

MONTAGE

NEWS AND VIEWS FROM MONASH UNIVERSITY

Lest we forget

Dot Angell's battle for greater recognition of nurses' war service is shedding light on largely-ignored chapters of Australian history.

After years of lobbying politicians for an award for civilian nurses and doctors who served in Vietnam, the head of Monash's Caroline Chisholm School of Nursing was among the first to receive the Vietnam Logistic and Support Medal in April.

"The award is significant because nothing has been written about the work these volunteer surgical teams did in Vietnamese provincial hospitals," Professor Angell said.

The late Sir Edward 'Weary' Dunlop, who earned fame for his heroic surgery in World War II prison camps but less recognition for his service as a civilian doctor in South Vietnam, was also awarded the medal in April.

Professor Angell estimated that about 400 civilian doctors, nurses and allied health personnel who volunteered to work in Vietnamese hospitals between 1964 and 1972 were eligible for the award.

She is chairing a committee, formed by the Royal College of Nursing Australia, which is seeking a memorial site on Canberra's Anzac Parade.

Professor Angell and her fellow lobbyists recently presented their submission for land to the Canberra National Memorial Committee, and are hopeful of including a dedication ceremony in the 1999 celebrations to commemorate a century of Australian war nursing.

The memorial would record the names of all nurses who died in wars, and an inscription would dedicate it 'to all Australian nurses who served, suffered and died in the cause of humanity'.

The first Australian army nursing service was established in 1899 for the Boer War, and nurses have been alongside the nation's troops in every conflict since.

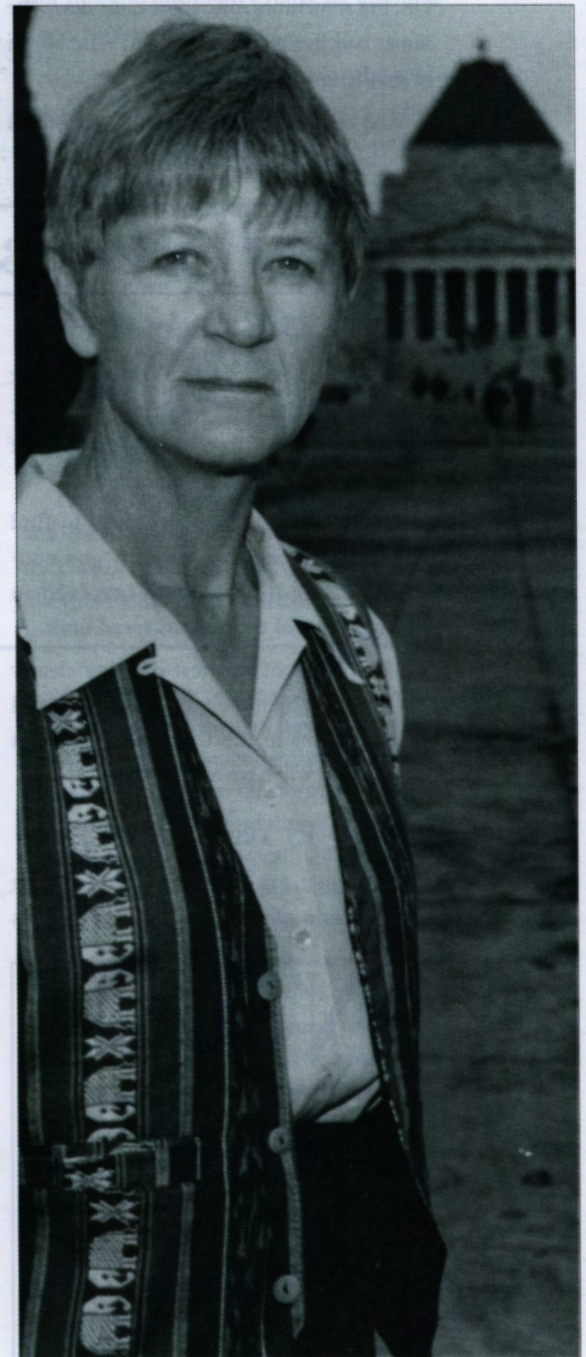
Nurses endured the same horrendous conditions as 'diggers' throughout Europe and the Middle East in World War I, and dozens lost their lives in World War II as they came under direct attack for the first time.

Professor Angell said some of her Vietnam nursing colleagues were suffering from cancers and lymphomas, believed to have been caused by Agent Orange.

There was also the longer term psychological impact of living through the war years and witnessing horrific social trauma. "Only someone who experienced the war first-hand can understand what it is like to go through it," she said. "It's important to have a memorial purely for nurses – a place to go and reflect and heal if need be."

Professor Angell's recollections of Vietnam sound like an episode of MASH – she said they used humour with "a touch of craziness" to cope with the daily routine of battling human destruction with inadequate medical resources.

Continued on Montage 2



Lest we forget

From Montage 1

Her team was sent to Bien Hoa Hospital, near Saigon, to train South Vietnamese medical personnel in surgical procedures.

They treated South Vietnamese, North Vietnamese and Viet Cong patients, counselled distressed Australian soldiers and organised blood donations from US servicemen. Their non-partisan attitude earned valuable respect.

"Often when we drove to the hospital for night duty, we'd see figures come out of the shadows, recognise our jeep and retreat into the darkness," she said. "We knew that we were OK, but sometimes Americans came down the same road five minutes later and were blown to smithereens."

And conditions within Bien Hoa Hospital could be almost as frightening.

"It was common to have two or three patients to a bed and to use newspapers as sheets," Professor Angell said. "We had no facilities for testing blood groups so we relied on universal donor supplies from the US base."

But the Australian volunteers did make a difference. As each team completed its tour of duty, the hospital was left in better condition.

"When I got there in 1967, the offal from the operating theatres would just be thrown out the back and there were rats everywhere," Professor Angell said. "By the time the last Australian team left Bien Hoa in 1972, it was functioning like a Western hospital."

While the teams coped with the trials of their Vietnam postings with black humour, impromptu parties and even a lobster barbecue while artillery shells whistled overhead, they received little help in adjusting to everyday life on their return to Australia.

"Our time over there was treated as if it had been an ordinary hospital round. We finished

in Vietnam on a Friday and were expected to start work in Melbourne on Monday, as if nothing extraordinary had happened," Professor Angell said.

The transition was made even more difficult by the prevailing anti-war sentiment which stifled any official recognition of their achievements.

The end of the official silence in the late 1980s and 'welcome home' marches and memorials held both here and in the US inspired Professor Angell to take up the case for nurses.

BY GARY SPINK

NOW & THEN

25 Years Ago

An amphotometer was operated by our Parking Attendants on the University roadways during 1969 to obtain some idea of the incidence of speeding on campus.

The instrument was also used to find out what categories of University and non-University motorists were involved in infringements of the campus speed limit.

The results of this test indicate clearly that speeding by motorists is a great hazard to pedestrians in the University, and that some action will have to be taken.

15 Years Ago

The Monash practice of restricting the chairmanship of departments to professors

has, on the whole, served the University well.

This was one of the principal findings of the Monash Review Committee, whose report on the headship of departments was adopted by Council at its June meeting.

However the committee left the way open for the appointment of non-professorial chairmen "in exceptional circumstances".

5 Years Ago

Australia's world-renowned academic community was at risk of becoming an "intellectual backwater" unless significant salary increases were approved soon by the Federal Government, the Vice-Chancellor, Professor Mal Logan said.

He said academics in Australia were grossly underpaid and were at the end of their tether over the lack of action on salaries.

This Month Last Year

Monash is the *Good Universities Guide* University of the Year.

The Minister for Employment, Education and Training, Mr Simon Crean, announced the award when launching the 1995 edition of the guide at Parliament House in Canberra on 26 July.



Spike

School for the gifted

The erudite thinkers in Philosophy have been at it again. Faced with a closed door labelled PUSH, an eminent Monash philosopher was heard saying "push ... push ... what does push mean?" Those listening were momentarily confused ... he was pronouncing PUSH to rhyme with RUSH.

Adrenaline rush

The emergency phone number on Caulfield campus is getting a run for its money. Each time an evacuation drill is run, people jam the emergency line inquiring if it's a real emergency or just a trial, instead of leaving the building. So much for evacuation practice.

A bit of a snag

Open Day plans were in danger of a demarcation dispute when it was revealed that two student clubs would be providing a sausage sizzle on Sunday 6 August. An awkward stand-off was narrowly averted after the German student club promised to contain themselves to only broiling bratwurst.

MONTAGE

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Businesses must adapt to new electronic commerce: expert

Businesses will have difficulty surviving in the global marketplace unless their managers implement electronic commerce systems, the executive director of Monash University's new Centre for Electronic Commerce has warned.

Ms Joanne Fisher said senior management in commercial, government and educational organisations must learn how to harness the potential of technologies such as electronic messaging, electronic data interchange (EDI) and all forms of on-line business communication.

This was particularly important for managers of small to medium-sized businesses. "If they fail to address this new technology, their organisations may be left well behind in the new order of international business competition," Ms Fisher said.

The centre is being established within the university's Gippsland School of Business. It will provide research, consulting and training services to the Australian public and private sectors.

While its head office is at the campus, many of the centre's staff are located in Australian capital cities and 'telecommute' to the centre in a working application of the new technology.

"What is unique about this centre is that it has a nucleus of Australia's leading electronic commerce experts within the one organisation," Ms Fisher said.

"While other universities may be involved in the technology of electronic commerce, the Monash centre is the only tertiary institution in Australia focusing on how the new technology can be used to streamline business operations."

The centre has already begun a number of electronic commerce projects and research studies including electronic commerce feasibility and impact studies, EDI standards development, an analysis of options for small to medium-sized enterprises (SMEs), and electronic commerce awareness and training programs.

Head of the School of Business Professor John Anderson said the centre's research would focus on "real problems requiring real solutions".

The centre is essentially a self-funding organisation, with projects undertaken on a contractual basis or by joint venture.

Ms Fisher said there were few electronic commerce consultancies in Australia which were independent of vendors or network service providers.

The centre will also research the potential benefits to organisations of the technology as it is constantly changing and presenting new opportunities.

Research findings will be incorporated into the university's business degrees and postgraduate programs to prepare managers for the electronic commerce decision-making environments of the future.

About 6000 Australian organisations currently use EDI.

And the Federal Government has committed itself to the full introduction of electronic commerce into all its purchasing by 1997 with all government departments using electronic commerce to transact business.

Continued on Montage 11



The electronic commerce team with head of the Gippsland School of Business Professor John Anderson. From left to right: Professor Anderson, Mr John Mills, Ms Joanne Fisher, Ms Jan Gessin and Mr Graham Behrendorff.

Healing against the odds

Doctors swear to preserve life and Monash medical graduate David Simon believes this obligation does not stop at boundaries between the first and third worlds.

He is completing obstetrics and gynaecology training at the Monash Medical Centre, and gave up his recent holidays to answer a plea from a rural hospital in northern South Africa desperate for specialists.

During his three-week stay, he saw more babies die from preventable causes than he had seen in three years at the Melbourne hospital.

Dr Simon said the difference was made even more tragic because private health care in South African cities was equal to the best in Australia.

Recent democratic reforms have given the African nation a brighter future, but people living in many impoverished, predominantly black areas were still a long way from enjoying first-world standard health care.

"There was so much unnecessary death because of simple infrastructure problems, such as not having enough midwives to monitor all the women in labour, or complications caused by women arriving late at hospitals because there was no car in their village or our ambulances had broken down," he said.

While there were good supplies of drugs and medical equipment at the 600-bed hospital in the Kwa Zulu area of Natal, Dr Simon said the building was run down and there was a drastic shortage of medical specialists.

"A hospital that size in South Africa is supposed to have 30 doctors, including six specialists. This one had a staff of 16, and its only obstetrician couldn't do operations because he was nearly blind," Dr Simon said.

"They have the same problems as Australia in attracting doctors to remote

areas. Most locally trained doctors go into private practice or leave the country for higher pay in Europe, Canada and Australia.

"Seventy per cent of doctors in Kwa Zulu Natal come from overseas and half the specialist positions remain unfilled."

Previously, Dr Simon has sought to help redress the imbalance in Australian health care.

After graduating in 1983, he spent eight years working in isolated Aboriginal communities in the Northern Territory.

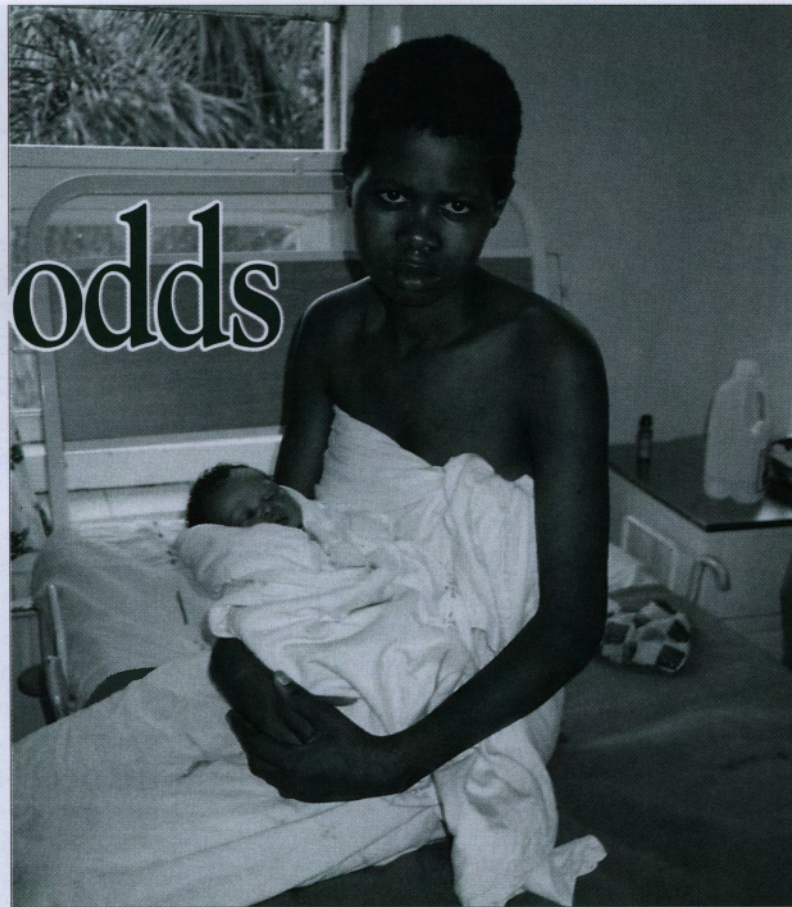
The recent trip was Dr Simon's second visit to the Natal hospital. His first was for nine months in 1991, after he answered an advertisement in the *Australian Medical Journal*. The latest stint came after a plea from the hospital's medical superintendent.

The hospital had managed to double its staff since his first visit, so although the workload varied from busy to frantic, he was able to take on more of a teaching role, demonstrating aspects of his obstetrics training and experience to resident general practitioners.

"Skilled people working in any third world situation are always going to be more effective by teaching than actually doing things themselves," Dr Simon said.

"It's great to be able to save a life, but teaching someone else to do it is like treating dozens of patients."

But training couldn't overcome some infrastructure problems, such as sudden water and power cuts in the operating theatre.



Many of Dr Simon's patients suffered unnecessary complications giving birth due to horrendous conditions in the South African Hospital.

"I even saw a cat dash across the theatre one night, and I asked a nurse what it was doing in there," Dr Simon said. "She told me it was chasing rats."

Patients ill enough to need a transfer to a more advanced hospital presented a more serious problem.

"The condition of our ambulances and the roads meant that anybody sick enough to need a transfer probably wouldn't survive the trip."

But despite such horrendous problems, Dr Simon maintains there are benefits for doctors willing to support poorly resourced places throughout the world.

"It might sound a bit corny, but I believe any doctor who works in third world countries gets far more than they give," he said.

"Professionally, you get to do so many operations and see so much pathology in a very short time. And you learn about yourself, other cultures and what is really important.

"As Australian doctors, we have to ask ourselves if the patients of the third world are our concern, and if so, we have to ask what our response should be."

BY GARY SPINK

The gift of a lifetime

Head of the Monash Music department Professor Margaret Kartomi will present a lifetime of research to the Indonesian Director-General of Culture at a special ceremony in Jakarta later this year.

Professor Ibu Edi Sedyawati has asked Professor Kartomi to hand over a recorded copy of what is believed to be the only comprehensive collection of traditional music from Indonesia's provinces.

The Monash ethnomusicologist has compiled the music during 31 field trips to 26 of the country's 27 provinces since 1970.

She has had many adventures travelling to the remotest parts of Indonesia to record traditional music, such as steering a canoe through a crocodile-infested river and moving through areas where guerillas were operating.

On one occasion Professor Kartomi had been recording ritual music in small villages of Irian Jaya and had to travel back through the open sea to the local airport. The dugout canoe became lost in a maze of rivulets, and she was trapped in malaria-infested water thick with crocodiles for 17 hours without food or drink.

Professor Kartomi admitted she did not think she would survive another incident, when she was caught in a wild storm in a tiny canoe on Sumatra's Lake Toba. However the boatman told her to throw foreign cigarettes into the water to appease the god of the lake, which gave him the confidence to steer the boat to shore.

During her early field trips in the 1970s, Professor Kartomi carried large pieces of recording equipment as she hiked through rainforests and mountains to reach remote villages.

Now she carries small, high-quality cassettes called DAT, as well as video equipment, to record the dance and rituals which accompany the music.

As an ethnomusicologist, Professor Kartomi's work includes research into the anthropology of various communities. When she visits a region, she studies its local rituals and ceremonies, learns its music terminology and plays its instruments.



Professor Kartomi enjoys a traditional festival in a remote village in Indonesia.

She said many people mistakenly believed gamelan and other Javanese and Balinese music was typical of all traditional Indonesian music. In fact, there were hundreds of diverse music cultures throughout the country.

Professor Kartomi regularly returns to regions to record changes in music, which has enabled her to map the development of various music cultures over 25 years.

"It is very unusual for an ethnomusicologist to be able to get this kind of historical perspective," she said.

Most of the traditional music recorded in Indonesia has been destroyed by fires, floods and humidity levels.

Professor Kartomi's collection will be protected in the humidity and temperature-controlled National Archive in Jakarta,

where copies will be made on request for other Indonesian institutions.

Technicians in Monash's Music department are currently copying about 400 hours of Professor Kartomi's recordings on reel-to-reel tape, which has been found to be the best way to preserve material for the long term.

The project is being funded by the Australia-Indonesia Institute, a subsidiary of the Department of Foreign Affairs and Trade.

Professor Kartomi has published several books, more than 100 articles and two annotated LP records on selected musics of Sumatra, Java, Sulawesi, Maluku and Kalimantan.

BY GEORGIE ALLEN

Warning labels for infant formula

Milk formula products should carry warning labels similar to those on cigarette packets, according to a Monash University breastfeeding specialist.

Professor Roger Short from the Department of Physiology said the State Government should legislate to make it a requirement that baby products carry such warnings.

Labels should read: 'Infant formula is potentially hazardous to the health of your baby in the first four to six months of its life.'

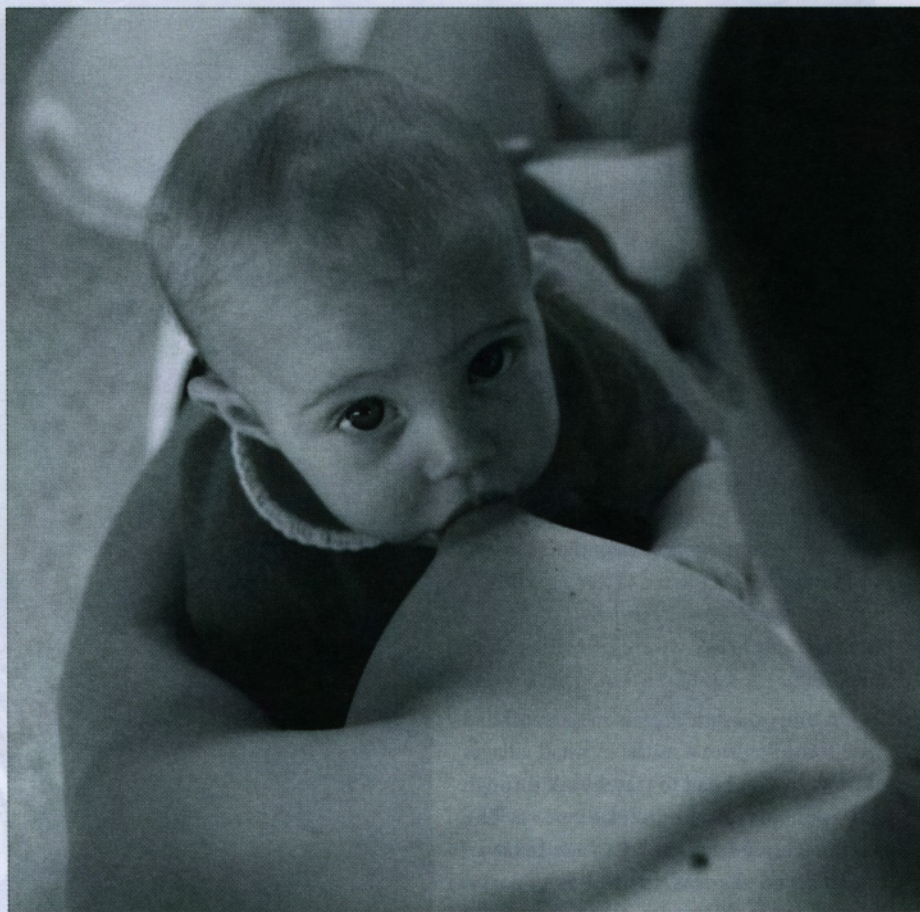
He said every packet of infant formula should also have an insert documenting its health risks.

"It is an effective way of getting the message – that there are potential health risks in using infant formula – out in the community," he said.

*Labels should read:
'Infant formula is
potentially hazardous to the health
of your baby in the
first four to six
months of its life.'*

Professor Short said feeding an infant milk formula products instead of breast milk during the early months of its life put it at greater risk of diarrhoea, respiratory infections, sudden infant death syndrome (SIDS), necrotising enterocolitis, lowered intelligence and allergies in later life, and early-age onset diabetes.

Women who choose not to breastfeed also increase their risk of breast cancer in later life and miss out on the contraceptive effect of lactational amenorrhoea, he said.



"While we understand that some women cannot or do not want to breastfeed, there are still those who choose not to breastfeed without knowing all the facts."

He said it was the moral and legal responsibility of health workers to make women aware of the risks of using infant formula.

"Failure to inform mothers about the life-threatening health risks of infant formula could be construed as a failure of medical duty to inform."

He also said it was important that provision be made in the workplace to make it easier for women to continue to breastfeed when they returned to work.

Professor Short made the statement at a ceremony to present the Royal Women's Hospital with Australia's first public 'Baby Friendly Hospital' award.

A 'Baby Friendly Hospital' is one which provides women with a high level of up-to-date information about the advantages of breastfeeding, as well as training in breastfeeding techniques.

The award was originally initiated by the World Health Organisation (WHO) and UNICEF in an attempt to reduce infant mortality and morbidity in third world countries caused by incorrect handling and preparation of milk formula products.

They found breast milk substitutes were being diluted to reduce costs to the family and often prepared with contaminated water.

Their solution was to encourage hospitals to educate women about the advantages of breastfeeding through antenatal and postnatal visits.

They then shifted their sights to Western nations and found the number of women opting to breastfeed was surprisingly low in some countries and ethnic groups.

Baby formula containers already carry a warning that breast milk is best for infants and recommend that any change to formula should be done under medical supervision.

BY GEORGIE ALLEN

Trading partners

Tess was 19 when she met Bill, 58, who was holidaying alone in the Philippines. He was charming and, although unemployed, seemed to have plenty of money to spend on her and her family.

When Bill asked her to marry him and come to live in Australia, Tess jumped at the chance. Bill was generous and loving, and she looked forward to a life of comfort and security.

Five months after moving to Australia and weeks before their planned wedding, Bill gave Tess a final beating and dropped her off outside a women's refuge.

He returned to the Philippines to find another 'fiance' and Tess tried to pick up the pieces of her life - stranded in a foreign country without enough money for an airfare and too humiliated to return home.

Tess is one of a growing number of Filipino women sponsored to come to Australia by Australian men looking for women they perceive to be docile and sexually submissive.

Ms Shyamali Larsen, a Monash anthropology and sociology PhD student, recently presented a paper to the Office of the Status of Women on the problems of intercultural marriages between Filipino women and Australian men.

She travelled to the Philippines to interview about 50 Filipino women engaged to Australian men, and examined ways the Australian and Philippine governments were addressing the problem.

According to Ms Larsen, the Australian media and government portray Filipino women as money-hungry women who are looking for ways to escape the financial hardship of their own country.

She said that by stereotyping the women this way the Australian government took the attitude that they would "come here anyway" and dodged much of the responsibility for the problem.

While financial considerations did play a large part in the women's motives, Ms Larsen said there was a range of economic and social reasons for the women wanting to migrate to Australia.

Social motives included pressure to marry early, shame from the loss of virginity

before being married, low opinion of Filipino men, unreasonable expectations on a new wife by the extended family and a 'colonial mentality' making Westerners seem glamorous and exciting.

Ms Larsen said that although both governments were playing an increasing role in educating Filipino women of the potential dangers of inter-cultural marriage, their efforts were still inadequate.

The Australian embassy, where the women go for entry visas, plays a video explaining the social problems of inter-cultural marriages in the foyer 24 hours a day, but Ms Larsen said it became part of the background and was largely ignored.

Women are also obliged to attend a compulsory counselling session at the Commission of Filipinos Overseas (CFO) on the possible outcomes of their marriage.

However, Ms Larsen said the sessions were ineffective because women were counselled in groups and not encouraged to express their fears openly.

"Due to the sheer volume of people passing through the CFO in one day it, is possible for a woman to go through the paces and not learn anything."

Ms Larsen said the best way for the Australian Government to deal with the problem was to try to improve the services available in Australia for Filipino women who were abused by their Australian husbands and fiancés.

The phenomenon of Australian men travelling to countries such as the Philippines 'shopping' for brides has taken on a sinister element recently with the emergence of 'serial sponsors' - men who sponsor a Filipino woman to come to Australia to marry them, and within the six months that the marriage must legally take place, abandon the first woman and return to the Philippines to sponsor another woman.



She said these men were often unemployed, were much older than the sponsored women and had difficulty finding a partner within their own culture. They perceived Filipino women to be domesticated, sexually obedient and disposable.

"These Australian men are looking for a mate who will be more willing than an Australian woman to uphold their patriarchal values."

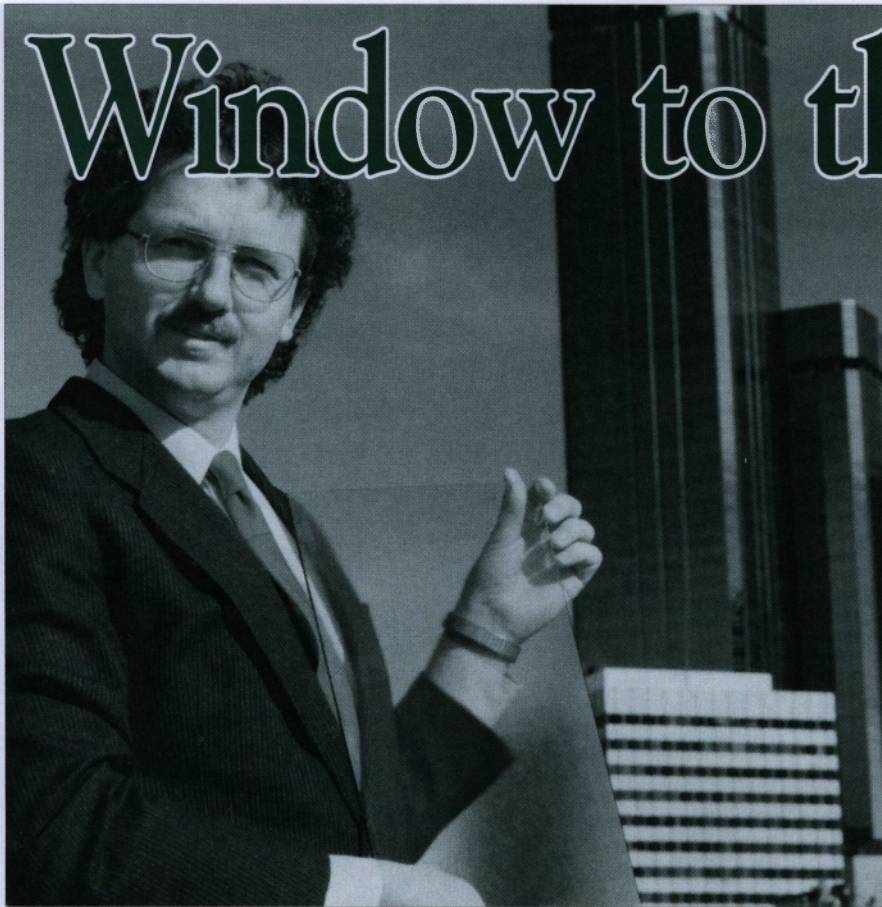
A recent report, entitled *Serial Sponsorship: Immigration Policy and Human Rights*, identified 110 Australian men who had sponsored Filipino women more than once.

Of these, 53 had sponsored twice and 57 had sponsored at least three partners. The maximum number of women sponsored by one man was seven. And almost 80 per cent of serial sponsors were known to have been physically abusive to their partners.

Ms Larsen stressed, however, that while serious sponsorship was a serious problem, there were many successful Filipino-Australian marriages.

BY GEORGIE ALLEN

Window to the future



Dr Ian Watkins holds a sample of glass which has been coated with the sol-gel process.

Two new breeds of external windows being developed in Australia will revolutionise climate control and electricity supplies in large buildings.

Researchers from Monash University's Department of Chemistry are working on collaborative projects to develop 'electric' and 'smart' windows designed to achieve huge energy savings for interior space heating and air-conditioning.

The electric windows project is headed by Silicon Technologies Australia Limited (STA) and also involves Flinders University and the Australian Nuclear Science and Technology Organisation.

The smart windows project, headed by the University of Technology, Sydney (UTS), has STA as its main commercial partner and also involves Sydney University. Both projects have been funded by STA and the Federal Government's Energy Research and Development Corporation (ERDC).

Electric windows

Monash's research for the electric windows project is led by Dr Leone Spiccia in association with professors Glen Deacon and Doug MacFarlane.

The electric windows comprise layers of specific materials sandwiched between two

pieces of window glass, forming transparent solar cells that convert sunlight and heat radiation into electricity.

These photo-electrochemical (PEC) cells are based on patented inventions by Professor Michael Graetzel of the Ecole Polytechnique Federale de Lausanne in Switzerland, who has pioneered improvements in these cells since the late 1980s.

Nano-particle and ruthenium dye technologies are the main elements of the PEC solar cells.

They are based on nano-structured titania sensitised by a specific pink dye, rather than the crystalline or film silicon used in currently available solar cells. The latter are called photovoltaics, because they convert light directly into electricity.

The present technology PEC cells are ready for scale-up and commercialisation to provide high-rise buildings with an extensive passive solar power unit. The electric windows project aims to further increase the efficiency of the windows.

For residential and low-rise buildings, the cells will take the form of roof modules, laid down on steel or aluminium roofing.

Unlike their silicon counterparts, the solar cells in electric windows work even if part of

the window is in shade. They will be made using cheaper manufacturing processes than silicon cells and have less expensive system requirements.

The electric window concept has captured the imagination of Mr Harry Seidler, the architect involved in Melbourne's latest skyscraper project. Backed by Melbourne developer Mr Bruno Grollo, the proposed 120-storey tower would be the tallest building in the world.

When the first model of the building was unveiled in May, the design briefs outlined plans to incorporate electric windows into the tower's facades and apex structures.

The architects predict that this massive solar energy plant should be able to generate electricity at the rate of three to four megawatts per day. This is equivalent to the total energy consumed by one conventional city building in an average working day.

Professor MacFarlane believes putting electric windows to large-scale use will significantly reduce the overall cost of providing electricity to high-rise buildings.

He said part of the huge cost in building power stations was not in supplying the base load but in providing the extra capacity needed to cope with peak loads.

"If buildings use electric windows to generate some of the power for their own air-conditioning, it would reduce peak loads and cut the overall costs of supplying power, which would also benefit the power companies," he said.

Earlier this year, the ERDC agreed to invest \$1.55 million into STA's development of transparent solar cells for use in electric windows and roof power modules. STA is now seeking additional financial investment from other Australian companies interested in the electric windows project.

Smart windows

Research at Monash into another energy-efficient form of window, dubbed the 'smart window', has been underway for the past five years as part of a \$3 million project. STA expects these new windows to be ready for large-scale commercial production before the turn of the century.

Electrochromic smart windows have the capacity to change from colourless to blue when an electric power source is applied.

The colour can therefore be varied according to the outside weather conditions to keep a building warm or cool, or to maintain even lighting.

On a sunny mid-summer's day, for instance, all the windows on a skyscraper could be turned blue, providing an all-over sunshade and dramatically reducing air-conditioning costs. On cold days, the penetration of light and heat into a building could be increased by flicking a power switch to reverse the process and make the glazing transparent.

Glass used in the smart windows is coated using the sol-gel deposition process – a relatively inexpensive way of depositing thin, homogeneous ceramic layers on glass.

Each glass plate is coated on the inside with a layer of indium-tin oxide, a transparent conducting oxide (TCO). The TCO layer on one plate is coated, via sol-gel deposition, with an electrode layer of tungsten oxide, while the other plate is similarly coated with a layer of vanadium oxide.

The vanadium layer used in the windows can have a small amount of yellow colour, but not enough to give an overall discoloration to the finished windows. The TCO, polymer electrolyte and tungsten oxide layers are essentially colourless until the desired chemical reaction turns the tungsten oxide layer blue.

STA research project manager Dr Ian Watkins has been working with chemists at Monash's Clayton campus and at STA laboratories in Queanbeyan, NSW, to refine the sol-gel process so it can be used for mass production of large commercial-sized smart windows.

He said STA and Monash were at the forefront of research into the sol-gel deposition technique.

Sol-gel deposition involves dipping the glass substrate into a solution of metal-organic compounds, often alkoxides, in an organic solvent.

The film's thickness can be controlled by the rate at which the substrate is withdrawn from the solution, or by altering the viscosity of the solution. The solvent in the layer is then allowed to evaporate.

The substrate – now coated with a layer of metal alkoxide – is allowed to react with water vapour in a controlled humidity chamber, forming a gel-like layer of metal hydroxide. The material is heated to drive off water and form an oxide. The oxide layer is then annealed to produce a uniform, amorphous or crystalline layer whose physical, optical or electrical properties can be determined by the annealing temperature profile.

The Monash chemistry team, under Professor Bruce West and Dr Spiccia, is responsible for developing and testing the various chemical solutions used to provide coatings for the 'smart glass'.

Dr Maria Forsyth, of Monash's Department of Materials Engineering, and Professor Doug MacFarlane – two of

Australia's leading experts on ion-conducting polymers – have the task of providing the polymer which is sandwiched between the two sheets of coated glass.

Dr Watkins said smart windows had the potential to reduce energy consumption for commercial buildings by up to 30 per cent.

"In northern cities such as Sydney and Brisbane, the air-conditioning costs for a large building during summer are massive in comparison to heating costs during winter," he said. "In Melbourne, the cost of air-conditioning is still higher than the cost of heating.

"So any measures which reduce the need for peak-load heating and cooling units, as well as lessening the cost of running them, will present enormous savings."

He said there was considerable worldwide interest in the window technology research underway in Australia, and added that the research by STA, UTS and Monash into smart windows in particular was comparable with several major projects in other parts of the world.

"Until recently, we were the only commercially oriented group pursuing sol-gel processing.

"Most of the international research groups are focused on initially producing small devices for cars, such as mirrors, windows and sunroofs, but ultimately want to produce architectural windows."

He said the windows had to last for up to 30 years – the average life of a building.

And any extra cost of installing the windows must be offset by the level of energy savings within five to 10 years of installation.

At present, smart glass models measuring 10 cm x 10 cm have been tested, with plans to take the size up to at least 15 cm x 15 cm by the end of this year.

Dr Watkins said STA was presently commissioning a 0.9 metre square dipping facility to accommodate larger sheets of glass.

In the longer term, the researchers hope to incorporate multiple window technologies in the same window – for example, combining electric and electrochromic windows.

BY SUE HOBBS

A model of the imposing Grollo tower, which architect Harry Seidler has designed to incorporate electric windows.



Robotic researchers play the field

The forerunners of tomorrow's robots are being developed at Monash today.
Sue Hobbs reports.

People could be reminded of the old adage about boys and their toys as they watch Professor Ray Jarvis and his colleagues zipping around Monash's Clayton sports oval in their curious 'techno-buggy'.

But be assured – the elaborate manoeuvres are performed in the name of science, not leisure.

Covered in scaffolding, cameras and wires, the device is the forerunner to machines that are likely to become an essential part of life in the 21st century – driverless robot vehicles.

By the end of this year, Professor Jarvis and his team from the Intelligent Robotics Research Centre hope to have developed a prototype robot vehicle which will be able to take to the oval on its own – albeit a little shakily.

"We expect our first driverless demonstrations will be pretty rough, but there will be some independent automotive capabilities," Professor Jarvis said. "Then the prototype will be refined over the next two years and safety features added."

Last year the Monash robotics team was awarded a three-year, \$180,000 grant from the Australian Research Council to develop an 'all-terrain intelligent autonomous vehicle'.

Major uses for such a vehicle in Australia would initially be in the fields of agriculture and surface mining.

For example, the intelligent systems could be adapted to farm technology, enabling tractors to work in paddocks



without drivers. Or they could be used for mineral exploration expeditions into the Australian outback.

Professor Jarvis also envisages potential uses in search and rescue and fire-fighting, as well as the ultimate goal of having road freight fleets of driverless vehicles on national freeways.

The robot road carriers would use a dedicated lane on freeways and their positions would be logged into a base station via radio signals.

"It's a little while off but it will come eventually," he said. "Americans are very keen on the concept of driverless vehicles and hold conferences devoted entirely to the subject."

The prototype vehicle being used by the researchers could be the only one of its kind in Australia.

Professor Jarvis was thumbing through a copy of *Popular Science Magazine* last year when he saw an amphibious vehicle pictured in an advertisement and realised it would be an ideal 'base' for his experiments.

He was so taken with the idea that he immediately ordered the vehicle from the US.

Used in America as a recreational vehicle, mostly by duck-shooters and fishermen, the robust, six-wheel drive buggy is extremely versatile.

"It's the sort of vehicle Americans use to drive around in swamps, although I don't know just how water-tight it is," Professor

Jarvis said with a grin. "The manual does warn the user to make sure certain plugs are in place before going into the water."

He said the vehicle was "just a platform for demonstrating the technology at this stage".

Because of its amphibious capabilities, the technology being developed could also be adapted to boats. "It could be adapted to a hovercraft for example, or used for unmanned coastal patrols."

The aim of the research project is to develop a mobile robot vehicle that can successfully plot its way over all kinds of terrain and also function in still water.

The outdoor robot would be able to independently perceive any obstructions in its path, apply its own reasoning to solving the problem and take action to avoid the obstacle.

Covered in scaffolding, cameras and wires, the device is the forerunner to machines that are likely to become an essential part of life in the 21st century – driverless robot vehicles.

"Even if the robot has an in-built map, it may still have to deal with something like a cow walking across the road," he explained. "So the vehicle will need enough sensors to do its own environmental mapping."

He said there were five sub-system requirements for supporting autonomous mobile robot navigation – environmental modelling, localisation, path planning, motion control and communications.

The intelligent systems being installed in the vehicle are mostly adaptations of technologies already developed by the Monash team for indoor robots, with the addition of a satellite navigation system.

Although using satellite-based differential global positioning systems (GPS) enables the robot to determine its position with much greater accuracy, it does limit

the vehicle's use to reasonably open outdoor environments where there is sufficient line-of-sight to the satellite.

So far, the researchers have been able to pin-point the location of the robot to within 75 cm in trials using GPS localisation.

Other smart systems being trialled on the outdoor robot include flux gate compass steering, active-passive range data sensor fusion and distance transform based path planning.

Professor Jarvis said preliminary tests had demonstrated the viability of using

these intelligent systems to create a feasible, autonomous outdoor robot.

"The various components of the system are functional, but the efficient and reliable integration of all these sub-systems is yet to be carried out," he said.

Professor Jarvis recently attended the 'Intelligent Automated Vehicles '95' conference at the Helsinki University of Technology, where he presented a paper on the all-terrain vehicle being developed at Monash.

Electronic commerce

From Montage 3

EDI is the transfer of data from one computer application to another. Data may come from one software package and go into another, passing through several computers before meeting its ultimate destination.

The crux of EDI is that the whole process is automated, without human intervention at each stage of message transfer.

Advantages include the systematic processing of orders, reduced effort in order placement, reduction of errors and the virtual elimination of manual record keeping and filing.

It is estimated that EDI can increase efficiency in the purchasing process by more than 20 per cent, releasing managers from paperwork to concentrate on strategic planning and other management roles.

Ms Fisher comes to the job highly qualified and widely respected in the field of electronic commerce. She was formerly managing director of Electronic Commerce Consulting Services, an independent consulting company specialising in business and marketing strategy for electronic commerce planning and implementation.

From 1989-93, Ms Fisher was involved in implementing some of Australia's largest EDI projects, including SUPPLYLINE for the NSW Government and Taxline for the NSW Office of State Revenue.

Mr Graham Behrendorff has been appointed senior consultant to work with Ms Fisher at the centre. He was previously manager of the Electronic Trading National Office, ALH Electrical Group, and was

responsible for implementing and managing the electronic trading system of the group through a corporate EDI gateway servicing customers and suppliers.

Corporate gateways are computer systems that provide a standardised common input/output environment to manage access and delivery of information between internal systems and the business systems of external partners.

Other recent appointments to the centre include Ms Jan Gessin and Mr John Mills.

Ms Gessin, as senior consultant, will head the centre's Small to Medium Enterprise division. She was formerly the executive officer of Electronic Commerce Australia and electronic trading projects manager for Pacific Bell in California.

Mr Mills will be based in Sydney, and will focus on electronic commerce initiatives in the insurance and banking sectors.

The Centre for Electronic Commerce will offer services such as feasibility studies, impact analyses, cost-benefit studies, strategic business and marketing planning using electronic commerce, new application development, trading partner and community development, future system planning and training courses.

BY GEORGIE ALLEN
Monash University's Centre for Electronic Commerce has been endorsed by the university's Faculty of Business and Economics and will be officially launched later this year pending formal university approval.



Dr Peterson uses a base map drafted during his 1971-73 expedition to the Carstensz glacier.

Jim Peterson is a patient man – patient enough to spend 20 years studying the slow retreat of a glacier in Irian Jaya.

The Monash geographer believes that plotting the present and past rate of change in the size of the glacier could be the best way to assess the impact of global climate change in the tropics to Australia's immediate north.

Dr Peterson, from the Monash Department of Geography and Environmental Science, has shown that the Carstensz glacier in the highlands of Irian Jaya has shrunk from 19 square kilometres to 3 square kilometres in the past 200 years.

And that rate of change is gathering pace. In the mid-1970s, Dr Peterson estimated the size of the Carstensz glacier at 7 square kilometres, more than twice its size today.

The Carstensz system is one of only 10 near the equator and the only one outside Africa and South America.

Dr Peterson said nobody fully understood the long-term pattern of global climatic change, but the change in shape of glaciers, tracked by residue as they advance and retreat, and the limited record provided

by expeditions does give an indication of change over the millennia.

"Small glaciers like Carstensz can be used as a thermometer to monitor the rate of climate change over the centuries," he said.

According to Dr Peterson, there is no definitive evidence that the decline of the Carstensz system is caused by human activity, as similar changes have occurred at least four times in the past 4000 years.

Whatever the cause, Dr Peterson said an understanding of long-term climate change in the tropics was vital to gaining an understanding of the world's long-term weather patterns.

The tropics played a pivotal role in the world's radiation balance, but meteorological records on high-altitude regions are limited, making it difficult to study radiation trends.

And even if the 'dying' Carstensz was not the result of global warming, it could still have worrying implications for the region. Dr Peterson said an alternative reason for the retreat of the glacier could be a long-term decline in precipitation, with disturbing consequences for the agricultural base of Papua New Guinea and Irian Jaya.

Measuring ice fluctuations requires an accurate base map, against which satellite images of ice retreat can be compared. Dr Peterson is currently using a base map drafted during his 1971-73 Carstensz expedition.

Dr Peterson and his colleagues are using spatial data handling techniques to monitor ice cover changes. The information gathered is added to the findings of previous aerial and ground-party surveys, and the resulting data is digitised and reproduced as maps to demonstrate changes in ice boundaries and flows in the Carstensz system.

Dr Peterson believes techniques such as these will revolutionise all sorts of geographic modelling. "It's like switching from a typewriter to a word processor," he said.

Dr Peterson said the modelling software and satellite imaging made it possible to build a file on Carstensz without the need for repeated visits to Irian Jaya. But the weather still made glacier-watching a tricky business.

"There are just not that many cloud-free days over Carstensz to get a clear image from space," he says.

BY STEPHEN MATCHETT



Dr Dawson's research found that contrary to popular belief, few surrogacy agreements lead to disputes over the legal parentage of the child.

Delivering the truth on surrogacy

When 'Jane' discovered that a close friend was unable to have a baby, she offered to act as a surrogate mother and carry a child for her. She already had four children of her own and felt she didn't want any more.

However, Jane did not anticipate the bond she would feel for the unborn baby as it was growing inside her. She tried to tell the biological parents how she felt, but they were consumed with happiness knowing they were finally having a child.

When the baby was born, Jane's feelings overwhelmed her and she refused to give up the child. The couple were devastated but Jane insisted that the baby was hers and the battle to determine the rightful parents began.

While this particular story is fictitious, it will appear familiar to many people. The

Baby M case in the US attracted international attention and became the subject of a dramatic television mini-series.

But according to a research fellow at Monash University's Institute of Reproduction and Development, Dr Karen Dawson, the probability of a surrogate mother giving birth and then refusing to give up the child is minute.

In fact, only six out of the 1100 US surrogacy cases Dr Dawson recently surveyed ended in legal action, and of those only two were a result of the birth mother not wanting to relinquish the baby.

Dr Dawson believes that the media hype surrounding cases such as the Baby M trial have misled many people about the real issues of surrogacy agreements.

According to Dr Dawson, a major problem facing couples choosing surrogacy in Australia is not whether the surrogate will refuse to give up the child when it is born but establishing legal parentage.

"IVF surrogacy – where the egg and sperm of the couple wishing to have the baby is used and implanted into the surrogate – is neither illegal nor legal in Victoria, making it difficult to establish legal parentage," Dr Dawson said.

Altruistic IVF surrogacy, where no money changes hands, is allowed in Victoria providing that either the potential surrogate or her partner are infertile, preventing any confusion about which couple are the biological parents.

"Victorian legislation states that the woman who gives birth is the legal mother, so even though the baby is made up of the genetic material of the commissioning couple, they still have to adopt it back from the surrogate."

One of the most successful surrogacy cases in Victoria involved sisters Maggie and Linda Kirkman. Maggie couldn't carry a child to term, so Linda offered to act as a surrogate for her and her husband. But Maggie – the biological mother – was not considered the legal mother until she and her husband had officially adopted the baby. The sisters' relationship remains intact and baby Alice now lives with Maggie and her husband.

Surrogacy is an option for women who are able to produce eggs but unable to carry because they have either no uterus or a condition that makes pregnancy dangerous to their health.

Dr Dawson said many couples nominated someone they knew – a relative or close friend – to be the surrogate. The surrogate had usually completed her own family and undergone a tubal ligation.

In the lead-up to a surrogacy agreement, both couples received counselling. They were seen separately and together to determine how they interacted as a group.

The ACT is the only Australian state in which altruistic surrogacy is legal. Accompanying legislation to the surrogacy law gives the commissioning women legal parentage of the child when it is born.

However, the Canberra Infertility Centre only has the capacity to take on about six of the 20 cases that qualify for IVF surrogacy in Australia each year.

BY JULIET RYAN

The ethics of politics

When Monash academic and philosopher Professor Peter Singer was approached to run for the blue ribbon Liberal seat of Kooyong in last year's by-election, he had few political aspirations.

But when he won the highest number of votes a Greens candidate had ever attracted, Professor Singer's political aspirations rose. He realised he had a real chance of winning a seat in the Senate and raising the profile of the Greens.

Director of the Monash Centre for Human Bioethics, Professor Singer has been an active voice in the animal liberation and environment movements since 1975, when he published his first book, *Animal Liberation*. The book sold 400,000 copies and became a bible for the animal liberation movement.

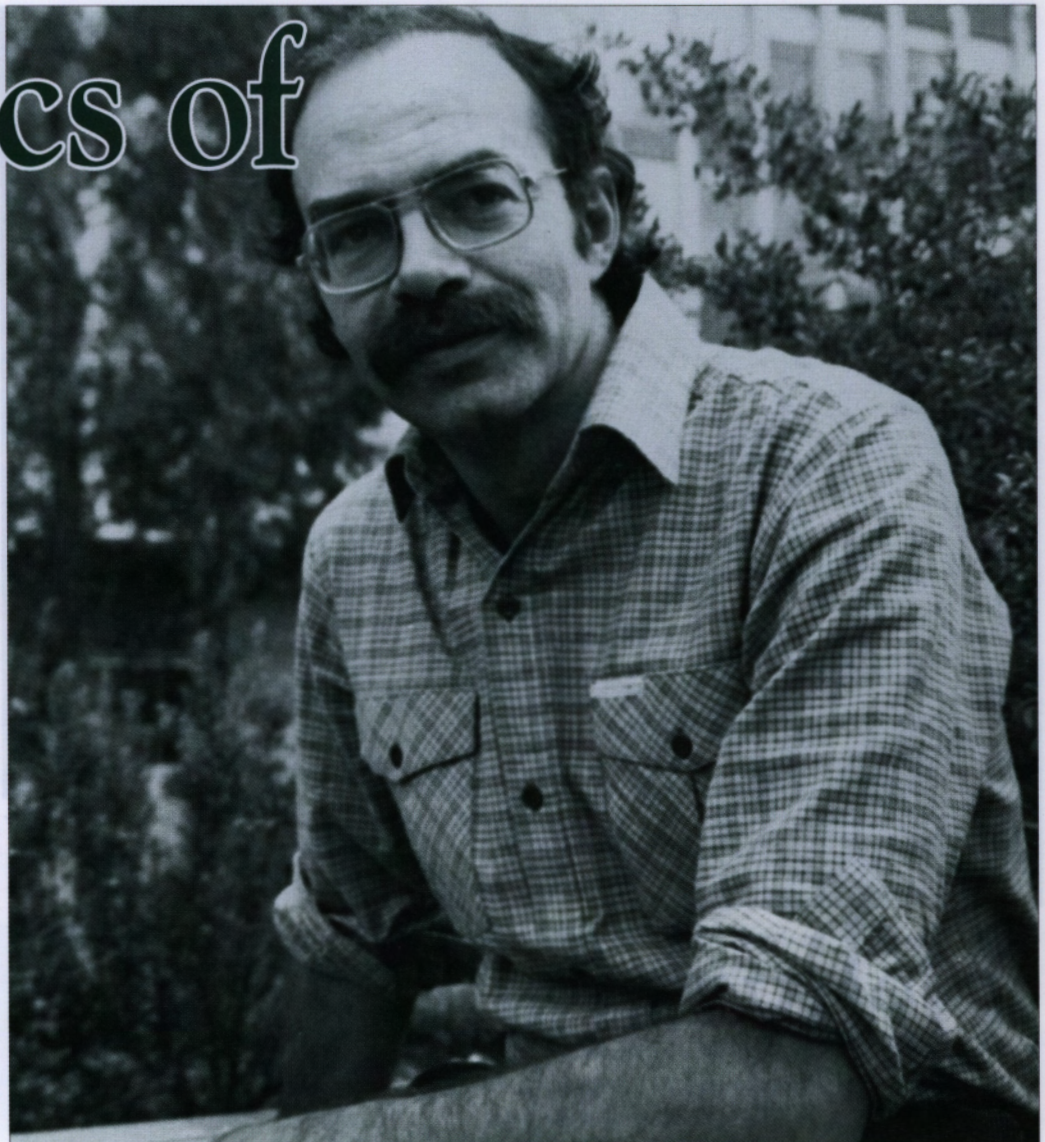
Professor Singer's question 'Why is it justifiable to do to animals what we would never do to human beings?' inspired many people to re-examine their ideas about animal ethics.

He believes equal consideration should be given to the interests of all living beings regardless of species and that Homosapiens are not inherently more important than other creatures.

"You cannot always say that the life of a human is more valuable than that of a non-human," he said.

His 'radical' support of experimentation on human in-vitro embryos was also controversial. He argued that while animals were capable of suffering and therefore had interests, early human embryos could not suffer and therefore had no interests.

He compares a baby born with brain damage with a chimpanzee: "A baby born with huge brain damage has no capacity for life on a meaningful level of consciousness whereas an animal such as a chimpanzee does."



Professor Singer's vision for society may seem idealistic, but he believes the result in the by-election indicates that people are looking for an alternative political direction.

Professor Singer is critical of the major parties' approach to governing: "Their attitude is that they can't do very much to change things for the better, that they work within an economically rationalist ideology which focuses on the materialist consumer ethos to stay in power."

Power, money and material goods have, according to Professor Singer, taken on far too an important role in contemporary society.

"We can think about the quality of our lives in other respects – in terms of clean air, clean water, and ancient forests where we can go for walks and know that our wilderness is being preserved," he said.

He believes there is a real danger that Australia is moving in the same direction as

much of America, where a sense of community and belonging has been lost among more materialistic values.

"There is a need to focus on maintaining the things that are important and valuable in Australian society."

"Focusing on building a just community that is equal and not a community where the gap between rich and poor is widening – a community in which we look after the disadvantaged properly – should be important to Australians."

For Australian voters, the Greens alternative is becoming a serious political option. The party is also becoming a political power in its own right, with two independent Greens senators currently in parliament.

If the voters of Kooyong are any indication, the electorate may be more than ready to expand this influence.

BY JULIET RYAN

Shakespeare and SNAGS

How do reinvented nineties men relate to inventive nineties women?

This question is explored in *Dead White Males*, David Williamson's new comedy, which will be performed at the Alexander Theatre from 3 to 8 August.

The play is set in the fictitious New West University, where intelligent and inquiring English literature students Angela and Melissa are confronted by the academic rhetoric of their charismatic lecturer Dr Grant Swain.

Dr Swain argues that Shakespeare's works typify a sexist literary heritage, mostly written by dead white males, and are symbolic of an oppressive society dominated by men.

Shakespeare steps in to argue his case, while Angela examines the structure of her own family.

Women confront technology

In a time of rapid technological development, Monash University Gallery's latest exhibition *Technothelylogia* steps back from the hype and considers the nature and impact of various forms of technology.

Technothelylogia, a collection of works by Australian women artists, looks at the

practices we call medical, domestic and communications technologies, and raises issues of control, access and social responsibility.

The content is critical, personal and sometimes humorous. The media includes computer-generated images, computer interactives, video, photocopies and paintings.

Images cover a range of technology from familiar domestic tools that dominate the life of the homemaker to the seductive lure of designer drugs.

Policing conference

The chief commissioner of Victoria Police, Mr Neil Comrie, will make a major statement about the future of policing in Victoria at a conference hosted by Monash's Centre for Policing and Public Safety entitled 'Police, Corrections and the Community: Challenges and Initiatives' on 28 July.

The keynote speaker will be visiting professor John Benyon, from Leicester University's Centre for the Study of Public Order, which is at the leading edge of police, corrections and public order research and teaching in northern Europe.

Other speakers will include the deputy commissioner of the Australian Federal Police, Mr Adrian Whidett, the director of the Correctional Services Division, Mr John

Van Groningen, and the general manager of Prison Operations, Mr John Griffin.

Issues to be discussed include the future direction of corrections in Victoria, modern prison management including privatisation, officer training and education, the role of community-based corrections and developing offender/community links.

Law faculty v Victoria Police

On Monday 19 June, the Monash Law faculty and the Victoria Police teamed up to train prosecutors and defence counsels in four mock Magistrates' Courts set up in the Law school lecture theatres.

The prosecution course, under the guidance of Acting Sergeant Paul Lawrie, culminated in testing the trainees in carefully simulated prosecutions of offences ranging from careless driving to robbery, recklessly causing bodily harm and prostitution.

Law students played the part of defence counsel and the accused, and were tested by Magistrates and staff on their knowledge of the law and court procedure, their advocacy skills in the examination of witnesses and powers of persuasion.

The program gave both police officers and law students hands-on experience and the chance to further their understanding of 'the other side' of the courtroom.

Prostitution law reform: who will benefit?

From Montage 16

Board, which will check the criminal and financial records of licence applicants. Members of the board include a brothel manager, a welfare worker, a member of the police force, two lawyers and an academic. It is unfortunate there is no representative of the Prostitutes Collective of Victoria on the board.

The Office of Fair Trading has drafted regulations which will impose fees to cover the costs of processing licensing applications. (Around \$33,000 a year will be spent on community education programs and for organisations which help sex-workers leave the business.) For brothels, licence fees

increase according to the number of rooms and business names used. For escort agencies, the fee is calculated according to the number of telephone numbers owned by the business. While I do not oppose applying the user-pays principle to brothel and escort agency owners, there is a danger that fees will rise to the level where the government will be living off the profits of prostitution.

The regulations will require that rooms in brothels have a concealed alarm button, and escort agencies must provide sex workers with mobile phones. But they do not ensure that brothel or escort agency owners pay work-cover premiums or compensate sex workers

injured during the course of employment. In the past, brothel owners have argued that prostitutes are independent contractors so they are not subject to the normal obligations of employers. The regulations require that brothels display signs indicating that only safe sex is provided. Controls are placed on advertisements for prostitution services.

Historically, selective enforcement of the criminal laws kept prostitution out of sight, leaving sex workers at the mercy of clients, pimps and corrupt police. The new legislation comes close to establishing brothel and escort agency prostitution as a legitimate business activity. While it gives sex workers some protection against physical harm, it could have gone further in this direction. Like many feminists, I wish that prostitution could be eradicated. Until this happens, controlling prostitution, rather than punishing those who meet the demand for paid sex, is the best solution.

Prostitution law reform: who will benefit?

In 1984, I was commissioned by the Victorian Government to inquire into the social, economic, legal and health aspects of prostitution. My 1985 report argued that criminalising prostitution does more harm than good. Laws that punish sex workers (the majority of whom are women) but not their clients (almost all of whom are men) reflect a sexual double standard. Such laws have always been selectively enforced. They have little effect on the demand for, or supply of, paid sex and are almost invariably associated with police corruption. Prosecuting sex workers forces them into association with criminals and puts them in the power of their clients, their employers and the police.

The report recommended that criminal laws punishing prostitution should be repealed (except laws necessary to protect children from sexual abuse and adults from violence and coercion), that the location of brothels should be controlled through town planning laws, and that brothel owners and managers should be controlled through a licensing system.

It argued that the most effective way of preventing abuses in the sex industry was to give sex workers greater control over their own working conditions. I found that women working in small self-run brothels were often better off than those in larger brothels. They could insist on clients wearing condoms and refuse anal intercourse. I recommended that sex workers who did not employ others should not be required to hold town planning permits and that two sex workers working together should not require licences.

By regulating larger brothels and placing fewer controls on prostitutes working alone or with one other person, I hoped the sex industry would move in the direction of small-scale prostitution. Unfortunately, the

Professor Marcia Neave from the Faculty of Law takes a look at recently introduced prostitution reform laws and argues that they do not go far enough in preventing abuses in the sex industry.



bill implementing my recommendations was amended, removing the important distinction between small and large brothels. The government decided it should not be proclaimed in its amended form.

This resulted in the division of the sex industry into legal and illegal sectors. Prostitutes working alone or in small brothels did not usually obtain planning permits and could still be prosecuted for criminal offences. Larger operators (often business men chasing profits) could afford to buy premises in suitable areas and obtain town

planning permits. Legal brothels were promoted as part of Melbourne's entertainment industry and often employed up to 70 women, working in shifts. Some sex workers moved from brothel to escort agency prostitution, but were in greater danger from their clients.

In 1993, the Attorney-General announced a moratorium on the granting of new brothel permits and appointed a committee to examine prostitution laws. The new Prostitution Control Act, which was based on the committee's report, will implement many of my recommendations.

The act repeals laws penalising men and women who work in brothels or for escort agencies, but retains penalties for soliciting or loitering for the purposes of prostitution and for 'gutter crawling'. The clients of street prostitutes may be fined up to \$3000 for a first offence. My view is that soliciting and loitering offences should have been repealed as well. A small number of sex workers will always choose this form of prostitution and harsh laws will not deter them. Criminalising makes it harder to provide help to street workers when they need it and increases their vulnerability to violence and abuse.

The new act imposes planning controls on all brothels regardless of their size. Existing brothels with planning permits change hands for huge sums, and the process of obtaining planning approval is legally complex and expensive. Control of the sex industry will probably remain in the hands of the large operators, which will make it difficult for prostitutes to work privately outside large brothels.

Owners and managers of all except owner-run or two-person brothels will have to be approved by the Prostitution Control

Continued on Montage 15