

MONTAGE

NEWS AND VIEWS FROM MONASH UNIVERSITY

A senior lecturer in physics and expert in radiation research at Monash University believes the French have lied over the stated reason for the resumption of nuclear testing in the Pacific.

Dr Don Hutton, who has been researching and teaching about nuclear weapons and radiation for more than 40 years, does not believe the official explanation that testing is being undertaken to perfect computer simulation models of nuclear explosions.

Dr Hutton also discounts French assertions that there have been no radioactive leaks during underground testing at the Moruroa Atoll. "Last month in an article in *New Scientist*, the Russians freely admitted that about half their underground tests leaked radiation to the surface and the atmosphere.

"At Moruroa, the French have used a much smaller and more restricted area for about the same number of tests, and they deny any leakage has occurred," Dr Hutton

Dr Hutton said that while Moruroa was originally chosen for atmospheric tests because it was remote, it was clearly inappropriate for underground tests.

Low environmental impact for a modern underground nuclear test required that it be carried out at least 800 metres into or under solid rock. At Moruroa a bore hole must be drilled down through the surface coral reef deep into the underlying basalt.

Dr Hutton said a small explosion of about 10,000 tonnes of yield melted a 'chimney' of surrounding rock about 30 metres in diameter and 100 metres high, and shattered the rock out to a radius of about 150 metres.

"To ensure the structure of the underlying rock is maintained and leakage prevented, bore holes should be at least 500 metres apart. This is a problem, given that 134 tests have already taken place on the narrow atoll, which is only 30 kilometres long.

"Small wonder then that the French military now needs to drill from floating platforms into the base of the lagoon to find unshattered rock. The major environmental threats come from venting, leakage and seepage from and to the bomb cavity by way of the cracked rock, and the disposal of the drill hole materials."

Dr Hutton, who is a member of the group Scientists for Global Responsibility, said one of the worst aspects of the French nuclear testing program was that it brought science into disrepute.

"It drags science into bad ethical situations. I wouldn't mind so much if what was happening was being honestly promulgated. But a lot of what has been said is patent rubbish to any physics graduate."

BY TIM THWAITES

French have lied: nuclear expert

"The tests are most probably needed to develop new 'third generation' weapons, such as neutron bombs, for which computer simulations cannot give all the technical answers," Dr Hutton said. (Neutron bombs are weapons which release large amounts of penetrating radiation, killing people but leaving buildings and infrastructure intact.)

"The history of events at Moruroa, and in Auckland Harbour in 1985 (when French agents blew up the Greenpeace vessel *Rainbow Warrior*), show that the French military are technically incompetent and environmentally insensitive, and that French politicians can be immoral, deceitful and dishonest."

said. "And the French will not allow any independent observation and assessment of leakage.

"A lot went wrong with their last program of 41 atmospheric tests at Moruroa, including heavy radioactive fallout over other inhabited islands of the Tuamotu group to the east, and over the Cook Islands, Fiji, Tonga, Niue, Samoa and Tuvalu to the west. Yet French military restrictions have allowed very little health-related data to be gathered or released, either on leukaemia and thyroid problems for the islanders, or on the uptake of radionuclides by flora and fauna, especially food species such as crabs, clams, squids and coconuts."



Spike

Up, up and away

As we bid a fond farewell to the Great Russian Dinosaurs, it is gratifying to know they are leaving us in style.

Protoceratops and friends have clocked up enough flying points during their travels over the past two years to be awarded Qantas frequent flyer gold cards.



The dinosaurs can access all the privileges of other gold card holders, including free phone and fax, food and bar service and seat preference on all flights. Leg room will not be a problem!

The long and the short of it

The following was kindly forwarded from one of *Montage's* Sydney correspondents:

"It's one of those words you should check every time. But the Australian Consumers Council, when organising a Consumers Futures Summit, did not. That's why [one participant] is described in a press release listing the summit panel as

NOW & THEN

25 Years Ago

"The most striking fact in the present period of revolutionary change is the quickened erosion of the traditional institutional authorities that for nearly a millennium have been Western man's principal sources of order and liberty.

I am referring to the manifest decline of influence of the legal system, the church, family, local community and, most recently, and perhaps most ominously, of school and the university.

There are some who see in the accelerating erosion of these authorities the beginning of a new and higher freedom of the individual. Far greater, however, is the number of those persons who see in this erosion the spectres of social anarchy and moral chaos." – Professor of sociology, Robert Nisbet.

15 Years Ago

Monash's Centre of Policy Studies has received a \$27,000 grant from the top-level Australian Education Council to conduct a study on changing patterns of school enrolments and the implications for educational policy and management.

The investigation will identify a range of policy options for schools and Education Departments facing opportunities – as well

as problems – because of population mobility and declining birth rates.

5 Years Ago

A shot of caffeine is one way to clear the early-morning brain fog, but in larger doses it can also cloud the mind, a Monash study has found.

The study on a group of habitual users by PhD student in psychology Ms Paula Mitchell found that people with high intakes of caffeine consistently performed worse on complex tasks than people with more moderate habits.

The research confirmed that caffeine does improve mental speed performance, especially after the early morning hit at 7 am.

This Month Last Year

The pro vice-chancellor (international programs and development) Professor Leo West recently announced the establishment of a new company to provide a full range of services associated with the university's international activities.

The move will not only streamline the processes and management of the activities, but will also improve the services provided to faculties and foreign students.

The company, Monash International Pty Ltd, is wholly owned by Monash.

'Co-director of the Institute of Ethics and Public Affairs at Monash University'

(*Sydney Morning Herald*, 7 July 1995)

On a swallow and a prayer

As part of the Monash Caulfield campus Multicultural Week, a burger-eating competition was organised with 15 healthy students signing up. Simple rules decreed that the first to consume five hamburgers was the winner.

The first burger was tasty, the second saw some shaky contenders pull out and the third finished off all but three contestants.

The remaining two contenders in the last round went bite for bite, with one fast swallow deciding the match.

The title of Mr Piggy Burger 1995 was dutifully awarded to Gordon Tam. Runner-up, Caulfield's International Students Services officer, Lu Yin, summed up the event perfectly: "It was a close game and

everybody except the competitors enjoyed it very much!"

The Monash car park

One of the best quotes from a long list overheard on Open Day this year came from Clayton campus, when one of our visitors was heard asking a guide: "Where's the car park?"

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Righting past wrongs

Sharon Firebrace believes it is important to preserve Aboriginal history and culture – not just for the benefit of indigenous people, but for the wider community as well.

As a child, Ms Firebrace felt “totally devastated” that her school textbooks failed to credit Aborigines with any significant contribution to Australia’s history.

Ms Firebrace believes white Australians are also beginning to share the frustration experienced by Aborigines, as they realise that the real treatment of blacks by white settlers was missing from their childhood history lessons.

As the newly appointed director of Monash’s Centre for Research into Aboriginal Affairs, she hopes to be able to rectify some of that past neglect.

She said progress towards self-determination and self-management in the Aboriginal

community had been slow. This was understandable considering it was only 28 years since a national referendum had given citizenship rights to Aborigines, reversing a discriminatory social and political system in place since the early 1800s.

It was also potentially disastrous to offer self-management to Aboriginal people without first giving them skills, training and education, Ms Firebrace stressed.

“It’s like getting on a train with a train driver who doesn’t know how to drive it. How far are you going to go on that train?”

It has been projected that at least 3000 Aboriginal students need to graduate from university each year to meet the demand for qualified, skilled leaders within the Aboriginal community.

“At the moment we have nothing like that number,” she said. “We need qualified public and social administrators, doctors, lawyers ... and only now are Aborigines beginning to enter the higher education system in these fields.”

According to Ms Firebrace, there are two main reasons why young Aboriginal people have failed to continue their education to tertiary level.

Firstly, for the last 20 years there had been an “anti-education philosophy” within the Aboriginal community. “They have tended to believe that providing their own education and qualifications for life within the Aboriginal community was sufficient,” she explained.

“And secondly, negative attitudes from mainstream Australians have built up barriers between the races, and this has affected educational opportunities for Aborigines.”

Although the situation was improving, she said more effort was required to retain capable indigenous students within Australia’s primary, secondary and tertiary education systems.

A descendant of the Yorta Yorta clan, Ms Firebrace was a high

achiever at school in academic and sporting circles, representing Victoria and Australia in both volleyball and netball.

A former executive director of Victoria’s Aboriginal Advancement League, she is currently a regional councillor for the Aboriginal and Torres Strait Islander Commission (ATSIC) and the principal director of Aboriginal-focused consultancy firm Palm River Pty Ltd.

Ms Firebrace was named National Indigenous Businesswoman of the Year in 1993/94 and is perhaps best-known for her weekly Koorie affairs segment on ABC radio.

Discussing her childhood in 1960s Melbourne, Ms Firebrace said her experiences were similar to thousands of other indigenous children who were forcibly removed from their families up until the late 1960s.

“I was placed in an orphanage at the age of six; my surrogate mother and educator were the welfare institution and the government,” she said.

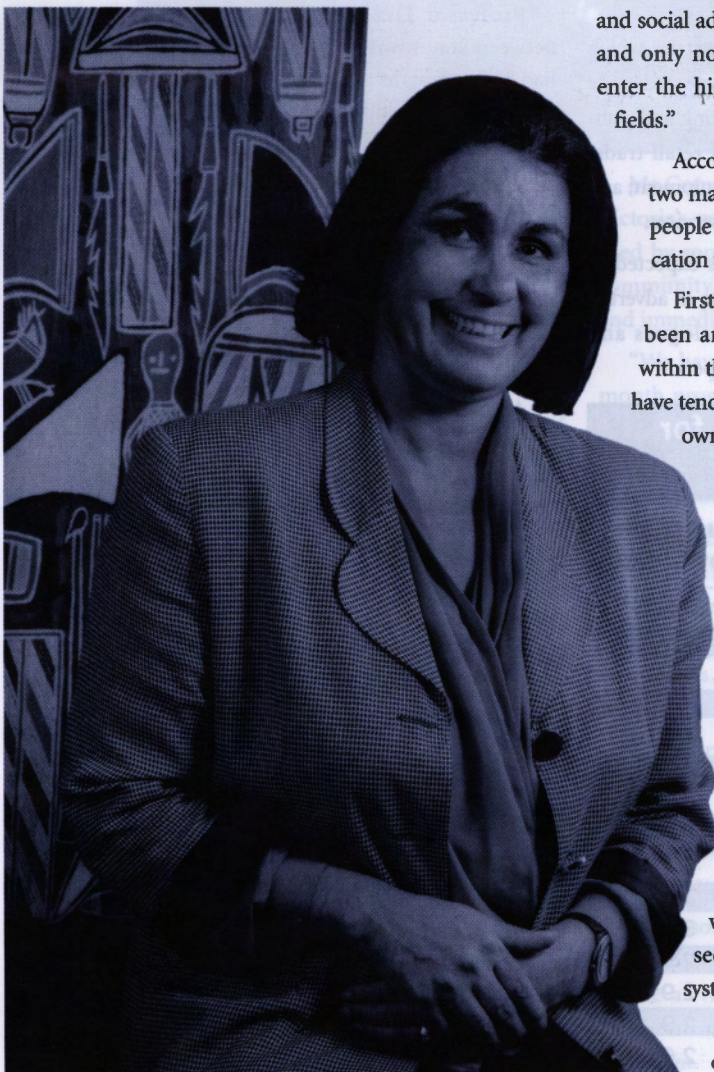
“The welfare department and the police were authorised by the government to remove children from Aboriginal families for the most ridiculous reasons. I know families whose children were taken away because they had snotty noses.

A major role of the Monash centre is to provide research support for the university’s existing courses in Aboriginal studies. Five new courses also are under consideration for 1996 – Aborigines and the law, Aboriginal literature, Aborigines and art, Aboriginal women’s studies, and the Bundjalung language.

Ms Firebrace said language was a fundamental aspect of any culture, and the centre would focus on researching and nurturing key Aboriginal languages. Bundjalung is spoken in parts of northern New South Wales and was chosen for its similarities to Victorian Aboriginal languages.

“If a language such as this can be universalised and reach indigenous and non-indigenous communities, it can become a central agent for developing a more accurate understanding and appreciation of one another.”

BY SUE HOBBS



Traditional industries constrain Victoria's economic growth

Victoria will be one of Australia's slowest growing states over the next decade due to its reliance on poor-performing industries such as clothing, textiles and footwear, according to a Monash study.

However the study, 'Prospects for Australian Industries, States and Regions: 1993-94 to 2001-02', found that all states and regions could look forward to solid economic improvement into the next century.

It predicts that the economy will grow at an average yearly rate of 3.5 per cent to the year 2001-02.

The study, conducted by the university's Centre of Policy Studies, has strongly challenged the perception that increasingly difficult times were ahead for Australia's regional areas and that government initiatives were needed to address such issues.

The authors, Professor Peter Dixon and Dr Phillip Adams, said the government's lack of regional initiatives demonstrated that it also believed Australia's regional areas were not a key aspect of Australia's economic problems.

While the government has released four reports on the regional economy since May

Australian growth rates to the year 2001 - 02									
State	SA	VIC	TAS	ACT	NSW	QLD	NT	WA	AUST
Growth rate %	3.08	3.13	3.23	3.27	3.43	3.74	3.91	4.33	3.48

last year, it has pledged only \$250 million for policy development in the area.

"The government agrees with us," Professor Dixon said. "Despite all its reports, the money put aside is negligible. They are not really concerned with special regional initiatives."

The study examines forecasts generated with the economic model of the Australian economy known as MONASH, which looks at states, regions and industries.

The model forecast that industries which would perform well over the next decade included communications; printing and publishing; mining; wholesale and retail trade; electronic and other specialist equipment; and hospitality, leisure and personal services.

Printing and publishing was expected to perform well through an increase in advertising in the form of flyers, catalogues and inserts in magazines and newspapers.

Industries not expected to enjoy strong growth included textiles, clothing and footwear; non-metallic construction materials; agriculture, forestry and fishing; leather, rubber and plastic; and car and other transport equipment.

At the state level, the study forecast that Western Australia would have the highest growth rate at 4.33 per cent a year and South Australia the lowest at 3.08 per cent. Victoria fared little better at 3.13 per cent.

Professor Dixon said the difference between states was small because all states had both strengths and weaknesses. Victoria's weaknesses included its reliance on industries such as clothing, textiles and footwear, which would suffer from continuing tariff reductions, as well as the northward migration of many retired people and the lack of high-growth industries such as mining and tourism. Its strengths lay in electronic and other specialist equipment as well as in paper products, printing and publishing.

Among Victoria's regions, East Gippsland fared the worst, rating 55 out of 56 in Australia, with Gippsland rating 53 and Ovens-Murray rating 48.

Other predictions included:

- strong growth in Australia's international trade, with both export and import volumes increasing by about 8 per cent a year;
- international tourism growth at an average annual rate of 10 per cent;
- poor prospects on world markets for wool, wheat and other coarse grains; middling prospects for iron ore, black coal, sugar and meat; and good prospects for oil, gas and non-ferrous metal ores.

Although Professor Dixon was confident about the future of Australia's economy, he admitted there were no guarantees. "Economists can't predict droughts," he said.

By GEORGIE ALLEN

Average annual percentage growth rates for sectors: 1993-94 to 2001-02

Rank	Sector	Australian growth rate
1	Communications	7.3
2	Paper, paper products, printing and publishing	5.1
3	Mining	4.9
4	Wholesale and retail trade	4.9
5	Electronic and other specialist equipment	4.6
6	Hospitality, leisure and personal services	4.6
7	Chemicals, petroleum and coal products	3.7
8	Finance, property and business services	3.3
9	Electricity, gas and water	3.2
10	Transport and storage	3.2
11	Wood, wood products and furniture	3.2
12	Health, education and welfare	2.9
13	Construction	2.9
14	Metal products	2.9
15	Food, beverages and tobacco	2.6

Australians broaden their views

Australians are more accepting of religious differences than ever before, but most would still not want to be friends with a Jehovah's Witness or a Muslim, according to a recent survey of religious attitudes.

The survey, 'Religious tolerance in Australia', conducted by Monash University sociologist Professor Gary Bouma, is a replication of research conducted by the Office of Multicultural Affairs (OMA) in 1988.

The 1988 study found that only 15 per cent of Australians would accept a Jew as a family member, 9 per cent a Muslim and 11 per cent a Buddhist. The recent figures, however, were 59, 48 and 54 per cent respectively.

Professor Bouma said this shift in attitude reflected a broader acceptance towards different religious groups.

"Australians are allergic to 'high temperature' religions. The more intense or visible a religious group is, the less acceptable they are to Australians".

But the recent survey, commissioned by the World Conference on Religion and Peace, also showed that many people were still unaccepting of some religious groups, with almost two-thirds of survey respondents unwilling to have a Jehovah's Witness as a family member or friend.

Professor Bouma said Australians were generally suspicious of the "overtly religious".



"Any religious group which calls attention to its religious life, beliefs and practices is likely to be a target of suspicion in Australia," he said.

"Australians are allergic to 'high temperature' religions. The more intense or visible a religious group is, the less acceptable they are to Australians.

"Jehovah's Witnesses who knock on doors and Muslim women who wear garments that make them easily recognisable seem too fervent and pushy for laid-back Australians," he said.

But Catholics and Orthodox denominations fared much better. Only 4 per cent of those surveyed said they would not like a Catholic or a member of the Greek or Russian Orthodox Church as a family member or friend.

While Australians were less tolerant of the more visible religious groups, Professor Bouma said he was pleased with the small number of extreme negative survey responses.

"Australians have obviously learned a lot in the six years since the OMA study," he said.

"While a large number of respondents didn't want an intimate relationship with a

Jehovah's Witness or Muslim, they were generally quite happy for members of these groups to be a neighbour, workmate or citizen," he explained.

"There were very few respondents who said they wouldn't let them into the country. This trend is certainly a step in the right direction."

Professor Bouma said the Gulf War, the war in Bosnia and multicultural policies implemented by the Australian Government may all have impacted on how Australians perceived other cultures.

"Australians may be recoiling at the horrors of ethnic cleansing and the effects of religious and cultural intolerance, which have opened their eyes to what intolerance can lead to," he said.

"Even if some respondents gave more positive responses out of a sense that it was the politically correct thing to do, this reflects a shift in perception of what is acceptable in Australia.

"If it has become less acceptable to be religiously intolerant, then the efforts of those who are trying to lead Australia towards a genuinely multicultural society are succeeding."

BY JULIET RYAN

Setting the APEC agenda

The Asia-Pacific Economic Cooperation Forum will face a number of political challenges in the near future, according to the new executive director of the Australian APEC Studies Centre.

Mr John Woods said that when the moratorium on membership ended in 1996, the group would have to consider the entry of Pacific economies such as Russia, India and various South American countries.

It would also have to tread softly around issues such as the relationship between member economies China and 'Chinese Taipei' and the eventual links between North and South Korea.

Mr Woods said one of APEC's major strengths had been its refusal to allow political sensitivities to distract it from its major goal of promoting economic growth and prosperity for the region.

While the centre's work will have a strong trade and economic focus, it will also encompass broader issues such as the development of a community identity in APEC and the interaction of political and cultural factors.

"Situations such as the US-Japan dispute over auto parts have not been allowed to hinder the broader APEC objectives," he said.

A Monash and University of New South Wales joint bid recently won the government contract to establish the centre, which is currently located in Queens Street, Melbourne.

Professor John McKay, director of the Monash Asia Institute, and Professor John Ingleson, dean of the Arts and Social Sciences faculty at the University of New South Wales, are also directors of the centre and are both involved in wide-ranging Asia-related research.

While the centre's work will have a strong trade and economic focus, it will also encompass broader issues such as the development of a community identity in APEC and the interaction of political and cultural factors.

Current APEC member economies are Australia, Brunei Darussalam, Canada, Chile, China, Hong Kong, Indonesia, Japan, Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, the Philippines, Singapore, Chinese Taipei and the US.

At APEC's 1993 Seattle summit, each member economy agreed to establish its own studies centre to conduct high-level research and analysis of APEC issues, develop short courses, briefings and degree programs on APEC issues, and promote public awareness and support for APEC.

Centres would conduct research into key economic and trade transitions taking place in member economies in the build-up to the APEC leaders' commitment to free trade in the region by the year 2020.

APEC currently accounts for 45 per cent of world trade and 55 per cent of world production - figures expected to increase over the next five to 10 years.

The Asia-Pacific is Australia's largest and fastest-growing regional market, with its export share rising from 64 per cent in 1986 to 75 per cent in 1993. And Prime Minister Paul Keating has forecast that increased exports in the region would create 70,000 Australian jobs in the next two years.

Mr Woods said the new centre would build close links with Australian business and undertake research into how organisations should best exploit the opportunities the development of APEC presented.

He said he had already conducted several productive meetings with Monash staff, including those at the Centre of Policy Studies and the Faculty of Business and Economics, on potential APEC-related



research. He encouraged other staff who were interested in working on APEC to contact him.

The centre would also develop cooperative links with other Australian universities and academics, and become a repository of APEC-related research and a valuable resource for research on APEC issues.

Mr Woods said that eventually the Australian centre would conduct collaborative research projects with APEC studies centres in other member economies to boost cooperation and a sense of common goals for the region.

The development of an electronic network on APEC would also help meet these objectives.

The seventh ministerial meeting and economics leaders' meeting will be held in Osaka, Japan, in November.

Mr Woods said the APEC Studies Centre would be holding a half-day seminar on 29 August for business representatives to preview some of the outcomes expected to emerge from the Osaka meetings.

BY GEORGIE ALLEN

Mapping the sands of time

A chance discovery of a 140-year-old government map and a unique use of computer software could unlock secrets from the Bendigo goldfields and develop new methods of recording landscape history.

A few years ago, Monash geography masters student Ms Lynette Peterson came across a Bendigo area map in an 1859 Royal Commission report, 'Best Method of Removing the Sludge from the Gold Fields'.

She has used the map to pin-point areas of significant scientific and historic interest, as well as locate traces of gold washed away with mining waste.

Sludge was the mixture of unwanted crushed rock, soil and water generated from a goldmining method called puddling, introduced shortly after gold was discovered in Bendigo in 1851.

A puddling machine is a large circular pit, sometimes up to six metres in diameter. Mined material was placed in the pit along with a constant flow of water. Harrows, attached to a crossbeam that was pulled by a horse circling the pit, churned the muddy mixture until heavier particles (including gold) settled at the bottom.

The lighter clays and sands (sludge) were washed down an outlet channel, eventually choking local creeks and leaving a concrete-like cover over large areas of fertile farmland.

The Royal Commission heard that the "evil which has now attained such formidable dimensions" nearly filled creek waterholes seven metres deep, while farms 70 kilometres away were covered by "several inches" of sludge.

Vast mud lakes sprang up around the goldfields, natural drainage was obliterated and the mining town's stormwater channel was rendered useless, causing serious flooding and several drownings.

The commission's suggestions for removing the sludge were never fully implemented. But its report noted that consider-

able quantities of irretrievably fine gold were being washed away with the sludge, and it expressed the hope that methods could be developed to recover it.

The sludge has long since dried, attracted new (but poorer) vegetation and become part of the modern landscape.

But while many of the geographic features recorded on the commission's 1859 map no longer exist, Ms Peterson discovered that many roads remained unaltered.

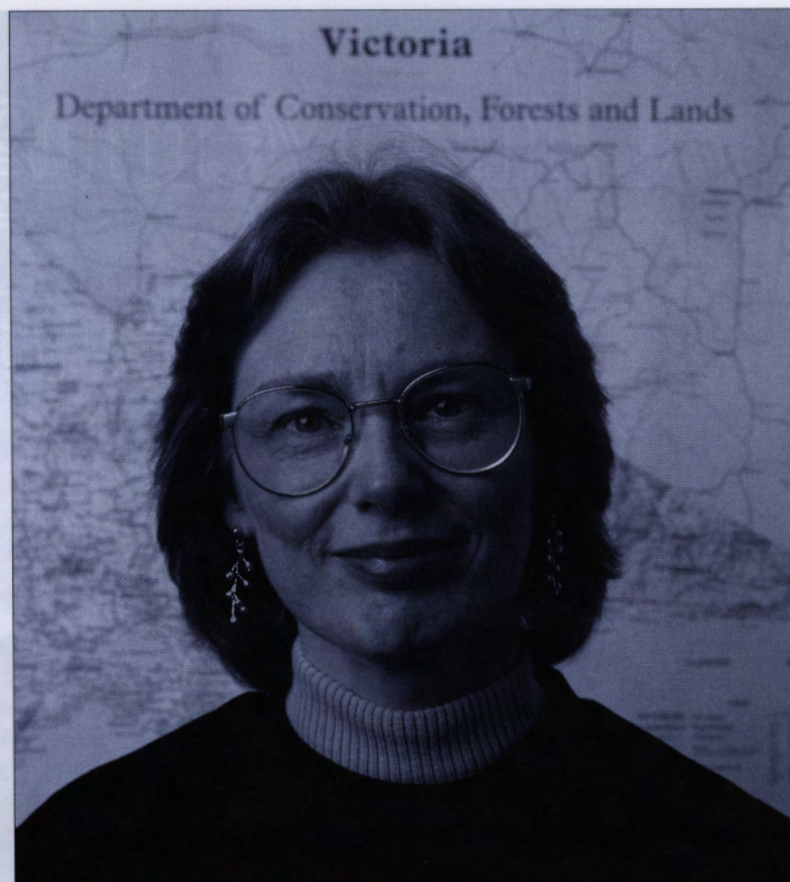
Using computer equipment in Monash's Geography and Environmental Science department, she scanned the old map into a computer database. Then, using the road intersections as reference points, she was able to digitally register the old map with a modern one of the same area.

These methods make it possible to create computer records of the evolving environment for areas where historical maps exist.

The technology is relatively common and the idea sounds simple, but Ms Peterson said most geographers and historians were still daunted by computer technology.

"Because map-making became so important in Australia after European settlement, we have an enormous resource available for learning more about the geographical aspect of our history."

Ms Peterson found sludge deposits in 95 per cent of samples taken from nearly 500 field sites. The 'concrete layer' varied in thickness from a few centimetres to three metres across an area of 700 square kilometres.



Preliminary analysis of core samples from several test sites have confirmed the commission's estimates that considerable amounts of gold were discharged with the sludge.

However, Ms Peterson has not investigated the commercial implications of these findings as she is more interested in developing her work for historical record and as a basis for researching the impact of European settlement on the environment.

"Most of this land had only recently been taken over from the local indigenous people when it was covered in sludge, so the soils beneath the sludge layer have never been cultivated and the land may only have been grazed for 10 years," she said.

"Now that these soils have been located, the difference between modern soils after 150 years of agriculture and the original buried soils can be documented."

Ms Peterson plans to make further investigations in the Bendigo area and would like to plot other mining districts in a similar way.

"I'd like to look at the links between European activity in our environment and legislation introduced to control land degradation. It's all about the history and evolution of land management policy and practice."

BY GARY SPINK



Uncovering the secrets of major diseases

copies of all the genes of chromosome 21 instead of the usual two copies. (The others – about one per cent – have three copies of only some of the genes on chromosome 21.)

This means that those with Down's syndrome produce up to one and half times as much of the protein products for which the genes on chromosome 21 serve as a template. A higher dose of these particular proteins upsets the biochemical balance of the body. The result is abnormalities in every major organ system – cataracts in the eyes, misshapen bones, short stature, mental retardation, premature ageing, and 40 per cent more heart defects than normal.

Many of these abnormalities also occur in those who do not have Down's syndrome. Dr Kola said that if the cause of such diseases could be traced to genes involved in Down's syndrome, it would suggest that the problem was an overdose of gene product.

Genes associated with motor neuron disease, Alzheimer's, and the natural ageing process have also been identified on chromosome 21. In the future, Dr Kola said, it could be possible to treat all these conditions by switching off the extra gene or decreasing the amount of protein it produces.

Several lines of evidence led Dr Kola's group to suspect that a gene on chromosome 21 known as Erg or Ets-related gene was responsible for acute myeloid leukaemia. The genes in this family produce proteins which control the process of protein manufacture itself and are particularly important during organ development.

In 1992, French researchers led by Dr Olivier Delattre studied a genetic abnormality in which a copy of the Erg gene fused with a gene on chromosome 22. They found this condition was associated with a cancer of the connective tissue, known as Ewing's sarcoma. The following year a

A Monash research group has found a link between a fatal form of childhood leukaemia and a gene located on the chromosome associated with Down's syndrome.

Discovery of the link may lead to earlier diagnosis and better therapy for acute myeloid leukaemia, a disease which affects about one in 6000 children under the age of 15 and which is responsible for more than 3000 deaths a year in Australia.

But tracing the leukaemia gene is only one of several important spin-offs from the research group studying the genetics of

Down's syndrome to investigate the basis of serious diseases. The spin-offs include advances in the study of ageing and Alzheimer's disease.

Dr Ismail Kola, the group's leader and head of the molecular genetics and development group at the Monash Institute of Reproduction and Development, was awarded the 1995 Westpac-Amgen Australia Medical Research Week Award in recognition of the group's success.

Down's syndrome occurs at the rate of about one live birth in 700. Almost all people with Down's syndrome have three

Japanese team discovered a similar genetic abnormality where a copy of Erg fused with a gene on chromosome 16. This was correlated with cases of acute myeloid leukaemia.

Knowing that Down's syndrome children were particularly susceptible to acute myeloid leukaemia, Dr Kola and his team decided to study the difference an extra copy of Erg would make to cells.

The group inserted an extra copy of Erg into cells cultured in the laboratory. These cells normally clump together to form a tissue, but the addition of Erg transformed them into cells of a different shape which were freely dividing and independent. When these independent cells were injected into mice, they induced tumours.

The next stage of establishing the role of Erg in the cancer is to create transgenic mice carrying an extra copy of Erg. This will allow the researchers to observe the impact of an overdose of Erg in animals.

This strategy has also been important in helping to determine how another gene on chromosome 21, superoxide dismutase 1 (Sod1), affects ageing.

People with Down's syndrome begin ageing at about 30 years, about 20 years before the rest of the population. The symptoms include dry skin, greying and loss of hair,

and the appearance in the brain of clumps or plaques of material containing the protein fragment known as beta-amyloid. These amyloid plaques are a symptom of Alzheimer's disease. By the age of 40, people with Down's syndrome are suffering from mental disorders that are indistinguishable from Alzheimer's disease. In fact, amyloid precursor protein, a chromosome 21 gene, has been implicated in the development of a form of Alzheimer's disease.

Sod1 seems to be associated with some of the other facets of ageing. Transgenic mice with an extra copy of Sod1 were created by Israeli researchers led by Yoran Groner. They showed changes in nerves and muscles typical of ageing, as well as an abnormality of the tongue found in those with Down's syndrome.

Sod1 produces an enzyme which is responsible for turning superoxide free radicals – highly reactive forms of oxygen – into hydrogen peroxide. The peroxide is further broken down to water by another enzyme, glutathione peroxidase, from the chromosome 3 gene, Gpx1.

One theory is that the extra copy of Sod1 translates into more enzyme, which leads to more hydrogen peroxide produced than can be handled by the normal production of Gpx1. This build-up of hydrogen peroxide

then reacts to form hydroxyl radicals which are even more harmful than the original superoxide. Hydroxyl radicals can combine with almost any biochemical molecule, wreaking havoc with the chemistry of cells and producing the degeneration typical of old age.

In research about to be published, the group has shown that an extra copy of the Ets2 gene in mice causes skeletal abnormalities similar to those which cause the characteristic flattening of the face of people affected by Down's syndrome.

Last May Dr Kola's group reported it had found that as normal mice age, a natural imbalance occurred between Sod1 and Gpx1, mimicking that which occurred in Down's syndrome.

As well as studying the genes associated with leukaemia and ageing, the research group is working on two other genes from chromosome 21 – the interferon alpha receptor gene and Ets2, another member of the Ets family.

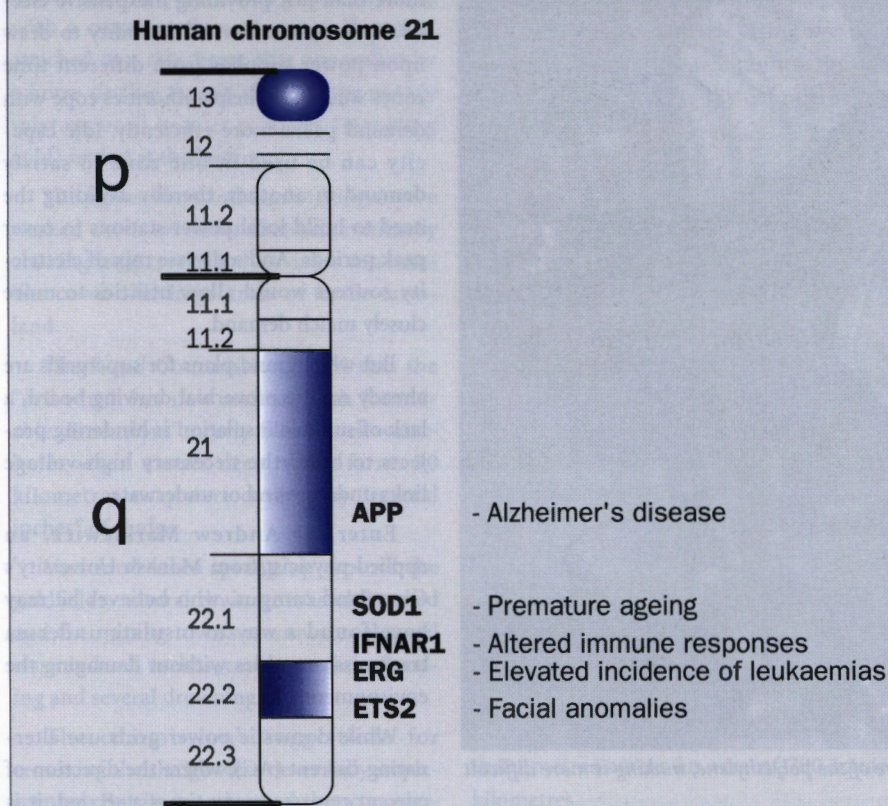
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And, while lack of the interferon alpha receptor gene causes no abnormalities in mice, it greatly reduces their ability to cope with viral infections.

BY TIM THWAITES

The research group includes Adam Hart, who has been working on Erg; Sony Sumarsono, Trevor Wilson and Martin Tymms who have been working on Ets2; Seung Hwang and Paul Hertzog working on the interferon alpha receptor gene; and Judy de Haen, Rocco Lanello and Francesca Cristiano on Sod1/Gpx1.

Putative relationship between individual genes and abnormalities that occur in Down's Syndrome



Powering towards global electricity supergrids

As the world moves closer to developing a global electricity grid, a Monash scientist has found a novel way to insulate undersea cables without harming the environment. Tim Thwaites reports.



Dr Markiewicz uses X-rays to change the structure of the polyethylene, making it more difficult for electrons to penetrate.

In the mid-1970s, American futurologist Buckminster Fuller predicted that the world would eventually be linked into one global electricity grid. And 1995 has brought Fuller's vision one step closer to realisation.

Last April, Arab energy ministers met in Cairo to discuss plans for a power grid stretching across North Africa from Morocco to the Gulf States. There is talk of developing a submarine cable to transmit hydroelectricity from Siberia across the Bering Strait, and another to bring geothermal electricity from Iceland to Britain and Europe. Malaysia has already approved construction of a giant power station in Sarawak to supply the Malayan Peninsula across the South China Sea. And, closer to home, electricity authorities are advocating a link across Bass Strait.

The advantages of such links include more than just providing inexpensive electricity for consumers. The ability to draw upon power supplies from different time zones would also help authorities cope with demand peaks more efficiently. Idle capacity can be used in one zone to satisfy demand in another, thereby avoiding the need to build local power stations to cover peak periods. And a diverse mix of electricity sources would allow utilities to more closely match demand.

But while grand plans for supergrids are already on the proverbial drawing board, a lack of suitable insulation is hindering projects to build the necessary high-voltage links underground or underwater.

Enter Dr Andrew Markiewicz, an applied physicist from Monash University's Gippsland campus, who believes he may have found a way to insulate undersea transmission cables without damaging the environment.

While domestic power grids use alternating current (AC), where the direction of current reverses many times a second, it is

much more efficient to transmit electricity over long distances as a direct current (DC), which flows in one direction only. Power losses in AC cables become significant over distances greater than 50 kilometres.

Also, an AC cable consists of three separate conductors which need to be insulated from each other. Therefore AC cables must be three times the size of DC cables, which contain only one conductor. When dealing with transmission of the order of several hundred thousand volts, AC cables become unwieldy compared with their DC counterparts and are significantly more expensive.

Insulating cables

But the current means of insulating high-voltage DC cables is environmentally unacceptable. They are wrapped in oil-soaked paper and encased under pressure in a special insulating oil. If the casing cracks, oil may be leaked, causing damage to a remote undersea environment.

Dr Markiewicz believes the obvious solution is to use inert solid state (polyethylene) insulation. But this introduces another problem, since the high electrical stresses involved can break down the insulation and rupture the cable.

A high voltage DC cable is constructed as a coaxial cable. At the core is an inner conducting wire wrapped in carbon black, a composite material which is a semi-conductor of electricity. This is surrounded by main insulation – another layer of carbon black – and finally, braided wire which acts as an earth return. The voltage is main-

tained between the inner conductor and the earth.

But at 500,000 volts, the forces on the negatively charged electrons – which form the current by streaming through the inner wire – are great. Some of the electrons are forced into the polyethylene, becoming trapped and charging the insulation. When the temperature begins to fluctuate, as it does in any normal environment, the charged insulation begins to discharge at random, which can lead to a breakdown of the cable itself. In an underwater or underground cable, locating and fixing such a rupture involves enormous expense.

But Dr Markiewicz believes ionising radiation could solve the problem. His research involves treating the polyethylene with a dose of radiation during the manufacture of the cable. The energy delivered by the X-rays changes the structure of the polyethylene to make it more difficult for electrons to penetrate. And once electrons do get inside, they are bound tightly so that discharges are only likely to occur if the temperature of the cable rises beyond a certain threshold.

Dr Markiewicz and his colleague Dr Bob Fleming, a reader in physics on the Clayton campus, have been testing the process using a laboratory model of a DC cable. The model is a sandwich with polyethylene in the middle, coated by carbon black on both sides onto which metallic electrodes are laid. When a high voltage is placed across the electrodes, electrons migrate into the polyethylene.

The researchers have found that if they treat the polyethylene with X-rays, they can suppress the charge build-up at temperatures below 300 C. Although the effect persists over at least several months, they are now trying to improve the results by varying the dosage of X-radiation.

Dr Markiewicz said the next step would be to make the model more realistic. "We would like to measure the effect in real cables, however that would require a huge power generator, which is very expensive."

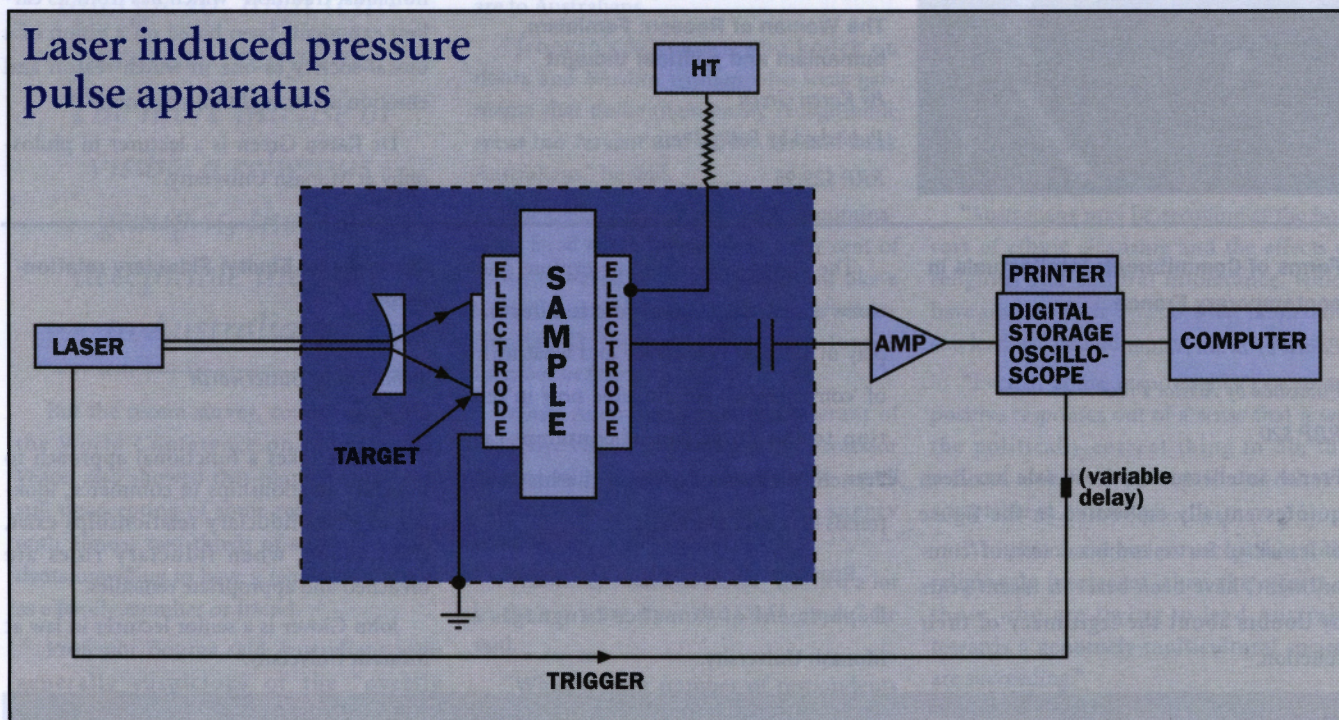
Laser pressure

But the researchers are now using a technique which allows them to observe the distribution of charge across the thickness of a cable – the laser-induced pressure pulse technique. A laser beam heats a spot on the outside of the cable, creating a pressure wave which passes through it. This disturbs trapped electrons, allowing the researchers to find their position. The location of charge before and after irradiation reveals information about the changes that have occurred.

During the past year, the researchers have presented their work at conferences in Europe, and next month Dr Markiewicz will be travelling to Japan to discuss the research.

"The Europeans alone are spending billions on this problem, and the Japanese are also trying hard," he said. "We want to be in the race."

Laser induced pressure pulse apparatus



Two approaches to modern feminism

Sexy Bodies: The strange carnalities of feminism

Edited by Elizabeth Grosz and Elspeth Probyn

Published by Routledge

RRP \$36.95

There have been many recent books on women's sexuality, but *Sexy Bodies: The strange carnalities of feminism* is different, according to its editors Elizabeth Grosz and Elspeth Probyn.

The anthology of essays is an attempt to rethink traditional notions of sex and sexiness and portray sexuality in its broadest

terms: "Its goal is to ask rather than presume what sex, sexuality, or sexiness are."

Sexy Bodies, the editors say, is about "establishing new connections between and among bodies, desires, pleasures, powers, cruising the borders of the obscene, the pleasurable, the desirable, the mundane and the hitherto unspoken."

The book invites discussion about the controversial relationship within feminist politics between feminism and heterosexuality and examines the implications of feminism in "hetero-culture".

While examining sexuality and sexiness from outside the heterosexual norm, the editors believe it is important that "heterosexuality be explored and interrogated from within, revealing the insecurities, anxieties, uncertainties and possibilities for transformation."

The book "celebrates lesbian and queer sexualities but also explores what runs underneath and within all sexualities, discovering what is fundamentally weird and strange about all bodies, all carnalities."

Elizabeth Grosz is director of the Institute of Critical and Cultural Studies at Monash University.

The Woman of Reason: Feminism, humanism and political thought

By Karen Green

Published by Polity Press

RRP \$29.95

The Woman of Reason: Feminism, humanism and political thought challenges the direction taken in much recent work by feminists by mounting a defence of humanism and arguing that the ideal of rationality is compatible with emotion and feeling.

Dr Green rejects the traditional feminist perspective that reason was constructed by male philosophers in a way that excluded feminine traits and argues for the need to reconceptualise both rationality and liberalism.

Rather than a new phenomena which emerged during the late 19th century and flowered during the latter half of the 20th century, feminism was implicit in the much older humanist movement, she believes.

"Humanism immediately gives rise to questions that tend to lead to feminism, questions like: 'Is there a single human nature, the same in both sexes?'; 'If men and women are equally human, why are they not social equals?'; and 'What constitutes justice in the realm of sexual relations?'"

While the relationship between feminism and humanism is currently a matter of controversy, Dr Green attempts to offer a feminist humanism that includes a distinctively "feminine" conception of rationality and objectivity.

She argues that the best way to develop a coherent vision of a non-patriarchal society lies in the development of a feminist humanist tradition "which has from its earliest exponents been based on a vision of a moral society as one in which reason and emotion are brought into harmony".

Dr Karen Green is a lecturer in philosophy at Monash University.



Forms of Commitment: Intellectuals in contemporary France

Edited by Brian Nelson

Published by Aristoc Press

RRP \$20

French intellectuals, whose role has been quintessentially embodied in the figure of Jean-Paul Sartre and his notion of 'commitment', have been beset in recent years by doubts about the legitimacy of their function.

The essays in this volume explore questions about the critical role intellectuals play in a liberal democracy and what forms of 'commitment' are available now in relation to the pluralism of contemporary French intellectual life and the historical trends that have marked it.

Professor Brian Nelson is head of the Department of Romance Languages at Monash University.

Commercial Equity: Fiduciary relationships

By John Glover

Published by Butterworth

RRP \$95

This book takes a functional approach to fiduciary relationships in commerce, looking at when fiduciary relationships exist, their scope, when fiduciary rules are breached and appropriate remedies.

John Glover is a senior lecturer in law at Monash University.

All books in this column can be purchased in the Monash University Bookshop, Clayton campus.

May the force be with you



Project Beacon is teaching police new ways of dealing with violent offenders.

Media sensationalism fuels the public's misconception of crime levels in Victoria, according to the state's chief commissioner Mr Neil Comrie.

While Victoria's crime rate is the lowest of any mainland Australian state and has continued to decline over the past four years, most people still believe that crime in Victoria is escalating.

Speaking at a conference organised by Monash University's Centre for Policing and Public Safety recently, Mr Comrie was critical of the role the media played in the public's perception of crime and the police force.

"A major difficulty faced by police organisations is maintaining a balance between the actual level of crime in the community and the community's perception of crime and the likelihood of becoming a victim," he said.

"The dramatisation of the reporting of crime by the media often increases the public's fear, to the extent that it is disproportionate to the risk of the becoming a victim."

Mr Comrie accepted criticism levelled at Victoria's police force for the "lethal force" used by some of its members and said the community's disquiet had led to extensive and immediate reviews by the force.

"We have developed an intensive four-month program known as Project Beacon, which retrained almost 9000 members of the force in dealing with potentially dangerous situations," he said.

Project Beacon is training police officers to use defensive tactics based on a 'safety first' philosophy, focusing on alternative ways for members of the force to deal with situations, other than drawing their weapons.

The recent introduction of laws such as the loitering and antistalking laws, which allow police to charge people for harassment, is also part of a campaign to provide better protection to the community.

Professor John Benyon from the Centre for the Study of Public Order in the UK also spoke at the conference and addressed the issue of community/police relations in Britain.

He said one aspect of 'community policing' which was being introduced in Britain was "the continued opposition to the use of firearms".

In a recent survey of British police officers 79 per cent said the police should not be routinely armed even though 42 per cent said their lives had been in danger in the previous two years. And 11 per cent of police officers said they were not prepared to carry firearms under any circumstances.

Community policing is designed to bring police closer to their communities and emphasises consensual rather than coercive policing. It aims to increase the involvement of community groups in setting priorities and making decisions, decentralise command structures, increase accountability and improve training and recruitment.

The introduction of community policing is a response to a huge jump in crime rates, up 120 per cent in the past 15 years, as well as increasing criticism of police in Britain over the same period.

BY JULIET RYAN



Craft artist draws 'stacks' of praise

Art critics have been scouring their dictionaries for superlatives since Monash art lecturer Mark Edgoose won Australia's most prestigious craft award.

His *Stacks* of titanium containers won the \$30,000 VicHealth National Craft Award in June over a diverse range of pieces by 20 of the nation's leading craftspeople.

One review praised his work's "sophisticated abstract quality", another highlighted "the strength of each idea that shapes and identifies every piece he makes". The award judge described *Stacks* as "an entertaining engagement with the notion of the deconstructed object".

Such heady praise makes it difficult to distinguish craft from art, but Mr Edgoose said this reflected modern craft directions.

"Contemporary craft is increasingly being appreciated on visual and intellectual levels, while still maintaining a functional purpose," he said.

"My work is fairly sculptural, but I still use the pieces as containers."

Do people buy silver containers coloured inside with titanium hues (for around \$9000) to put on their kitchen shelves?

"I guess that's the same as people buying \$300,000 Porsches to drive around town," Mr Edgoose said.

"But I use my containers at home for displays of food or objects. I'm interested in the idea of eating and storage of food as a ritual," he said.

Mr Edgoose, who is coordinator of metal studies at the Peninsula campus, said that while function was the starting point for all his work he constantly tried to push

the boundaries that define what craft can be.

This can be seen in his favourite choice of material, titanium, a metal more commonly associated with the aeronautical and nuclear industries.

It has proved a difficult material to work with, forcing him to invent new ways of joining surfaces, but he enjoys the challenge.

"Contemporary craft is about pushing ideas and materials to the limits. It's hard work that requires immense skill.

"Traditionally, painters and sculptors have been rewarded for their skills, but not so with craft. Although that situation is starting to change," he said.

"There is a real curiosity about the hidden elements of the Stacks. People can't stop themselves opening the lids and looking for the different colours inside."

Mr Edgoose said hand-crafted objects were starting to find a place in our culture, and he enjoyed seeing the "physical interaction" his work created.

The nature of his *Stacks* encourages people to arrange and rearrange the work to suit their own needs and whims.

This applies equally to collectors who buy his work to people viewing it in galleries.

"There is a real curiosity about the hidden elements of the *Stacks*. People can't stop themselves opening the lids and looking for the different colours inside."

And are people any more curious about his work now that he has won such a major award?

"Winning the National Craft Award is fantastic from a professional point of view," Mr Edgoose said.

"Being recognised like this, against such a strong field of entrants, will make it easier to arrange future exhibitions."

BY GARY SPINK

Law on the Internet

Two Monash academics have been invited to join a legal issues taskforce for a National Information Services Council recently set up by Prime Minister Paul Keating.

Professor Sam Ricketson from the Law faculty and Professor Greg Tucker from the Syme Business School, Peninsula campus, have been working with other members of the taskforce on an issues paper to be presented to the council this month.

The council has been established to address the legal issues surrounding the information superhighway and its international implications.

Family affairs on the stage

The Alexander Theatre's newest production is the story of "a truly twisted family".

A satire on the Parisian bourgeoisie, *Les Parents Terribles* traces the downfall of an eccentric and dysfunctional family.

George and Yvonne's obsessive, neurotic lives are disrupted forever when 22-year-old Michael comes home to announce to his insanely possessive mother that he is going to marry Madeline, a beautiful young book-binder.

The Sydney Theatre Company production stars Sandy Gore, Kate Fitzpatrick,

William Zappa, Daniel Lapaine and Veronica Neave.

Bookings for performances from September 13 to 16 can be made at the Monash Box Office on 9905 1111.

Celebrating national diversity

Monash's Caulfield campus recently celebrated its multicultural character with a week of food festivals, language classes, foreign films and exhibitions.

The annual Multicultural Week festival aims to foster community awareness of the 90 nationalities represented on the campus.

Monash Caulfield's 1512 international students make up 17 per cent of the campus's overall student population.

The Caulfield campus director of Overseas Student Services, Soh Kiat Hong, said Multicultural Week was also designed to help break down barriers between people of different countries of origin.

Reviving lost culture

Theatregoers will get the chance to discover the lost culture of Australia's early female dramatists with the inaugural season of the Australian Drama Project this month.

The project, a joint initiative of Monash's National Centre for Australian Studies and Centre for Drama and Theatre Studies, will use Monash drama students and professional actors to produce plays that were written before 1955.

Kerry Kilner from NCAS said the three short plays in the first series would focus on women playwrights whose plays were lost in archives and libraries, having never been performed or enjoying only short radio seasons.

The project will be launched at a gala evening on Thursday 31 August, which will recreate the theatrical gala nights of the 1920s, with period costumes and champagne while musicians play popular music from the era.

It will also be an opportunity to launch the first volume in a new series of published plays, *Playing the Past: Three plays by Australian women*.

A matinee performance of *Three Plays by Australian Women, 1922, 1928, 1942* will be held on Friday 1 September in conjunction with a seminar hosted by the Centre for Australian Studies, 'Women Changing: Making a Scene!', which will explore how women use performance to question accepted notions of femininity and bring about social change.

For inquiries and bookings for the performances of the play, contact Ms Kerry Kilner on extn 55239. To book for the women's studies seminar, contact extn 59136. For further information on the seminar, contact Ms Barbara Dalton on extn 52945.

The fight against youth suicide: what now?

From Montage 16

Consistently, when working with individuals from this group, I found many were experiencing an overwhelming sense of loss of control of their lives, coupled with intense emotional and psychological pain. Ending life, and therefore the pain, was the only way they could see of controlling not only their own lives, but also those of the people around them. Significant too was the idea of death as an experience rather than a finality. While the pain would end, there would be the experience of that pain ceasing. Some imagined watching their

funeral and seeing everyone there showing how much they cared, while others wanted revenge, to "get back" at those who they perceived as having caused their torment.

A major underlying factor in the lives of homeless youth is family breakdown. In 1993, the Department of Child, Adolescent and Family Psychiatry at the Austin Hospital found that of 50 young homeless people they interviewed, 40 per cent had attempted suicide at least once and those who were emotionally disconnected from their families were more at risk of attempting suicide.

Young people who felt it was their choice to leave home were far less at risk of behavioural and/or emotional disturbances.

We should be directing our attention to putting programs into place which address feelings of disconnection, alienation and loss of control earlier in young people's lives. With the increase in family breakdown, children and adolescents are often left without adults they can turn to for help, because those adults themselves are in crisis.

Our communities and schools need to have the resources in place for picking up this responsibility while parents work through their own grief and loss. We need to be asking how we can give young people the resources to ask for help before becoming desperate, before they cross that threshold of despair.

The fight against youth suicide: what now?

It is time to stop talking about the rate of suicide in today's youth and start helping young people in need, says Monash researcher and social worker Karen Crinall.

Over the past few years there has been growing concern at the levels of youth suicide in Australia. While exact figures are difficult to determine, there is evidence to suggest that suicide rates for Australian teenagers is high by world standards.

The 1994 UNICEF publication, *The Progress of Nations*, stated that Australia's adolescent suicide rate was the sixth highest in the world, and the Australian Bureau of Statistics states: "Of the 24 countries on which the World Health Organisation reported in 1992, Australia has the fourth highest suicide rate for 15 to 24 year olds."

Public concern has been inflated by media headlines such as the *Good Weekend's* front cover in April 1994, 'The Teenage Suicide Epidemic' and, also from *The Age*, 'Distraught teenagers dice with death'.

The breakdown of suicide rates for the Australian population as a whole reveals that the group causing the greatest concern is adolescent males aged 15 to 24 years. The rate for this group increased from 14.8 in every 100,000 in 1975 to 26.5 in every 100,000 in 1990.

Over the same period, female rates for this age group increased from 4.6 to 4.9 in every 100,000. During this time there has been a decrease in suicide rates for the 45 to 54 and 65 to 74-year-old groups for both genders. Studies in Tasmania and New South Wales have found higher rates and a more rapid increase of suicide among rural youth. While for the population overall, the

rate of death by cancer, for instance, is more than 10 times greater than that of suicide, amongst adolescents suicide competes with road accidents as the major cause of death.

Statistics comparing rates of suicide between decades, of course, do not tell the whole story and can be misleading because of social, political and cultural variants influencing the recording of cause of death and advancements in assessment. When reading these figures we need to take account of an array of possible vested interests in statistical demonstrations of high, low or changing suicide rates for particular age groups at various temporal, social and political locations.

This caution aside, for social and community workers, suicidal intentions and practices among adolescents is an area of increasing concern. These workers are feeling the pressure of inadequate training in suicide prevention.

As a former youth worker with homeless young people on the Mornington Peninsula, I found that suicide was seen as a legitimate life option by many of the client group.

Disconnection and rejection from family, a history of physical, sexual and emotional abuse, exclusion from mainstream education and lack of prospects contributed to overall feelings of failure, hopelessness



Australian adolescent males aged 15 to 24 years are now more at risk of dying from suicide than road accidents.

and despair. In my experience, many more young women attempted suicide but were able to discuss the issue and acknowledge they had a problem and needed help.

On the other hand, there was a tendency for young men to either choose a method with little opportunity for intervention or to engage in highly dangerous forms of risk-taking behaviour, involving combinations of trains, cars, drugs, alcohol and lethal weapons.

The literature on youth suicide will tell you that "suicide is a cry for help". But one of the questions practitioners and researchers need to be asking is what is getting in the way of helping young men. Why aren't young men more able to ask for help? We need opportunities and resources to find the answers to these questions. We can spend large amounts of money on measuring and demonstrating the rate of youth suicide, but how many times must we restate the problem?

Continued on Montage 15