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NEWS FROM THE CAMPUSES OF MONASH UNIVERSITY

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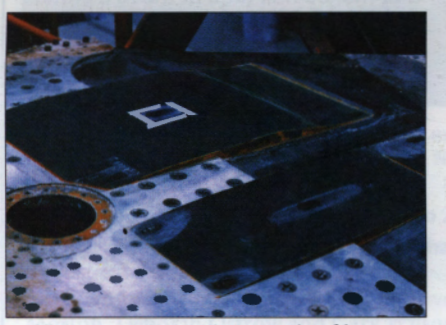
Modified wings take F-111s beyond the year 2000

Top gum: New epoxy composite technology developed at Monash will keep Australia's F-111s airborne into the next century.

A Monash University mechanical engineer may have saved taxpayers more than $100 million by developing technology to strengthen the F-111's famous swing wing.

The reinforcement technique, the result of 15 years' research into epoxy composite materials by Monash's Professor Rhys Jones and Dr Alan Baker, from the Defence Science and Technology Organisation, means that the fleet of 20 F-111s will remain the linchpin of Australia's air defence into the next century. Until recently the RAAF and the government were faced with the need to either strengthen the wing design or purchase replacement aircraft.



High strength doublers, made of boron fibre, are attached at four places on the F-111 wing surface.

Wing stress fractures have been discovered at various times throughout the F-111's history, but a decision on whether Australia should purchase alternative aircraft was complicated by replacement costs.

A new fleet of aircraft with a similar level of technical sophistication would cost Australian taxpayers billions of dollars. Although more than 30 years old, the aircraft is still regarded as a high-tech weapon.

Many military specialists think the B 1 bomber is the only aircraft able to offer comparable capabilities, but with a price tag of around $1 billion per plane, cost is a major stumbling block.

The estimated saving of $100 million is regarded as conservative and could soar as high as $1 billion, depending on interest rates at the time of purchase.

Professor Jones said the technology had performed well under stringent strength tests and believes the wing design has been significantly enhanced.

Professor Jones, previously head of structural engineering with the Department of Defence, began the project seven years ago with a team of specialists from the Defence Science and Technology Organisation, the Aeronautical Research Laboratory, and the RAAF.

He recently joined Monash University, where he finished development work.

The project was initiated after tests in the US resulted in a series of wing stress fractures.

Professor Jones described the composite material modifications as "an external doubler for lowering the wing's stress field".

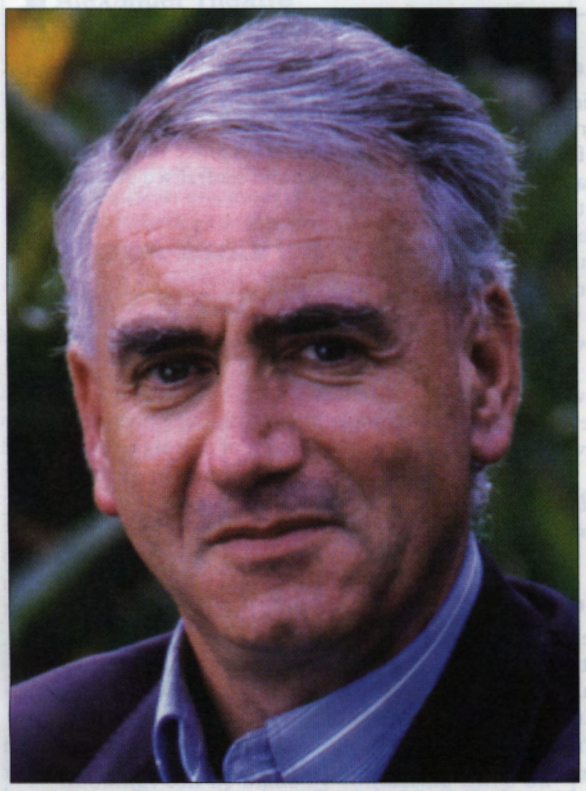
In lay terms, the modifications create a more even load distribution across structural stress points on the F-111 wing. This is achieved by moulding ultra high strength, low weight reinforcement 'doublers' in four places on the wing's surface.

The doublers are made of boron fibre covered with epoxy resin, and are 'moulded' across four positions on the wing's exterior surface.

The layers of ultra-fine boron fibre, which have the strength of steel reinforcement without noticeable weight increases.

Professor Jones said the modifications had successfully come through extensive tests and were being progressively introduced to the fleet.

BY PETER HENRYS



Professor Gab Kovacs says there is no medical reason why women should adhere to the traditional 28-day cycle while on the pill.

New method for pill users

Women need only menstruate four times a year, according to a Monash University professor who is researching a new method of contraception.

Professor Gab Kovacs, of the Department of Obstetrics and Gynaecology at the Box Hill Hospital, said the contraceptive pill, used by millions of women around the world, can be taken for 12 weeks without a break for menstrual bleeding.

When the pill came onto the market in 1960, the natural 28-day cycle was imitated to encourage women to use the contraceptive.

However, Professor Kovacs says there is no medical reason why women should conform to the traditional cycle of 21 days on the pill and seven days off.

The potential health benefits of having fewer cycles each year include a lower risk of anaemia, breast cancer and endometriosis.

The tri-monthly cycle is being used by a growing number of Australian women following studies initiated by Professor Kovacs and undertaken by Family Planning Victoria.

Professor Kovacs said many Australian women in the past had been using the extended cycle method of contraception but had been feeling guilty about it.

He decided to conduct studies into the method to provide it with respectability and medical credibility.

More than 200 women aged 16 to 35 took part in the 12-month trials between January 1989 and June 1993.

Although 70 per cent of women dropped out of the trials before the 12 months were up, no major health risks have been linked with the tri-monthly cycle.

Unexpected spot bleeding was one major problem reported by the women. About 20 per cent also experienced the occasional headache, and another 20 per cent complained of breast tenderness.

The study identified the need for women to take hormone tablets for 48 rather than 39 weeks a year as a major disadvantage of the tri-monthly practice.

According to Professor Kovacs, women should only take the pill for a maximum of 12 weeks without a seven-day break.

He said it was important for women to discover any pregnancy within three months so they could consider their options.

Professor Kovacs said the next step in his research would be detailed biochemical studies with small numbers of women to ensure that there were no significant side effects to the three-month cycle.

Only some of the contraceptive pills currently available on the market are suitable for the tri-monthly cycle.

Monophasic pills, which contain identical amounts of hormones, rather than biphasil or triphasil pills, which contain different amounts of hormones throughout the cycle, are suitable.

BY GEORGIE ALLEN

Updating international affairs

Monash University's International Office recently attended an Austrade Education Exhibition in Singapore as part of its recruitment activity.

Singapore is one of the largest growing markets of foreign students for Monash, which is encouraging considering the slow decline experienced by some Australian universities in the Hong Kong and Malaysian markets.

Of the 7000 students who attended the exhibition, more than 70 per cent asked about articulating polytechnic diplomas with undergraduate degrees and about credits for subjects passed.

All computing and information technology applicants, 93 per cent of engineering applicants and 60 per cent of business applicants were seeking credit exemptions.

To ensure continuing growth in the Singapore market, a report compiled by the promotions and information services manager in the International Office, Ms Melissa Banks, has recommended formalising arrangements for articulation with undergraduate courses.

"The report also recommends that the university establish a seminar/interview program specifically for polytechnic diplomates seeking entry into the university's degree programs," she explained.

She suggests that the program involve faculty registrars to make offers on the spot, with CIS staff on hand to ensure that the process runs smoothly.

Some of Monash University's major competitors in the highly valued foreign students market are the large American universities.

Australia attracts most of its international students from South-East Asia, particularly Malaysia, Hong Kong, and Indonesia, while America attracts students mostly from China, Japan and India.

America has 42,940 Chinese students, while Australia has 5578, including 201 at Monash.

Hong Kong – the biggest single source of foreign students for Australian universities – provides 11,533 students, compared with 13,190 for the US.

Top American universities for international students are (in order of popularity): University of Texas, University of Southern California, Boston University, University of Winsconsin, New York University, Ohio State University and Colombia University.

Monash and the University of New South Wales are the two most popular Australian universities among international students.

Australia also competes with the United Kingdom, Canada and New Zealand for Asian students.

Monash has recently begun marketing a range of education programs in America and Europe, but admits that British universities have a huge advantage when competing for European students.

Monash's International Office says the benefits of having a high intake of foreign students include local students' exposure to other cultures, establishing reciprocal relationships and the opportunity for Monash students to study abroad.

Monash believes that the intake of foreign students at the university will continue to grow and is working hard to maintain a high intake from Asia, as well as America and Europe.

Monash is marketed overseas through a range of contacts and networks, such as Australian Education Centres, Monash representatives and other education agents, and by fostering relationships with key foreign government and industry personnel.

Monash University representatives also attend education trade fairs and run seminar programs abroad, and the university advertises in foreign newspapers and education magazines.

The most popular area of study at Monash among international students is business and management, followed by computing and information technology, engineering, arts, science, education, law and medicine.

Paw vs Claw

THE SPIKE

Romancing the rhino

From the that-sounds-suspiciously-like-an-understatement department...*The Age* recently reported that Professor Alan Trounson, of the university's Institute of Reproduction and Development, was pressing ahead with an attempt to produce 'test-tube' rhinos. The research, assisted by a team from a New South Wales zoo, is aimed at saving the endangered African black rhinoceros from extinction.

Admits Professor Trounson: "Getting a male rhino to donate sperm would be very difficult".

Songs, schlock, and swine

Three entries from recent diary sections of *Etcetera*, reprinted here entirely without comment (and permission).

21 April *Music department seminar* 'The yodel in Australian country music'.

27 April *Women's studies seminar* 'The monstrous feminine – to bed it or bob(b)itt? The dubious pleasures of images of monstrous women in *Basic Instinct* and the Lorena Bobbitt case'.

27 April *Genetics and developmental biology seminar* 'Cloning of porcine genes: A pig of a problem'.

For whom the bell (doesn't) toll

Only on Clayton campus...The fire alarm clanged in the Union building the other day. It was lunchtime, queuing room only. The kind of crowd that makes half-time at the AFL grand final look like a claustrophobic's dream.

The bell rang. And rang. Then rang some more. The target response was decidedly serene.

Suddenly, in what seemed an effort to save face, an announcement came over the loudspeaker.

"Do not panic!" it intoned. "This is not an emergency."

NOW & THEN

25 YEARS AGO

Victoria is facing an educational crisis of major dimensions in the tertiary area. A rapidly increasing demand for advanced education together with escalating costs for scientific and technological training have produced a situation where one must ask, "Can Victoria afford a system of education in which provision is made for tertiary level opportunities for all students with the ability and the desire to proceed with advanced education?"

The cost of such a system will be frighteningly high and at a completely different level from that which we have previously faced.

Fro a talk given at the Melbourne Legacy Club by Dr P. G. Law, vice-chancellor of the Victoria Institute of Colleges.

15 YEARS AGO

The next few years will see the check-out or sales point function in Australian stores – from supermarkets to local milk bars – revolutionised by the introduction of the computer-linked Universal Product Code.

Harbinger of the new system in Australia is a lecturer in marketing at Monash, Dr Robin Shaw who, in the last few months, has written articles on it for the general and specialist press. He claims that the automated check-out system made possible by the UPC's zebra stripped symbol "is the biggest innovation since the introduction of self service and centralised pay-and-wrap facilities".

5 YEARS AGO

The signing of the Heads of Agreement between Monash and Chisholm was an historic occasion, said the president of Chisholm Council, Mr Paul Ramler.

Mr Ramler was speaking at the formal signing of the agreement which will lead to the establishment of one of the biggest and most diverse universities in Australia.

THIS MONTH LAST YEAR

Scientists at Monash University's Victorian College of Pharmacy have synthesised a potent new drug that may cure and prevent influenza.

The drug has already been tested successfully on ferrets, a species highly susceptible to the human influenza virus.

The breakthrough came when a research team at the College of Pharmacy, led by Dr Mark von Itzstein, discovered a compound that prevents the virus spreading by locking it inside the infected cells.

MONTAGE
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Keying in to a brighter future

General manager of Monash, Mr Peter Wade, presented the inaugural career start scholarships to six university secretarial and keyboard staff last month.

Awards were presented to Ms Christine Ingram from the Faculty of Education, Clayton campus; Ms Marie Bartholomeusz from the International Office, Clayton; Ms Heather Whelan from Community Services, Clayton; Ms Eileen Edwardes from the Housing Office, Clayton; Ms Julia Haig from Community Services, Peninsula; and Ms Vicky Ryan from Language and Learning Services, Caulfield.

The General Manager's Career Start Scholarships for Secretarial and Keyboard Staff provide funds for two units of study through the Open Learning program.

A selection panel, chaired by Professor Stella Crossley, chose recipients based on an interview, references, and a presentation by applicants stating why they believed they deserved the award.

Mr Wade said the selection process was a "serious academic test" and the scholarships a "genuine effort" to improve career potential and increase job satisfaction.

He praised secretaries for their often unrecognised contribution to keeping an office running smoothly and keeping academics "out of trouble".

Ms Ingram, thanking Mr Wade on behalf of the recipients, said the scholarships were a "wonderful opportunity, opening doors for people of all ages".

She said the scholarships encouraged staff and gave them confidence to pursue further studies and career development.

"My position has limits, and although I know I do my job well and this is appreciated, I wish to be challenged and stimulated," she said.

"The only way I can see to get on is to prove myself academically, because in a university, success is generally measured by academic achievement.

"To be given the opportunity to prove that I am capable of more than my present position allows will be satisfying."

She said that it was not only satisfying, but also of long-term benefit to the university.

Ms Ingram also commented on the continuing lack of male secretaries or keyboard staff in the university and elsewhere.

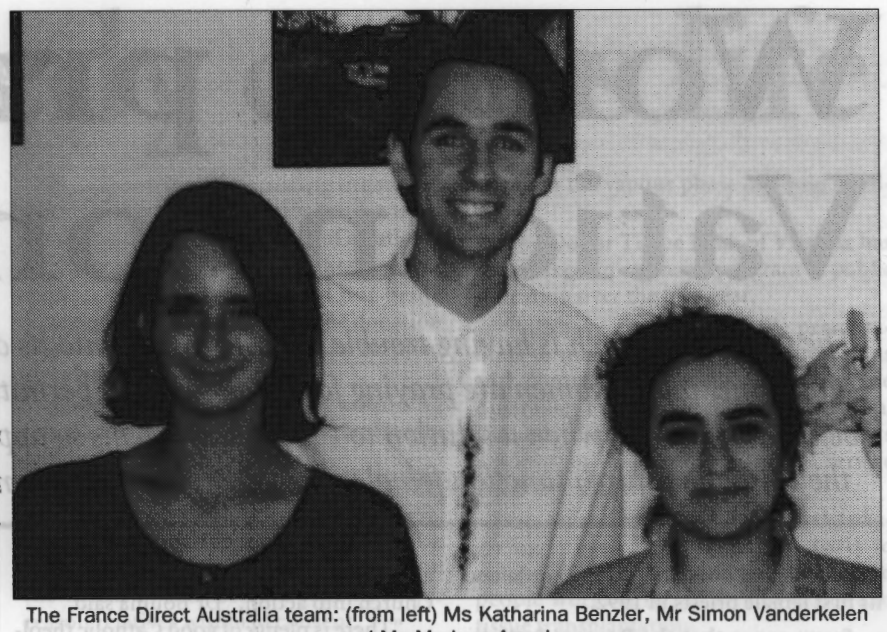
Staff development manager and member of the selection panel Mr Lionel Parrott said he was pleased with the huge response the scholarships had generated in the first year they had been offered.

"It shows there are many staff members quietly sitting in the wings gathering the confidence to have a go," he said.

Ms Ingram will study history and politics, Ms Bartholomeusz – society and culture, Ms Whelan – psychology and philosophy, Ms Edwardes – Australian studies, Ms Haig – psychology and marketing, and Ms Ryan – religious and cultural studies.

All hope to broaden their knowledge and advance to a more responsible position within the university.

Left to right: Ms Marie Bartholomeusz, Professor Stella Crossley, manager of student services at Open Learning Australia Mr John Evans, general manager of Monash Mr Peter Wade, Ms Heather Whelan and Ms Chris Ingram.



The France Direct Australia team: (from left) Ms Katharina Benzler, Mr Simon Vanderkelen and Ms Marlene Amari.

French on the move

The language of romance is still chic in Australia, according to a recent graduate in French who is capitalising on the language's popularity.

Ms Katharina Benzler and two other Monash graduates in French have recently established a language studio with great success.

In their first term of teaching, the group, called France Direct Australia, have taught upwards of 20 students, catering to beginners and intermediate, advanced and VCE levels.

"We feel it's better to teach a small number of students properly to begin with and then think about building up the business," Ms Benzler said.

The three entrepreneurs – Mr Simon Vanderkelen, Ms Marlene Amari and Ms Benzler – have all visited their country of fascination.

Mr Vanderkelen and Ms Amari taught English in France as part of their assistantship scheme with Monash, which they say is a great way to gain teaching experience while also being exposed to the culture.

Ms Benzler says that while Asian languages studies have experienced an upsurge in popularity in Australia in recent years, it has not been at the expense of the more traditional languages.

"People realise that Europe hasn't suddenly disappeared off the map," she said. "With the European Community, they feel it is worthwhile keeping their foot in the door.

"French has the aura of being the diplomatic language, although that is slowly being taken over by English and to some extent German too. But French is still the glamorous language."

The classes, which are conducted from Mr Vanderkelen and Ms Benzler's home in Armadale, aim to develop students' conversational skills.

"We cover the grammar aspect of French, but we introduce it through conversation," Ms Benzler says.

"We want to teach a 'correct' form of French because if people want to work in France it's important."

Interest in the group's evening and weekend classes comes mostly from beginners and travellers.

"We're positioned next to Armadale station, and we hold classes for travellers in a nearby cafe, which provides a bit more ambience," she said. "For an hour or so they can have coffee and cake and dream they are in France."

Three VCE students are currently improving their fluency in French by taking weekend classes with Ms Amari.

Ms Benzler says the extra tuition can be very important for these students. At school, in classes of about 20, they can find it hard to develop aural skills in French.

Each of the teachers boosts their income with other work. As well, Ms Benzler is completing honours and Mr Vanderkelen is undertaking a diploma of education.

The Monash graduates hope to expand their business in the next year by increasing the courses available and the amount of translation work they do, and by organising homestay programs for Australian students in France.

Spreading the word on science

Julius Sumner Miller would be well pleased. The late science professor, whose summer schools on ABC-TV in the 1960s entranced a generation, now has a Monash apostle.

The world is Dr Andi Horvath's laboratory, which is just as well – her enthusiasm for science recognises no borders, let alone walls. Episodes of a new science education series she recently planned for SBS television begin in a room of a house – and conclude in an outside location, such as an open cut mine.

"The series looks at the dialogue of science in society," Dr Horvath said. "I've also added one of my favourite things: the kitchen professor lectures, a sort of 1990s version of Professor Julius Sumner Miller. It amounts to putting a different face on science."

A lecturer in science education in the School of Early Childhood and Primary Education, Dr Horvath describes herself as "an enthusiastic amateur".

Her qualifications and work experience, however, suggest the opposite. She has a PhD in fetal physiology ("pregnant sheep, actually"), completed a one-year course in science communication at ANU, worked as Victorian coordinator of the CSIRO Science Education Centre, and is now studying for an MA in the history and philosophy of science.

Add to those credentials the work of her radio alter ego "Dr Andi" (whose science show on Sundays on 3RRR includes segments with titles like 'Dr Andi's body parts' and 'Dead scientist of the week') and you have a scientist committed to communication.

"When I was a tutor at university I was always more interested in the tutorials than the science going on in the research labs," Dr Horvath said.

"The communication of science was always a compelling challenge for me."

Dr Horvath believes public education in science is paramount. "It is far more important for the public to understand science than the scientists," she said.

"People fear and applaud science, so there is always this ambivalence. They should learn to evaluate science – to stop, have a think, and get the best information possible."

Dr Horvath believes that by teaching science to primary teachers she is reaching a huge audience.

"I always aimed to lecture in science education, to package science information for consumption. I see my role as nurturing students to become confident about teaching science.

"Science is not hard and fast facts – it's a way of looking at nature, getting in at the ground level. And primary education is the key."

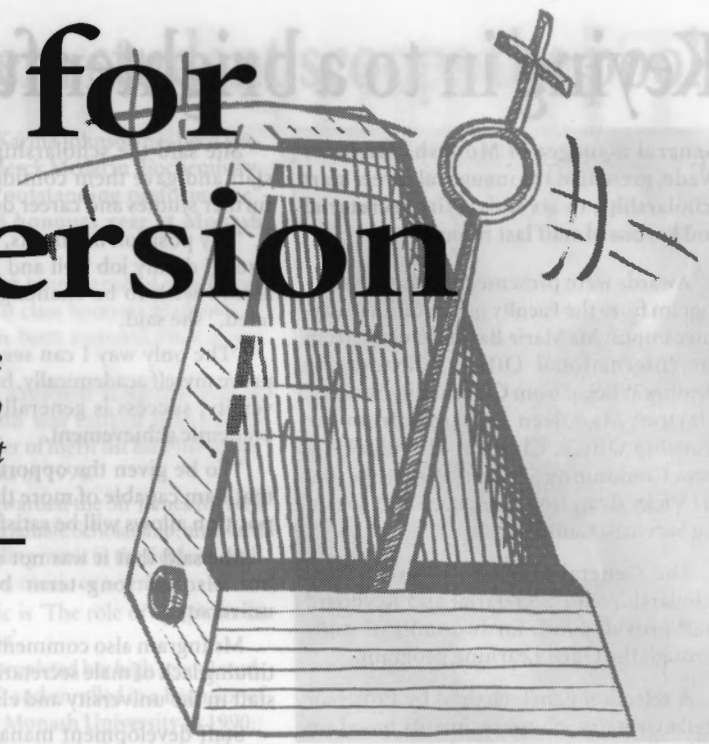
Dr Horvath's hobbies "feed into each other". "Recently, I interviewed weatherman Rob Gell on a 3RRR Saturday morning show I do called 'Vital Bits', then spoke about him and his work to my Monash students," she said.

Last month Dr Horvath added an international TV link-up to her growing list of media engagements when she hosted the annual Faraday lecture for SBS. The broadcast for high school students linked studios in Sydney, Perth and Nottingham.

Given Faraday's enthusiasm for spreading the science gospel, the lecture on the progress, operation and application of telecommunications made a "nice metaphorical connection", Dr Horvath said.

Ballooning science: Dr Andi Horvath demonstrates the precise art of balloon shish kebab.

Women pray for Vatican conversion



The Catholic Church is having trouble recruiting men into its clergy. At the same time, many women are praying for a papal decree permitting them to be ordained. Why, when a solution to the problem seems so apparent, won't the Catholic Church sanction female priests? Bridget Montgomery reports.

The Anglican Church in Australia ordained its first female priests in 1992.

Some argue that the Roman Catholic Church in time will follow suit, while others say the precept to have only male priests is so bound by tradition that it will never be overturned.

Those who support the ordination of females point to the scriptures of Jesus and Paul, which have very strong statements about the equality of people.

They also argue that many Melbourne parishes are essentially run by female pastoral workers and ask: "Why shouldn't females also be allowed to bless the sacraments?"

According to Anglican priest and associate professor in Monash's Department of Anthropology and Sociology Gary Bouma, it is ludicrous for a male priest to simply arrive at 8 am on Sunday to oversee their sacramental duties for the week.

Dr Bouma says that if a female pastoral worker does the day-to-day work in a church, relates to the sick and leads the congregation, then "it is silly to have Father Patrick zoom in out of the blue to bless and administer the sacraments".

But he says that with priests in short supply, the Catholic laity will increasingly experience women with pastoral roles in the Church and acceptance for such an arrangement will grow.

Monash University's Catholic chaplain, Reverend Father Tony Vidot, feels the dwindling numbers of priests is of little concern. He says that a lot of dioceses are training lay people in taking services and believes it is not necessary for every church to have a priest on every Sunday.

Furthermore, Father Vidot believes that the Vatican is likely to change its stance on allowing married men into the ministry before it allows women in. This, he says, will effectively reduce the pressure surrounding the issue of women in the priesthood.

"I think Rome will do its classic compromise. They'll make out there's a theologically sound teaching for married clergy, which will reduce the 'supposed' pressure on the lack of priests in Catholic churches," he says.

"I think it will take at least 200 years before women are allowed into the Catholic priesthood. But this is a pessimistic estimation."

Dr Bouma on the other hand estimates there will be female clergy in the Catholic Church within 25 years.

"Now that the Anglican Church has accepted women as priests, this will encourage the lay people of the Roman Catholic Church into action," Dr Bouma said.

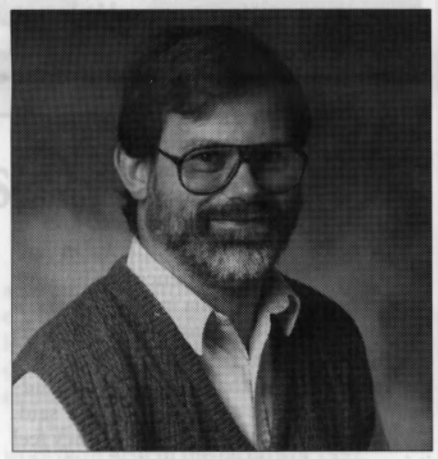
"There is plenty of good Catholic theology that recognises the legitimacy of the idea – they don't have to invent it. But given that the decision is in the hands of celibate males, it's hard, and change does not come easily."

But Father Vidot believes the Anglican experience will have the opposite effect.

"I think the mood in Rome will be twofold," he said. "First, there will be a reaction very strongly against the ordination of women because they will feel as though the Anglicans have sold out on their ecumenical brotherhood. Second, I think the Vatican will react by saying 'let's sit back and see what unfolds', and that will take time."

But what rationale lies within those who wish never to see a female priest take to the pulpit?

Father Vidot says they point to passages in Timothy and the Corinthians which indicate that women should not have a leadership role in the Church.



Reverend Father Tony Vidot.

"As priests are currently interpreted as being the leaders of the Church, they argue that females should not be priests," he says. "This understanding of leadership in the Church has been around for about 500 years."

As further weight to their opposition, they say that if Jesus had wanted his leaders to be women, he would have chosen them as apostles.

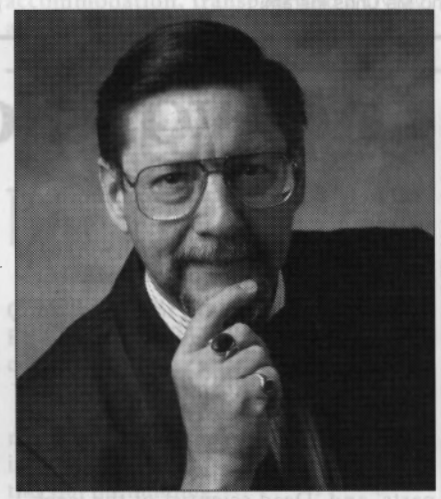
Dr Bouma rejects this argument by saying that if women are not permitted into the priesthood because they were not chosen as apostles then in theory there shouldn't be any black priests, any non-Jewish priests and perhaps priests no taller than six feet.

"What characteristics should be picked up on?" he asks.

"Gender has been fixed on because the Church has been hierarchically [organised] along gender lines," he explains. "In effect, there's been a caste system along gender lines for many centuries.

"It's harder to change those groups where you have a very traditional and hierarchical structure. Groups such as Congregationalists and Methodists with different structures began ordaining women much earlier.

"In the Catholic case, all of the experience of women's ministry has been structured with men at the top and women as second-class citizens who have never been able to exercise priestly office."



Dr Gary Bouma.

By contrast, women involved in the Anglican and Protestant missions as education and pastoral workers developed a greater sense of their own worth as ministers and were less dominated by male clergy.

Not only did the Anglican women experience the fullness of having their own ministry, Dr Bouma said, but the laity became used to the ministry of women in the Church. "It is the experience of women's pastoral ministry which leads people to accept and want women to be their priests," he said. "There's a catch-22 in that."

In 1941, the first female Anglican priest was ordained in Hong Kong. More than 50 years later, the Vatican will not even hint at the idea of accepting women into the priesthood.

"This Pope has made it so clear that he is opposed to the principle, that aside from a Damascus experience he's not going to change his mind," Dr Bouma explained. "But with a new Pope, all things are possible."

Finally, there is the argument that the Church has never had female priests before, so why do it now?

"That argument gets you nowhere," Dr Bouma says. "You can't even put electricity in a church with that argument."

Despite the dwindling numbers of Catholic priests and congregations, the most recent census figures indicate that more Australians are identifying themselves as Roman Catholics.

It seems followers of Catholicism see no problem with the faith's principles, but are detecting the unrest within the Church's hierarchy.

Father Vidot says: "The Church is a part of society and is necessarily affected by it. The current fragmentation and plurality of society is reflected in the opinions held by those in the Roman Catholic faith. So often the Church is seen as one autonomous piece of society, which is wrong.

"There has also been a breakdown of the rigid authority structure across society, resulting in priests losing a lot of their power in the eyes of their parishioners."

Father Vidot believes that in time the current turmoil in the Catholic Church will subside and a more standardised and accessible model of priesthood will emerge.

"Hopefully, that model will be less power/authority figured than in the past and much more service-oriented," he said.

Whether females become a part of that model will be determined by the depth of feeling about the issue throughout the world and by the views of future Popes.

"I don't feel that women in the Catholic clergy is a burning issue, but on principle I favour the ordination of women.

"I haven't been convinced by any scriptural arguments against the ordination of women.

"The only reason that women aren't in the clergy yet is because of a general reluctance by large institutions to change. All large old organisations tend to be conservative.

"Women's roles have extended in every aspect and I don't think that the Church is immune to the changes. Women have always had a strong role in the Church and the extension of their role is part of a historical pattern.

"I think there would have to be women priests in the Catholic Church within 50 years."

– Associate Professor Elaine Barry of the Department of English. Dr Barry is of the Catholic faith.

"I don't see any reason why women shouldn't be ordained in the Catholic Church. However, the Catholic Church has always been an 'old boys' network. It has been male dominated for so long that they may find it difficult to accept change, especially in the female form.

"I can't give any biblical reason as to why females should or should not be ordained in the Catholic Church, but being brought up as a Catholic and going to a Catholic school I have always been told that God does not discriminate. For this reason, I cannot see why God would see women as inferior to men when it comes to the role of a priest. It's not like it involves any heavy lifting!

"Also females have more interaction with the running of the Catholic Church these days. Thirty years ago the role females played in the Church was minimal. They weren't permitted on the alter but now they can administer the sacraments.

"The lack of available priests to perform services is something that needs to be seriously looked at by the Church. There are fewer men joining the priesthood and existing priests are getting older. If women priests could lighten the load on existing priests, then to me it seems like a viable proposition.

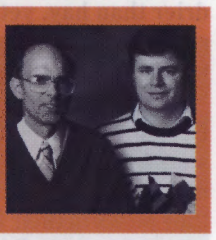
"Unfortunately, I think the Catholic Church would rather see its own demise before it would let women into the priesthood."

– Ms Juliet Ryan is a public affairs officer in the Office of University Development.

RESEARCH MONASH

Solving a growing concern

Searching for ways to reduce breathing problems



Defusing the playtime debate

Is aggressive play by children a sign of real aggression? According to a Monash researcher, the answer to this much-debated question is "no".

Adults watching children play are sometimes disturbed at how aggressive their games seem – boys wrestle or 'kill' each other with toy guns in mock battle, some girls play at being bossy, or indulge in exclusion or ostracism of others.

Ms Vicki Jenvey, who recently completed a PhD study of aggression in children at play, says parents shouldn't be too concerned. Mock aggression appears to have an important role in defusing genuine aggression, and in teaching children to cope with aggressive people.

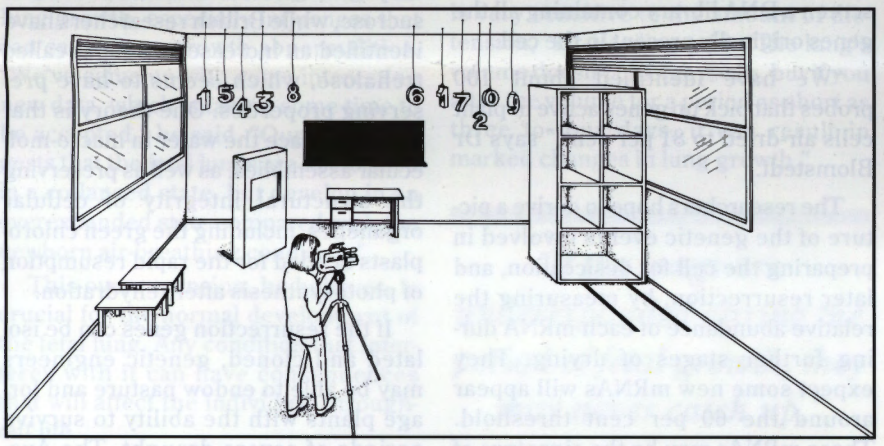
"I was trying to address two questions that have bedevilled the research literature on the role of aggression in play," Ms Jenvey said. "First, how do you distinguish between real and playful aggression, and second, in what way do certain toys affect children's play?"

Ms Jenvey says the second question bears on the controversial issue of war toys. Despite their perennial popularity with boys, nobody knows to what degree, if any, these toys foster real aggression later in life. The question interests toy manufacturers, as well as educators seeking to promote creative play.

The Monash study showed an association between the type of toy being played with and the level of aggression in the children playing with the toy. For example, if a highly aggressive child was playing with a war toy they were more likely to engage in real aggression than if they were playing with another toy, such as a doll or Lego.

Ms Jenvey's study also found that aggressive play was not a form of real aggression, as other researchers had believed.

"My study indicates that the more children indulge in playful aggression, or even pretend violence, the less likely they are to engage in real aggression," Ms Jenvey said. "It seems to allow them to rehearse strategies for dealing with real aggression or threats later in life."



The room in which Ms Jenvey conducted her study.

Ms Jenvey says playful aggression is not limited to young children. Adolescents also indulge in rough-and-tumble play.

She says that primatologist Jane Goodall, in her studies of wild chimpanzees, also observed extensive rough-and-tumble play in young animals. "We know it probably has some biologically adaptive function, although sometimes it can degenerate into real fights if a child or an animal bites or pushes too hard," she said.

In her own study, Ms Jenvey gave children three different types of toys that are popularly believed to promote aggression or, alternatively, pro-social behaviour. She also used an internationally standardised test to measure aggression levels in the children before they began playing with the different types of toys. Ms Jenvey said previous studies had failed to establish a baseline against which their results could be compared.

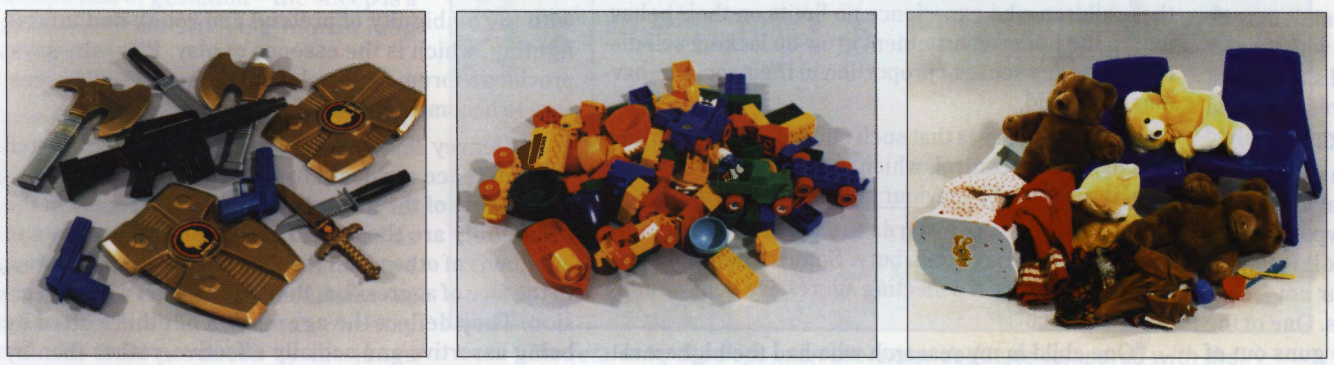
Ms Vicki Jenvey: In play children rehearse a much wider range of behaviours than they will ever need as adults.

"I found three kinds of play and aggression, although my experimental play groups did not indulge in a lot of rough-and-tumble play because space in the laboratory was too limited," she said. "In half the groups, girls and boys played together, and I found that boys moderated their aggression in these circumstances.

"But the most interesting thing was that I found a difference between real and pretend aggression. Some of the children in my study had previously been identified as highly aggressive – in the top 2 per cent on the standardised measure of aggression. They showed reduced amounts of play and reduced amounts of pretence in play, including pretend aggression, suggesting that they lacked the skills to deal with aggression when it arose. Normally, children learn to deflect aggression through play, but these kids seemed to have no strategies for dealing with conflict.

"Once a high level of aggression develops in play, there is very little difference in the behaviour of boys and girls. Boys are likely to resort to physical aggression, while girls use ridicule and ostracism, and lesser physical violence like poking and pinching."

Ms Jenvey says overseas research on adult aggression has suggested that males experience greater and more prolonged episodes of physiological arousal earlier in life than do females because they engage in more physically active behaviours. This means that their autonomic nervous systems are more often aroused, causing an attendant loss of cognitive function that affects their ability to make a detached appraisal of aggressive play. It therefore takes boys longer to calm down – hence their greater tendency towards impulsive behaviour.



The three groups of toys Ms Jenvey gave to the children as part of her study.

Continued on Research Monash 2

Shut-down: The key to survival

Various groups of plants have the ability to revive after periods of drought. Research by a team of Monash biologists has shed light on the genetic processes involved in these phenomenal rebirths.

Life cannot exist without water, but some plants get close. Deprived of water, they wither and many become drier than hay, yet within 24 hours of rain, they turn green and resume growing as if nothing had happened.

Dr Don Gaff, of the Department of Ecology and Evolutionary Biology, has studied resurrection plants for the past decade, attempting to discover how they perform their Lazarus-like feats. A number of unrelated plant species – both Monocotyledons and Dicotyledons – have independently evolved the ability to resurrect themselves. They include at least two Australian species, the lily-like *Borya nitida*, and *Boea hygroscopica*, a relative of the popular African violets grown on window sills.

Now a team of molecular biologists from the Department of Genetics and Development Biology is collaborating with Dr Gaff and extending his work by trying to identify the genes involved in shutting down and reviving resurrection plants.

The team – put together by Dr Gaff, Dr Alan Neale and Genetics and Developmental Biology department head Professor John Hammill – is headed by Dr Cecilia Blomstedt and Dr Robert Gianello and includes PhD students Mr Mark Sexton, Mr Jianbo Kuang and Mr Hamid Ghasempour.

The study is following up the leads provided by Dr Gaff, who found that resurrection plants produce special proteins in their cells in response to desiccation. Dr Gaff demonstrated a threshold effect in the drying-out process: a signal, induced early in desiccation, initiates a sequence of genetic mechanisms. The sequence takes time and if disrupted, the plants fail to resurrect. The initial signal occurs when the plant's relative water content reduces to about 80 per cent of its fully hydrated state. If the sequence is disrupted before the plants reach 60 per cent relative water content, they die instead of rehydrating. Yet at any level between 60 per cent and 5 per cent, the plants resurrect.

The researchers suspect that the signal originates in the roots, the first organs to sense any prolonged water deficit in the soil. In some species, the signal may be transmitted by the plant hormone abscisic acid, which causes deciduous plants to drop their leaves in autumn. Leaf-drop can also be an adaptive response to drought. Dr Gaff demonstrated that when the South African resurrection plant *Craterostigma plantagineum* is exposed to abscisic acid, it responds in the same way as if it had been exposed to drought.

Inspecting the resurrection pants: (from left) Dr Robert Gianello, Dr Cecilia Blomstedt and Dr Alan Neale.

The study is focusing on another resurrection plant from South Africa, *Sporobolus stapfianus*, which seems to have evolved a different method of desiccating – it does not respond to abscisic acid. The genetic study involves comparing the cellular mechanisms in this species with those of a close relative, *Sporobolus pyramidalis*, which dies when droughted.

Dr Gaff originally identified more than 40 proteins that differed between the cells of the two Sporobolus species; a dozen appeared exclusively in the cells of the *S.stapfianus* (the resurrection species) after air-drying below 60 per cent relative water content.

Dr Blomstedt and her colleagues air-dried *S.stapfianus* in stages, sampling harvested leaves for signs of gene activity in fully hydrated plants, then once at relative water contents of 81 per cent (when the first unique protein appears in the cells), twice at between 65 and 55 per cent (bracketing the threshold beyond which the plants acquire the ability to resurrect), and at 5 per cent.

When a gene is activated, it sends copies of its genetic code, called messenger RNAs (mRNAs) to cellular factories where their instructions are translated into protein. Messenger RNAs from specific tissues can be turned into DNA and used as probes to screen a DNA library containing all the genes originally present in the cell.

"We have identified about 100 probes that pick up genes active in plant cells air-dried to 81 per cent," says Dr Blomstedt.

The researchers hope to derive a picture of the genetic events involved in preparing the cell for desiccation, and later resurrection, by measuring the relative abundance of each mRNA during further stages of drying. They expect some new mRNAs will appear around the 60 per cent threshold. These mRNAs may be the signature of a small group of critical genes whose proteins will protect vital components of the cell's machinery against the normally lethal effects of desiccation.

"We have already identified one messenger RNA that switches on at 81 per cent, and stays on right through the desiccation process," Dr Blomstedt said. "It seems that once the cell reaches a relative water content of about 60 per cent, the protection phase is complete and it can then survive almost total water loss."

Dr Blomstedt says the DNA sequence of this first clone shows no similarity to any known gene from other resurrection plants, including Craterostigma, suggesting that Sporobolus has evolved its own unique method of surviving desiccation.

She says the resurrection process may have evolved through the prolongation, in adult plants, of mechanisms which protect seeds against death in the often extended phase of dormancy before they imbibe enough water to germinate. In some plants, this phase is known to extend to the seedling phase, when the plant is at risk of dehydration because it lacks an adequate root system. Some plants, like Sporobolus, may have taken this one step further, so that they can survive prolonged desiccation even when mature. The possibility that adult resurrection plants have retained a protective juvenile trait is suggested by the fact that in mature plants, only young leaves resurrect – older, senescent leaves die.

The Monash researchers have found that sugars increase in the cells of resurrection plants during desiccation they have detected increased levels of sucrose, while British researchers have identified an increase in a sugar called trehalose, which seems to have preserving properties. One theory is that sugars replace the water in macro-molecular assemblies, as well as preserving the structural integrity of cellular organelles, including the green chloroplasts needed for the rapid resumption of photosynthesis after rehydration.

If the resurrection genes can be isolated and cloned, genetic engineers may be able to endow pasture and forage plants with the ability to survive periods of severe drought. The Australian Meat Research Corporation is sponsoring the project, which has also received an Australian Research Council grant.

From Research Monash 1

Defusing the playtime debate

"Some of the children in my study played in a very overactive way with toys, tearing around, killing other children and dying themselves – but it wasn't genuinely aggressive," she said.

"Freudians would say that this type of behaviour is cathartic, that the emotional mastery gained teaches the child more control when a genuine situation arises. While I think there's some evidence for that, it may be more fundamental – it may have more to do with the fact that a child can say: 'This is only a toy, I will subjugate it to my play needs', whereas the more aggressive child may say: 'This is a gun, I will behave more aggressively'."

Ms Jenvey said that in play children seemed to rehearse a much wider repertoire of behaviours than they would ever need as adults. With all types of toys, they behaved in unexpected ways. "I think it is impossible to say whether a toy is educational or not – children will always adapt it to their play needs. One of the boys in my study built the most elaborate guns out of Lego," she said.

The 'million-dollar question', according to Ms Jenvey, is whether children who display advanced social skills during play, including the ability to make social contact with other children and to deflect real aggression, learn these skills, or whether they are largely inborn.

"One theory is that they are completely learned and that children who experience no limits on their behaviour in the home environment grow up lacking self-discipline, or any sense of proportion in their social behaviour," she said.

"The other view is that such children are born with a lack of impulse control, which is reinforced when they display antisocial behaviour at home or at school."

Ms Jenvey leans towards the former explanation, although both may contribute. Some children display exceptional skills in deflecting aggressive behaviour by other children.

"One child in my research who had the highest rating of aggression rolled a baby cradle into another child with considerable force," she said. "The other child simply said: 'No, I'm not going to put the baby to bed now.' I found it surprising that a child of six or seven was able to deflect the provocation so effectively."

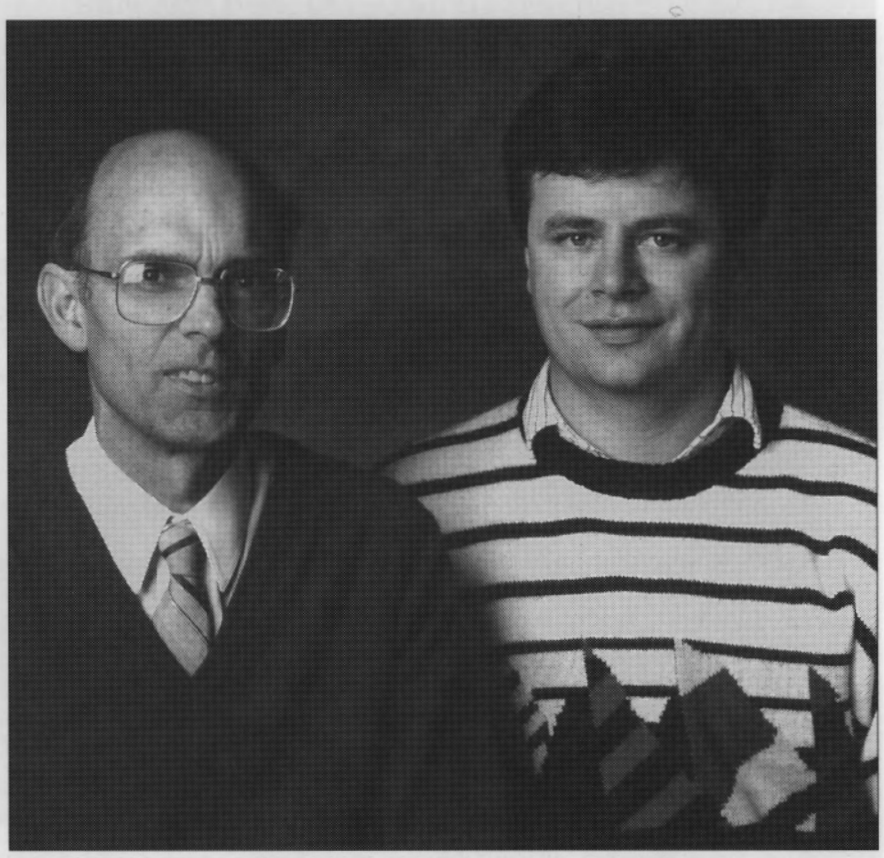
This type of behaviour – interpersonally effective behaviour – demands enormous cognitive skill. "For instance, if a big boy comes along and gives you a poke, did he mean it to be friendly or hostile and how do you respond?" Ms Jenvey asked. "How do you know if it's not a real hit if some boy hits you during play? What cues are the children using?"

Overseas studies have looked at how children deal with the ambiguity of pretend and rough-and-tumble fighting, which is the essence of play. Play, she says, provides a forum for developing the social skills necessary to become a socially competent adult.

Ms Jenvey says some children seem to learn to tell the difference and learn to read the signals appropriately. Some of the most socially effective people in the community are those who can assess accurately the intentions of others and respond in an appropriate way. In the face of aggression, they do not react with aggression. They deflect the aggression of others often by being assertive and socially effective, rather than by being aggressive and antisocial.

Breathing easy with newborn knowledge

Dr Richard Harding has not only discovered how a fetal lung develops while in the womb, but also identified ways to reduce the incidence of breathing abnormalities later in life. Graeme O'Neill looks at how this Monash physiologist has redefined the medical profession's understanding of a vital stage of human development.



Dr Richard Harding (left) and Dr Stuart Hooper.

For many years, biology textbooks have taught that mammalian fetuses, in the months before birth, practise breathing by inhaling the amniotic fluid which surrounds them. This mechanism supposedly expands their lungs, which develop in a collapsed state, in preparation for the transition to breathing air at birth.

That information is wrong, according to Dr Richard Harding, of the Department of Physiology, who was awarded the medical faculty's Silver Jubilee Research Prize for his studies into fetal lung development. "The fetus doesn't inhale amniotic fluid, but produces its own secretions – a clear, saline fluid that flows out of the lungs and contributes to the amniotic fluid," he said. "In fact, amniotic fluid is full of fetal excretions and cellular debris, and if amniotic fluid enters the lungs it can cause damage."

Dr Harding says he and his colleagues have been investigating fetal lung growth, especially influences that can cause lung growth abnormalities. "We've come up with some interesting new data, which is taking some time to be accepted," he said. "Our work suggests that the fetal lungs are not formed in a collapsed state, but develop in an overexpanded state compared with the newborn air-breathing condition."

This overexpansion, he believes, is crucial for the normal development of the fetal lung. Any condition that interferes with it can have consequences that will affect the individual throughout life.

"Scientists in Britain made an epidemiological study of the birth weights and placental weights of thousands of men, and found an interesting correlation between these measures and their later health," Dr Harding said. "For instance, they found that the smaller the birth weight in relation to the placental weight, the more likely the person was to develop high blood pressure and respiratory disorders. Low birth weight also seemed to predispose people to chronic lung disease."

Some of these correlations, Dr Harding suspects, are due to problems with fetal lung growth. He and his colleagues have been studying lung growth in sheep embryos during the second half of gestation – the sheep is a good model for studying human lung development.

"In 1983, John Wickham, a talented bioengineer working in our department, developed a flow meter which allowed us for the first time to measure liquid flow into and out of the fetal lungs," Dr Harding said. "It allowed us to determine how lung volume and growth are regulated. Essentially, we found that the fluid makes a one-way trip, the fluid produced by the lungs leaves the lungs, mostly during periods of fetal breathing, and very little returns.

"Our next conceptual leap was to understand how fetal breathing movements work – it has been suspected for a long time that they are important in lung development, but nobody knew why. We found that this 'breathing' takes place about 50 per cent of the time in healthy fetuses, and seems to maintain the lungs in an expanded state. But it doesn't do this by drawing liquid in – it does it by slowing the rate at which liquid leaves, via a natural valve in the larynx. If fluid leaves the lungs too rapidly, lung growth slows and the fetus ends up with smaller, less effective lungs."

Dr Harding and his colleague Dr Stuart Hooper have been manipulating fetal lung distension – when the fetus 'breathes', the natural resistance of the larynx valve creates pressure in the lung which stretches its tissues, stimulating growth. "It turns out that the lung is very sensitive to the amount of distension," Dr Harding said. "The lung's volume doesn't change much, but if you alter the volume for a period as short as three to four days, it can result in marked changes in lung growth."

"If the lungs are underexpanded during the period of fetal growth, they may never catch up."

The Monash researchers think this important finding explains why some fetuses experience problems in lung growth and development. Interestingly, the pool of amniotic fluid surrounding the fetus does have an indirect influence on lung growth – by allowing the fetal lungs to maintain their expanded state. In the absence of amniotic fluid, the lungs of the fetus become compressed because the fetus is forced into a more constricted position. Rupture of the amniotic sac in the last trimester is not uncommon.

"We think that overdistension is an essential stimulus for lung growth – not just for tissue growth, but for the modelling of the airways and the growth of the network of tiny blood vessels through which gas exchange occurs," Dr Harding said. "About 23 generations of branching are required before the alveoli in the lungs reach full development. In humans, about 17 of these generations occur before birth. If the lungs are underexpanded during the period of fetal growth, they may never catch up. The lack of tiny airways and alveoli formed during the final generations of branching can have an enormous effect on the surface area available for gas exchange."

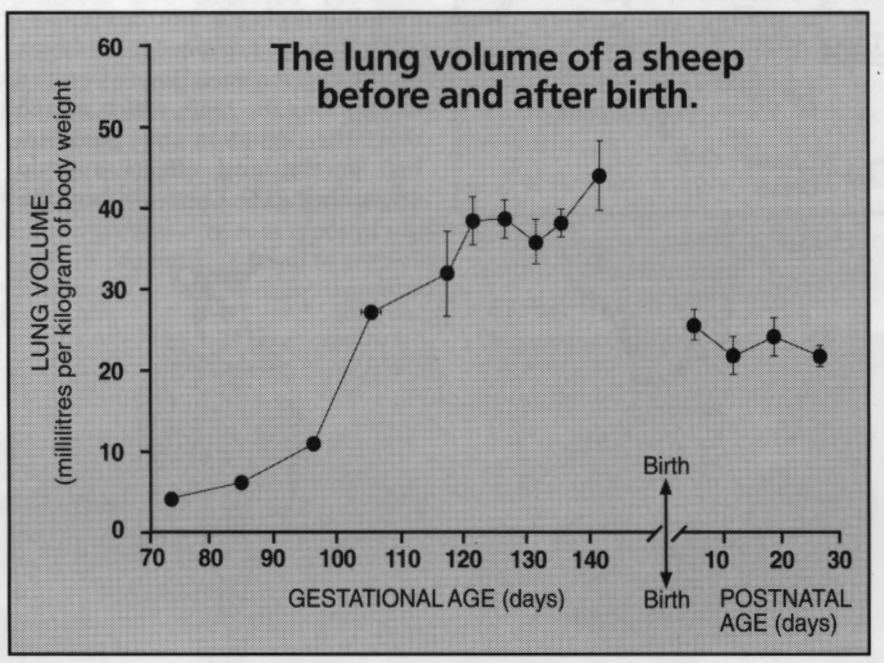
Dr Harding says insufficient lung expansion or too short a period of fetal development may account for the higher incidence of asthma and other respiratory disabilities in premature babies or babies who experience problems with lung expansion before birth. Babies born with a herniated diaphragm – a quite common congenital abnormality – usually suffer severe respiratory problems; many die because of underdeveloped lungs.

The new information may help overcome problems associated with underdeveloped lungs. "We've been thinking about using the fetal lung's tremendous sensitivity to stretching to try to overcome growth deficits," Dr Harding said. "Diaphragmatic hernias can be repaired surgically after birth, but the results are not always good because the lungs are still underdeveloped. Theoretically, if a problem could be picked up early with ultrasound, it should be possible to block the trachea to maintain normal lung expansion and stimulate lung growth."

In the longer term, Dr Harding and Dr Hooper hope to identify hormone-like growth factors that may be produced by lung tissues in responses to stretching – by supplying these growth factors, it may be possible to induce lung growth even in the absence of the stretching stimulus.

Dr Harding believes that high birth weight, full-term babies suffer fewer respiratory problems because they have the maximum opportunity to complete their lung growth. "This is intriguing, because a lot of experts still think that provided a baby makes it past the newborn period, everything will be fine," he said. "But we are now learning that respiratory problems do not just begin and end with the lungs – an adequate oxygen supply is essential for the development of the brain, and if lung development is sub-optimal, it can impair development of the central nervous system.

"The two things work hand in hand – the brain controls lung function, but you must have proper lung function to get normal brain development."



The fetal lung develops in an overexpanded state compared with the breathing condition after birth.

The demise of the Minoans

A unique collaborative study between three Monash researchers continues to shed new light on the catastrophe that overtook the Minoan civilisation in the Aegean Sea more than 3600 years ago.

The Bronze Age Minoan civilisation, whose capital was the city of Knossos on the island of Crete, emerged around 2500 BC and spread to adjacent islands in the Cyclades group. The archeological record on Crete suggests that their civilisation collapsed around 1400 BC, when the Mycenaeans from mainland Greece, to the north-west, invaded Crete.

For some time, volcanologists, like Dr Ray Cas of the Department of Earth Sciences, have suspected that the violent eruption of Santorini, a huge volcano on the island of Thera, 130 kilometres from Crete, weakened Minoan civilisation so severely that it eventually succumbed to invaders. But archaeologists, including Dr Peter Bicknell of Monash's Department of Greek Roman and Egyptian Studies, have found it difficult to accept that even the most violent eruption could have dealt a mortal wound to the heart of Minoan civilisation at such great distance – 130 kilometres of blue Aegean water separate Crete from Thera, in the southern Cyclades.

The conventional view, according to Dr Bicknell, is that Crete escaped the effects of the eruption, and that the dislocation of the Minoan civilisation may just have been part of a more general dislocation of Bronze Age civilisations around the same time.

But that would be to ignore the scale of the Santorini eruption, the largest in recorded history. In places, the volcanic ash deposits on Thera itself are 30 metres deep. The eruption was about eight times more powerful than the one that destroyed the Indonesian island of Krakatoa late last century.

A previous edition of *Montage* reviewed Dr Cas's theory that a pyroclastic flow – an incandescent cloud of volcanic gas and ash – supported on a layer of vaporised seawater, rapidly traversed the 130 kilometres from Thera and swept over the island. *Montage* has also reported on efforts by Dr Joe Monaghan, of the Department of Mathematics, to develop mathematical models which simulate fluid flow phenomena – the movement of a pyroclastic flow over water, and the way in which tidal waves may have interacted with the sea floor before arriving on the coast of Crete.

Dr Bicknell, who made a field trip to Thera and Crete with Dr Monaghan in 1992, has been attempting to reconcile the archaeological record with these violent events. "Originally, I thought it was rubbish," Dr Bicknell said. But he now finds his colleagues' evidence persuasive. "There is no doubt that violent eruptions can generate tidal waves and pyroclastic flows that travel long distances over water without sinking," he said. "Ray has been able to demonstrate that an earlier, smaller eruption on the Aegean island of Kos generated a pyroclastic flow that travelled 80 kilometres across water, so it is plausible that a much bigger eruption could send a flow 130 kilometres to Crete."

The pyroclastic flow may not have travelled over water for the entire distance. Dr Cas now thinks that during the Plinian phase of the eruption, preceding the main explosion, Santorini carpeted the Aegean with an extensive mat of floating pumice. After Indonesia's Krakatoa eruption, people were able to walk on a layer of pumice covering the sea; such a layer may have helped the much bigger pyroclastic flow from Santorini travel over the surface of the Aegean as far as Crete, with disastrous consequences for the Minoans. Tidal waves travelling at close to the speed of sound may have swamped coastal settlements on Crete, arriving before and/or after the pyroclastic flows.

Complex evidence of massive fires on Crete may confirm that the pyroclastic flow was as destructive as the tsunami (tidal wave). The topography of Crete is such that it may have flowed right across lower lying areas of the island, incinerating anything and anybody in its path. Grass fires may have magnified the destruction. "There is evidence of massive burning and destruction right across the island," says Dr Bicknell. "Destruction which need not, as many have assumed, have been associated with a single event."

Dr Bicknell says that when British archaeologist Sir Arthur Evans began excavating Knossos early this century, he noted a horizon of mass destruction, but attributed it to a single wave of military activity. Palaces built during the height of the Minoan civilisation, around 1700 BC, had burned down along with entire townships and isolated mansions in the countryside. The current orthodox view holds that the destruction was due to the towns being sacked and burned in battles associated with the Mycenaean invasion, which would suggest that the Minoans were already in decline before the eruption.

Dr Bicknell explained that a Greek archaeologist named Doumas wrote a book during the 1980s which argued that the eruption of Santorini had purely local effects and no serious impact on Crete. He dated the eruption to the sixteenth century BC. Recent research has suggested that the Santorini eruption took place much earlier, in 1628 BC. Dr Bicknell says this date has thrown Aegean archaeology into confusion. The late Minoan 1A pottery phase, within which the eruption took place, may have to be reassigned to a date earlier than previously envisaged.

Dr Peter Bicknell: an advocate of interdisciplinary studies.

Late Minoan 1A pottery was decorated with bands of abstract designs and featured plant motifs such as leaves and tendrils. Its successor, Late Minoan 1B, is enigmatic in that pictorial design underwent a marked change. Featured were marine motifs, octopuses, starfish, anemones and seaweed. Dr Bicknell says many such pots were used for ritual purposes – were the Minoans attempting to placate angry sea gods? Evidence suggests that by the end of Late Minoan 1A some people in Crete had moved from low lying to higher ground. Did they fear repetition of Santorini's tidal waves?

Dr Bicknell says the previous lack of interdisciplinary studies had led archaeologists to an overly simplistic view of Minoan history. "If there had been more contact between archaeologists and volcanologists, the idea that the Santorini eruption had caused no problems would never have got off the ground," he said. "At present, Crete's archaeology seems to be at odds with what is known about the region's violent volcanic history." Dr Bicknell says he subscribes to the view that Minoan civilisation survived the Santorini cataclysm, but in a weakened state, and slowly fell under the influence of the Mycenaeans. By around 1400 BC, Crete was merely an appendage of mainland Greece.

Late Minoan 1A pottery (left) featured abstract designs, while late Minoan 1B pottery displayed images of the sea.

Through tragedy comes life

At the age of 23, David faced a bleak future.

David (not his real name) suffered from the crippling bone disease osteosarcoma, and was told leg amputation was the only cure.

Ironically, his leg was saved by the tragic death of another man. The family of the recently deceased man agreed to donate their relative's bone for transplantation.

Instead of amputating David's leg, surgeons removed the diseased bone and grafted the donated tissue in its place, allowing him to resume a healthy and normal life.

David is one of more than 250 people to receive a tissue donation from the Donor Tissue Bank of Victoria each year.

The tissue bank is part of the Victorian Institute of Forensic Pathology (VIFP) which operates as Monash University's Department of Forensic Medicine.

It supplies urgently needed heart valves, bone marrow, bone tendon, ligaments, blood vessels, corneas, sclera and skin to hospitals throughout Australia.

Until the tissue bank was established in 1989, there was no systematic organisation in Australia for the retrieval of tissue for transplantation.

Located at the VIFP, at the Coronial Services Centre in South Melbourne, the bank provides a central location for the acquisition, processing, storage and distribution of tissue for transplantation.

A donated heart valve may save the life of an adult or child with a defective valve, or greatly improve the life of someone with valvular heart disease.

Last year the tissue bank responded to about 70 urgent requests for donated heart valves from cardiac surgery units at hospitals in Melbourne, Brisbane and Hobart.

Every month about 25 bone donations are also supplied to hospitals in Melbourne, Sydney and Brisbane for orthopaedic and plastic surgery, such as total hip revision, spinal fusions, and joint reconstructions.

The donor tissue bank began supplying bone in December 1991, and in the first nine months sent 52 bone donations to surgeons around Australia.

The most frequently transplanted tissues are the highly effective corneal transplants which restore sight when blindness is caused by corneal damage or disease.

In most Australian capital cities, Lions Eye Banks also collect corneas for transplantation.

The tissue donor bank has recently received a grant from Esso, allowing it to establish skin banking on site.

Skin donations are used for chronic unhealed wounds, such as burns and ulcers. Skin allografts (donated skin) are replaced regularly until enough autograft skin (skin from the patient) can be obtained.

A self-funding, non-profit organisation, the bank recoups the cost of procurement, processing and testing of the tissue by charging hospitals a small fee.

A major concern regarding organ and tissue donation is how quickly families must be approached after the death of a patient.

Unlike organ donation, which occurs while a patient is brain dead but being maintained on a ventilator, tissue donation is possible after the blood has stopped circulating.

Corneas need to be taken within 12 hours of death, and heart valves and bones within 24 hours.

Scientist-in-charge at the tissue bank, Ms Lyn Ireland, said lack of community discussion on donation and transplantation and the subsequent lack of knowledge of the wishes of the deceased was the major reason relatives withheld consent.

Other reasons include families being ethically opposed to donation, or not wanting to face more invasion and trauma from the death.

Transplant coordinators, who have nursing backgrounds and are experienced in grief counselling, contact the family of a person who has recently died to discuss possible donation and offer support.

In the past year, coordinators approached 224 families of recently deceased people, with 75 per cent giving permission for tissue to be taken for transplantation.

Once consent is obtained, the tissue is surgically removed, processed and stored until a suitable recipient is found. Corneas are stored at 4° Celsius, bones at –80° Celsius in a freezer, and skin and aortic valves are stored in the vapour phase of liquid nitrogen.

The Donor Tissue Bank of Victoria has undertaken an extensive program of public education over the past year.

Staff have visited and made presentations to many professional organisations and community groups including the Australian Funeral Directors Association, Victoria Police, the Venturer Scouts Association, and various hospitals, service clubs and schools.

An ecumenical service of thanksgiving is held every year in Victoria to recognise donor families, recipients and people working in the area of organ and tissue transplantation.

According to the latest annual report, the bank was established to "offer relatives the opportunity to salvage something positive from a death by considering donating tissue for transplantation".

Ms Ireland said most families who agree to donate their relative's tissue are pleased that some value and purpose has come from their loss.

The family who donated the bone marrow that saved David's leg said they agreed to the transplant because they could see "how such a gift could enhance the quality of life of the recipient".

The 1994 service of thanksgiving will be held on 5 June at 2 pm in the Wesley Church in Lonsdale Street, Melbourne.

BY GEORGIE ALLEN

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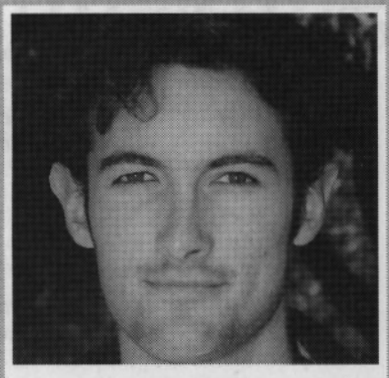
Too much violence on television?

Do you think there should be greater control over the amount of violence shown on Australian Television?

Ms Susanne Hatherley, manager, Marketing Unit, Office of University Development, Clayton campus.

"No – if the issue is control, I think there are adequate controls over violence. What is needed is less community demand for violence in television. The fact is that violence rates, and if it didn't they wouldn't show it."



Mr Scott Maloney, fourth-year chemical engineering student, Clayton campus.

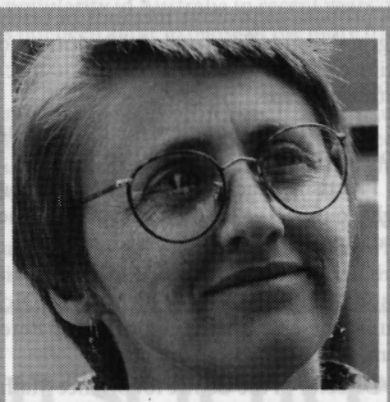
"No – People can always get access to violence. The amount of violence on television has not changed that much, it is just shown differently... The increasing number of guns and violence can't necessarily be attributed to increased violence on television. John Wayne used to go around shooting everybody in 1940s Westerns."

Mr Andrew Pearl, fourth-year law/arts student at Melbourne University.

"I think there should be greater control because what it's doing is raising people with the idea that violence is normal. Once you get to an older stage you can look at violent shows and evaluate them and say I'm not going to be influenced by this. If schools and parents try and teach [their kids] 'don't be violent' but then every single film that you see for boys around 12 years of age has got violence in it, it's giving them two messages."

Ms Zoe Hill, first-year arts student, Clayton campus.

"No – Parents should control children's viewing... At the beginning of each program there are sufficient warnings. When you get into other areas such as computer games there should be censorship but for television the parents should do it."



Ms Helen Edwards, administrative officer, Faculty of Arts, Caulfield.

"I think that it doesn't matter what you do with violence on TV. You can help your children by supervising them. I'm happy with the controls at the moment."

Mr Aris Damalas, first-year engineering student, Caulfield.

"Yes. Children have greater access to TV these days because parents will plant a kid in front of a TV to try to keep them quiet. A lot of kids' programs are actually quite violent."

Ms Tracey Stewart, first-year arts student, Clayton campus.

"Yes – It [violence on television] does influence people to a degree. People become desensitised to violence and society becomes more accepting of violence in general."

Hamish Aikman, final-year student, Bachelor of Business Management.

"Yes. I think the level of violence at the moment is too high, especially for young children. I'm not sure of the degree that it is affecting children, but I'm sure it's having some impact. I think the burden of responsibility has to be shared by as many people as possible – parents and those who are showing the programs..."

Ms Downy Aitken, sessional tutor and masters student, Department of Geography and Environmental Science.

"Yes – I feel that the amount of violence shown on television is even more important than the amount of sex shown on television because violence is more influential. I have a young daughter and she could be influenced."

Boost for tax research

A commemorative plaque has been unveiled in the Law faculty library acknowledging a $30,000 donation by the accounting firm Arthur Andersen and Associates.

Law Librarian Mr Nicholas Pengelley said the money was donated to the faculty over three years and is being used to develop Monash's collection on tax law research materials.

"About two years ago, the company contacted the Monash Law school and made an offer of money to help us with our tax law collection," Mr Pengelley said.

"Because of their interest in promoting excellence in research and highly qualified graduate experts in the field of tax law, Arthur Andersen have a real interest in ensuring the availability of the necessary tools.

"The money has been spent on buying tax-related research resources, including books, journals, CD-ROMs, and arranging access to electronic databases.

"Thanks to the donation, Monash has one of the best tax collections in Australia.

"There is still money to spend, and we are going to expand a lot more into the taxation area."

Managing partner of Arthur Andersen Mr Peter Gutwein (left) with the dean of Law, Professor Bob Williams.

Biochem student scoops the pool

PhD student Ms Karina Johnson has been presented with the Merck Medal in Biochemistry, recognising an "outstanding performance" during her 1993 honours year at Monash University.

It is only the fifth time the medal, which goes to exceptional first class honours graduates in biochemistry, has been awarded since it was established in 1967.

Following an excellent academic year in 1993, Ms Johnson was ranked first on the departmental order of merit list for PhD scholarship applications in 1994.

She was also awarded the Sir James McNeil Foundation Postgraduate Scholarship, an award made for outstanding merit in the fields of engineering, medicine, music or science.

Her PhD topic is 'The role of apoptosis in ageing and disease'.

Ms Johnson completed her high school studies in Georgia, US, and enrolled in a Bachelor of Science degree at Monash University in 1990.

Previous recipients of the Merck Medal have been Ms Anita Green (1970), Ms Amanda Carrotssi (1984), Ms Anne Verhagen (1988) and Ms Meredith Layton (1990).

Ms Karina Johnson receives the Merck Medal in Biochemistry from the managing director of Merck Pty Ltd, Mr Hans Schroeder.

Monash student wins scholarship to Scotland

Monash arts student Ms Penelope Rush has won the General Accident Australian Bicentennial St Andrews scholarship to Scotland.

The fourth-year student will commence her year of study at the University of St Andrews in October.

The scholarship, awarded by UK-based General Accident Insurance and its Australian counterpart NZI Insurance, was granted on academic merit.

The managing director of NZI Insurance, Mr Rex Parker, said Ms Rush had an outstanding academic record.

"Her enthusiasm for study and thirst for knowledge, particularly in the field of philosophy, is infectious," Mr Parker said.

Ms Rush hopes to gain a PhD and sees her time in Scotland as a stepping stone towards her goal.

"I have never travelled outside Australia before and, with Scottish ancestry and stories from my grandparents, I know I will love Scotland," she said.

"Academically, this will set me on a very definite path to become a challenging and successful philosopher."

The scholarship includes full tuition fees, accommodation, transport and a living allowance for the year.

Constructing a sense of science

Federal ALP President, Mr Barry Jones, recently launched a book co-edited by three senior members of Monash University's Faculty of Education.

The Content of Science explores the use of constructivist approaches to teaching and learning science.

The dean of the faculty and one of the book's co-editors, Professor Richard White, said the principle of constructivism was basic but far-reaching.

"All of us construct our own meanings for what we experience. Our constructions depend on what we already know, as well as our physical and emotional states and our abilities," Professor White said.

"Good teaching takes into account the fact that those attributes differ from student to student," he added.

Some chapters provide a theoretical account of constructivist approaches, others propose innovative methods of teaching, and some offer detailed descriptions of children's understanding of particular scientific concepts.

The book is the result of an international workshop held in the faculty in 1992.

Practising teachers and academics from eight countries wrote draft chapters and met to discuss each other's work.

The final product was edited by Professor White, Associate Professor Dick Gunstone and Emeritus Professor Peter Fensham.

Director of the Centre for Science Mathematics and Technology Education, Dr Paul Gardner, who hosted the launch, said this process resulted in a book with an unusually high level of coherence.

Co-editors Associate Professor Dick Gunstone, Professor Richard White and Emeritus Professor Peter Fensham with Mr Barry Jones (second from right) at the recent launch of *The Content of Science*.

The complete bar and bistro

Construction of the Gryph-Inn Bar and Bistro on Caulfield campus has been completed.

To mark the event, a dinner was held recently for the more than 140 people involved in planning, constructing and fitting out the building.

The bar and bistro, which is named after the Caulfield campus student union logo – the gryphon – will open to staff, students and the public once a liquor license has been granted.

The new facility will seat more than 100 people in the bistro and more than 300 people in the bar/lounge area.

The building, which is part of the Student Union's ongoing building and development program, was funded from the fees of past and present students.

Postal points

Monash University is considered one of Australia Post's most valued customers.

Did you know:

- the university sent 1,830,000 items through Australia Post last year, a 25 per cent increase on the year before;
- the Monash University mail room sorted 2,600,000 items of external and internal mail in the past year;
- Monash is one of Australia Post's top 30 Victorian clients, coming behind major banks and government utilities.
- post from the university makes up 0.6 per cent of the state's mail;
- on campus, Australia Post delivers to central services, the book shop, the libraries, the halls of residence and the administration department;
- Monash University featured at a recent Australia Post expo at the Melbourne showgrounds.

The arts gallery

■ Monash University Gallery

Through the Surface: Jonas Balsaitis, Paintings 1968 – 1992.

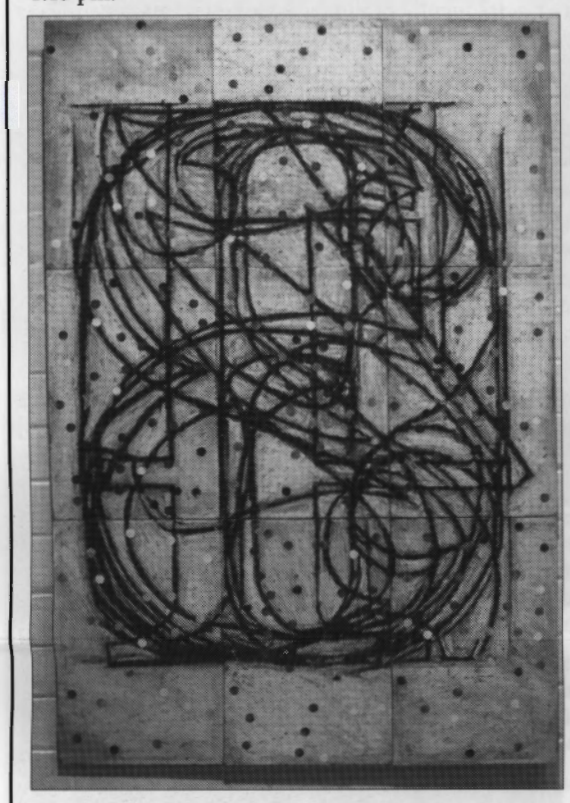
A comprehensive survey of paintings by Australian artist and filmmaker Jonas Balsaitis. The exhibition runs until 14 May.

Looking at Seeing and Reading. 20 May to 25 June.

The exhibition, which was originally mounted by the late Ian Burn at the Ivan Dougherty Gallery in Sydney, looks at the perception and language in the art of the past three decades.

Artists include Carl Andre, Shusaky Arakawa, Richard Dunn, Lucio Fontana, Robert Hunter, Jasper Johns, Narelle Jubelin, Joseph Kosuth, Sol LeWitt, Tony McGillick, Bea Maddock, Barnett Newman, Susan Norrie, Michelangelo Pistoletto, Melb Ramsden, Jacky Redgate, Ad Reinhardt, Ed Ruscha, Imants Tillers and Peter Tyndall.

A floor talk will be given on Wednesdy 25 May at 1.15 pm.



From the *Looking at Seeing and Reading* exhibition: Immants Tillers, Counting (0 through 9) III, NO. 11640-11649, 1987.

Passage: Spatial Interventions. 19 May to 25 June.

An exhibition of three-dimensional work that responds to the institutional structure of the gallery. Sculptural interventions by young artists Helga Groves, Callum Morton, Deborah Ostrow and Gary Wilson consider the way the interaction of art architecture shapes the visitor's experience. The exhibition is part of the Next Wave Festival.

■ Alexander Theatre

The Crucible. From 20 May.

One of the Sydney Theatre Company's most successful productions in recent years finally heads south for its only Melbourne season at the Alexander Theatre.

The Salem witch-hunts of 1692 provide the chilling background for this modern classic of American theatre. With the scale and power of a grand opera, this stirring play explores the hysteria and personal feuds that divide a puritanical farming community.

Richard Wherrett's acclaimed production has had several public-demand return seasons in Sydney since it premiered in 1991.

To book, contact extn 51111.

■ Robert Blackwood Hall

The Monash Series by the Melbourne Symphony. 13 May at 8 pm.

Always a favourite of Australian audiences, popular American conductor and Principal Guest conductor of the Queensland Symphony Isaiah Jackson will lead the orchestra in Bernstein's exhilarating overture to *Candide*, Copland's atmospheric *Quiet City* and Dvorak's Eighth Symphony. The program also includes the world premiere performance of Australian composer Gordon Kerry's new Viola Concerto, written for the brilliant young American soloist Karen Elaine, who is making her first visit to Australia.

Bookings can be made by contacting BASS on 11500 or by calling the Alexander Theatre Box Office on extn 51111.

Bookworm

The Monash Bookshop on Clayton campus has thousands of books for study and leisure reading. What many people don't realise is that many of the books are written by Monash staff.

In an occasional column to be run in *Montage*, the works of Monash's many highly acclaimed academics will be reviewed.

The most recent collection of published works includes a book on culture, one on Australian history and another about public administration.

Rethinking Imagination: Culture and creativity

Edited by Gillian Robinson and John Rundell

Published by Routledge

Recommended retail price $29.95

This book presents a collection of papers that investigates the relation between the imagination and modernity.

It discusses different concepts of imagination and argues for positive interpretations. It also provides glimpses of the role of the imagination in the creation and understanding of modernity.

Ms Gillian Robinson is a lecturer in the Department of Anthropology and Sociology.

Creating a Nation

By Patricia Grimshaw, Marilyn Lake, Ann McGrath and Marian Quartly

Published by Penguin Books Australia

Recommended retail price $19.95

This book challenges the traditionally held view that only men have been responsible for Australia's political, economic and cultural generation.

Creating a Nation asserts that whether in giving birth to babies, sustaining communities, creating wealth or shaping a maternalistic welfare state, women have played a major role in the nation's development.

Three chapters have also been devoted to the Aboriginal experience.

Marian Quartly is a professor of History and dean of the Faculty of Arts.

Public Management and Administration: An introduction

By Owen E. Hughes

Published by St. Martin's Press

Recommended retail price $32.95

A new form of public administration is emerging throughout the industrial world. The rigid, hierarchical, bureaucratic system so familiar for most of the twentieth century is giving way to a more flexible, market-based form of public management.

The book asserts that this 'new managerialism' represents not simply a change in management, but a transformation of the role of government in society.

Dr Owen Hughes is assistant director of the Public Sector Management Institute.

A steamy production

Steaming, a wickedly funny comedy, gives you the chance to eavesdrop on women who meet in a Turkish bathhouse.

This award-winning play is famous around the world. The characters are six strangers from vastly different backgrounds who develop a special relationship over the course of a very moving and funny play.

The kaleidoscope of fascinating characters is played by an outstanding cast. Belinda Giblin, who starred in 'The Box' and 'Sons and Daughters', is Josie who can only express herself through sexual relationships. Betty Bobbit, of 'Prisoner' and 'Nunsense' fame, plays Mars Meadow, a relic of the Victorian era. Mrs Meadow has her work cut out for her trying to control her simple-minded daughter played by Ingrid Menge, who has appeared in 'A Country Practice'. Cornelia Frances, who has starred in 'Young Doctors' and 'Home and Away', is the manager of the bath house who dispenses bath towels, wisdom and a friendly ear in equal proportions. Finally, Shayne Foote and Elspeth Mactavish play two middle-class school chums who meet again after suffering broken marriages.

Steaming is playing at the George Jenkins Theatre on Peninsula campus from 30 May until 1 June. Bookings can be made on extn 44300.

The production will be showing at the Alexander Theatre on Clayton campus from 2 until 11 June. To book, contact extn 51111.

Unravelling the business of law

Law is a complicated business – full of jargon and styles of discourse often unintelligible to the lay person.

A new text co-authored by Monash lecturers, *How To Study Business Law*, attempts to demystify law studies for students, particularly those speaking English as a second language.

Monash University's Language and Learning Services lecturer, Ms Glenda Crosling, and Victoria University's Educational Development lecturer, Ms Helen Murphy, joined forces to write the text.

Published by well-known legal publisher Butterworths, the book also includes a chapter written by Monash business and management law lecturer Mr Lyall Phillips.

The authors believe the easy-to-read book makes law studies more accessible to students, particularly those from non-Anglo cultures.

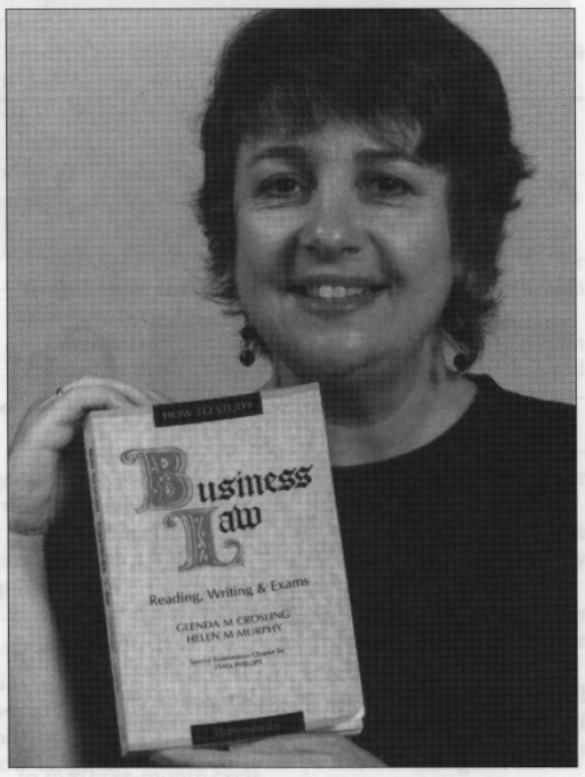
The language of the Australian legal system is formal and difficult even for native English speakers to understand.

How To Study Business Law offers strategies and techniques to tackle law subjects, especially in business courses, and provides insight into the logic underpinning the use of language and thinking patterns in law.

Ms Crosling is responsible for developing and presenting the program 'Legal language for commercial law', which attracts many international students. The program is available through Language and Learning Services on Caulfield campus.

Mr Phillips also takes part in the program, teaching exam strategy workshops at the end of the semester.

Topics covered in the book include skills for coping with vocabulary, how to read texts more effectively, how to approach cases, essay writing skills and writing answers to problem questions.



Ms Glenda Crosling.

In addition, a detailed analysis of problem questions and students' essays is included. The final chapter, contributed by Mr Phillips, focuses on exam strategies.

The book, which has only been on the market this year, has already been placed on student reading lists for law subjects in business courses throughout Victoria.

Aligning humanity with education

by Dr Steven Sommer

In 1979, as a 16-year-old first-year medical student, I nervously listened to Dean Schofield welcoming some of the "brightest" students in the state to the Monash Medical School. I remember looking around and thinking, "What am I doing here with all of these brainy people?"

I chose a career in medicine because of my desire to help others and my interest in biology. During the ensuing years, I experienced a course which stimulated my interest without nurturing my desire to help others.

The lack of sensitivity to the human needs of the students was highlighted in my third year when my study-mate's father died suddenly from a heart attack at age 47. The lack of sensitive support for his pleas for special consideration culminated in him sitting a supplementary exam when he really needed a break. He completed the course but this whole episode left him with some scars and sent shivers down my spine.

After two years of residency at the Alfred Hospital I took a year off and travelled overseas where I began to recover from the often dehumanising effects of my training and hospital work. Despite practising medicine to a minimal degree in this year, it was a vital time in my development as a doctor. My desire to help others was rekindled as I began to recognise the importance and the simple joy in genuine human interaction. I learnt meditation during this year and it assisted me greatly in my personal development process.

It was much later that I became aware of the disturbing figures relating to doctors' psychological health. Surveys suggest that many doctors regret having followed a medical career path. Further reports indicate drug and alcohol abuse rates in doctors up to 30 times greater than the general community, suicide rates two to six times greater, and marital breakdown rates also at higher levels than our patients. There is also evidence that these effects are transferred to the families of doctors. Studies suggest that these problems may begin in the training years and I now believe that much of this can be avoided.

The paradox as I see it is that we would like our future doctors to be caring health professionals but as medical educators we do not set an adequate example by caring for them. At Monash this is beginning to receive some recognition with communication skills teaching and stress management sessions allowing some personally and professionally beneficial skills to be learnt. While the current course is an improvement on the version I experienced, there is still room for change. This is evidenced by the 70 per cent of students who indicate that they would like further assistance following the meditation–based stress management sessions run by Dr Craig Hassed and myself.

It is important to recognise that the manner in which we treat our patients can markedly affect their healing processes. My own appreciation of this has run in tandem with some of the fascinating research over the last decade into 'psychoneuroimmunology', which is linking mind and body. It is validating what ancient wisdom has always known and personal experience simply confirms.

Scientists have discovered that there is a two-way communication between the brain and the immune system via nerve fibres and neuropeptides (NPs) released into the blood stream. This communication occurs between white blood cells and an area of the brain associated with emotions. Different emotional states literally flood the body with different NPs which affect the immune system. For example, chronic psychological stress has been shown to have an adverse effect on immunity, while psychosocial interventions, laughter, relaxation/meditation and moderate exercise can all have positive effects on immune function. Furthermore, emotions associated with certain personality traits have been independently linked as risk factors for cancer and heart disease. This may explain the finding from a United States taskforce that job dissatisfaction and overall unhappiness were stronger predictors of coronary heart disease than serum cholesterol, smoking or high blood pressure. Importantly, it has also been shown that personality characteristics are not fixed and following a stress management program unhelpful traits can alter significantly. As this happens, disease profiles can improve. A person's emotional state may well prove to be far more important than their cholesterol level!*

As doctors we are required to deal with all aspects of a person. How emotionally available we can be in a consultation relates directly to our personal development. Studies have shown that if a doctor displays sincere empathy, warmth and genuineness, the placebo effect – a healing response within a patient – is maximised. Empathy, genuineness and warmth can increase towards others as we grow personally and come to a greater sense of ease within ourselves. I believe a doctor's effectiveness as a healer relates as much to this as to his or her technical and communication skills. Medical educators are beginning to recognise this as seen by the inclusion of 'personal development' on the agenda of this year's Australian and New Zealand Medical Education (ANZAME) conference in Newcastle. Dr Hassed and I expect to be presenting at this event.

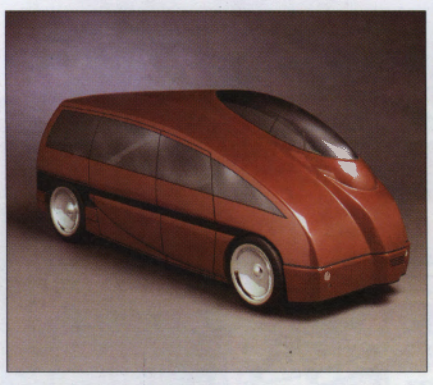
Let me finish with a personal story. Recently, I had a conversation with a nurse who works in an intensive care unit (ICU). She was inviting me to run a meditation session for the ICU staff and in the process disclosed her difficulty in dealing with three patient deaths that day. She lamented that the staff were surrounded by millions of dollars of equipment and yet no time, facility or funds were available for them to debrief their experiences or deal with their stress. It seems that Thackrah's comment made in 1832 is applicable today: "The work people are less thought of than the machinery. The latter is frequently examined to ascertain its capabilities and the former is scarcely ever."

While much of this discussion has related to medical training, I believe that the need to bring the human being back to the centre of education has broader societal implications and is an issue for us all. After all, the origin of the word 'education' means 'to draw out'. As educators, we need to ask ourselves if we are drawing out or 'covering up' our students' humanity. I believe that our abilities to draw out the best from them will be enhanced when we begin to recognise the importance of our own personal growth in this equation.

* A copy of Dr Sommer's discussion paper (with over 55 references) 'Stress, Illness and the Mind - Body Connection' can be obtained by contacting the Department of Community Medicine on 579 3188.

Dr Steven Sommer is a senior lecturer in the Department of Community Medicine and a member of the Royal Australian College of General Practitioners Preventive and Community Medicine Committee. He is also the president of the non-profit organisation The Whole Health Institute.

Cruising into the future



The 2005 taxi features a raised driver capsule for better visibility and safety.

If the imaginative work by three Monash industrial design students is any indication, we are about to experience a radical new chapter in road transport history.

The students have come up with three creative designs that will transport people into the 21st century in a style never before experienced by the average traveller.

According to Monash's third-year course coordinator in industrial design, Mr Mark Wilken, the students have conceptualised a testing brief and displayed great skill in transforming their ideas into highly finished models.

"Each of the designs has its own special features, and there is no question that the thought processes and application that have gone into them are of a standard that any car designer would be proud of," Mr Wilken said.

One of the most difficult briefs was given to Mr Richard Kingsmill, who was asked to develop the next generation taxi.

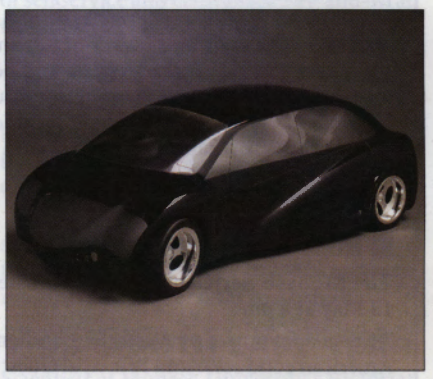
Mr Kingsmill said he was mindful to make the design distinctive so the taxi would stand out in traffic.

One feature of the 2005 taxi is an enclosed driver capsule perched above the passenger compartment, providing better visibility of traffic conditions and total separation from passengers.

Payment is made through an electronic device that can either allow a passenger to record credit card details or pay by cash.

Mr Andrew Dallan-James designed a five-seater family car. The driver sits in the middle of the front section and the passengers sit in a conversation area – two people facing the front of the car and two facing the back.

The car is designed to be rear-engined and offers an on-board computer entertainment package among its interior features.



Mr Andrew Dallan-James's 21 century family car design.

The third car, designed by Mr Anton Saptano, combines 21st century sportscar performance with the practical requirements of family living.

Like the other two, Mr Saptano's design is full of electronic wizardry to add to the comfort and fun of motoring.

His design features highly aerodynamic lines that heighten performance.