

CAMPUS NEWS

Resolution of major issues puts University on strong footing

On Friday 6 December the University Council unanimously past the proposals received from the Reshaping Working Party for 1997.

This follows months of negotiation, consultation and planning throughout the University as a result of the Federal Government's funding cuts to universities announced in the last budget.

During the same week an agreement was reached with the academic staff union (NTEU) on academic salaries and the following week general staff voted to accept a similar package. (*See P3 for details*)

This makes the University of Wollongong the first in the country to reach a decision on these major issues placing the University in a strong position to respond to the challenges of the next decade.

The University is required to make savings of \$5.3 million in each of 1997, 1998 and 1999 in order to meet the planned cuts in funding by the Commonwealth Government and to pay overdue salary increases to academic and general staff now that the Government no longer provides supplementation for salary increases.

Included in the Council resolution

were the following points:

- Student enrolments in 1997 against targets for both domestic and international students will have a significant bearing on the reshaping proposals beyond 1997;

- There be a full review of the University's mission statement and strategic plan to accommodate the constraints arising from the 1996 Commonwealth budget and other developments;

- Before May 1997, the Academic Senate will produce a statement of the desired academic priorities of the University, taking account of the new mission statement and strategic plan;

- Academic units and appropriate faculties be directed to undertake full and considered academic reviews of their academic activities in the light of the new mission statement and strategic plan, stating in the review the full consequences, especially in the quality of learning, teaching and research, of any changes to its activities for itself and for the remainder of the University, so far as can be ascertained;

- All other changes to the academic activities of the University in 1998 and 1999 not be implemented until such reviews are complete;

- Measures necessary to implement changes required for the 1997 academic year specifically exclude amalgamation of academic units or amendment to courses and subjects until specific proposals have been fully considered by the relevant academic units, the relevant faculties and Academic Senate;

- Except as provided in the previous paragraph all measures necessary to implement changes required for the 1997 year proceed;

- Proposals for 1998, after taking account of total enrolments in 1997, will be forwarded to the August 1997 meeting of Council.

Council requested that the Vice-Chancellor report to Council, at its February and April meetings, on the progress of the reshaping strategies and to submit a formal statement to the August meeting on the outcomes to date and the planning for 1998.

Council noted and endorsed the Academic Senate's concern at the limited student involvement in the reshaping process and advised all faculties and relevant operating units that it expects them to provide opportunities for student input into the continuing reshaping discussions.

A summary of initiatives to be undertaken by each Academic Unit and Administration follows:

The Faculty of Arts

The faculty has reshaped into academic programs based on the disciplines of English, History and Politics, Modern Languages, Philosophy, and Sociology, and

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Campus News may go

As part of cost-saving exercises made necessary by the Federal Government's funding cuts, *Campus News* may be discontinued next year.

This may possibly be the last issue.

A news page has been established on the Internet linked to the University of Wollongong page.

It is called 'Making the News' and is a summary of some of the developments and achievements at the University.

Resolution of major issues strengthens University

two interdisciplinary studies areas: Science and Technology Studies, and Communication and Cultural Studies.

The reshaping recognises the changing nature of Arts and the Social Sciences, where exciting developments are occurring at the interstices of the traditional disciplines.

A program structure delivers considerable curricula and staffing flexibility, and allows the faculty to retain its traditional disciplines while enabling the development of innovative interdisciplinary areas. Communication and Cultural Studies, which is essentially an outgrowth of English, Sociology and History, is a case in point.

The new structure allows space for the program, now that it has developed some maturity, to function independently from its two host disciplines in the Faculty, English and Sociology.

The Faculty of Commerce

The faculty has major reserves of \$1.7m and proposes to respond to the reduction by income growth, particularly connected with its new business school.

The reserves will run down to \$850,000 over three years as revenue is increased before the position stabilises in 2000.

The Faculty of Creative Arts

The faculty will undertake further restructuring based on the Faculty Review recommendations. Subject offerings in studio-based areas are being rationalised.

Several vacant positions are being deleted although some are being reconstituted in different ways.

It is proposed that technical staff, who have taught into some programs, will return to their base duties.

The Faculty of Education

The faculty anticipates some growth based principally on contracts already entered and proposes a reduction in some postgraduate offerings.

Required reductions in staff numbers can be achieved through natural attrition due to the staff age profile.

The Faculty of Engineering

A restructuring of subjects in the faculty will create more commonality across the faculty.

Realistic assignment of costs to research and consultancy projects, which have previously been subsidised, will be introduced.

Staff savings will be predominantly through natural attrition. A technical staff

working party is reviewing current deployment of staff and assessing the merits of a central faculty unit.

The Faculty of Health and Behavioural Sciences

The faculty has pursued a strategy of creating efficiencies through course rationalisation, combined with income generation.

This has resulted in a reduction of postgraduate coursework programs, a relocation of the Nutrition and Dietetics program to the Department of Biomedical Science, and increased collaboration within the faculty and with other faculties to share teaching in programs such as Health Science, Mental Health and Indigenous Health.

Income will be generated through a three-year international contract for Public Health and Nursing Training programs, and the progressive introduction of fees for postgraduate courses.

The Faculty of Informatics

In the Council resolution it was noted that a more flexible structure has to be developed in the Faculty of Informatics in 1997 to achieve the savings necessary to allow the faculty to meet the budgetary constraints for 1998 and 1999.

A proposal contained in the reshaping document is to combine the departments within the Faculty into three schools – School of Mathematics and Applied Statistics, School of Information Technology and Computer Science, School of Electrical, Computer and Telecommunications Engineering – with emphasis on applied programs.

A full review will be undertaken.

The Faculty of Law

The faculty's reshaping proposal requires a full review of all the faculty's programs, teaching and research.

The review is being undertaken by all members of staff in a series of faculty planning days and smaller, working group meetings.

The aims of the review are to assess whether the professional programs can be delivered in better and more efficient ways while maintaining their integrity and to assess whether all of the Faculty's activities remain viable in the new financial climate.

The proposal for 1997 seeks to reduce expenditure on part-time teaching.

The Faculty of Science

Ongoing changes in courses and sub-

jects offered by the Faculty of Science will be accelerated by the reshaping process.

For example, development of a completely new raft of courses in Geosciences (previously Geography and Geology) will take place in 1997 with some reduction of staffing resulting from teaching efficiencies.

In Physics there will be a reduction of staffing in 1997 and this will be followed by a review of the positioning and academic directions of the department.

The Bachelor of Medical Physics degree will be discontinued.

New programs in the Bachelor of Science degree in areas such as Forensic

Science, Biochemistry and a group of programs with environmental science emphases (e.g. Marine Science) have been designed.

These programs, that reflect the internationally recognised research strength of the faculty, are being introduced to raise the number of both undergraduate and postgraduate students undertaking studies in Science disciplines.

In reference to Physics, the Council resolution stated 'in order to preserve both the ability of the University to teach Physics in ways necessary for and consistent with the future mission and strategic plans of the University, and to maintain confidence in the ability of the University to continue to teach scientific and technological courses and conduct scientific and technological research on a proper foundation, the existing Department of Physics, after full consultation with the current members of the Department of Physics, be merged with another academic unit, not necessarily in the Faculty of Science, and that the word Physics appear in the name of such a unit;

'Physics should continue to accept students into the BSc and BSc (Honours) Advanced Science programs; and discussions on the most effective size and positioning of Physics in the University's Faculty structure should occur in early 1997 with a view to implementation in 1998.'

Administration

Administration has developed a wide range of proposals to achieve its five per cent contribution for 1997. Measures include reducing costs, rationalisation of some services and increased revenue. In addition, Administration will undertake major reviews of all its activities, including Buildings and Grounds and Information Technology Services, to identify changes to be made for 1998 and 1999.

PROSPECTIVE STUDENTS: TOURS AND ADVISERS AVAILABLE 8-10 JANUARY. PHONE 1800 680320 FOR BOOKINGS AND INFORMATION

Pay deal agreed for staff

During the first week in December, the National Tertiary Education Union (NTEU) and the University reached agreement on a major new salary deal.

Deputy Vice-Chancellor, Professor Peter Robinson, who chaired negotiations with the academic union, said that this pay deal, which provides for a 11.35 per cent increase over 13 months, should go a long way to correcting long-standing inadequacies in academic pay rates.

'The solution of this issue combined with the restructuring proposals considered by the University Council on Friday 6 December, should position this University to be at the forefront of academic activity into the next century,' he said.

President of the Wollongong Branch of the NTEU, Mr Michael Morrissey,

Proposed timing of salary increases for Academic and General Staff:

6 per cent as from 4/12/96.

1 per cent as from 1/9/97.

4 per cent as from 1/1/98.

Agreement to expire March 1999.

Accumulative amount of increase = 11.35 per cent.

said that it was a 'relief to now be able to concentrate on our real work of teaching and research'.

'However, the underlying issue is a political one which has to do with the Federal Government's financing of universities and this issue is still unresolved,' he said.

'Any conflicts within the University have been predicated by Federal Government policy.'

This agreement will also lead to the resolution of issues relating to: new methods of teaching; academic career development; consultancies and in-

tellectual property.

Professor Robinson said that underlying negotiations had been the resolve of all parties to seek solutions that would enhance the academic standing of the University.

After this agreement all foreshadowed industrial action, including bans on exam results, was lifted.

A similar proposal was accepted by the Miscellaneous Workers Union and, when *Campus News* went to press, was being considered by the Community and Public Sector Union (CPSU).

Council expresses appreciation

At its meeting on 6 December, Council endorsed, and asked the Vice-Chancellor to circulate, the following statement to all University staff and to student representatives:

'The University Council is conscious of the difficulties and uncertainties which all members of the University have faced during the reshaping process and may experience in the challenges that still lay ahead.

'Council is concerned that the University continues to be distinguished not only by the high standard of its

programs and achievements but also by the collegial spirit that has made it such an attractive place to study and work.

'Council urges all members of the University to recognise the special but equally valuable contribution to the University and its goals made by all of their colleagues, whether students, general or academic staff.

'The University has accepted a statement on Attributes of a Wollongong Graduate and those same attributes should be evident in the everyday life of the campus, especially in times of rapid change.

'The future well being of the University will depend upon all of its members respecting the concerns and achievements of each other and valuing the contribution of all sectors of the campus community.

'It will also depend on individuals refraining from actions which intentionally prejudice the reputation of the University and its ability to attract students and resources.

'Council wishes to thank those who devoted much time and effort to the reshaping process and to encourage all to maintain a positive, co-operative approach to ensuring that Wollongong has world-class University prepared to face the future with confidence and high expectation.'

Science for holiday fun

Looking for entertainment for the family during the school holidays?

The Science Centre in Fairy Meadow has more than 120 hands-on activities that will entertain and educate.

New Science Shows:

Weather wonders

Sound and music

Bubbles and balloons

Fantastic fluids

Science of sport

See also the Planetarium Theatre, Science shop for Christmas gifts and telescopes on Friday evenings. Trained explainers available.

Open everyday during the summer break 1pm-5pm. Closed Christmas Day, Boxing Day and New Year's Day. Cowper St Fairy Meadow. Phone (042) 21 5591.

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Scholarships reflect Wollongong's emphasis on Science

In recognition of the high priority that the University places on teaching and research in Science, up to 30 Science Scholarships will be offered in 1997.

These scholarship will be offered on a competitive basis to students who enrol in first-year Science next year.

A letter has been sent to all UAC applicants who have indicated that a science course at Wollongong is one of their preferences.

Most scholarships will be offered on the basis of HSC results (TER), but a few will be available to students who believe that they have been disadvantaged in their education by regional, economic or other relevant factors.

As part of the selection process on these special grounds, an interview at the University will be held in the period 8-10 January.



CALLING ALL GRADUATES OF THE UNIVERSITY OF WOLLONGONG !

Are you a Graduate of this University or any of its antecedent institutions – Wollongong University College of NSW, Wollongong Teachers' College or Wollongong Institute of Education ?

IF SO, WE WANT TO STAY IN TOUCH !

The University of Wollongong Alumni Association can offer you many benefits, as well as help you keep in touch with old friends and with the University through social, cultural and professional activities.

Have you moved recently? Do we have your current address?

If you have not received the alumni magazine, the "Outlook", in the last 12 months, please contact:

**The Alumni Office,
University of Wollongong NSW 2522
Tel: (042) 21 3169 or 21 3249
Fax: (042) 21 4299
Email: alumni@uow.edu.au**

The "Outlook" is published twice a year in June and December.
(If you know any other Wollongong Graduates please pass on this message)

Experts tackle graduate employment challenges

The University of Wollongong hosted the annual conference of the National Association of Graduate Careers Advisers (NAGCA), in association with the Graduate Careers Council of Australia (GCCA), from 8-11 December.

The conference was concerned with factors impacting on the capacity of universities to develop the employability of their graduates. These factors include the influence of technology on the recruitment process and service delivery, and the provision of more effective links with small to medium enterprises.

One of the major themes was the exploration of local and international curriculum-based initiatives which develop work-readiness skills in graduates.

Speakers included:

Dr Simon Marginson (The University of Melbourne, Centre for the Study of Higher Education) – An expert in the area of personal and transferable skills, Dr Marginson's keynote address considered the attributes the job-ready graduate needs, and how to measure and develop them.

Jonathan Winter (UK) - Recently conducted research for the UK Association of Graduate Recruiters and co-wrote the influential report 'Skills for Graduates in the 21st Century'. Mr Winter has just completed a report on change management in higher education for the UK Department of Education and Employment, and has thought-provoking views on the 'skilling' of university students.

Dr Karl Kruszelnicki – Gave the after-dinner address: 'The impact of technology on the workplace of the future'.

The British, Canadian and American Presidents of NAGCA's corresponding careers/employers associations delivered presentations on their successes in embedding career planning topics within the curricula of the UK, Canada and USA.

For further details contact Martin Smith, University of Wollongong, Career Service and Conference Convenor, phone (042) 213 324.

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Successful ARC Research Grants - 1997

ARC Collaborative Grants

The Collaborative research grants program provides grants to support high quality research projects involving collaboration between university's and industry with the potential for economic and social benefit for Australia.

At Wollongong University eight out of 13 applications were successful giving a success rate of 61.5 per cent and \$602,683 for 1997.

This income is actually doubled as each project receives matching funds from their industry partner.

Associate Professor Tara Chandra, Dr M Ferry

The aim of the research program is to elucidate the effects of hot rolling conditions on crystallographic texture development during subsequent cold rolling and annealing of a range of ultra low carbon (ULC) steels, thereby maximising drawability of these materials. Hob-band microstructural features such as grain size and texture, and precipitate size and distribution will be correlated with texture development and plastic anisotropy in cold rolled and annealed sheet. Finally, optimised hot and cold rolling procedures will be devised for producing high formability steel sheet by the continuous annealing process.

Industry Partner: BHP Flat Products Division

Funds awarded:	1997	1998	1999
	\$68,539	\$69,581	\$70,626

Professor Shi Xue Dou, Dr R G Buckley, Associate Professor H K Liu

This program arises from the rapid maturing of high-Tc superconducting technology and the opportunity to apply this technology to the expanding need for refined products in Australian industries. The aim of the research is to conduct a collaborative research project on the feasibility of applying high temperature superconductor (HTS) magnet technologies to applications in the separation industry.

Funds awarded:	1997	1998	1999
	\$87,000	\$91,000	\$94,000

Associate Professor John Hedberg, Associate Professor B M Harper, Mr J R Steele

Students need to extract ideas and information from what can often be a complex and bewildering array of resources. Software applications (tools) to help with this task should be readily accessible for both extraction of information and for representation of ideas and information. Recent research on learning endorses the use of such mechanisms to facilitate and support learning; especially in conjunction with existing and new interactive multimedia titles. This proposal seeks funds to: Investigate how school students use complex cognitive tools; identify and refine existing cognitive tools; develop new tools; and define the specifications for tools appropriate for supporting learning.

Industry Partner: Interactive Media Pty Ltd

Funds awarded:	1997	1998	1999
	\$50,000	\$40,000	\$0

Associate Professor Anthony Hodgson, Dr R John

The Australian Sugar Industry as a part of a constant quality cycle reviews its operations at all levels. This has led to the involvement of Dr Hodgson from the University of Wollongong and Dr John from Griffith University.

Funds awarded:	1997	1998	1999
	\$68,000	\$60,000	\$62,000

Dr Sharon Nightingale, Dr G A Brooks

Researchers at the University of Wollongong, BHP and Ansto will pool their expertise in steelmaking, refractory materials, high temperature properties and computer modelling to attack one of the steel industry's most pressing problems, degradation of refractories. Refractory materials are used to contain the molten metal, slag and hot gases in steel processing vessels. BHP has identified reduction of refractory of consumption as essential to maintenance of their international competitiveness. However, very little is known about the fundamental interactions of molten steel, slag and refractories which lead to corrosion, or about how changes in processing conditions affect corrosion and wear. This project will investigate these fundamental interactions, and provide the vital information needed to help the Australian steel industry to remain competitive.

Industry Partner: BHP Research

Funds awarded:	1997	1998	1999
	\$61,000	\$48,000	\$50,000

Dr Masoud Samandi, Dr P Mercer

The major thrust of this collaborative project between the BHP-Research and the University of Wollongong is to develop a range of novel coatings for sheet steel.

Industry Partner: BHP Research

Funds awarded:	1997	1998	1999
	\$107,454	\$110,000	\$110,000

Associate Prof A Kiet Tieu, Dr F De Boer

In a multi-stand tandem cold mill, most of the off-gauge or out of tolerance strip occurs during low mill speeds such as head threading, tailing out process, accelerating to full speed or decelerating to a stop. For head or tail off-gauge accounts for about 2 per cent of the yield (\$6 millions/year). A neural networks-fuzzy logic system will be developed to determine the inter-dependency between the key process variables and strip thickness and shape at the head end and tail end during threading and tailing-out. An expert system will be developed to optimise the head and tail thickness of the strip exiting stand 5 of the cold mill during threading and tailing out based on incoming strip profile, operators' knowledge, machine conditions. It may be used to provide a diagnostic tool to troubleshoot production and quality problems.

Industry Partner: BHP Steel

Funds awarded:	1997	1998	1999
	\$105,000	\$70,000	\$70,000

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PROSPECTIVE STUDENTS: TOURS AND ADVISERS AVAILABLE 8-10 JANUARY. PHONE 1800 680320 FOR BOOKINGS AND INFORMATION

Professor Gordon Wallace, Dr G M Spinks

Conductive, electroactive polymers are unique materials discovered less than 20 years ago. It has now been shown that the properties of these materials are such that they can be utilised as the active componenet of new ploymer batteries, sensors, membrane devices, electromechanical actuators and enhanced performance coatings of corrosion protection of electromagnetic shielding. Practical use is, however, limited by the need for a simple and reliable processing method.

Funds awarded:	1997	1998	1999
	\$55,690		

ARC Large Grants

The objective of the Large research grants program is to award grants to support research which is likely to lead to:

- * a significant advance in our understanding and knowledge of a subject, through conceptual advances and discoveries; or
- * practical outcomes of importance to the research endeavour itself and to applications of social and economic value.

Associate Professor David J Ayre

The conservation of genetic diversity is a major goal of conservation policies although the functional significance of genotypic variation is rarely assessed. I will use behavioural, ecological and physiological approaches to document intergenotypic variation in the life-history characters of clonal sea anemones. Comparisons between successful clones and new recruits, together with reciprocal transplantations will be used to infer the effects of selections and importance of environmental heterogeneity. Clones will be identified using DNA markers. These data have implications for marine conservations and will be used to test the predictions of models that seek to explain the function and maintenance of genotypic variation.

Funds awarded:	1997	1998	1999
	\$57,000	\$55,000	\$53,000

Associate Professor R Badham, Professor D Buchanan

The successful introduction of technology is a process of organisational innovation as both the technology and the organisation are adapted to each other. The management of the politics of this process is an often recognised but inadequately explored area of study. There is a lack of in-depth research on the kinds of tactics employed, how open and acceptable methods are combined with hidden and less legitimate ones, the skills required and the ethical issues raised. This project will overview and integrate theoretical research in this area, inform the analysis through detailed cross-cultural case study research, and develop a new framework for understanding and managing the micropolitics of change agency.

Funds awarded:	1997	1998	1999
	\$50,000	\$50,000	\$55,000

Associate Professor Martin Bunder

Types and their inhabitants are constructed using combinators or lambda terms and can be interpreted as:

theorems and proofs, data types and programs and program specifications and algorithms. Type theory is also used in the development of programming languages and program verification. Our proposal involves a study of certain types and the kinds of inhabitants these can have, a study of the computational power of certain type systems as well as the continuation of a study of the relations between generalised type systems and systems of illative combinatory logic previously developed as a foundation for mathematics.

Funds awarded:	1997	1998	1999
	\$53,000		

Professor Stephen Castles, Dr M Bommers, C Wihtol de Wenden

This cross-national cooperative project aims to analyse the long-term effects of recent immigrations on society and the political system in Australia, France and Germany. In each country, the researchers will examine how different modes of managing immigration and settlement have helped bring about varying forms of multi-ethnic society. International comparisons will aim to improve the social-scientific theorisation of the relationship between intercultural and interethnic relations, forms of identity ascription and conditions for membership in modern nation-states.

Funds awarded:	1997	1998	1999
	\$51,000	\$51,000	

Professor Shi Xue Dou, Dr K H Muller, Professor H W Weber

This proposal brings together the expertise from cross fields to conduct an international collaborative project. The main aim of this project is to clarify the current distribution and current limiting factors, to assess the effectiveness of the means for improving weak links and to investigate the effect of uranium doping and neutron irradiation on the critical current density in the Bi-based superconducting tapes. Correlation of microstructures and electromagnetic properties will lead to a better understanding of the weak link and flux pinning properties, and development of the means of improving the critical current density to a level suitable for applications.

Funds awarded:	1997	1998	1999
	\$55,000	\$57,000	\$59,000

Dr Tana Li, Professor Nguyen, Professor Reid

Contrary to the conventional "top down" approach which looks at government policies and their economic effects in general, this study will examine late pre-colonial and early colonial Vietnamese economic history from the "bottom up". It focuses on individual entrepreneurs and their networks, the historical formation of these groups and their changes in economic systems and power structure, at a major turning point of Vietnam's history. By this approach, the project will not only fill the gap in this field, but also make a major contribution to the current reorientation of the historiography of South-east Asia.

Funds awarded:	1997	1998	1999
	\$25,000	\$25,000	\$45,000

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Associate Professor Chris Nyland

The project examines the scientific management movements contribution to the development of employment relations systems that emphasise union-management co-operation designed to enhance both organisational performance as well as the regulation of conflict. Recent scholarship has highlighted the major contribution scientific management made to the democratisation of public administration and the development of highly competitive industrial and financial structures. The project extends this new literature to the study of labour management by focussing on the movements contributions to the stabilisation of employment; the development of the mutual gains enterprise; and the international dissemination of best practice labour management.

Funds awarded:	1997	1998	1999
	\$42,000	\$41,000	\$45,000

Dr Rei Safavi-Naini, Associate Professor J Pieprzyk

Distributed authentication systems allow collaboration of authorised groups of principals in generating and/or verifying authentic messages and prevent intruders from tampering with, or fabricating, stored or communicated data. The aim of this project is to develop theories, techniques and tools that are required for modelling, analysis and design of distributed authentication systems. The outcomes of this project allow development of secure systems that satisfy complex security requirements of modern information systems, such as electronic co-signing or collaborative verification of electronic documents, and hence contribute to competitiveness of Australia in export and deployment of advanced information technologies.

Funds awarded:	1997	1998	1999
	\$55,000	\$47,000	\$40,000

Professor Jennifer Seberry

The spectacular growth in the use of the internet and telecommunications networks is providing the world with universal, mobile and ubiquitous communications and computing services. These services have had an unprecedented impact on the generation, dissemination and consumption of information. This phenomenal new development has been accompanied by growing concerns about confidentiality and integrity of information and payments, as well as of privacy of individuals in society.

This project will study the design of S-boxes and secure cryptoalgorithms using Hadamard matrices, bent functions and related mathematics to obtain fast, secure algorithms for use in the internet and networks.

Funds awarded:	1997	1998	1999
	\$63,000	\$56,000	\$57,000

Associate Professor Edward J Steele

We are interested in the complexity and evolution of the flanking and coding sequences of immunoglobulin (Ig) variable (V) region multigene families. Unlike other housekeeping multigene families (rRNA, tRNA, Histones) which contain many copies of identical genes, individual members of IgV families have unique DNA sequences.

The exact number of germline VH segments is in dispute. We will isolate as many VH genes as possible to accurately estimate the size of the J558 locus. This will assist our understanding how the numerous open reading frames in multigene IgV families have evolved and been maintained. We will also develop unique PCR markers for many J558 VH genes to assist an international collaboration in providing a detailed genetic map of the murine IgH locus (with Dr Roy Riblet, Medical Biology Institute, La Jolla, CA, USA)

Funds awarded:	1997	1998	1999
	\$67,000	\$65,000	\$61,000

Professor Rob J Whelan, Associate Professor D Ayre, Mr R Peakall

Disruption of normal pollinator activity in self-compatible plants is usually thought to produce harmful inbreeding. Here we manipulate honeybees to test how the subsequent alteration of pollinator activities affects mating systems in small and threatened grevillea populations. Do honeybees cause more inbreeding? Does greater inbreeding reduce plant fitness? What factors determine whether fitness is affected? Does a soil seed bank provide a buffer to inbreeding by storing genetic variability that is lacking in the present adult plants and their seeds?

Funds awarded:	1997	1998	1999
	\$46,000	\$48,000	\$50,000

Dr Song-Ping Zhu

Oil spills, especially spills from large oil tankers, into oceans or coastal waters pose a serious threat to our environment and ecological system; any improvement on the clean-up technology will benefit our society as a whole in the battle of protecting our beautiful environment from those spill disasters. This proposal aims at developing a mathematical model to study the flow near the barrier of an oil boom and exploring the possibility of improving the effectiveness of using an oil boom to contain oil spills, so that they can be removed more quickly and effectively.

Funds awarded:	1997	1998	1999
	\$40,000	\$43,000	\$44,000

ARC APA Industry Grants

Australian Postgraduate Awards (Industry) are to:

- build up long-term relationships between higher education institutions and industry through research undertaken by APA (I) students on projects related to industry needs;
- provide industry oriented research training to prepare high calibre research students for a career in industry and/or academic research; and
- produce, for Australian industry, a pool of world class researchers who are capable of understanding and addressing industry's research needs.

Offered at the top rate of \$20,180 pa for students to undertake PhDs or Hons Masters (Research) degrees. The company partner is also required to contribute a minimum of \$5000 pa cash and \$5000 pa in kind towards the research. The University had a success rate of 70.6 per cent for 1997 with 12 from 17 applications being successful.

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Associate Professor A Basu, Professor R Singh

Gas outbursts are a growing safety concern in underground mined workings. As a result \$800 million worth of coal from underground mines each year in Australia is at risk of sterilisation, creating debilitating economic constraints. The (methane) gas outburst phenomenon has been studied and researched worldwide but these findings cannot be applied to Australian conditions directly, because (i) Australian longwall mining involves very high extraction rates which create high pressure gradients not experienced elsewhere and (ii) local mine gases are comprised of mixture of the methane and carbon dioxide whose flow behaviours are not well understood. This research project is aimed to overcome these deficiencies with particular concern to improve local underground mine workers' safety. This research work will focus on theoretical and numerical studies of the mechanism, prediction and management of gas outbursts.

Industry Partner: BHP Collieries

Professor Druce P Dunne, Professor J Norrish

High strength corrosion resistant sheet steels, produced by cold rolling and zinc alloy coating, are used widely for fabricated structural members in the building and construction industries. The cost effective joining technique of arc welding produces softening which downgrades the strength rating for design purposes, but the softening has not been adequately quantified and the currently recommended practice of compensating for the strength loss is considered to be highly conservative. The aims of the project are to measure the strengths of arc welded sheet, to elucidate the mechanism of softening and to optimise the welding conditions in order to minimise strength loss.

Industry Partner: BHP Research

Dr Mark Walker, Mr E Thornton, Dr S Djordjevic

Porcine enzootic pneumonia is an economically important disease which results in an estimated loss of \$20 million per annum to the Australian pig industry. The pathogenic agent of disease is the mollicute *Mycoplasma Hyopneumoniae*. We have developed an experimental vaccine which protects immunised pigs from experimental challenge with a virulent strain of *M. Hyopneumoniae*. We propose to conduct a field trial of the experimental vaccine in a piggery owned by our industrial partner. The genes encoding the protein antigens in our experimental vaccine will be cloned and genetic engineering will be used to produce commercial quantities of the vaccine.

Industry Partners: Bunge Meat Industries Ltd, NSW Agriculture (EMAI)

Professor Stephen Linstead, Professor R Badham

This project investigates a major Australian concern - the development of managers capable of operating internationally. This was highlighted in the Karpin Report as a key Australian need. BHP and the University of Wollongong will collaborate in an action learning project which will research the design, development and evaluation of BHP's human resource development program for global management. The project will use longitudinal case,

action learning and ethnographic techniques in extending conventional management development needs analysis methodologies. The resulting methods and program developments will be capable of application across Australian Industry, and will highlight industry requirements from the education system.

Industry Partner: BHP Pty Ltd

Dr Michael Zanko, Professor R Badham

Poor occupational health and safety (OHS) performance in Australia is a key issue for microeconomic reform. Yet little attention has been given to the scientific study of OHS management and its importance for successful outcomes. Rather, the dominant applied research focus has been on technical, hazard specific controls. This project will redress this imbalance by developing a new model of OHS management technologies and strategies. It will integrate research literatures on OHS management and organisational change, involve participation in initiatives by BHP Steel to adopt and develop world best practice OHS management practices, and analyse the factors influencing the success of these initiatives.

Industry Partner: BHP Pty Ltd

Professor John Norrish, Mr Z Chem

Particulate fume generated during welding operations is potentially damaging to the health of welding operators. Previous studies of total fume generation rates give little indication of the distribution of particulate in the welders breathing zone nor the mechanisms by which the fume is generated. The proposed work is an attempt to investigate the source of the fume and elaborate the fundamental mechanisms involved. The results of this work should enable both the generation rate and fume composition to be correlated with the process parameters. An understanding of these fundamental phenomena should enable more effective control strategies to be developed.

Industry Partner: Welding Technology Institute of Australia (WTIA)

Associate Professor David J Ayre, Professor J Whelan, Mr T D Auld

As a result of land use practices, environmental managers face an increasingly difficult task in attempting to conserve or restore woody plants that now exist as sets of small and isolated populations each with a very few adult plants. Theoretically such populations are especially at risk of extinction because of reduced genetic variation and demographic vulnerability. The soil-stored seed bank may be a vital buffer against extinction and may be a critical resource for managers. We propose to assess the value (viability and genotypic diversity) of this seed bank for two threatened species. This study will answer several basic questions critical to the efficient management of Australia's natural ecosystems.

Industry Partner: NSW National Parks and Wildlife Service

Dr Buddima Indraratna, Mr J Downey, Professor J Morrison

PROSPECTIVE STUDENTS: TOURS AND ADVISERS AVAILABLE 8-10 JANUARY. PHONE 1800 680320 FOR BOOKINGS AND INFORMATION

Significant areas of acid sulphate soils (ASS) have been identified in the Shoalhaven flood plain. ASS have a drastic environmental impact on vegetation, pasture, water chemistry and aquatic life. Preliminary studies conducted by the chief supervisor indicate that optimum management of the groundwater table is the key to ASS remediation. The primary goal of the project is to verify through field trials and geohydraulic modelling that watertable management, for instance, using adjustable weirs in flood mitigation drains can achieve significant improvement of the soil and water quality. The outcome of the project will enable the Shoalhaven City Council and the NSW Environment Protection Authority to establish comprehensive guidelines for ASS remediation in the Shoalhaven flood plain and similar areas.

Industry Partners: Shoalhaven City Council, Environment Protection Authority (EPA), NSW Agriculture

Dr Michael Ferry

Strip casting is a revolutionary process with the potential for producing low-cost sheet steel products. However, if these steels are to be used in deep drawing applications, it is crucial that they possess the desired ductility and formability. The aim of this project is to devise thermomechanical processing routes to produce strip-cast steels with the desired microstructures and textures for good formability. Overall, the project is expected to produce a high calibre researcher with expert knowledge concerning the development of microstructure and texture in both conventional and strip-cast steel, and who will be of great value to both academia and industry.

Industry Partner: BHP Research

Dr Ian S Burnett, Associate Professor J F Chicaro

Current terrestrial, digital cellular telephone systems (eg GSM) can offer only limited coverage in remote areas, such as outback Australia. New satellite systems (eg Motorola's Iridium) will integrate with the current terrestrial systems to offer coverage in such areas. This project will research the key enabling technology or robust low-rate speech coding for the Iridium system. These coders will need to cater for the poor noise characteristics of satellite channels and will require significant research to achieve acceptable performance in background noise (eg traffic noise). The aim is to provide near-seamless mobile telephony, whether terrestrial or satellite transmission systems are used.

Industry Partner: Motorola Australia Pty Ltd

Dr Masoud Samandi, Professor B Parker, Mr J Havranek

The principal aim of this collaborative project between the BHP-Research and the University of Wollongong is to apply surface engineering technologies such as plasma nitriding and PVD coatings (both nitride and carbide layers) to improve the tribological and anti-galling behaviour of draw beads used in the forming of coated steels. It is believed that the higher hardness and less affinity of nitrides and carbides will reduce the wear of draw beads whilst at the same time obviating, or at least reducing, the extent of zinc pick up. It is envisaged that improved

formability and surface finish of coated steel will alleviate some of the concerns of car manufacturers and will result in more widespread acceptance of coated steel in automotive industry.

Industry Partner: BHP-Research (Port Kembla Lab)

Professor John Bremner, Dr R Smith

There is a continuing need to develop new medicinal agents for the treatment of viral diseases and cancer. One approach to addressing this need is to look to modifying natural products with known activity to try and make new compounds with increased potency and selectivity of action. If successful, this project would add value to a natural resource and could contribute to the development of Australia's growing pharmaceutical industry.

ARC Fellowships

The Fellowships scheme aims to foster opportunities for the pursuit of independent research and thereby ensure the supply of trained, innovative personnel, who are able to maintain and expand national research capacity and move into other areas of education and industry.

1997 has been the University of Wollongong's most successful year ever with respect to ARC Fellowships. The University of Wollongong was awarded five Fellowships - two of these at Senior Research Fellow level were only 15 are awarded Australia wide. As well as the five awards, we have two individuals on a reserve listing. Fellowships cover salary costs for the period of the award.

Professor Gordon Wallace

Senior Research Fellowship

This project will address the development of novel electroprocessing methods for production of conducting polymers. The project aims to overcome the biggest obstacle to more widespread utilisation of these materials: the ability to fabricate them in different forms with appropriate properties. This obstacle will be overcome by addressing three specific, and unique approaches:

- Electropolymerisation with hydrodynamic control;
- Electropolymerisation within a hydrogel host material;
- Development of novel electropolymerisation methods to produce microstructures.

Findings from these studies will be channelled into our extensive and well established end user network to ensure maximum utilisation.

Associate Professor Jim Hill

Senior Research Fellowship

Granular materials are involved in almost every industrial process. Eighty per cent of products manufactured by Du Pont industries rely on an understanding of particulate technology. Australia's industries such as mining and agriculture involve handling and transport of granular materials. Despite its fundamental importance, the theory remains controversial scientifically. This proposal aims at providing realistic models for understanding the flow of granular materials and will be undertaken in collabora-

PROSPECTIVE STUDENTS: TOURS AND ADVISERS AVAILABLE 8-10 JANUARY. PHONE 1800 680320 FOR BOOKINGS AND INFORMATION

tion with the Key Centre in Bulk Solids and Particulate Technologies. It will have benefits for those industries concerned with the flow of granular materials such as in hoppers, chutes and pipes.

Dr Yuan Chang Guo

QE11 Postdoctoral Research Fellowship

The practical application of Bi-based high temperature superconductors depends on the successful fabrication of long tapes with high current-carrying capacity (J_c) and superb mechanical properties. Although considerable advances in the improvement of J_c have been achieved for short tapes, J_c for long tapes is still too low for most applications. The aim of this project is to improve the J_c and mechanical strength of long-length superconductor tapes to a level suitable for practical application through the implementation of a number of new techniques including 'defined phase balance' precursor powder, silver-alloy sheath materials and a "Continuous Tube Forming/filling (CTFF)" procedure.

Dr Xian-Mo Zhang

Australian Postdoctoral Research Fellowship

Data Protection Schemes and Access Schemes are core components of security systems. We study more deeply a family of Combinatorial Structures which have indicated excellent properties for information technology security. We will search for structures which have desirable theoretical and practical design criteria. We believe this will be able to be implemented efficiently and greatly enhance the competitiveness of Australian industries which are increasingly relying on security of information transmission.

Dr Suchandra Balachandra

Australian Postdoctoral Research Fellowship

Many plant viruses interact with the photosynthetic apparatus causing chlorotic-mosaic leaf symptoms which eventually lead to leaf death. Using novel tobacco mosaic virus/green fluorescent protein marker constructs we will identify areas of virus accumulation in-vivo in *Nicotiana benthamiana* leaves and test the hypothesis that photosynthesis, in infected leaves, is affected by a specific interaction of viral and chloroplast components rather than be a general nutrient deficiency imposed by competition between virus and host protein synthesis. This project is of relevance to a wide range of virus-host interactions and has important agricultural and ecological implications.

Research Infrastructure Equipment & Facilities

The University's success in the Research Infrastructure, Equipment and Facilities program was again extremely high with three out of the five projects receiving funding.

The main objective of this scheme is to fund relatively large scale initiatives to develop research infrastructure on a cooperative basis across groups of institutions or the higher education system as a whole.

Those successful for 1997 are:

Professor B Parker - \$300,000 for a Facility for the Study of Thermal and Deformation Processing of Metals and Alloys.

Dr M Sheil - \$200,000 for a High Sensitivity Mass analysis of Bioactive Molecules and Macromolecules.

Dr H Dharmappa - \$150,000 Establishment of Environmental and Industrial particle Characterisation Laboratory.

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The following was sent to schools, the press and interested parties

A role for Physics at Wollongong

The University of Wollongong is engaged in a major reshaping process that will carry it into the 21st century.

As part of this process, the University Council met on Friday 6 November to discuss the reshaping proposals.

The outcome of the Council meeting supported the view that Physics has a key role to play in the scientific and technical development of this University.

It is the intention that Physics will undergo a rejuvenation so that it will continue to make a major contribution to the development of the University's research and teaching programs.

A key to this rejuvenation process is a review, to be undertaken in early 1997, of the optimum size and position of Physics in the University structure. This review will consider the introduction of new relevant degree courses involving a significant physics component.

Interested parties within the University and in industry will be consulted in the development of these courses to ensure that they will be attractive to both students and employers.

Students should be reassured that the Bachelor of Science and the Bachelor of Science (Honours) Advanced will continue to be offered in 1997 in all scientific disciplines areas including physics.

During the course of their studies they can expect to see exciting changes within the Physics program.

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University of the Third Age seeking speakers

In the last seven years the University of the Third Age (U3A) has become increasingly successful due to the ready-made audience of seniors and retirees with an unquenchable thirst for knowledge and learning.

U3A aims to satisfy this thirst with a program of guest speakers who give lectures on a wide variety of topics ranging from legal and financial advice, to travel and film appreciation.

The U3A yearly program is limited only by the availability of qualified people to lecture in topics like philosophy, history, literature, science, health, languages, cultural studies, art classes, economics, and theatre – in fact any subject offered by qualified or interesting people who have a special field of knowledge.

In the last seven years many speakers have made a great contribution by giving

their lecture time at no charge. Their services have been sincerely appreciated by the seniors who attend U3A.

While many speakers have been teachers or academics, or from other professional backgrounds, some of the more entertaining speakers have lectured on their travels, gardens or family history.

Course coordinator, John Jenkins, said there is a great wealth of knowledge among U3A members and, their objective is to keep up the interest and vitality through the attraction of speakers (new and former) to fill the timetable.

'As the U3A has no funds to pay speakers, at certain times it has been difficult to find people willing to give their services at no charge,' Mr Jenkins said. 'In particular, staff from the University of Wollongong have given tre-

mendous support and we hope this will continue.

'We are now seeking speakers who are prepared to participate in our 1997 program, as the continued success of the U3A relies on the quality and number of speakers who come to our assistance.

'We are asking for anyone who is professionally qualified to speak or who has significant knowledge about a particular topic, to contact us about the possibility of giving a little over an hour of their time.

'If they can give us just one hour of their time, we can assure them an enthusiastic and responsive reception at U3A.'

For further details contact Mr Jenkins, phone (042) 671 762, Bernice Murrie, 841 954, or Neville Jolly, 715 953.

Writers' Centre gets \$30,000

The South Coast Writers' Centre will receive \$30,000 from the NSW Ministry for the Arts.

The money will be used to refurbish the centre's meeting rooms at 93 Crown Street (at the eastern end of the Mall), to employ a co-ordinator for the centre, and to continue the centre's program of readings, workshops and residencies.

Associate Professor Ron Pretty from the Faculty of Creative Arts and President of the centre said: 'This will enable us to get on with the business of developing the centre for writers and readers from Wollongong to the Victorian border.

'We've already begun planning for writing workshops, readings and residencies in 1997.

'This grant will supplement assistance we have had from the Wollongong City Council and from the University of Wollongong.

'It will enable us to create a space in central Wollongong for use by everyone interested in writing and in reading or hearing the work of writers.'

The South Coast Writers' Centre can be contacted at PO Box U34, University of Wollongong 2500 or by phoning Associate Pretty on (042) 213 867.

Student wins \$10,000 prize

Faculty of Creative Arts doctoral student Bruce Crossman, has received \$10,000 for winning the prestigious 1996 Corbould Composition Competition for his orchestral composition work *Colour Resonances and Dance*.

The competition was established by the Queensland Philharmonic Orchestra with the support of the Edward Corbould Charitable Fund - managed by Perpetual Trustees (Qld Ltd).

It aims to develop the nation's creative talent through

public recognition and performance and is open to all Australian residents.

In addition to the prizemoney, the winning work, which is 15 minutes long, will be performed as part of the Philharmonic's 1997 concert season.

Bruce, formerly from New Zealand, is studying in the Faculty of Creative Arts for a Doctor of Creative Arts under the supervision of Associate Professor Andrew Schultz, Associate Dean (Research and Postgraduate) in the Faculty.

Plant biologist from China visiting

Deputy Head of Department of Biochemistry and Molecular Biology, Nankai University, China, Associate Professor Yong Wang, is visiting Wollongong University for up to four months.

Dr Wang's interest is Plant Biology and Biotechnology.

He and Dr Ren Zhang of Department of Biological Sciences have been collaborating on retarding leaf senescence of soybean plants which may increase the crop's productivity.

This research project is supported by a grant from The China National Natural Science Foundation.

Dr Wang's contact is ext. 4684.

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 - Administration • Exhibit Maintenance • Exhibit Repair
 - Assisting in Science Shop • Promotions
- Volunteer training sessions start this month.

Enquiries: Max Morris at the Science Centre on (042) 21 5591 during business hours.

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Government backs Illawarra as telecommunications centre

The State Government has backed the Illawarra's decision to make itself the centre of the State's telecommunications industry.

On Thursday 20 November, Minister for State and Regional Development, Mr Michael Egan announced a new initiative to help the Illawarra attract more telecommunications firms to the region.

Mr Egan made the announcement at a briefing in Sydney for the telecommunications industry on opportunities in the Illawarra.

'Working with the State's largest telecommunications research centre at Wollongong University, Wollongong City Council and local MPs, the Government will try to lure new telecommunications players to the Illawarra,' Mr Egan said.

'The Illawarra Telecommunications

Advisory Service will provide a one-stop shop for small- and medium-sized telecommunications firms looking to move or expand their operations.'

It will act as an agent for State and local government, the university and investment capital providers.

Firms can use the service to link into the research and development cluster at Wollongong University and the most up-to-date technical advice.

It will also help companies cut through government red tape, harness State Government incentive programs and, as need be, find investment capital.

This initiative follows the Government's recent decision to fund a study for a network design and evaluation centre at the Wollongong's Institute of Telecommunications Research,

home to 30 full-time and 60 post-graduate researchers.

'The centre would be the only one of its kind in the southern hemisphere, competing on a commercial basis with three other centres in Ireland, France and the United States,' Mr Egan said.

'This is not about the Government picking winners. This is a case of the Illawarra picking itself as a winner in telecommunications.'

Other initiatives helping to position the Illawarra to grab a bigger slice of the telecommunications industry include:

- Wollongong University's new Bachelor degree in Telecommunications Engineering, building on existing expertise in this area;

- The planned development of a \$300m ecoenergy park on Lake Illawarra that would include business precinct ideal for telecommunication companies looking to establish in the region.

- The possible development of a major aeronautics park near Nowra to support a Navy helicopter contract; and

- The possible relocation of a massive defence control and communications facility to Nowra.

Trade with Vietnam - proceedings to be made available

The Department of Economics coordinated a successful international workshop last month on trends and prospects in investment, trade and business for Australian companies in Vietnam.

It was held at the University Centre in Clarence St, Sydney.

Speakers were from the Research Institute for Trade in Vietnam, Department of Foreign Affairs and Trade, St James Ethics Centre in Sydney and the University of Wollongong.

This workshop covered major prime areas for investment in Vietnam, the current business environment in Vietnam, the Greater Mekong growth area, ethics issues in doing trade in Vietnam and the role of environment regulations on business and economic development.

Assistance was received from the International Business Research Institute, Department of Economics, Applied Economic Modelling Research Group, the Vietnam Trade Office in Australia, the Australian Department of Foreign Affairs and Trade, and the Australian Embassy in Hanoi, Vietnam.

There were 44 registrants consisting of academics, postgraduate students, government officials, business and corporate people, and representatives from Vietnam Ministry of Trade.

The department plans to publish the proceedings of the workshop as a book in the near future.

Stop Press

Campus News was published weekly on Wednesdays. For any other enquiries contact the Editor, Gillian Curtis (042) 21 3926.

Campus News had a circulation of 3500. It was distributed on campus to staff and students. 1000 were mailed to the community and overseas including schools in Illawarra, southern Sydney and Canberra; local, Sydney and Canberra media; Friends of the University; business representatives; MPs and numerous individual requests.