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Boosting R&D will create path for nation's future, Academy says

The Australian Government should implement policies to reform Australia's economic structure in ways that will increase the complexity of the economy and move the nation up the value chain, the Australian Academy of Science argues in its pre-budget submission for 2023-24.

The submission urges the government to commit to an ambitious structural reform agenda for science, including a target to boost investment in research and development (R&D) across all sectors, and to undertake an independent review of the Australian science system.

The submission, issued in late January, argues for change under five headings: to formalise a 3 per cent R&D investment target as government policy, to reform Australia's economic structure, to review the nation's science and research sector, to collect data on science "frequently and comprehensively", and to prioritise strategic measures.

Australia's investment in R&D as a proportion of gross domestic product had fallen over the past decade, to the point where it stood at 1.79 per cent. Had it remained constant, the nation would be investing \$10.6 billion more than it is at present.

The academy identified three important reasons for setting R&D investment targets: they showed a country's overall performance in science and innovation, they were a measurable goal for science and innovation policy and "a powerful tool to guide public and private investments towards knowledge-based activities that promote growth", and they were an easily communicable and visible metric for science and innovation policy.

In arguing for the reform of Australia's economic structure, the academy notes that a country's level of R&D investment "is greatly influenced by structural factors such as industry structure, company size, and the presence of multinational companies".

"Australia's unique comparative advantages in industries such as resources, education, tourism, and agriculture differ from those of other nations and are not typically associated with high levels of R&D expenditure," the submission says.

“The OECD estimates that if Australia had an industrial structure more typical of the OECD average, our R&D intensity would be closer to 2.2 per cent instead of the current 1.79 per cent, equalling \$8.9 billion per annum in 2022.”

Policies to increase the complexity of the Australian economy would especially affect business R&D, which is a significantly smaller proportion of the total R&D effort in Australia than in many other OECD nations.

The President of the Academy, Professor Chennupati Jagadish, said stronger investment would help Australia to become a knowledge-based economy, in line with other OECD countries that have a greater dependence on knowledge, information and high-skill levels.

“Australia should decide the skills and capabilities we need to build and the research strengths we need to sustain them,” Professor Jagadish said.

“These recommendations will take time to implement, but are achievable, and we hope the upcoming budget helps to reposition Australian science to advance national prosperity and global competitiveness.”

Science, research system needs “renewal”

The Academy says the science and research system is 30 years old, and needs “substantial review and a plausible redesign. It needs renewal, refurbishment, recasting and, in some cases, reimagining”.

“Australia’s research system should be designed to recognise the value of deep knowledge of our world while supporting its application to enhance productivity, build sustainable economic growth, facilitate job creation and new industries, and improve national well-being. The system should develop and sustain scientific knowledge as a national asset,” the submission says.

In pressing for the importance of setting strategic priorities, the submission says “there is a particular Australian disease that infects the performance of our science system”.

“It is the tendency to respond to big questions with tiny thinking,” it continues. “In the science system, that is demonstrated by the proliferation of programs throughout the Australian Government. Moving the dial on our R&D investment will not be achieved by another small grants program or research initiative. Where the opportunity presents itself, the government should prioritise major strategic investments.”

The Academy says that while the government has commissioned reviews of the Australian university system, science and research priorities, diversity in STEM, and the Australian Research Council, linking these endeavours to a national priority to lift the nation’s R&D performance is “urgently required”.

The academy says that Australia has “one of the world’s least differentiated economies — 91st in the world — largely due to the dominance of minerals and agricultural goods in our exports. The Academy holds that such a situation is unsustainable. Australia should decide the skills and capabilities that we need to build and the research strengths we need to sustain them — namely science, engineering, inventiveness, mathematics, and imagination. This is measured by national investment in R&D.”

V-C aiming for a smooth transition

The Vice-Chancellor, Professor Brian Schmidt, has signalled his readiness to remain in the position beyond his retirement at the end of December to ensure a smooth transition in the office, though he says this is “not an excuse to go slow on the appointment process”.

Professor Schmidt announced his intention to finish up as Vice-Chancellor at the end of the year when he delivered his State of the University address on 2 February.

In that address, he told his listeners that a Vice-Chancellor's job at ANU was “to be its chief evangelist — to help harness the energy and resolve of the community to achieve its mission”. It was both the most rewarding and the hardest job he had undertaken, one that required unbridled enthusiasm and a continual look to the future.

It was, therefore, a job that could sit with an individual for a limited amount of time. “My integrity says the end of that time is approaching for me,” he said.

He was proud to have done the job for seven years, but he was also realistic about a VC's “shelf-life”. “Having arrived as an agent of change, for the university's sake, I want to leave before I become ‘the status quo’. And, personally, after eight years, I will be ready to get back to my research and teaching, and a somewhat more balanced life,” he said.

His love for ANU was undimmed. When he looked back to 2015 to the list of things he wanted to achieve as Vice-Chancellor, almost everything was on its way. He had confidence in the future.

“This does not mean there is not still lots to do, and we won't let the pace slacken this year just because I am finishing up,” he said. He went on to enumerate things that he wanted university and staff to prioritise in the next 12 months:

First, as government looked to undertake reforms, ANU needed to focus on partnership, and bring its knowledge and expertise to bear to ensure that the changes are the best they can be for the future of Australia.

Secondly, people should work to make ANU have a truly outstanding culture in which to work and study. That meant behaving collegially and respectfully.

Thirdly, the university and its people needed to connect to the public, to engage with communities and to tell their stories in a way that makes sure ANU is a place that can be trusted, that makes a positive impact on people's lives, and a place for study.

Fourth, staff should focus on improving services, “providing the standard we would hope to receive so that we can all spend more time adding value rather than slowing each other down”.

“For me, I will be working to persuade the Federal Government to invest in the amazing work we do for the betterment of Australia — our students, our researchers — and to see us as an opportunity, rather than an expense,” Professor Schmidt said.

Queen Elizabeth Prize for ANU solar pioneer

Internationally renowned solar energy expert Professor Andrew Blakers, of the ANU College of Engineering, Computing and Cybernetics, has been honoured with the 2023 Queen Elizabeth Prize for Engineering, the world's most prestigious engineering prize, for his work in transforming solar cell technology.

Professor Blakers, his former PhD supervisor, Professor Martin Green from the University of NSW Sydney, Dr Aihua Wang and Dr Jianhua Zhao have shared the prize for development of Passivated Emitter and Rear Cell (PERC) solar photovoltaic technology.

PERC technology is easy to manufacture and can produce more electricity than other solar technologies. After decades of improvements and input from many scientists and companies, PERC is now the most commercially viable silicon solar cell technology used in solar panels and accounts for about 90 per cent of the world's solar cell market, making it the global standard.

“This is such an honour for me, and a testament to the many wonderful people I have worked with over the years,” Professor Blakers said. “As a PhD student and postdoctoral researcher working on high efficiency silicon solar cells at UNSW in the 1980s, it was a fantasy to imagine that our work could have a global impact.

“I am delighted to share this prize with Professor Green, Dr Wang and Dr Zhao, who have made major contributions to solar energy over many decades.”

The solar research lab at UNSW held the global record for silicon solar cell efficiency for most of the period from 1983 to 2014. In the 1990s, with Dr Wang and Dr Zhao leading the work, Professor Green's lab achieved a 25 per cent efficiency target, which remained the world record until 2014.

Through their work on PERC technology, and with input from many others worldwide, the 2023 awardees have significantly reduced the costs of solar panels. The cost of solar power generation has fallen by more than 80 per cent in the past decade, making solar the cheapest source of electricity in most countries.

Professor Blakers hopes to use his new-found platform as a QE Prize recipient to highlight the importance of accelerated solar adoption.

“Solar energy is enormously abundant nearly everywhere. Silicon solar cells allow clean and affordable electrification of energy-poor rural areas across Asia, Africa and the Americas. This energy source creates large opportunities for billions of people to improve their economic, educational and social positions without the destruction caused by fossil fuels,” he said.

“Silicon solar cells provide the cheapest energy source in history. Universal access to very cheap and abundant solar and wind energy allows the elimination of fossil fuels, resulting in an 80 per cent reduction in global greenhouse emissions.”

Professor Blakers hopes to inspire the next generation of engineers who are equipped with the creativity, curiosity and drive required to tackle some of society's biggest challenges, such as climate change.

“We have all the technology needed to eliminate fossil fuel use by 2040, and reduce 80 per cent of global greenhouse emissions, so let's get on with it,” he said.

The QE Prize is awarded every year and recognises engineers from across the world who have delivered innovative solutions to some of humanity's greatest challenges. As recipients of the award, the 2023 Laureates join a cohort of engineers who have radically changed the world we live in, cementing their place alongside the likes of Sir Tim Berners-Lee, the inventor of the World Wide Web.

Academy to advise on future of reef

The Australian Academy of Science will bring together the nation's leading experts to discuss the future of the Great Barrier Reef under different climate scenarios and to examine ways to boost its health and resilience for the decades to come.

The Academy announced on 8 February that it had been engaged by the federal Department of Climate Change, Energy, the Environment and Water to convene a series of roundtables that will support the Reef 2050 Independent Expert Panel in its role of advising government.

At three roundtables this year, cross-disciplinary scientists, specialists and traditional owners will discuss the latest evidence of pressures on reef species, habitats and ecosystems, both terrestrial and marine, identify key gaps in knowledge, and look at potential responses, including new and emerging technologies, in the context of future climate scenarios.

The Academy will provide a final report that will be an evidence-based synthesis of the science, and present the most likely impacts of climate change on the ecosystems that make up the Great Barrier Reef. The final report will be publicly available as a resource for governments and the non-government sector.

The President of the Academy, Professor Chennupati Jagadish, said the role of independent expert advice was more critical than ever.

“Despite substantial investment, the outlook for the health and resilience of the reef continues to trend downwards,” he said. “We welcome this opportunity to assist in providing a contemporary evidence base for use by governments and advisors.

“The Academy has demonstrated experience harnessing knowledge and expertise across the science sector, and we look forward to documenting the outcomes from these gatherings of experts.”

Obituaries

Colin Barlow

28 November 1932 – 11 December 2022

Colin Barlow was a quietly spoken person of great achievement. He was a renowned agricultural scholar, arguably the world's leading authority on the smallholder cash-crop economy of Southeast Asia. He had a deep concern for the rural poor. With great energy, vision and determination he established one of the most effective NGOs in Eastern Indonesia, and perhaps in the developing world. It was for this reason that his Indonesian collaborators aptly called him a 'humanitarian ambassador'.

Born in the depths of the great depression, Colin grew up in an "academic family" in England; his father was an internationally eminent scientist at University College London. From an early age Colin had a love of agriculture, of 'growing things', a passion that was to remain with him all his life. In his youth his ambition was to be a farmer. His first degree was at the renowned Wye College, a specialist agricultural institution. He then took graduate degrees in agricultural economics at Cornell and Aberdeen Universities.

His formal professional career commenced when he took up an appointment as an agricultural economist in Malaysia (then Malaya) in 1963. These were enjoyable years for Colin, his wife Ruth and his young family. He immersed himself in the country's agricultural development challenges, particularly smallholder farmers, one of the most important occupational groups in the country. He worked in two major agencies, both considered exemplars of successful agricultural policy in the developing world. These were FELDA, the Federal Land Development Agency, designed to settle landless (mainly Malay) farmers on newly opened rubber and palm oil smallholder estates, and the Rubber Research Institute, established in the colonial era and widely regarded as the leading institute of its type in the world. Colin was to maintain close professional and personal ties with Malaysia for the rest of his life. His important work there was recognised with a British imperial honour, an OBE, in 1967.

Colin was able to build on these solid foundations with his appointment to the staff of the recently established Research School of Pacific Studies at the Australian National University in 1968. This was to be his institutional home for the next 54 years, as a member of its academic staff for the first 30 years, and thereafter as a visiting fellow.

Colin's academic career as a researcher, teacher and government advisor blossomed at the ANU. He wrote what has become a classic, *The Natural Rubber Industry: Its Development, Technology, and Economy in Malaysia* (Oxford, 1978), the authoritative study of the rubber industry, with reference to Malaysia, the country that, along with Indonesia, for many years possessed the world's largest and (in Malaysia's case) the most dynamic rubber sector. The volume illustrated how rubber was the lifeblood of a significant proportion of Malaysia's rural population in the country's early years of economic

development. Colin's work had important implications for living standards among many lower-income households who earned their living in this industry.

This volume was followed by a later study, *The World Rubber Industry* (Routledge, 1994, reprinted in 2014), with two of his former PhD students, Sisira Jayasuriya and Suan Tan. He built on this work in several directions, geographically with work on Indonesia, Thailand, the Philippines, and elsewhere, and analytically, by investigating the process of agricultural innovation, measures to improve rural livelihoods, and much else. He also edited several important volumes, including on the Malaysian economy and on institutions and economic development.

Colin was also conscious of the importance of building analytical capacities in Southeast Asia, the Pacific Islands, and elsewhere. To this end in 1972 he and colleagues at the ANU established a highly innovative graduate agricultural program, the Masters in Agricultural Development Economics. It was designed principally as a program for mid-level government officials and the staff of international development agencies. It immediately had a huge impact, building successive cohorts of graduates throughout many of these countries, many of whom went to become senior policy makers in their countries. Among this group and their peers, Colin was a revered and much-loved figure.

In the mid 1980s, Colin's research interests evolved further, with a particular focus on rural poverty in very poor regions. This interest had always been a feature of his work, particularly the connections between smallholder agriculture and rural living standards, but his earlier work focused on Malaysia, a relatively prosperous and dynamic country. Now he began to grapple directly with the much more serious poverty evident in the dry, arid zones of Indonesia's East Nusa Tenggara (known by its Indonesian acronym, NTT). The Australian aid agency was then planning to initiate a major development assistance program in that region, and its officials invited Colin to prepare a report on the region's economic landscape and challenges. After workshops in Canberra and Kupang in 1989 this resulted in his edited volume, *Nusa Tenggara Timur – The Challenges of Development*, ANU, 1991.

This set the scene for the third, and arguably most challenging, phase in his professional career, one which was to be the principal focus of his life for the next three decades. He observed first-hand NTT's acute poverty, and an economy that had lagged behind the nation's rapid economic development that had commenced in the late 1960s. By then not far off formal retirement, and prior to the untimely passing of Ruth, Colin established an NGO, the Nusa Tenggara Association (NTA, www.nta.org.au), which was to become the principal vehicle for his efforts to improve rural livelihoods there. In this work he was joined and greatly assisted by Ria Gondowarsito, later to become his second wife, and herself a well-qualified rural sociologist with extensive regional fieldwork experience.

In this work, Colin employed his mix of extensive analytical knowledge and deep humanitarian instincts to address the region's rural poverty. Characteristically this was no armchair approach to the study. Accompanied by Ria, Colin began to visit the region regularly, at least twice a year. They lived with the poor communities, observed first-hand their daily life challenges, and engaged with local communities and government agencies. As his NTA

colleagues observed, “well into his eighties Colin was bounding up the slopes of farms with local people to inspect progress and discuss issues. He loved talking to the people and they loved talking to him.”

Under his inspired leadership the NTA tackled ‘micro’ – but essential – development issues: what forms of animal husbandry worked best, would seaweed farming be a promising income source, how to improve rural sanitation, especially for women, which crops are best suited to the difficult local ecology, and much else. To the end of his life, Colin was untiring in these efforts, making frequent field visits, developing close relationships with local communities, fund-raising to support these activities, motivating others to join these endeavours, and donating his available human and financial resources to these causes.

Colin thought deeply and creatively about development issues, and the links between theory and practice. On several occasions he announced his intention to write up the lessons learned from his NTA experience. He did some of that, and it will now be left to others to continue this important work. For anybody interested, in addition to the material available at the NTA website, one of the most insightful analyses of the work is the piece by his ANU colleague Stephen Howes, another researcher who has skillfully combined analytical knowledge and practical development policy, drawing on his discussions with Colin and Ria.

A crucial insight is Stephen’s reminder of just how complex rural development initiatives are, however well-intentioned the proponents, and however internationally famous its supporters (viz the Jeffrey Sachs’ Millennium Villages Project in Africa), and how frequently they fail. As Colin would freely admit, not all the NTA’s activities have been successful. But many have been, and they owe much to the analytical wisdom, painstaking preparatory work and personal skills of Colin, Ria and their teams.

Colin inspired huge respect and affection wherever he went. He was understated, a good listener, modest, and a charming, inspiring, congenial colleague. He mixed easily with people regardless of their station in life or background. Above all, he had a fierce commitment to improving livelihoods in poor communities, and he marshalled his formidable talents in pursuit of these worthy goals.

—Hal Hill

With thanks to members of the Barlow family, and to Prema-Chandra Athukorala, Sisira Jayasuriya and Chris Manning for helpful advice and information.



Thomas Edward Dutton **10 May 1935 – 21 December 2021**

Thomas (Tom) Edward Dutton died on December 21, 2021, aged eighty-six. He made important contributions to the study of New Guinea languages in several domains. He carried out surveys of the 100 or so indigenous languages of Central and Southeast Papua and did in-depth descriptions of several of these, especially Koiari and Koita. He wrote textbooks for Tok Pisin and Police Motu,

the chief *lingue franche* of Papua New Guinea (PNG). He contributed many maps and articles to the massive two-volume *Language Atlas of the Pacific*. He was the Foundation Professor of Linguistics at the University of Papua New Guinea (UPNG) from 1975 to 1977. He served as managing editor of *Pacific Linguistics* (PL) publications between 1987 and 1996. He co-supervised the dissertations of many PhD students who worked on languages of New Guinea.

Thomas Dutton was born on May 10, 1935, at Dayboro, near Brisbane, the eldest of five children of Lewis (Ted) and Mary Dutton, but grew up near Bundaberg where Lewis was a schoolteacher. Tom decided to follow in his father's footsteps and in 1953 went to Queensland Teachers College. The following year he was posted to East Bundaberg State School and began a BA as an extramural student of the University of Queensland. In midyear he was called up for national service and was selected for training as a pilot. He was invited to make flying for the Royal Australian Air Force his career but declined and returned to teaching.

1957 proved to be a watershed year for Tom. He had come round to the view that there must be more to life than being a schoolteacher in Queensland. He heard that the Administration of what was then the Australian Territory of Papua needed Education Officers and he applied. He hitchhiked to Sydney and attended a six-week course training teachers for Papua. In June he took up an appointment as head of Rigo Intermediate School, east of Port Moresby. In 1959 he was promoted to Area Education Officer in charge of Administration and Mission schools from Manumanu to Gaire.

The diversity of languages spoken by his Papuan students interested him. He began learning Police Motu, the main *lingua franca* of Papua, and its source language, Motu, an Austronesian language spoken around Port Moresby. In 1960 Tom was one of three Education Officers chosen to attend the first six-week language learning course for administration field officers run by the Summer Institute of Linguistics in Goroka. He was then posted to Chimbu Sub-District and later to Okapa in the Eastern Highlands. During that period he studied Gahuku (spoken around Goroka), Kuman (Chimbu) and compiled a set of lessons on Fore (Okapa). He also began to learn Tok Pisin (New Guinea Pidgin English), the *lingua franca* used by the Australian Administration in the Trust Territory of New Guinea.

Tom was now hooked on the study of languages and realised that he needed to get some serious academic training in linguistics. In 1961 he took leave from Papua and in 1962 finished his BA at the University of Queensland, majoring in English, with minors in mathematics and philosophy. In 1962 he married Corinne Scott, a schoolteacher who hailed from Nanango, near Kingaroy, and was working for Tom's father. Corinne flew light aircraft for a hobby, and Tom was assigned to be her copilot on a flight to the Gold Coast. Thus began a successful partnership of almost 60 years.

From 1963–65 Tom studied for a Master's degree in English linguistics while employed as a research fellow in the Queensland Speech Survey, recording and analyzing varieties of English spoken by local Aboriginal communities and Broken, the creole of Torres Straits Islanders. His Master's thesis was titled "The Informal English of Palm Islanders" and ran to 457 pages.

In 1967 Tom became one of the first PhD students in linguistics in the Research

School of Pacific Studies (RSPacS) at the ANU, which had been created by the Federal Government soon after World War II as an institution to boost postgraduate study in Australia. In its early years it consisted solely of several research schools and most, if not all, its students were PhD students. In 1957 a post in linguistics was created in the multidisciplinary Department of Anthropology in the RSPacS, and Stephen Wurm was appointed as a Senior Fellow.

Wurm was one of a handful of scholars who shaped the direction of linguistic research in the Pacific after World War II. He was an Austro-Hungarian scholar whose original specialty was in Turkic languages. He moved to Australia in 1954 after becoming interested in works by S. H. Ray about non-Austronesian languages of Papua, and after engaging in a lengthy correspondence with the eminent Australian linguist Arthur Capell, who gave Wurm his notes on the Kiwai language. Capell organised a research fellowship for Wurm at the University of Sydney. In 1957, a senior fellowship in linguistics was created in the Department of Anthropology and Sociology in RSPacS, and Wurm was appointed.

Wurm immediately made plans to do fieldwork in PNG, focusing on the non-Austronesian (Wurm preferred the name “Papuan”) languages. They were numerous—no one knew how many, but there were at least several hundred. Many remained almost completely undocumented. No Papuan families larger than about 20 or 30 languages had been established. In 1958 Wurm carried out a nine-month survey of the central highlands of Australian New Guinea, gathering data on over 50 different Papuan languages.

In 1968 a Department of Linguistics was formed in RSPacS with Wurm as professor. He was able to recruit a number of very capable PhD students, three of whom went on to become members of his staff. The latter had to have two crucial qualities: being prepared to be a specialist in a certain part or parts of New Guinea and Island Melanesia and being an indefatigable fieldworker. By the late 1960s he had a staff of five: Wurm himself; Don Laycock, focusing on the Sepik basin; C. L. (Bert) Voorhoeve, on the Gulf Province of PNG and parts of what is now the Papuan Province of Indonesia; Darrell Tryon, on the New Hebrides (today’s Vanuatu), the Loyalty Islands and the Solomon Islands; and Tom Dutton.

Tom’s interests and experience fitted neatly with Wurm’s research agenda. He became the specialist for Central and Southeast Papua, comprising today’s Central, Milne Bay, and Oro (formerly Northern) Provinces. This area contained about 100 languages, of which approximately half belong to the Austronesian family and half to several Papuan families.

Tom reviewed such literature as existed on these languages and did extensive fieldwork. It was still possible to find undocumented languages even in coastal Papua, which had had 100 years of government contact. Between Table Bay and Amazon Bay, Tom came across four tiny relic Austronesian communities surrounded by and much influenced by Papuan languages. This led him to write several papers on borrowing among languages of Papua.

Dutton’s 1969 dissertation was a descriptive and comparative–historical study of the Koiarian languages, a Papuan family of six or seven languages spoken on both sides of the Owen Stanley Range inland of Port Moresby.

I first met Tom in 1969, when I was seconded to UPNG for a year to establish courses in linguistics in the Department of Anthropology. Tom passed through Port Moresby coming and going to fieldwork. I had collected mother-tongue word lists from students at UPNG and at high schools in various parts of Papua and we began exchanging data. I returned to PNG regularly to do fieldwork in Madang Province and as external adviser to the UPNG's linguistic program.

At the end of 1969 Tom took advantage of an ANU travelling fellowship to spend a year studying in the USA, mainly at MIT in Cambridge, Massachusetts, the leading center for generative grammar and a hotbed of opposition to the Vietnam War. His PhD thesis had included a generative grammar of Koiari and he was keen to learn about the latest developments. Arriving in early winter, Tom and Corinne, with their five-year-old son Brett, found Boston cold, lonely and expensive, but Tom enjoyed the intellectual atmosphere and reported home on the vigorous debate between Professor Noam Chomsky and some of his brilliant students over generative semantics.

Over the next several years Tom published prolifically, including two monographs, *The peopling of Central Papua: Some Preliminary Observations* (1969), and *A Checklist of Languages and Present-day Villages of Central and South-east Mainland Papua* (1973), and an 830-page edited book, *Studies in Languages of Central and South-East Papua* (1975). He contributed several articles to the three-volume *New Guinea Area Languages and Language Study* (1975–77) edited by Wurm. Dutton also wrote textbooks for Tok Pisin and Police Motu, the chief *lingue franche* of PNG. His 1973 (revised 1986) *Conversational New Guinea Pidgin*, with texts and 16 one-hour cassette tapes, remains the standard textbook for teaching Tok Pisin. His *Beginning Police Motu* (with C. L. Voorhoeve) appeared in 1974.

In 1975 Dutton was seconded to UPNG for three years as Foundation Professor in the newly established Department of Language and Linguistics. With some 16 full-time staff the department had both academic and service functions: to teach and do research in linguistics, focusing on the indigenous languages of PNG, and to teach English-language courses to students of law and science.

Tom's inaugural address at the UPNG stirred up the establishment by arguing that Tok Pisin should be made an official national language of PNG and should be the main language of instruction in school contexts where teachers and students were more comfortable using Tok Pisin than English. He pointed out that, among the three to four million people of PNG, Tok Pisin was much more widely known than English. It was an important medium in local newspapers and on radio, was the main working language of PNG's House of Assembly, and in most provinces virtually all children of school age spoke it fluently. By comparison, few students and not many teachers were competent in English. There was an important role for English but its early use as the main language of instruction doomed students to poor learning.

In the short run, there was no change to the Education Department's language policy. But Tom's lecture was prophetic. In the 1980s, *Viles Tok Ples* (local mother tongue) preschools were adopted, first in Bougainville and then more widely. A reform of the country's English-only educational system was launched after the community-based *Viles Tok Ples* movement spread informally throughout PNG. In 1988 it became government policy to include teaching in the

vernacular language in the initial years of a child's education, while implementing a gradual transition to the use of English as the main language of instruction.

Tom was a strong and steady hand at UPNG and his colleagues there were sorry when he decided to return to the ANU after three years. But he continued to put his weight behind the Linguistic Society of Papua New Guinea. Nearly every year during the 1980s, he travelled to PNG to attend the annual conference of the society and to do some fieldwork.

Tom's return to Canberra almost ended tragically. He had an attack of cerebral malaria and lay seriously ill in hospital for a time. After recovering he set about various projects. One was as an editor of Wurm's ambitious *Language Atlas of the Pacific*, which was published in two volumes in 1981–83, with more than 40 large multicolored maps locating some 2000 languages, plus commentaries defining their family relationships, number of speakers, and so on.

He pressed on with his work on the origins of Hiri Motu and also returned to the topic of his Master's thesis, tracking down 19th century sources on Queensland Aboriginal English. He made a nice coup in the field of Pacific pidgin studies when he published the full transcript of a remarkable interview that he had recorded in 1964 of the last two surviving men among those who had been brought from the New Hebrides to work in the Queensland cane fields in the late 19th century. His many publications in this period included a 300-page history of Police Motu.

From August 1982 Tom took a short sabbatical in Germany and began by taking a course in German at the Goethe Institute in Prien. He went on to visit the University of Graz in Austria to work on Hugo Schuchardt's materials on creole languages.

In 1983, he was promoted to Senior Fellow, and in 1987 he was elected a Fellow of the Australian Academy of the Humanities in recognition of his outstanding research record. Tom's publications cover diverse domains to do with language, including surveying and mapping, grammatical analysis, dictionary-making, comparative-historical reconstruction, language-contact issues, language planning, and language teaching, but all link back in some way to his early years in PNG. This fact is consistent with Tom's pragmatic mind. His creative energies in linguistics were stimulated chiefly by observation of languages in context rather than by sitting in an armchair and building theoretical models.

Tom and Corinne found life in the suburbs of Canberra confining. They hankered after life in the country, something they had both grown up with. In the mid-1980s they bought a few acres of land at Murrumbateman, about a 40-minute drive from Canberra, had a house built (which Tom finished himself) and kept a few horses because of their daughter Anna's equestrian interests. Soon they were hooked into the rhythm of farm life and the community life of Murrumbateman. His colleagues grew used to him warning "I won't be in next Monday and Tuesday. Got to help the neighbor with his shearing" or "Can't come to the conference on Saturday. This weekend I'm helping to run the Murrumbateman annual fair", or "I've got to take Anna and her horse to an equestrian competition."

Tom was never content to be just a scholar doing his own thing. He was always someone who contributed to the wider community, be it academia or general. He was co-supervisor of many of the more than 50 PhD theses produced in the department during his time. Between 1987 and 1996, he served as managing editor and financial manager of PL, the department's publications arm. Wurm had begun PL in the early 1960s to provide a publication outlet for books on minority languages of the Pacific and South-east Asia which commercial publishers would not take on. The enterprise proved to be a remarkable success. Wurm gathered a sizeable support staff of typesetters and copy editors and by 1987, when he retired, PL had published 334 books in four different series. Tom took on this responsibility at a time of transition and crisis for PL. Three radical changes were under way. First, the manner of producing books was moving from electric typewriters to computers and laser printing. Typesetting staff had to learn new production skills. Second, the review of the department in 1987, though complimentary about the large number of PL volumes produced per annum, was sharply critical of the emphasis on maximising output at the expense of quality. More stringent refereeing and editing of manuscripts was required. Third, as budget restrictions bit RSPacS, the department was steadily losing support staff. Whereas PL once had half a dozen typesetters, this number was reduced to three, and by the early 1990s to two.

When in 1997 Tom handed over the managing editor's job to Malcolm Ross, with Darrell Tryon taking over as financial manager, PL was a more streamlined and efficient operation than it had been a decade before.

Tom was also Reviews Editor of the journal *Language and Linguistics in Melanesia* from 1987 to 1991 and business manager of the Australian Linguistic Society for several years in the 1990s. From 1995 to 1997 he was Associate Director of the research school, creating a student handbook that set out the responsibilities of students and supervisors. He also established an induction course for students and thereby made an important contribution to student pastoral care, one which was adopted across the whole university.

There were many things about Tom that I admired. One was his ability to consistently convert a high proportion of his research data as well as his principal findings into publicly accessible form. Many of us do a lot of basic research and manage to publish our most spectacular findings but are negligent when it comes to publishing or circulating the extensive but mundane data that underpin our findings. (The advent of computer files has made this a lot easier.) He did not suffer from the two deadly P's: perfectionism and procrastination. He possessed the two good P's: the ability to prioritise and to be prompt.

In 1997, still at the height of his powers, Tom surprised us all by deciding to take early retirement. A year or two earlier he and Corinne had found a project that they thought would be a satisfying challenge for their retirement years. They bought a run-down farm near Yass in New South Wales, intending to renovate the farmhouse and other buildings and to stock the farm with Saxon Merino sheep. Tom's preparation was typically thorough. He systematically learned shearing, wool-classing and pasture improvement techniques, sheepdog training, and farm finance management—in short, all one would need to know

to become a successful sheep farmer. The farm became a favoured venue for the department's Christmas lunch party.

In his retirement years, Tom completed two major long-term projects: a large dictionary of Koiari and a monograph reconstructing the history of the wider family of Koiarian languages. In 2001, 24 of his colleagues and former students presented him with a festschrift.

It was a privilege to know Tom. He is survived by his wife, Corinne, son Brett and daughter Anna.

—Andrew Pawley

This is an edited version of an obituary published in *Oceanic Linguistics* 61 (1): 602-61, 2022. It draws heavily on: Pawley, Andrew, 2001, 'Tom Dutton, linguist', in *The Boy from Bundaberg: Studies in Melanesian Linguistics in Honour of Tom Dutton*, ed. by Andrew Pawley, Malcolm Ross, and Darrell Tryon, 1–12. Canberra: Pacific Linguistics.

Diary dates

University's leaders in the Faculty spotlight

Dr Jill Waterhouse will outline the aims, approach and observations of her study project on the Chancellors and Vice-Chancellors of the ANU when she gives an illustrated ANU Emeritus Faculty Lunch and Lunchtime Talk in the Molony Room at noon on Wednesday, 1 March. She will also seek comment from those attending. Though the research project, supported by the Emeritus Faculty, is a serious undertaking, Dr Waterhouse will also touch on some of the lighter moments in the careers of the ANU's illustrious former leaders.

Brodsky Quartet mark 50 years at festival

The renowned Brodsky Quartet will celebrate a half-century of existence when it appears at the Canberra International Music Festival, which will run from Thursday, 27 April, till Sunday 7 May. The British group, formed in Middlesbrough 1972 as the Cleveland Quartet, will give three recitals, ranging widely through the repertoire from Bach to Britten and Andrew Ford. At the second recital on 30 April, the quartet will be joined by didgeridoo soloist William Barton to perform one of his works. The festival will be held at several venues across Canberra. Performers include Ukrainian pianist Alexander Gavrylyuk in a program of Beethoven, Schumann, Liszt, Chopin, Brahms and Saint-Saens. More information can be found at cimf.org.au.

Meet the Author events

March 7, 6pm: Maria Thatill will be in conversation with Kim Rubenstein about Maria's new book, *Unbounded: Manifesting a Life without Limits*. Thatill wrote *Unbounded* for people who wish to explore their identity and inspire change in their lives. She asks: what would you change in your life if you could silence the voice that tells you you're not good enough, you can't do it? A child of immigrants, Thatill knows what it is like to struggle with belonging. In

Unbounded she shares her experience of racism, sexism, financial hardship, intergenerational trauma, homophobia and mental health challenges. Through it all, Maria held on to hope and belief that her experiences could be turned into power — which she proved when she became only the third woman of colour to represent Australia in the Miss Universe competition in 2021, and created a media platform advocating empowerment, inclusion and equality. Cinema, Kambri Cultural Centre.

March 8, 6pm: Chris Wallace will talk with Tanya Plibersek on Chris's new book, *Political Lives: Australian Prime Ministers and their Biographers*, a history of image-making and image-breaking in national politics. Manning Clark Auditorium, Kambri Cultural Centre.

March 15, 6pm: Economist Alison Pennington will be in conversation with Guardian political writer Amy Remeikis about *Gen F'd: How Young Australians Can Reclaim Their Uncertain Futures*. Pennington argues that the most educated generation in Australia's history stands to be the first that is worse off than its parents. She argues that Australia's celebrated "fair go" has vanished, with millions of young people stuck in insecure work and crammed into share houses paying off baby-boomers' mortgages. *Gen F'd?* suggests a way for Australians to reactivate our democracy and create an economy that provides hope and opportunity for all. Pennington is an Adjunct Senior Research Fellow in Politics, Philosophy and Economics at La Trobe University. T2 lecture theatre, Kambri Cultural Centre.

March 28, 6pm: Saul Griffith will discuss his Quarterly Essay, *Electrification and Community Renewal*, with Emma Aisbitt. Cinema, Kambri Cultural Centre.

April 3, 6pm: Editors Brendan McCaffrey, Michelle Grattan and Chris Wallace will discuss their book *The Morrison Government. Governing through Crisis, 2019–2022*. Cinema, Kambri Cultural Centre.

April 11, 6pm: Pip Williams will talk about her new novel, *The Bookbinder of Jericho*, with Karen Viggers. In this companion to the international bestseller *The Dictionary of Lost Words*, Pip Williams explores a slice of history seen through women's eyes. *The Bookbinder of Jericho* is a story about knowledge, who gets to make it, who gets to access it, and what is lost when it is withheld. Vote of thanks by Amanda Laugesen. Cinema, Kambri Cultural Centre.

April 18, 6pm: Michelle Arrow and Elizabeth Reid will discuss *Women and Whitlam: Revisiting the Revolution*. This volume examines the contribution of the Whitlam government to advancing women's rights. It appointed a women's advisor to national government — a world first — and reopened the equal pay case. It extended the minimum wage for women, introduced the single mother's benefit and paid maternity leave in the public service, ensured cheap and accessible contraception, funded women's refuges and women's health centres, introduced accessible, no-fault divorce and the Family Court, and much more. Kambri Cultural Centre.

May 10, 6pm: Robyn Cadwallader will be in conversation with Nigel Featherstone about her new novel, *The Fire and the Rose*, a story set in medieval Lincoln. Vote of thanks by Sally Pryor. T2, Kambri Cultural Centre.

May 17, 6pm: John Blaxland and Clare Birgin will talk about their book *Revealing Secrets: An Unofficial History of Australian Signals Intelligence and the Advent of Cyber*. Cinema, Kambri Cultural Centre.

May 23, 6pm: Journalist Stan Grant will discuss his new book *The Queen is Dead*, with Mark Kenny. *The Queen is Dead* looks at the legacy of colonialism for indigenous people and calls for an end to monarchy in Australia, the need for a republic, and what needs to be done—through the Voice to Parliament and beyond—to deal with the past. Manning Clark Theatre, Kambri Cultural Centre.

June 7, 6pm: Karen Middleton will talk with Christine Helliwell and Mark Willacy about their books *Semut* and *Rogue Forces*, winners of the 2022 Prime Minister's Awards for Australian History and Non-Fiction, respectively.

ANU/*Canberra Times* Meet the Author events are held in association with Harry Hartog Bookshop. Books are available for purchase before and after each event. Pre-event book signings will be available from 5.30pm and again after the event. Registration is required and can be made at Registrations at anu.edu.au/events. In line with ANU's Covid policy, masks are no longer required. Enquiries to the convenor, Colin Steele, at colin.steele@anu.edu.au.

Exploring identity through portraiture

Portrait 23: Identity, a new exhibition at the National Portrait Gallery, will open on 10 March and run till August. The exhibition brings together new work from 23 artists and collectives taking ambitious approaches exploring who they are and what it means to represent themselves, their communities, histories and contemporary society. Street art, textiles, performance, photography, ceramics, painting, drawing, soft sculpture and bronze works challenge the boundaries of portraiture.

Feminine power through the ages

The National Museum of Australia's exhibition, *Feared and Revered: Feminine Power through the Ages*, features more than 160 objects drawn from the British Museum's collections. The exhibition, now in its third month, explores the power and diversity of female spiritual beings in cultural traditions and beliefs around the world and shows how goddesses, demons, witches, spirits and saints have shaped understanding in a variety of cultures. Exhibits span six continents and 5,000 years, from 2800 BCE to the present. The exhibition closes in August.

Five decades of Australian life in photographs

Less than a month remains for visitors to see *Viewfinder: Photography from the 1970s to Now*, an exhibition that brings together selected work from the National Library's extensive photography collection. It shows how Australia has changed over the past five decades, and how those who have seen Australia through the viewfinder have adapted to and used new techniques as photography has evolved, from film to digital. The exhibition, curated by Matthew Jones, shows how Australians' image of themselves and their society has developed in the past 50 years, and highlights the technological advances

and increasing diversity of styles, approaches and techniques that photographers have used. The exhibition closes on 13 March. Entry is free and booking is not required.

Items of note

Discovery could lead to new cancer treatments

Scientists from the Australian National University and the Peter MacCallum Cancer Centre have made advances that could lead to new and more effective treatments for lymphoma and lung cancer.

The researchers have discovered that the protein Menin contributes to the abnormal deactivation of specific genes in cancer cells. One hallmark of cancer is that the normal regulation of genes is disrupted, causing cancer cells to look and behave differently from normal cells. Cancer cells can switch off certain genes, keeping them dormant. By deactivating specific immune genes, some cancers are able to evade detection by the immune system. This allows the cancer to grow and become more aggressive.

By using drug therapies to target the Menin protein, the ANU and Peter MacCallum researchers believe they can reactivate these immune genes, making the cancer cells visible once again and allowing the immune system to seek out and destroy them.

Professor Mark Dawson of the Peter MacCallum Cancer Centre, said the findings helped scientists learn more about how cells function.

“Our research discovery has major implications for many different fields of research because we need to understand how cells make decisions and change the way they act in order to find new ways to treat cancer,” he said.

ANU Associate Professor Marian Burr, who is one of nine Snow Fellow researchers, said the researchers used gene-editing technology to delete the Menin protein from the cancer cells.

“Menin has been previously shown to activate genes. However, our research unexpectedly found that Menin functions to keep these genes in an inactive dormant state,” she said.

“This meant that by deleting Menin we could turn on the immune genes, which is essential to help the immune system to detect and kill the cancer cells.

“Importantly, specific drugs that inhibit Menin have been developed and are currently being tested in clinical trials for specific forms of leukaemia.”

Go8 committed to research security

The Group of Eight universities have been at the forefront of protecting their research from foreign interference, Go8 chief executive Vicki Thomson said earlier this month in comments on the Parliamentary Joint Committee on Intelligence and Security report *National Security Risks Affecting the Australian Higher Education and Research Sector*.

Ms Thomson said the Federal Government's response to the report would build on the foundation that Go8 universities had in place to protect national security. The research-intensive universities had worked closely with Government through the University Foreign Interference Taskforce (UFIT) to ensure an effective guardrail against foreign interference.

"As the group of universities which invest \$7.7 billion annually in research and undertake 70 per cent of all university-based research, we have been at the forefront of protecting our research from foreign interference," she said.

"As a founding and continuing member of UFIT, the Go8 recognises and backs the need to ensure that the world-class research conducted by our members is protected and supported so it can continue to protect and support Australia's economy, communities and people," Ms Thomson said.

"The Go8 will continue to work collaboratively with government and its security agencies to provide the best possible protections for our research, which is critical to national security and Australia's future."

Academy confers awards on Indigenous scientists

Emerging scientists Michelle Hobbs and Stephanie Beupark have each been granted a 2023 Australian Academy of Science Aboriginal and Torres Strait Islander Scientist Award.

The award recognises research by outstanding Aboriginal and Torres Strait Islander PhD students and early- and mid-career scientists.

Ms Beupark, an associate lecturer and PhD student at the University of Wollongong, will use the award to further her research, which studies the colour chemistry of natural dyes from Australian native trees such as *Eucalyptus cinerea* and uses an Indigenous methodology involving yarning with other Indigenous natural dye artists and weavers.

"I'm looking specifically at the eucalyptus dye used to make artworks and how the colorant compounds interact with the dye mixture to fix on to silk fabric and wool," said Ms Beupark, a descendant of the Ngugi people of Quandamooka Country.

She hoped the better integration of this knowledge would also allow artists to create a sustainable future use of colorants for textiles, and offer alternatives to mainstream artmaking materials.

Ms Hobbs, who is a Bidjara descendent and associate lecturer and PhD student at Griffith University, will use the award to seek insights into the management of Australian freshwater ecosystems and freshwater mussels.

She said freshwater mussels were one of the most imperilled groups of animals. "Extinctions or population declines of mussels are likely to disproportionately affect Indigenous peoples who use them, yet relatively little has been published about mussels from Indigenous perspectives or regarding the cultural values of mussels," she said.

She will travel to Canada later this year to meet First Nations researchers and discuss indigenous uses and management of mussels, and the role of indigenous values and communities in water management.

UA welcomes appointment of new Education secretary

Universities Australia has welcomed the appointment of Mr Tony Cook PSM as the Secretary of the Department of Education, beginning in April.

“Mr Cook is a skilled leader with a deep understanding of, and appreciation for, higher education,” Universities Australia Chief Executive Catriona Jackson said when the appointment was announced earlier this month.

“Universities have forged a strong working relationship with Mr Cook during his tenure as a deputy secretary overseeing higher education and research policy.

“We look forward to building on that as we begin the first comprehensive review of the higher education sector in more than a decade, and beyond.”

Bookshelf

Come Hell or High Fever

Readying the World’s Megacities for Disaster

Author: Russell W. Glenn

ISBN (print): 9781760465537

ISBN (online): 9781760465544

Publication date: January 2023

ANU Press. DOI: <http://doi.org/10.22459/CHHF.2023>

“Nations appear and fall, but cities endure and rediscover how to succeed,” Major-General Chris Field writes of *Come Hell or High Fever*. “In this meticulously defined and researched book, Glenn presents ideas for minimising suffering during urban catastrophes. His urgency identifies risks held in urban areas by 3.5 billion people. These people are many of us: as urban populations occupying 3 per cent of our planet’s land area, drawing water from 41 per cent of the world’s ground surface, consuming 60 to 80 per cent of global energy and achieving 80 per cent of the world’s economic productivity. For Glenn, our resilience—through diversity in preparation, survival and recovery—includes comprehensive approaches that are sustained in duration, orchestrated in bringing all necessary capabilities to bear, layered in approach and early in application.”

Lieutenant-General Sean MacFarland, United States Army (ret) writes: “The time to prepare for the inevitable is now. Dr Glenn has written a book that should be read by all leaders, planners and responders who may be called upon in an urban disaster, whether natural or man-made. Military leaders should give it particular attention, as the human race is increasingly concentrated in its cities. Understanding how to wage war in dense urban terrain is essential, especially if a nation also seeks to hold the moral high ground. The fruits of any victory won among people that fails to consider the lessons in *Come Hell or High Fever* are likely to be very bitter.”

Marhaba!

An Introduction to Modern Standard Arabic

By France Meyer, Leila Kouatly and Daishi Adams

ISBN (online): 9781760465261

Publication date: January 2023

ANU Press Languages. DOI: <http://doi.org/10.22459/MIMSA.2022>

Marhaba! An Introduction to Modern Standard Arabic, is a student handbook specifically written and designed for flexible learning. It consists of 23 lessons that include a variety of online interactive tasks supported by a range of audio resources. Online learners develop reading, listening, speaking and writing skills at the introductory level of Modern Standard Arabic while getting an insight into the culture of the Arab world. This publication addresses the needs of a mobile and diverse cohort of Australian and international students who seek to acquire a basic knowledge of the grammar and syntax of Modern Standard Arabic, a form of the language common to all peoples of the Arab-speaking world, from North Africa to the Middle East and Asia.

Made in China Journal

Vol. 7 Issue 2, 2022

Edited by Ivan Franceschini, Nicholas Loubere and Andrea Enrico Pia

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In 2020, Chinese Communist Party General Secretary Xi Jinping pledged to “transition to a green and low-carbon mode of development”, as well as to “peak the country’s CO2 emissions before 2030 and achieve carbon neutrality before 2060”. Xi’s pledge offered a tangible example of what has come to be known as the ecological civilisation—the idea of engineered harmony between humans and nature that was recently incorporated into the Constitution of the People’s Republic of China. But what kind of engineering is required for sustainable transitions at this scale and pace?

This issue of the *Made in China Journal* addresses these questions by borrowing political theorist John Dryzek’s rereading of the Greek myth of Prometheus. Inspired by the story of a demigod who stole the technology of fire for the sole purpose of human advancement, Prometheanism describes an eco-modernist orientation that perceives the Earth as a resource whose utility is determined primarily by human needs and interests and whose environmental problems are overcome through continuous political and technological innovation. In contrast with other environmental perspectives, Prometheanism prioritises human interests and needs over those of ecosystems or the individual needs of other lifeforms. The editors asked contributors to offer their perspectives on some key questions: To what extent can Xi’s dream of an ecological civilisation be understood in terms of techno-optimism and the anthropocentrism that characterise Prometheanism? What price is China paying in its effort to transition towards a heavily engineered ‘sustainable’ market utopia?

Administration

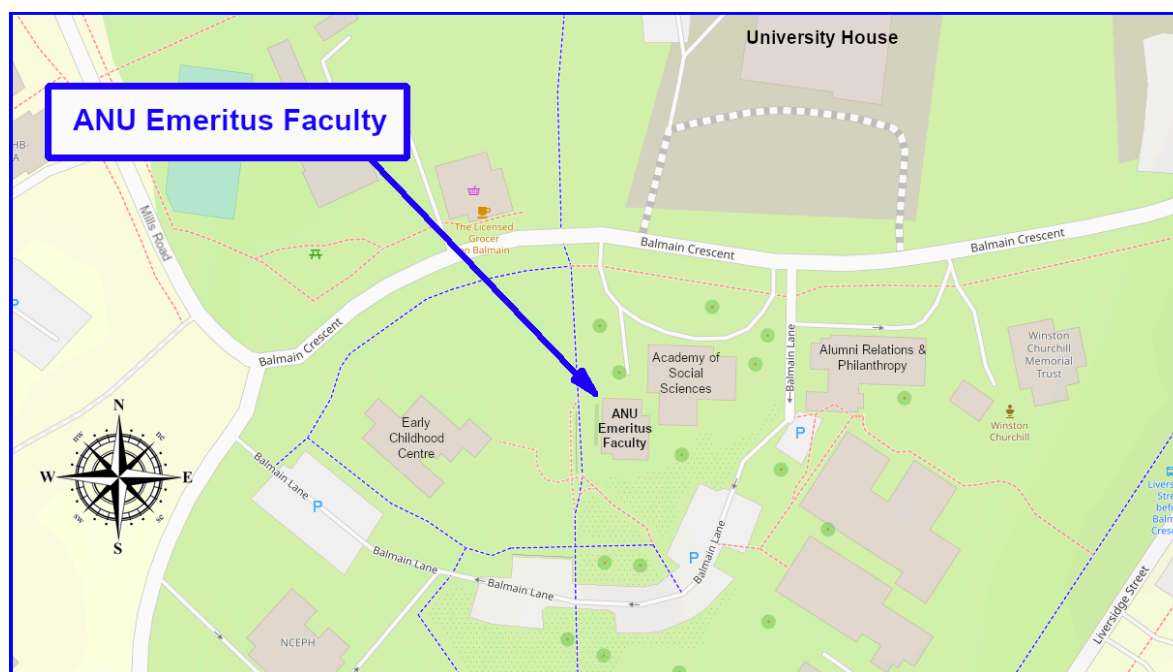
Arrangements for ANUEF room bookings

Requests to book the Molony Room should be addressed to the Secretary of the ANU Emeritus Faculty, Jan O'Connor, at jantanress@gmail.com or 6247 3341.

Finding the Molony Room

The Molony Room is at 24 Balmain Crescent, on the south side of Balmain Crescent almost opposite University House.

It is Building 1c on <https://tinyurl.com/yckuknbj>, set back between 22 Balmain Crescent (the Acton Early Childhood Centre) and 26 Balmain Crescent (the Academy of the Social Sciences). Four free car parking spaces reserved for ANUEF members visiting the Molony Room in the Balmain Lane Car Park immediately south of the Molony Room. The room is marked on: <https://tinyurl.com/y7gsyqgh>



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