



Science at the Shine Dome 2011

9.30am Thursday 5 May

Shine Dome – Canberra

Australian Academy of Science President Professor Suzanne Cory

Distinguished guests, Fellows, friends of the Academy – welcome to Science at the Shine Dome 2011.

This week is a wonderful opportunity to welcome our new Fellows, renew relationships, and rejoice in the dynamic, vibrant and diverse stories of Australian science.

Challenges for science

It is an exciting time for science in Australia - and also a time of immense challenge.

Over the past year, we have seen science on the front pages of newspapers and the top of television news bulletins almost daily - thanks to extreme weather, shifting tectonic plates, global food shortages and the world-wide debate about how to tackle climate change.

Science has also been making news for positive reasons – scientists at the Large Hadron Collider successfully created a mini ‘big bang’ – without ending life as we know it. The first census of marine life was completed. And researchers developed one of the key building blocks needed to make a quantum computer using silicon.

We have a strong tradition in this country of innovation, discovery and invention – and we have a Government that says it is committed to encouraging quality science. And yet we have a nation in which secondary students are losing interest in science and mathematics.

We have a nation which is falling behind its near neighbours and other countries when it comes to the scientific literacy of our young men and women.

We have a nation in which industry is lamenting the poor state of literacy and numeracy among apprentices in the trades.

We have a nation from which scientists are being lured overseas by the promise of better resourced laboratories and more stable research funding.

Never has the case for increased expenditure on science and science education seemed greater.

Health and Medical Research Crisis

In 2008, Health Minister Nicola Roxon said:

We are committed to ensuring that Australia’s best and brightest researchers have sufficient support and financial assistance to continue to work at the forefront of their fields.

And yet, in late March, we heard very concerning reports that the government intended to cut hundreds of millions of dollars from Australian medical research in next week's Federal Budget.

The outlook appeared very grim. But, as the Age Editorial aptly put it: The (Laboratory) Mouse Roared!

Scientists in lab coats took to the streets around the country, led by our students and postdocs, several of whom are with us today. Many others here also became involved - by writing letters to the PM and the media, giving interviews and publishing articles in newspapers and science magazines. And so did the wider community, who said loudly and clearly to the government how much they valued researchers and the work that they do.

I commend and thank you all for the enormous energy and commitment you poured into this campaign in defence of crucial research dollars.

This government has a strong and positive record in supporting health reform for the benefit of all Australians. It would be a very great shame if that revitalised primary and hospital care system was not underpinned by an integrated and robust medical research program.

In recent days, the Prime Minister has spoken of her strong support for medical research. I certainly hope that next week we will hear that this in-principle support translates into real gains.

Education

While I'm on the subject of the imminent Federal Budget - the Academy has been told that our acclaimed school science education programs, Primary Connections and its high school counterpart, Science by Doing, will no longer be funded by the Government.

Independent assessments have proved that Primary Connections dramatically increases teacher confidence and student learning in science and mathematics. This project has been underway for seven years and several states have taken it up strongly, with very positive results. The Academy believes Primary Connections is just two short years from being independent of external sources of funding.

Although it is at an earlier stage of development, Science by Doing has also demonstrated its transformative effect. Every junior high school in which it has been trialled has reported an increase in student engagement and enthusiasm for science.

In an era in which our teen science literacy is flatlining and we watch our near international neighbours forging ahead, Science by Doing has the potential to pull Australian high school science students back from science apathy and towards a renewed and vigorous thirst for knowledge.

We have received so many expressions of support since the news became public that no further funds are available. These programs clearly mean much to Australian schools and the broader Australian education community.

Education Minister Peter Garrett told the Grattan Institute in Melbourne recently that the Federal Government had invested a \$64.9 billion in its education revolution. For this it certainly ought to be commended. And yet it has indicated that it cannot spare \$11.5 million over the next 4 years to complete the development of high quality, independently assessed science education programs that are proven to capture children's interest and greatly improve their understanding of science and maths!

We certainly hope the government reverses this decision!

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International Science Linkages

Another program at risk in the upcoming budget is the International Science Linkages program, which the Academy has helped to administer on behalf of the Department of Industry, Innovation, Science and Research (DIISR).

This program has been very effective in increasing Australia's access to global science and in promoting awareness overseas of the quality and capabilities of our researchers.

The current ISL program terminates at the end of June and there is a grave risk that it may not be renewed. We certainly welcome the announcement of the new Australia-China Science and Research Fund, during the Prime Minister's visit to China last week. But it is also essential that we maintain and build strategic alliances and research collaborations with a range of other countries, including the US and Europe and the UK.

Just a couple of weeks ago, at the National Research Workforce Strategy launch at Parliament House a couple of weeks ago, Science and Innovation Minister Kim Carr said:

We ask a great deal of our researchers.

We ask them to fight disease, help feed the world and protect the environment.

We ask them to help business build good jobs in strong industries.

We seek from them the knowledge to understand and remake our world.

Researchers ... have every right to expect the government to provide the best kit the country can afford.

We say to the government: Thank you. It is terrific that you value our work in universities, medical research institutes and CSIRO. And we ask that you continue to build upon the investments you have made.

The Future

Because these investments are critical for our future!

Australia is fortunate to be rich in natural resources that are in strong demand worldwide: coal, oil, natural gas and minerals.

For the foreseeable future, we will continue benefit economically from the exports derived from our land.

But these will not last forever.

It is essential that a significant proportion of the wealth being generated from our natural resources is invested in education, research and technology.

Australia's future productivity will depend on our ability to innovate. If we support our best research and train our young people so they can take up skilled jobs, then Australia can become the knowledge-based, economically competitive and intellectually vibrant country that it aspires to be.

The potential of Australian science has never been greater.

The Australian Research Council's recent *Excellence in Research for Australia (ERA)* initiative collected data on 157 disciplines across all Australian universities. And found that many science disciplines reached the highest international benchmarks.

And certainly the outstanding quality of the science we have been privileged to hear yesterday and today, from diverse disciplines, bears witness to the excellence of Australian science.

But past success and policies are no guarantee that Australia will continue to deliver. Research excellence is a precious entity that requires constant tending and nurturing. .../4

Many big challenges loom for Australia in the 21st century - in health, energy, water, adaptation to climate change, sustainable agriculture and preservation of biodiversity.

To tackle these challenges, we need creative scientists, engineers and mathematicians, and a technologically skilled workforce. We need leaders and policy-makers who are scientifically well-informed. We need a scientifically literate community.

As a percentage of GDP, Australia's government spending on research rates poorly compared with other wealthy nations. Australia spends 2 per cent of GDP on research and development. Governments in Austria, Denmark, Germany, Iceland, Switzerland, Taiwan, and the United States spend more than 2.5 per cent; and those of Finland, Japan, South Korea, and Sweden spend more than 3 per cent; and Israel spends more than 4 per cent.

For a wealthy nation with a strong currency that has withstood the battering of the global financial crisis, I believe we can do better. On the international scale, Australia's debt barely rates a blip.

The United States and the United Kingdom, both of which have suffered far more from the Global Financial Crisis than Australia, have quarantined science funding from the savage reductions applied elsewhere.

As Barack Obama so eloquently put it:

"... 'there are those who say we cannot afford to invest in science, that support for research is somehow a luxury'.....I fundamentally disagree. Science is more essential for our prosperity, our security, our health, our environment and our quality of life than it has ever been before."

I urge the Gillard Government to make a bold statement about its long-term vision for Australia by asserting its strong support for science and technology, when it hands down its Federal Budget next week.

Chief Scientist

And I am confident that the newly appointed Chief Scientist, Professor Ian Chubb, will be a strong and effective advocate with government for the science community, continuing the valuable work of his predecessor Professor Penny Sackett.

Academy's support for science

Turning now to a brief overview of the Academy's work over the past 12 months.

Our major goals are

- to promote excellence in Australian science;
- to provide scientific advice to policy makers;
- to foster international scientific linkages;
- to advance science education in schools, and;
- to enhance public understanding of science.

We have worked hard in all of these areas over the past 12 months.

We responded to a diverse range of Government inquiries, reviews and consultations on topics as diverse as international aid effectiveness, stem cell legislation and rural R&D priorities.

We have also completed several major studies to inform government science policy and program development, drawing on the extraordinary expertise of Fellows and their colleagues in the National Committees for Science .

Four major documents have been published and can be obtained from our website: .../5

The *2010-2019 Decadal Plan for Australian Space Science – Building a National Presence in Space* identified a range of goals that would build our capability to look beyond planetary boundaries.

Turning in the opposite direction, the report of the 2010 Theo Murphy High Flyers Think Tank *Searching The Deep Earth: The Future of Australian Resource Discovery and Utilisation* recommends ways to enable deep exploration in our ancient, weathered continent.

To live within Earth's limits: An Australian plan to develop a science of the whole Earth system argued that a whole new integrative science needs to be developed to discover the Earth's biophysical limits and determine how to live sustainably within them.

And our booklet, *The Science of Climate Change: Questions and Answers*, has injected a much-needed voice of reason into an often fraught public debate. It provides an expert summary of current scientific knowledge about climate change, written in lay-accessible style, and does not shy away from admitting that in some areas of research uncertainties remain.

The response to the booklet has been overwhelmingly positive. I am pleased to report that it has been taken up with great enthusiasm by schools, the media, and governments at all levels, and received accolades internationally.

International

Further afield, the Academy's international links and standing remain strong.

The newest of these was established only this year with the signing of a Memorandum of Understanding with the Mongolian Academy of Sciences.

2010 also marked thirty years of scientific cooperation between Australia and China. We celebrated with a Science Week event at the Shanghai Expo 2010 in August, and a visit to Australia by a delegation from the Chinese Academy of Sciences, led by its President, Professor Yongxiang Lu, in November.

The Academy has also hosted bilateral workshops with Indonesia and Singapore and administered a Scientific Visits program that has helped Australian researchers build international networks in Europe, the Americas and Asia, all of these activities being supported by International Science Linkages Program.

Royal Society

As many of you know, the Academy is modelled on the UK's Royal Society and our founding Fellows were all Fellows of that society. We were therefore very pleased to be part of a world wide program of events to celebrate the 350th anniversary of the Royal Society, co-hosting a highly successful Frontiers of Science meeting in Perth that brought together 60 early- and mid-career researchers from the UK and Australia to discuss cutting-edge marine science.

We also worked with the Royal Society and the National Museum of Australia to mount the exhibition *Exploration and Endeavour*, which illustrated the ways in which science has contributed to the evolution of modern Australia, from early exploration through to understanding the impact of climate change on the Great Barrier Reef.

Community Outreach

Another example of the many ways in which the Academy reached out this year to engage the broader public with science was to co-host with James Cook University a presentation on the discovery of an early hominid, *Australopithecus sediba*, by Professor Paul Dirks.

Our acclaimed website *Nova: Science in the News* continues to prove there's a great thirst for better science information in Australia at large – judging by the large number of hits it receives.

Interest also remains high in our monthly public lecture series.

Last year's series on *Water Management: Options for Urban and Rural Australia* resonated strongly as the nation wrestled with widespread drought and devastating floods.

The 2011 series, dedicated to Professor Frank Fenner, is showcasing the latest scientific advances in research areas that he pioneered. Sadly, we lost Frank last year. And it is a little strange to be here at Science at the Shine Dome without his lively presence.

In conclusion, I have touched on but some of the many activities of the Academy since our last meeting. For now, suffice it to say that it has been an exciting and challenging year and I am proud and humbled to find myself President of such a diverse, enthusiastic and dedicated Academy.

Thank you.

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