



Australian Government

Chief Scientist

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**20-MINUTE KEYNOTE PLUS 5-MINUTE Q&A TO THE AUSTRALIAN
INTERNATIONAL EDUCATION CONFERENCE**

HIGHER THINKING FOR HIGHER EDUCATION

10 OCTOBER

9 AM

GREAT HALL, BRISBANE CONVENTION CENTRE

You've spent this week grappling with the theme *inventing the future*. I'll have more to say about that in a few moments.

But first, I want to begin by providing some context about what higher education has meant to Australia, and the place we occupy in the world.

Even before we became a nation, we had universities. Our first Prime Minister earned his degree at home.

And, in a quiet way, I think this made us proud.

Here were solid colonial answers to the time-honoured English model, proving all our claims to civilisation. Their purpose was noble, and worthy, but confined.

They would uplift a few thousand minds, from a few hundred of the better families, for the few jobs that might require higher learning.

Governments would not seek to interfere,¹ and Vice Chancellors would not expect too much by way of public funds.

And so it went for nearly a century, from the establishment of the University of Sydney in 1851, to the end of the Second World War.

This was a period that ushered in great change to Australia, and higher education was an important part of that change.

It was a time of Cold War. A time when people worried about the future. A time when the great powers competed in their laboratories as much as their military colleges.

We too wanted to grow our industries, build our infrastructure, enjoy the fruits of modern medicine. We too had come to appreciate that there were things Australians would have to do for themselves.

And we looked to immigration for part of the answer. We set out to increase our population by one per cent every year, driving a

¹ <http://www.voced.edu.au/content/ngv53782>

boom that would last two decades and transform our society in every way.

It was no coincidence that we began to build ambitions in education at the same time. Because we saw the need to develop and sustain our own skill base as we changed Australia on the inside; and as we sought to change the perception of Australia from the outside.

Talk of an Australian PhD became a reality in 1948. The Australian National University was established in 1946 with a specific brief to introduce research into the university sector and to work in areas seen to be of particular importance to Australia's future. Of course, nowadays they'd be criticised for 'picking winners' the current pejorative used to stifle sensible discussion.

But the critical turning point was reached with the 1957 inquiry by the Committee on Australian Universities (chaired by Keith Murray), heralding the beginning of direct government influence on higher education.²

² <http://www.voced.edu.au/content/ngv53782>

The review was the first national and wide-ranging investigation of Australian university education. Its message to Australians was very clear.

We could not be the mendicants at the global table and hope to prosper. And nor could we build our higher education enterprise alone. We had to open our doors to the world.

As the report said:

Every nation wants to enable its scientists to contribute a fair share to the total stock of human knowledge; and if there were any weakening in this high motive, no nation to-day dares on grounds of national defence alone to fall entirely behind or to be without its own good number of highly qualified men of science of the academic or university type.

It had this to say about research:

The Australian universities have an inescapable responsibility to contribute to the general pool of scholarship and discovery, to throw light on the problems of contemporary society, whether in a local or broader context; further, judged pragmatically,

university research in the sciences and technologies must be the door through which must come in an increasing stream, those men and women of enthusiasm and high capacity of whom the Australian community has need, if it is to exploit fully the potential of its environment, is to ensure the impetus necessary for national development, and render some measure of service to its less fortunate neighbours in South-East Asia.

We could have printed the same thing in the conference program today – although a few more full-stops wouldn't go astray. And I would add that today we would also like to see a more inclusive focus: gender, US, UK and Europe in particular.

Soon thereafter the 1964 Martin report resulted in a separate sector of vocational and applied colleges, an important addition to Australia's tertiary education profile.

Recognition has since grown about what universities and VET colleges have done, what they can do, and what that says to the world about the people we are.

And with that recognition has come an intuitive understanding that international education is key to this nation's future.

We are not alone in that recognition, but we have been on the crest of the wave.

We have the highest proportion of international students in our tertiary enrolments of any OECD country, at 18 per cent; and we are the fifth most popular study destination for international university students.

Only the US, UK, Germany and France accept more.

We are 23 million people, hosting half a million students – some three times more than the students we send overseas.³

It is a trade – but more importantly, a human exchange – that we can no longer separate from our identity.

Along with the many academic, cultural and social benefits it has brought with it, the international education sector has also become vitally important to Australia's economy.⁴ And it is global, not only, or not just, regional.

³ OECD (September 2014). *Education at a Glance 2014*.

⁴ Group of Eight (March 2014). *Policy note: International students in higher education and their role in the*

Education exports are Australia's fourth largest export, following iron ore, coal and gold and generating some \$15 billion in revenues each year.

Over the past five years, international students have provided Australian universities with \$18.5 billion.

Student fees paid by international students made up 16% of total university revenues in 2012 (\$4.1 billion), the third largest source of revenue for universities after the Australian Government and domestic student contributions.

And the sector has fought hard for its opportunities.

The number of formal agreements between Australian and overseas institutions (including staff and student exchanges and research collaborations) grew from 220 in 1990 to 8305 in 2014. 4227 new agreements have been signed since 2012.⁵ I'm sure that they are all useful - and well used!

Australian economy.

⁵ Universities Australia (April 2014). *International Links of Australian Universities.*

On the face of it that all sounds like good news. International higher education is thriving in Australia and the prospects for the future look rosy.

But that is the start, not the end, of the story.

We have built, through a combination of strategy and serendipity, a massive edifice on which we now rely.

Growing it is important – but so too is the path that growth takes. So, do we take just whatever comes along, roll with whatever happens; do we just wait for it to happen - or do we organise, and plan, and manage the future we want?

I speak particularly from the perspective of Chief Scientist.

Almost a quarter of our international undergraduate enrolments and more than half of our international postgraduate research enrolments are in science, technology, engineering and mathematics (STEM).⁶

⁶ Department of Education research snapshot (October 2014) International students studying science, technology, engineering and mathematics (STEM) in Australian higher education institutions

In 2013⁷ we had:

- o 13,117 overseas STEM undergraduate commencing bachelor enrolments
- o 10,060 overseas STEM undergraduate bachelor completions
- o 3163 overseas STEM commencing postgraduate by research enrolments
- o 1730 overseas STEM postgraduate by research completions

Importantly, we financially supported international STEM post-grad students with 330 research awards at a cost of \$22 million (there were 3499 Australian domestic awards at a cost of \$272 million). Maybe that balance is wrong.

So we could view all this as a business and it is little wonder that we speak of it as an industry. A word that I see more as a term of convenience but which could blind us to the actual purpose of a university in a civilised society. I think that we are in danger of getting that wrong, too. Another time.

But I ask, what does it all mean for the future of STEM, and more importantly the nation that STEM sustains?

⁷ Department of Education Higher Education Statistics Data Cube (UCube)

Do we know?

Is it just a question of opening a bigger shop to get more people through the door? Or do we want to work towards something greater? And if we do, do we know what that is?

And if we do know, are we conscious of how our part fits with all the other pieces?

Are your vision, and my vision, really the same?

For example, when we say we want a world-class education and research 'industry', can we actually explain what that looks like? Do we know what we will use it for? Have we identified what challenges we need it to work on? If we have, have we worked out how to communicate this vision to others around the world who might want to share in our enterprise? And how do we get from, and add benefit to, the strategies that are developed in the EU, the US and many countries in our region? And then I would add to that, parenthetically, that we need to develop them all - there should be no single basket syndrome just because it is easier.

How does that translate into all of those **8,305** linkages universities have already established overseas?

As a member of the International Education Advisory Council, I note that the Government has this week responded to the council's *Australia – Educating Globally* report.

I welcome its focus on planning for the future.

But I want to urge all of us in the sector to think about this important work in the context of all the national missions that it serves.

It is vital that we identify what our national needs are, what our research priorities are, and where we have advantages that we can use.

Too often for too long we start and then stop; an approach that works against science.

Or we think in our portfolio silos – forgetting that students become teachers and workers, just as research becomes new technologies, and the journey takes a very long time.

Science needs a long-term investment and a degree of certainty to prosper.

It also needs to be connected to all the things that keeps science strong – including international students.

This is critical national infrastructure and we ought to be monitoring it, planning it, securing it. And we should organise, evaluate and cohere our effort, always taking into account what others are doing, and ensuring that our effort is aligned with theirs. Shared challenges and opportunities require this approach.

Last month I provided the Government with a set of recommendations which I think would be the basis for a holistic Australian STEM strategy.

I have divided them across four fields of action:

- competitiveness or innovation;
- education and training;
- research;
- international engagement.

While every one of the fields is critical and should be read as a whole, I expect the last one will especially pique your interest.

Talking specifically about science (which I use as shorthand for all of STEM) I can tell you that international engagement earns Australia a seat at the table globally. Much of that engagement happens in our universities.

Knowledge and ideas flow freely across borders. While we are proud of our researchers and our ability to attract others, we cannot afford to assume that our place on that stage is secure.

It has to be earned through our continued contributions to the global STEM endeavour.

Nor should we pass up the opportunities that science opens to us. Science bridges cultural divides through its absence of ideology and shared intellectual tradition.

But we need to identify what it is that we want this international engagement to do. Where do we want to build capability? Who do we want to build partnerships with?

Here, my recommendations have a great deal to say.

For example, an international strategy should incorporate education, as well as science and research. This could enable us to take a prioritised approach for international engagements and fund them accordingly.

While we further develop relationships through science with the EU, US and other countries, I think we should also seize a moment of opportunity by planning and establishing an Asian Area Research Zone - talking the language of partnership in our region, working with our neighbours.

Like its counterpart in Europe, such an area would encourage researchers, knowledge and technology to circulate freely within and between member states. It would build capability and generate solutions for the challenges we confront together.

Higher education providers are crucial to all of this.

They are our foremost science ambassadors and the relationships formed between individuals and institutions become the foundation for much broader links between nations.

So if I could leave you with a small number of messages this morning, it is to think about the future in broad terms.

It is to recognise that what we do is a means to an end. That the end game is a prosperous, fair, healthy, just and secure Australia that is also a first rate global citizen - and a great neighbour.

Our contribution is to sustain a sector that brings people together. A sector that breeds tolerance and understanding. A sector that strives to improve our understanding of our natural world and our constructed world. A sector that will help make the world a better place.

As the theme of this conference suggests, you are about *inventing the future*, so let's not be content to muddle along.

Let's envisage the nation we want, indeed the world we want, and set the pieces in order to achieve it. **Thank you.**