



**Australian Government**

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**Chief Scientist**

**PROFESSOR IAN CHUBB AC**

**2015 AFR HIGHER EDUCATION SUMMIT**

**KEYNOTE ADDRESS**

**12:40 to 1:05pm**

**27 October 2015**

***Science: who needs it?***

**Swissotel**

**SYDNEY**

I want to begin my remarks today by congratulating Dr Alan Finkel on his appointment as Australia's eighth Chief Scientist.

Alan needs little introduction to this audience.

He is a scientist with the mindset of an entrepreneur.

He is a businessman with the insights of a researcher.

He is a policy thinker with the battle-scars of an active practitioner.

He is an Australian with his eyes and his attention on the world.

We can and do produce people like Alan in this country – and on his previous form we can be confident that Alan will help us to produce a good many more.

### **Playing the long game**

Alan's appointment has given me the opportunity to reflect on what it means to hold public office and be part of what we once called public life.

As you know, I am a retiring man.

The last time was five years ago, when I stepped down as Vice-Chancellor of the Australian National University.

I said at my retirement party that a sector like ours "needs people to sit back, reflect, and try and position future public policy with the capacity to do the research required." And I said I could anticipate doing that.

I did – albeit not in the way I expected.

I intend to keep reflecting, and I hope contributing, come 2016.

Which is not to say that I intend to be the Chief Scientist in exile.

I promised at my last retirement that I would not offer a running commentary on the decisions of Vice-Chancellors to come. I think I can make the same commitment to Alan – and all those who will follow Alan, because I intend to be around to see a good many of them.

I hope we will continue to appoint Chief Scientists, because we will need them.

And I hope they will each make the role their own, in the way that the circumstances of their time require and allow.

But I *also* hope they will come to that task, as Alan does, with the benefit of perspective – a sense of the long game as well as the priorities for the upcoming quarter.

Because science – like higher education – is very much a long game.

Most of the young people entering universities are the product of twelve years of Australian schooling, and seventeen or eighteen years of life in Australia.

The graduates who leave might still be in the workforce in six decades' time.

You have to think in both directions to serve them well.

And then there is the institution of the university itself – something with a deep past as well as an unfolding future.

The facilities we offer take time to build, and a great deal *more* time to become unsatisfactory enough for the funds to be provided to replace them.

The faculties we recognise, and what they teach, reflect ways of thinking with their roots in medieval if not ancient times.

Cultures, relationships, reputations, a sense of place in a community – how hard are they to build, and how much effort is required to maintain them?

Long games need new recruits, or they grow stale.

But without perspective they grow just as stale – because we never learn enough to move on from all the mistakes we have made before.

If there are recurring themes I see looking back over the years, they are these: a loss of memory and a failure of imagination.

### **Some perspective on our interesting times**

It is not simply a problem of too many players, with too little time on the field to learn something about the strategy as well as the tactics – but the figures on that score are striking.

I became Deputy Vice-Chancellor of Flinders University in 1985, moving close enough to the pointy end to take a serious interest.

Since that time there have been 18 different science ministers, and between them they have had 11 different titles.

The longest-serving science minister since 1985 was Barry Jones, who held office for just over seven years. The shortest-serving science minister lasted less than seven weeks.

Over the period, the average tenure for a science minister is almost exactly two years. For the past five ministers, the average drops to just under 10 months.

We have had two science ministers with science degrees – which is exactly half the number of science ministers called Chris. And, perhaps not so surprisingly, twice the number that have been women.

Then we could look at higher education, and see a similar pattern – if not quite so stark.

Since 1985 there have been 23 ministers for education and higher education, nine of which had responsibility specifically for higher education. In the last five years the average tenure has been just over one year.

But that is just the Ministers.

How many inquiries have been convened over the years?

Professor Roy Green has identified at least sixty reports into the innovation system alone in the last fifteen years – and there would be more, if all reports into the higher education sector were taken into account.

How many working groups convened to write them? And where are their members now?

How many public servants, in how many departments, generated how many briefs? And how many are still there, doing it again and drawing on their memory to avoid the old pitfalls?

How many journalists cycled through the higher education and science desks of the major newspapers?

How many of them remember the Dawkins era – let alone the conditions which prompted the Dawkins reforms? And learning from the knowledge? Few - but not many.

I am old enough to know that every generation thinks it lives in interesting times, and each generation is right, even if in hind-

sight we might say some generations had it worse - or better - than others.

But if I am old enough to know that there was never a golden age of policy coherence and national unity, I am also old enough to know that we *are* capable of long-term vision.

I would not have accepted this job if I thought otherwise. I certainly would not have been any good at it.

A Chief Scientist who only told you what you wanted to hear would be just as useless as a Chief Scientist who only suggested things you couldn't accomplish.

The challenge is to find the place in the middle, where something of substance can be achieved – a goal that stretches you, and rewards the effort.

My three word mantra is passion, persistence and patience.

Passion, to know that what you want is worth the effort it will take to achieve it.

Persistence, to make the case a hundred times over, and then move on to the next person hoping the first person has retained at least some of the key words.

Patience, to have the persistence. Patience not to wait for change, but to know that your actions today will influence your children's choices in fifty years' time.

**Science: we all need it, we all need to be part of it**

Which brings me to my topic today: science – who needs it?

I would say that we all do. Precisely how depends on us.

Do we want to know about our world, and our universe, who we are and how we came here, in ways that inspire us to cherish and protect?

Do we want to build industries that compete on knowledge and ideas, and operate in sustainable ways?

Do we want to generate new jobs to replace the old, jobs that people will want to do because they reward us for energy, imagination, and ambition?

Do we want to be the beneficiaries of new medicines, better ways of getting around, cleaner air, safer cities, and new opportunities to connect with people all over the world?

Do we want to be a confident, outward-looking nation, which contributes to the wellbeing of everyone on this Pale Blue Dot, and benefits in turn from the knowledge and ideas from overseas?

I think we do. So yes – I would say we all need science, in the sense that our lives would be intolerable without it.

But I also mean it in another sense. I mean that we all need science as part of our intellectual toolkits.

We don't all need to know enough to be scientists, because that would be a very sad and limiting kind of world. But we all have to be capable of understanding how science works, and what it might help us to achieve.

Science, as Tony Blair once said,<sup>1</sup> is not a moral good in itself. It lets us do more but it doesn't tell us whether doing more is right or wrong. It is a means to an end. So it can be an efficient

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<sup>1</sup> Tony Blair, Address to the Royal Society, 24 May 2012. Published by The Guardian, available: <http://www.theguardian.com/politics/2002/may/23/speeches.tonyblair>.

means of doing something appalling – just as it can be essential to the accomplishment of something good.

It takes moral judgment to determine the difference.

If we restrict science to the smarties, then we make it an elitist agenda – disempowering people, because they can't understand or critique it; and weakening science, because they don't support it.

If we approach it as a common interest, then we might well recognise our shared responsibility.

We are a democratic country: so we all share the decisions, and we all need to be informed.

We aspire to be a fair society: so we all deserve an education that equips us for future jobs and enables us to benefit from future technologies.

We want a knowledge economy: so we all need to be capable of working in it, and many of us will need the encouragement to build it.

So to grow the pie, and share the pie, we need a good science education, for every child.

Every encouragement for students to be curious about the world in which we live, and to seek out further study.

Recognition and support for those who choose to practice science.

And all of it recognised as perhaps the most important thing any country can do to make its way with confidence through the twenty-first century.



## **Making our entrepreneurial Australia through education**

One of our most pressing challenges in education is to prepare graduates for today's workforce, even as we prepare them for a future we expect to be very different.

We need graduates who will be curious, nimble and not constrained by the narrow confines of the particular discipline they might focus on today.

So we need them to think of education as something that continues throughout their lives – not just a series of stops on the way to doing what you actually want.

It is an escalator – not an elevator.

To that end, I have been thinking for some time about the ways we can encourage entrepreneurship, as part of my recommendations for Australian science, technology, engineering and mathematics.<sup>2</sup>

I called in that document for entrepreneurship to be integrated into mainstream education, at every level.

And by that I mean education conceived as the training, experiences, attitudes and opportunities we develop – as well as the content we teach.

Its purpose would not be to send graduates down narrowly conceived and regrettably clichéd pathways – but to encourage them to make the paths they want.

So that is what we set out to understand. We commissioned a paper on the role of universities in developing entrepreneurs.

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<sup>2</sup> Office of the Chief Scientist 2014, *Science, Technology, Engineering and Mathematics: Australia's Future*. Australian Government, Canberra. Online, available: [http://www.chiefscientist.gov.au/wp-content/uploads/STEM\\_AustraliasFuture\\_Sept2014\\_Web.pdf](http://www.chiefscientist.gov.au/wp-content/uploads/STEM_AustraliasFuture_Sept2014_Web.pdf).

I expect to release that report in the near future.

Its main finding is that universities are central to the economies where start-up activity clusters.

We are not one of those economies – although we are not short of either well-regarded universities or talented people.

Countries that do a lot better than we do have certain characteristics that, in the main, we lack:

- 1) A national strategy that places high impact entrepreneurship as an economic priority and seeks to address the known obstacles.
- 2) An understanding of universities as nurseries – where attitudes are developed and networks formed – not just classrooms where content is taught.
- 3) A belief that entrepreneurship needs to be part of mainstream education – not just one strand of a specific business degree.
- 4) An outward-looking perspective that encourages students to think about and tackle global rather than simply domestic markets.

And critically, they put an emphasis on entrepreneurship early in the school curriculum, and extending into university-based programs.

You can put elegant icing on a brick, but that won't make it a Christmas cake.

By the same token, you can make any number of opportunities available in universities – but if the students come with their eyes fixed on a conventional employment path, they will not emerge as entrepreneurs.

The trick is not just to enlarge their imaginations – but to enable their success.

In other words - we need to teach ourselves to think differently about education.

## **Conclusion**

The Prime Minister has now laid down the challenge – as he has done for many years in different roles.

In a speech he delivered last year,<sup>3</sup> he summed up the themes that have emerged as the national imperative in more recent times.

“In a nutshell we need knowledge and imagination. The former on its own is a dull resource; the latter on its own is a hallucination. Combined they will ensure an Australian future which is more exciting, more prosperous than ever before.”

It is true for individual students – it is true of the policies we pursue for the country.

Knowledge and imagination.

Let's rise to the opportunity of our time.

**Thank you**

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<sup>3</sup> Malcolm Turnbull, “The Importance of Tech Education in Schools”, 24 October 2014. Online, available: <http://www.malcolmturnbull.com.au/media/speech-the-importance-of-tech-education-in-our-schools>.