Abstract for Beijing

In 2010 Australia decided to establish a new national science communication strategy.

A report *Inspiring Australia* was launched in February that year recommended that science communication activities should be given a greater sense of direction.

The Chair of the Steering Committee said in the preface that, while she and her colleagues were encouraged by the breadth and diversity of science communication initiatives carried out by many organisations and individuals, they felt:

"Australia requires a national strategy that will mobilise and connect such activity, which is largely uncoordinated and fragmented. Many Australians are yet to engage with the sciences in ways that will enable them to participate fully in a society which embraces the Australian Government's innovation agenda."

Australia has a large number of science communication activities, some funded by national and regional government, some by the universities or research organisations, and others supported by organisations including not-for-profit organisations, the Academies and industry.

In the 30 months since the Report came out, six expert groups have been created to examine aspects of science communication. The first reports are now being made available.

What are these reports recommending? What other progress has been made? Are science communication activities more co-ordinated? The Government has provided $AU21 million over three years to fund these activities. How is the money being spent?

This paper will discuss the progress made in Australia, and compare the direction of Australia's program with science communication activities in China.

A national strategy for science communication in Australia
A progress report
Paper presented at the Chinese Research Institute for Science Popularisation.
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T.H. Gascoigne

So why does Australia feel it needs a national science communication strategy?

The Chief Scientist, Professor Ian Chubb presented four broad reasons when he spoke recently[i]:

> *Effective science communication is vital for supporting science more broadly. This is because:*
>
> - *It has immense downstream effects,*
> - *It educates and inspires future scientists,*
> - *It builds a case for more funding and support to the researchers and their institutions, and*
> - *It connects the public to the science that benefits their lives*."[ii]

He went on to say:

> *It aims to build a strong, open relationship between science and society that is underpinned by effective communication of science and its uses.*
>
> Inspiring Australia *provides a national framework that establishes a coherent approach to science communication.*
>
> *It aligns the activities of science research agencies, government departments, education providers, community organisations, businesses and industry.*[iii]

Australia's move to develop a national science communication strategy followed a national review. It was initiated by the Minister for Innovation, Industry, Science and Research, and resulted in a report *Inspiring Australia - A national strategy for engagement with the sciences*[iv].

Inspiring Australia concluded that science communication activities needed a greater sense of direction. The Chair of the Steering Committee said that, while she and her colleagues were encouraged by the breadth and diversity of science communication initiatives carried out by many organisations and individuals, they felt:

> *Australia requires a national strategy that will mobilise and connect such activity, which is largely uncoordinated and fragmented. Many Australians are yet to engage with the sciences in ways that will enable them to participate fully in a society which embraces the Australian Government's innovation agenda"*[v]

Australia has a large number of science communication activities, some funded by national and regional government, some by the universities or research organisations, and others supported by organisations including not-for-profit organisations, the Academies and industry. Most of these activities will be familiar:

- National science week
- Prizes for outstanding scientists, to create role models
- National campaigns to influence citizen behaviour on water use, the need for a healthy life-style, reducing energy consumption and so on
- Competitions and activities for school children
- Events to encourage dialogue between scientists and industry
- Promoting science understanding to politicians

Today I want to look at the reasons for the need for a national policy on science communication. Second, I want to report how Australia is rolling the new strategy out since the launch of the report. The third part of the speech will make some basic comparisons between the policy in Australia, and the science communication activities and policies in China.

Before I start, though, I need to thank CRISP, Dr Ren Fujan and the organisers of this important meeting. It is always a pleasure to meet with colleagues at one of the world's significant institutions in the study of science communication.

First, the reasons.

Inspiring Australia was released at the national conference of Australian Science Communicators (ASC) in February 2010.

It argued the case for an expanded and coordinated science communication effort, and made 15 formal recommendations. The Report described how Australia would look if it were informed by a national science communication strategy:

- be inspired by and value scientific endeavour
- attract increasing national and international interest in its science
- critically engage with key scientific issues
- encourage young people to pursue scientific studies and careers

The Report nominated four reasons why Australia should invest in science communication:

> *to increase appreciation of science in Australian culture, facilitate informed citizen participation in decision making and science policy development, boost confidence in the Australian Government's research investment and ensure a continuing supply of well-qualified science graduates.*[vi]

In launching *Inspiring Australia*, Science Minister Senator Kim Carr said:

> *Science communication matters because democracy matters. Science communication matters because so many of the decisions we make these days are based on science. Decisions about who gets what, when, where and how. Decisions that influence people's chances in life. Decisions that may well determine the fate of the planet. Citizens can only have a meaningful say in those decisions – whether for or against – if they understand the science. If we are serious about giving people a real voice in how we run this high-tech world of ours, we have to be serious about science communication".*

Other commentators expanded on the rationale behind the report – and raised further questions:

> *A society that doesn't understand the value of science does not utilise it, cannot learn from it and risks not benefiting from it. You end with a nation that is not only unaware of its own scientific prowess, but unable to tap it. That's why science communication is important….*[1]

Professor Linda Rosenman, President of the Council for the Humanities, Arts and Social Sciences, welcomed a role for her sector:

> *the contribution of the humanities, arts and social science disciplines in problem-solving, and [I note] the social sciences and humanities are critical to the interface between science and society*.[2]

Eighteen months after *Inspiring Australia* was released, Professor Ian Chubb was appointed Chief Scientist of Australia. He saw the need for a new approach in science communication. One of the factors was the difference between the high quality of Australian science, and the low interest in science by senior school students. He said that Australia produces about 3% of the world's scientific publications, but despite this, most Australians are disengaged with science.

> *You can see this in our university science and mathematics enrolments. You can see it in the projected shortages in engineering, statistics and the research workforce. And you can see it in the ways the public conducts scientific debate about climate change, stem cells or nanotechnology.*
>
> *This is an important time in our country's history. The problems we face – indeed, the problems that the world faces – won't be solved, or even managed without science and technology. Yet it is not clear to me that most people, or even many people, really understand the importance of science and technology to our future.* [vii]

Chubb quoted results from surveys of year 11-12 students (aged 16-17). Only 33% of the students studying science thought science was 'almost always' important to their future. The figure for those not studying science was much lower: 1%. Chubb concluded:

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[1] Wilson da Silva, Editor-in-Chief of COSMOS magazine and former president of the World Federation of Science Journalists. Ibid

[2] Ibid.

> *Considering the science and mathematics in everything from their school shoes, clothes, plastic bank notes, television, mobile telephone and food, this is profoundly discomforting*[viii].

Chubb quoted a study[ix] conducted in Norway in 2004. It showed that that the more developed a country, the less young people are inclined towards education and careers in mathematics, science and technology.

Australia was not one of the 40 countries in this study, but the same lack of interest is obvious. For instance, our enrolments in science courses at school and university have tracked a sharply downwards in the more demanding basic science and mathematics courses.

The stage was set for a new coordinated approach to science communication, one which aimed to generate a new appreciation of what science can do for a society, and why careers in science are worth pursuing. It would involve a co-ordination of activities and a bringing together of the many organisations interested in talking to the public about science.

What has happened in the 30 months since the report was released? There has been a flurry of activity. Regional managers have been appointed to coordinate science communication activities in Australia's 8 jurisdictions. Six expert committees have been asked to provide advice in areas such as evaluation, using the media, and other areas. To make sure Government programs are working together, two committees have been established to coordinate activities across government.

Changes have been tracked in the newsletters of *Inspiring Australia*, and here is a brief summary:

The first newsletter[x] (November 2010) outlined plans to eliminate 'duplication, gaps and inefficient use of limited resources', and announced a 'national framework-local action' approach through the appointment of regional officers to:

> *to deliver an effective and efficient national initiative that mobilises and connects otherwise uncoordinated, overlapping and fragmented activities*[xi]

The first two expert working groups were appointed, one to strengthen the media's role in communicating science; and the second to advise on the best ways to evaluate science engagement activities.

The second and third newsletters focussed on science prizes, reporting a speech by the Prime Minister at the presentation of the National Science Prizes.

> *But* Inspiring Australia *will go further, supporting science events and activities in Australia's cities, regional and remote areas all year round. We will target young people, outer-metropolitan and regional areas, and Indigenous and remote communities too. We will connect with popular community events such as writers' weeks and music festivals. And* Inspiring Australia *will connect with mainstream and new media to promote science*

> *issues and achievements to an even wider public. You do great things. Let's ensure the community gets to hear about them.*[xii]

It is clear that the program was determined to reach out to new audiences, not simply those who were naturally inclined to go to science museums and study science at school; and that support for these moves came from the highest level. This includes indigenous communities and those in regional areas, the most disadvantaged in Australia.

The first expert working group, *Science and Media: From Idea to Actuality*, made several recommendations, including more training and support for both scientists and journalists, and a science-media innovation fund.

The fourth newsletter (February 2011) reported on the second working group, which recommended (among other things) for a longitudinal study "of the Australian public's requirements for scientific engagement", and greater recognition for the discipline of science communication.

It also announced initiatives to widen the reach of the *Inspiring Australia* program to cover matters outside the Science Department, such as health, agriculture and the environment.

Newsletter 5 (March 2011) set out the agenda for the first *Inspiring Australia* conference, including discussions on involving hard-to-reach audiences in regional and rural Australia.

Newsletter 6 (May 2011) announced funding of $AU21 million ($AU1 =$US1.06) for the *Inspiring Australia* program over the next three years, a relatively modest increase of 50% over the programs it replaced.

The next newsletter announced the establishment of more working groups, including one for indigenous groups in Australia:

> *in what way would Indigenous Australians benefit from more engagement with the sciences, and in what way would the sciences benefit from more engagement with Indigenous Australians. How can Indigenous traditional knowledge and modern science benefit from each other? How can established practices of Indigenous science and technology inform a scientifically engaged Australia?*

The *Inspiring Australia* program called for proposals for projects, imaginative ways that science communication activities can be advanced. The three categories of grants were small (up to $AU5,000), medium (up to $AU45,000 over three years) and large (up to $AU500,000 over three years for larger 'high impact and nationally significant projects'). The final two newsletters dealt with the process of putting in a submission, and subsequently, which proposals had been successful.

278 groups or individuals applied for grants, asking for over $41 million; and 63 projects were funded, many with a regional focus which reflects the determination of the program to reach disadvantaged audiences.

That takes us up to the beginning of 2012. What has happened since then?

The report of the expert working group on the media has resulted in six new projects. These projects aim to assist both scientists and journalists in their efforts to get coverage for science in the media, through training and providing 'topical science forums' for journalists.

In the same manner, the recommendations of the second expert working group have been translated into projects. One is to conduct a national audit of science engagement activity, drawing up a list of activities across Australia and the organisations and people promoting them. A second is to develop a uniform set of evaluation tools, tackling one of the hard issues in science communication: how do we know whether our actions are having any effect?

Four new expert committees have been established, all seeking to extend community engagement and build effective networks. These groups are concentrating on communities linked by interest rather than geographical region, interests such as a common link with deserts or marine or tropical areas, or indigenous peoples.

A new move is to bring a greater sense of involvement and involvement between the natural sciences, and the humanities, arts and social sciences. Until recently, these disciplines had been regarded as separate areas of study and policy; and their capacity to work together on finding solutions to enduring problems had been overlooked. Strengthening the connections between the disciplines unlocks their capacity to work on problem areas together.

Some previously announced matters have been confirmed: program officers have been appointed to each jurisdiction in Australia, with the task of coordination and managing year-round science engagement activities; and National Science Week is on the calendar again, with 1,000 science activities across the nation.

So how does the new *Inspiring Australia* program compare with the situation in China?

In comparing the two situations, I want to draw on a paper by Donghong Cheng and Yinlin, presented at an informal meeting in Florence this year prior to the PCST conference. These are observations rather than the result of a detailed study, and it is interesting to see the similarities and the differences.

In China, "science popularization is now a social practice pushed by the demand of Chinese citizens". This suggests a thirst for scientific knowledge on the part of the ordinary citizen in China. Australians are also interested in science, particularly health and environmental issues, but perhaps not to the same extent. Although they are surrounded by the benefits of science, the figures quoted by the Chief Scientist seem to say that Australians do not see it as important in their lives – and the further young people are away from science, the less important it becomes.

The themes identified as a core of the Chinese program ("saving energy and other natural resources, preserving ecology and environment, protecting safety and

health of life, and facilitating innovation and creation") are also important in Australia, but one of our motivations is to encourage young people to study science at school and university. The numbers undertaking study have been dropping alarmingly, and Australia is concerned we will not have enough scientists and engineers to satisfy our national needs.

The target groups identified in the Chinese program through your five actions are similar to those of the Australian program, and for the same reason: we need to encourage specific groups to take a greater interest in science. China nominated five social groups:

"Given the unbalanced development of economy and culture in different areas and populations, and different needs of social groups as well, scientific literacy of Chinese citizens will be promoted through five main actions in progressive procedures by targeting at five social groups: farmers, working population in urban areas, youngsters, leaders and public servants as well as the community residents."

In Australia we too target people in rural and regional areas, less educated groups and young people. We also have specific programs to address the leaders of our community, to make them more sympathetic to the possibilities of science.

The Chinese program lists five projects for these target groups, "to make sure that they have more opportunities and access to improve their scientific literacy", which includes

1. science education and training project
2. SP resources development and sharing project
3. SP capacity building promotion project for mass media
4. SP infrastructure project and
5. SP talents training project.

From my description of the Australian program earlier, you can see that we share the same sorts of actions to achieve our aims.

There are also differences. The program in your country is a whole-of-government approach, while the Australian program was developed by the Department responsible for science without the formal involvement of other departments with an interest in science: agriculture, defence, telecommunication, agriculture and other areas. This is a potential weakness because much of the science communication activity and funding comes from these other departments, but the matter is being addressed through committees which aim to coordinate activities across all areas of government.

Resourcing is an issue in Australia, with only a small amount allocated to these efforts. A second issue is bringing together fragmented activities and bringing them into one program with a clearly defined purpose. We have three levels of government, national, regional and local; and it can be difficult to manage across these levels.

Is one of the aims in China to link research with industry, to ensure that good ideas are used to develop new products and processes? This not part of the

Australian program (although we have other measures to bring industry and researchers closer together), but it is an issue, and could have been one of the aims of *Inspiring Australia*.

For Australia it is early days and we are still developing the best approach. I understand that officers of CAST are in communication with the people running the *Inspiring Australia* program, and I would be interested in hearing the views of others in this room on the similarities and differences in our approaches. I hope we can learn from each other.

Thank you.

[i] 2nd Annual Inspiring Australia address at the CSIRO. TRANSCRIPT AVAILABLE. 14 March 2012

[ii] Chubb speech in Canada, 2011. Downloaded 7 August 2012. http://www.chiefscientist.gov.au/2011/11/canadian-science-policy-conference-inspiring-australia/

[iii] Ibid

[iv] Report is available at: http://www.innovation.gov.au/Science/InspiringAustralia/Documents/InspiringAustraliaBrochure.pdf

[v] Ibid. In the covering letter to the Report, p. iii

[vi] Ibid. op.cit. p4.

[vii] Professor Ian Chubb. Speech 13 March 2012. Downloaded 7 August 2012. http://www.chiefscientist.gov.au/2012/03/inspiring-australias-scientific-culture/

[viii] Professor Ian Chubb. Speech 13 March 2012. Downloaded 7 August 2012. http://www.chiefscientist.gov.au/2012/03/inspiring-australias-scientific-culture/

[ix] Schreiner, C and Sjoberg, S. (2004). The Relevance of Science Education – A Comparative Study of Students' View of Science and Science Education. Norway: University of Oslo Press.

[x] All newsletters are available at: http://www.innovation.gov.au/Science/InspiringAustralia/Newsletters/Pages/default.aspx Downloaded 7 August 2012.

[xi] Ibid.

[xii] Prime Minister Julia Gillard. From Inspiring Australia newsletter #2, December 2010 [web] Downloaded 7 August 2012.