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Science and Diplomacy

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In general diplomacy aims to promote national interests on an international stage without conflict or negative spill-overs. So how does science interact with this clearly established political goal? It does so in a very broad and evolving set of ways.

In some ways I think you will find close analogies between what I shall suggest and Sir Mark's comments on the nexus between science and policy.

The links between science and diplomacy have been formally described in three categories of activity, first articulated by Nina Federoff, former president of AAAS and former science advisor to the US State Department and encapsulated in a report 5 years ago by the Royal Society and AAAS. These were:

- Diplomacy for science,
- Science in diplomacy and
- Science for diplomacy.

But the reality it is much more nuanced.

Diplomacy has long played a role in assisting science that crosses national boundaries. This is most evidently seen in the raft of bilateral agreements involving researchers between states and in the development of global science projects such as the international space station; CERN: the Square Kilometre Array; or the Antarctic Research Program.

One particularly innovative example that New Zealand has been heavily involved in is the Global Research Alliance on reducing agricultural greenhouse gas emissions. This NZ – initiated proposal was born alongside the climate meetings in Copenhagen in 2009. NZ recognised it was unique amongst developed countries in having over 50% of its emissions associated with agricultural production; a pattern more like that of many developing countries. At the same time, it was in a position, scientifically, to be a leading force for change in this sector. It proposed a global alliance led by scientists to identify research gaps to

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mitigate agricultural emissions on the basis that addressing this sector could engage a range of countries in mitigation more broadly. At a meeting in Wellington in 2010, about 30 countries joined the initiative and it now numbers over 40 countries including all the big agricultural emitters, both developed and developing countries. The initiative is structured with light-handed governance and a very productive research effort is under way in areas related to livestock, rice, crop and arable, and soil carbon. Key to the early success of this effort: the diplomats were essential to develop the alliance but have now allowed the scientists to drive the work.

These examples are classic *'diplomacy for science'* – they are about building international relationships to foster robust collaborative scientific networks and shared expertise and infrastructure, especially in areas of shared global interest such as climate change, and ocean health and where the tools of diplomacy have clearly helped the scientific enterprise.

But if you reflect on any of these there has been a reciprocal effect of *'science for diplomacy'.*

For instance, there has been no doubt that the Square Kilometer Array has met a number of objectives for enhancing north-south relationships and technology uplifts in southern Africa. It has also furthered South Africa's relationships with its neighbours. For our part, there has is no doubt that the Global Research Alliance on agricultural greenhouse gases has been a doorway for relationship building with a number of countries, and has allowed NZ to project itself globally.

Thus, diplomatic objectives can be met using science policy tools, all while advancing internationally collaborative science itself. Indeed the recent impetus on science within diplomacy started at the beginning of this decade when the UK, the US and Europe looked towards building greater bridges into the Muslim world.

The third type of interaction between the diplomatic and scientific worlds is when science provides technical knowledge to meet diplomatic or trade objectives – that is: *science within diplomacy*. I won't dwell on this one, but without assessment and regulatory science to allow verification, arms treaties, for instance, would not be possible. And I suspect that when the world finally gets to an effective mitigation approach to climate change, similar demands will be made on the global science system.

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While we can distil the interaction of science and diplomacy to these three somewhat artificial categories, in practice we are continually finding important – indeed essential – nuances that mediate these relationships. Indeed, as with anything, context and perspective are paramount. A country typology might be simplistic, but we do know that there are important distinctions between large

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and small countries and those with developing and more developed economies. There are also differences between countries with larger strategic and industrial influence, compared to those without.

It goes without saying that large developed countries have long used science as a way of projecting themselves globally. And today, we are seeing smaller countries like NZ borrowing from that same playbook, but also adapting it to their own gestalt. One area where this is becoming most pronounced is in innovation. One example is the Small Advanced Economies Initiative, which brings the only non-European IMF –defined advanced economies with populations under 10 million people (Singapore, Israel and NZ) together with three European partners (Denmark, Ireland and Finland) to explore policy development in science, innovation and economic policy. This initiative was born out of the recognition that there are small economy particularities that play out in the science and innovation sectors. This network is proving particular valuable to policy makers in the 6 countries and has led to some very distinct insights and new sources of collaboration.

As innovation-based economic growth becomes the centrepiece of many countries' economic growth strategies, the role of science in that setting becomes more obvious. It is clear that countries want to project their image as sources of innovation. Thus countries appoint scientific attachés to many embassies, and we have seen the development of scientific and innovation networks amongst governments. For example the Asia Pacific Economic Council of 21 economies now has started chief science advisor and equivalent meetings to discuss matters of common interest in developing the economic agenda.

Among other things we are learning through the analysis in this initiative, is how the link between science and trade can be particularly acute within small economies. For instance, science has sometimes been exploited to create trade barriers, and small economies are especially vulnerable at the nexus of science and trade. Examples include enduring questions about the use of certain pesticides or wood preservatives. Indeed, a surprisingly large number of WTO disputes rest on science for their resolution.

One of the longest standing global trade disputes that went on for decades was the ban on exporting New Zealand apples to Australia because of a claimed threat from the bacterial disease known as fire-blight. New Zealand argued that scientific evidence did not support the continuation of these imposed restrictions and opted to take the dispute to the WTO because normal diplomatic processes had failed to resolve the matter. Eventually the impasse was resolved using the WTO dispute settlement process which ruled in New Zealand's favour based on scientific arguments related to the level of risk and the risk management required.

There is another core role for Science in diplomacy. Think of the world's ungoverned regions – space, the Antarctic, and the cyber world. To the extent they are governed at all they are largely governed by scientific collaborations.

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This is most obvious in the Antarctic treaty that restricts the use of the white continent to scientific purposes alone.

But let me now look forward –

Perhaps the climate change story heralds a future for science and diplomacy. Just as science is informing policy in different ways, it is engaging very differently and far more intimately with diplomacy than it has traditionally done. Science advice to governments is now very much focused on post-normal issues which are characterised by 1) the urgent and nature of the problem; 2) the incomplete nature of the science; and 3) is the high (and often factionalised) public interest in the problem. Not surprisingly, many of these same types of issues drive high diplomatic interest as well.

For instance, national interests are clearly at stake in developing a global climate change mitigation strategy, as each country positions itself according to the pressures faced within their own borders. It is indeed complex. But if we look at the matter somewhat dispassionately, we can see that since the emergence of the science-led climate change dialogues, governments have come to recognise the global nature of the problem. And while the science continues through the IPCC process to become increasingly clear, the challenge of how governments promote their national interests while avoiding a potential tragedy of the commons has come to the forefront. Both the science community and the diplomatic community have faced a number of new experiences and approaches in this journey and the difficulties of finding a solution remain painfully clear.

These kinds of issues are only going to get more common and possibly more complicated. Whether it is weighing the risks and benefits of geo-engineering or attending to the quietly urgent issue of honey-bee colony collapse, there is a growing list of 'grand' societal challenges that need a trans-national policy perspective and that are grounded in science, while accounting for national social values and economic imperatives. And as this list grows, this is also highlighting an important weakness that we all must consider: that is the somewhat inchoate relationship between national science advisory systems (themselves with varying degrees of maturity) and those of transnational organizations, which in general are not that explicit. This is a topic I do not have time to go into but will be discussed at length at the first international meeting on scientific advice to governments in Auckland in late August this year. This will be preceded by a meeting on science and diplomacy that will discuss in detail the issues that I have briefly discussed together, together with one more challenge.

That challenge is the growing science and technology gap between countries with more advanced economies and those with emerging or developing economies. In the case of NZ, we are particularly concerned about the small island developing states including many that are our Pacific neighbours. While science has long had a role in aid – and indeed there is a whole field of science of assessing the effectiveness of aid programmes – less attention has been given to the issue of how to build capacity in small countries to produce and use science

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and technology for maximal benefit. Can digital means be used for distributed learning models that enhance STEM education or to find niches for economic growth?

A still deeper challenge is how those countries with more experience in these areas might support the procurement and use of scientific advice in countries where capacity is still developing, and in ways that honour domestic knowledge and sovereignty. As the world gets more technologically intense this issue could become as problematic as the economic disequilibrium between north and south. Again this will be on the agenda at the Auckland meeting.

Science and diplomacy are inevitably intertwined. A few foreign ministries, such as those of the UK and US, have now appointed their own science advisors at a very high level (as distinct from S&T councillors in their foreign missions). In my own case, in addition to being Chief Science Advisor to the PM, I have a secondary appointment within the Ministry of Foreign affairs and Trade. I suspect that over time these roles will not be quite so foreign within the world's foreign services sectors.

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