

Government Science

Notes for Remarks to the DFO ADM Science Forum

by

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Introduction

- I'm delighted to have this opportunity to speak today as part of the DFO ADM Science Lecture series, and especially to be here at the Canada School (an institution that I helped to create some 20 years ago).
- In fact, I'm doubly honored, because I'm not a scientist. My government work has been in public policy and government organization, and my academic background is in philosophy. Yet here I am to talk to you about government science.
- I want to talk specifically about three things:
 - I will start with what we know about government science, and this government's relationship to science, today.
 - Second, I will talk a bit about the evolution of views inside government on the role and value of government science.
 - Third, I will offer some ideas on how we might support and manage government science more effectively in the future.
- A couple of words about my own history in these issues.
- First, as some of you know, I have a long association with Fisheries and Oceans. I am a member of the Departmental Audit Committee, on which I have served since its inception, over two years ago.
- Before that, I was closely associated with the Science Sector, where I was an adviser to Wendy Watson-Wright and Serge Labonté and others on a host of issues related to the organization and management of science in this department.
- But beyond DFO, I've had the privilege of working on issues related to government science for many years.
 - When I was in the machinery of government business, I dealt extensively with officials who were responsible for various aspects of the government's broader scientific enterprise.
 - I was there when the National Advisory Board on Science and Technology (NABST) was created.
 - As a consultant I was involved in creating the Food Inspection Agency, and Genome Canada, and I've provided advice on policy and organizational issues to scientific departments and agencies across government.
 - I've also worked on issues of intellectual property and industrial policy as it affects science.
 - More recently, in 2006, I was commissioned by industry Canada to do a review of NSERC and SSHRC that fed into the 2007 S&T Strategy.
- That experience, and especially my very positive experience of working with colleagues here in DFO's Science Sector, is what led me to this podium today.
- I believe, as you do, that science matters, and I think we need to pay it more respect.

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- In offering my thoughts to you today, I'm aware that many government scientists have strong views on how government science has been managed, led and resourced over the past 30 or 40 years.
 - I understand those views, though I don't necessarily share them. I also understand why successive governments have done what they've done to and for government science.
 - I'm aware of the views of the wider research community toward the actions and policies of the present government. I've heard their criticisms, and seen the newspaper stories voicing concerns over alleged funding cuts in research.
 - I don't share those views. To its credit, and perhaps against the impulses of some of its supporters, this government has been remarkably forthright in asserting its continued support for scientific research in Canada and its recognition of the importance of substantial federal funding for discovery research.
 - The government does have a view on science. It also has an S&T Strategy, released in 2007, which sets out a philosophical orientation and specific goals and principles to guide federal spending on science.
 - I believe that many of the criticisms of the government are based on disagreement with its perceived philosophical orientation rather than genuine differences with the government's actions and declared commitments.
 - But that's another topic.
 - My topic today is not discovery research in general but rather, *government science* – that is, the research and related scientific activity done in federal and other scientific institutions in support of policy, regulation, standard-setting and other federal responsibilities.

Where are we today?

- Let's start with what we know.
- *We know that the current government is committed to the marketplace*, and to the central place of the private sector in building a competitive economy and a prosperous society.
- *We know that the government is more oriented to "science for solutions" than to pure discovery research*. It wants results, not just scientific activity that may or may not produce benefits in the longer term.
- *We know the government is right in saying that in Canada we need more private sector R&D*. (Indeed, the Science, Technology and Innovation Council has just come out with yet another report saying so.) But historically, we have not been good at this, for a whole variety of reasons that I won't rehash here.
- (Where we do score well in international comparisons is on public spending on science broadly conceived, in part because of the comparative lack of spending by industry in this country.)

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- *We know there is a global market for scientific talent.* In our history, this has often worked to our advantage, and occasionally to our disadvantage. Today, Canada's best scientists can go anywhere; they know it, and they don't hesitate to remind us.
 - *We know the world is changing,* and that in the current economic crisis, governments are coming under increasing pressure to invest directly in innovation (recall Ontario Minister Michael Bryant's recent comment about "picking winners and losers").
 - *We know that the issue of how to make government science as useful as possible for Canada has been a constant preoccupation of governments,* dating back to the Glassco Commission and the early work of the Science Council in the 1960s.
 - The problem is that advisory bodies and Science-Based Departments and Agencies (SBDAs) have seldom been of one view on how to do this.

Where have we come from?

- Recall briefly the wide range of ideas and recommendations that have been made:
 - In 1988, NABST recommended that federal laboratories be essentially devoted to "industrial-related research";
 - In 1990, in a separate report, NABST recommended that government labs be organized and managed as distinct entities working in a contractual relationship with the department as a client;
 - In 1994, the federal S&T Review pushed for greater collaboration between federal labs and partners outside government;
 - In 1996, the federal S&T Strategy recognized the distinctive role and contribution of federal science in a larger national (and international) context of research and innovation;
 - In 1998, the Council of Science and Technology Advisors spelled out what has now become essentially the contemporary model for government science, namely:
 - science in support of policy making and regulation;
 - science in support of standard-setting;
 - science in support of public health, safety, environment and security;
 - science in support of economic and social development.
- *We recall that after 1995, the Chretien administration made a basic commitment to massive investments in university research.* And the Harper government has sustained or even increased that level of funding.
- The premise was (and is) clear – with relatively few exceptions, it is in universities that discovery research in Canada will be done. And the government has been consistent in backing up this commitment with major investments in CFI, in NSERC and SSHRC, in CIHR and in Genome Canada.

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- Since 2000, government spending on university research has more than doubled (from roughly \$1.2 billion per year to more than \$2.9 billion), while spending on in-house R&D has gone up by 15% from \$2 billion to \$2.3 billion. The government spends another \$4.6 billion today on RSA and support for business R&D.
 - Recent public health crises have reminded all of us of the importance of these investments in government science.
 - As you know, the Public Health Agency of Canada was created in part as a response to the capacity weaknesses revealed by the SARS crisis of 2003. One of its success stories is Frank Plummer's Level Four lab in Winnipeg, a world-class facility that does leading-edge work – most recently in sequencing the genome of the swine flu virus.
 - *We know that it's often harder for government scientists to collaborate – whether with university counterparts, the private sector or internationally – than it is for people in the universities.*
 - *We know that it's harder for SBDAs to hire people than it is for universities.* Federal departments and agencies can't move as quickly, and in many cases, they can't offer the same salaries and laboratory facilities.
 - And to repeat a point made earlier, *we know that if federal science-based departments and agencies cannot compete effectively for younger talent, an essential federal scientific capacity will be critically weakened over time.*

What has been done?

- For some decades now, people have tried to make government science more directly relevant to the needs of government, and through government, to the needs of Canadians.
- People have tried to manage science “more rigorously” – though this has not always meant more effectively.
- Efforts have been made to *target* government science, in part with a view to achieving the biggest bang for what has long been a very limited number of bucks.
- Yet, perhaps for lack of a sustaining vision, successive governments have failed to make necessary investments in renewing government scientific infrastructure.
- Successive senior leaders in SBDAs have not made strongly enough the link between the government's research and RSA activities and the research endeavours of the universities, and the applied research of industry.
- Neither governments nor senior managers have done enough to make members of the government science community feel loved or at least respected.
- Not for want of trying, Deputies and ADMs in those SBDAs have not told a convincing story to Ministers about the value of in-house science.
- Moreover, people like me in policy shops and central agencies have too often failed to recognize the diversity of the scientific enterprise within government, falling too

easily into the naïve categorization of universities as the home of discovery research, and the federal government as the home of people who do routine laboratory science in support of federal regulation and policymaking.

- The truth is, federal scientific institutions differ widely in what they do, in how they do it, and in how they manage their relationships outside government. Some agencies and labs (most obviously NRC) work closely with industry on what is very much applied research, while others such as DFO, NRCan and Environment Canada, in addition to their work in more applied and regulatory science, do large-scale monitoring and basic research that no one else has the capacity to do.
- In many cases, the latter is world-class, original research published in peer-reviewed journals.
- Finally, policy-makers and politicians have not done a good job of appreciating where and how federal scientific capacity can contribute to the government's economic agenda, or to strategic directions such as commercialization. We talk the talk – too easily – but we fail to translate our ambitions into relevant action.

What to Do?

- Let me offer a few thoughts on what I think needs to be done in future, if we (that is, you in the government) are to take full advantage of the capacity and the talent that is represented by the federal scientific establishment.
- First, we need to 'de-parochialize' government science. By this, I mean we need to make sure that government science is harnessed to serve the declared interests and objectives of departments and agencies, and not simply those of long-standing programs, program managers or scientists themselves.
- Second, we need to make government science more agile and responsive, better able to meet changing needs for data and advice in support of policy and regulation.
- Third, we need to make it easier for government scientists to collaborate with one another, and with their counterparts in universities and industry. (This may require a different management regime – both financial and personnel – for federal scientific institutions, about which I will have more to say later.)
- Fourth, and in the same vein, we need to make it easier for science departments and agencies to bring in people from the universities and the private sector for both permanent and term employment.
- Fifth, and this is crucial though difficult to achieve, we need to make sure that the voice of science is heard at the senior management table in departments and agencies across government. (I want to be clear that in my more than 10 years of experience working closely with DFO, I have seen that this department is one place where science does play a major role in policy and regulatory decision-making. In other places, it's more difficult for science to be heard.)
- Sixth, we need to do more to encourage and support scientifically trained professionals in pursuing science oriented management careers in government – whether this means the management of science, or of programs, or policy.

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- Seventh, we need to pull together existing initiatives for scientific renewal in particular departments, or among the SBDAs, into a ministerially-endorsed, strategic agenda for science renewal in government, both people and infrastructure
 - Finally, we need to ensure that the broader infrastructure supporting a competitive, science-based economy is in place. This includes such things as a modernized intellectual property regime.

A New Model for Science in Government?

- Now, if we're going to achieve all these objectives, what exactly do we need to do?
- I think we need to consider fundamental changes in how we organize and manage government science.
- Instead of trying to manage a science sector, or a government lab or even a whole agency, essentially like a government department, I think we need to give some thought to a new model for the organization of science in government.
- We need a model that recognizes:
 - the distinctive character of scientific work, both research and RSA;
 - the unique features of the scientific workforce, and its particular needs for training, support, working conditions, classification, and even compensation;
 - the specific requirements of government policymakers and regulators for scientific information, advice and support;
 - the need for more efficient and more results-oriented management of every government enterprise;
 - the declared objectives and philosophical orientation of this government, notably its interest in fostering innovation and the commercial applications of science, and encouraging closer connections between the private sector and government in a host of areas.
- What would such a model look like? I think it would be something like the following:
 - Within departments, science sectors and branches would be recognized as distinct entities with their own management regime (note that Defence Research and Development Canada is already an SOA within DND);
 - This would include such things as:
 - a Board of Directors;
 - a CEO who is chosen for his or her demonstrated capacity as a senior science manager;
 - a tailored personnel regime, specifically oriented to easy inflow and outflow of scientific talent; and
 - new tools for addressing issues of intellectual property, and collaboration with universities and private-sector research institutions.

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- For existing science institutions such as the NRC, I would see a similarly distinctive financial and personnel management regime designed to equip them to do their business more efficiently, without the burdens of management oversight and reporting that currently fall on them as “departments of government”.
 - The objective of these kinds of changes is simple – an organizational status and management regime that better equips these entities to do science in the public interest.
 - This does not mean leaving them alone to do science, much though some government scientists might wish that.
 - Rather it means helping government scientists and scientific institutions:
 - to become better at articulating their value proposition;
 - to work more closely with their colleagues in policy and program areas;
 - to move more quickly from one area of applied research to another in response to new issues and changing government priorities.
 - The government has said clearly that it will “sustain our world leading commitment to basic and applied research in all domains, while focusing that collective effort more effectively on priorities that matter to Canadians.”
 - That sounds like a reasonable objective to me. We should think about how to help our political leaders, and our senior leadership in the Public Service, make this happen.

Thank you.