



**CANADIAN GLOBAL AFFAIRS INSTITUTE**  
**INSTITUT CANADIEN DES AFFAIRES MONDIALES**

formerly **Canadian Defence & Foreign Affairs Institute (CDFAI)**

# **Science and diplomacy after Canada's lost decade: Counting the costs, looking beyond**

by Daryl Copeland  
November 2015



# POLICY PAPER

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## ► Executive Summary

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In the twenty-first century, Canada's security and prosperity - and the shared prospects for peace and development globally - depend increasingly on diplomacy rather than defence. In that regard, not least because there are no military solutions for the most pressing problems facing the planet, science diplomacy, and international science and technology more generally, have never mattered more. Yet rather than building a capability to join in collaborative efforts to find and deliver effective responses to complex global issues, under the Conservative Government key Canadian policy instruments were run down. Preoccupied with foreign wars, Islamist terrorism and related fear-inducing threats, Canada's political decision-makers shunned science, disdained diplomacy and dismissed multilateralism. That record has diminished this country's international reputation and influence while leaving the population vulnerable and exposed to a wide range of S&T-based threats. If Canada is to face the future with confidence, the new government must reallocate priorities and resources in support of science and diplomacy, and move immediately to address performance issues. Specific policy recommendations conclude this analysis.





## INTRODUCTION: CANADA AND THE NEW THREAT SET

*We cannot solve the problems we have created with the same thinking we used in creating them.*

Albert Einstein

**F**oreign policy issues rarely figure centrally in electoral politics, and in the public and media mainstream, science and technology represent an even more distant outlier. During the recent federal campaign, little was [said](#) about the state of science in Canada.

That's unfortunate, because science policy matters, and nowhere more so than here, where the new Liberal government has inherited some daunting challenges. Years of resource reductions and the centralized political [control and manipulation](#) of all public communications have deeply [corroded](#) Canadian democracy, governance and public administration. The capacity to practice science diplomacy - a critical tool in responding to the vexing range of challenges generated by the globalization age - has perhaps been foremost among the casualties.

Less visible, yet of similarly dire consequence, has been the damage to Canada's global brand wrought by the Conservative government's ill-conceived [war on science](#) and rejection of evidence-based policy and decision-making. Tourists and immigrants still hold this country in high [esteem](#), but in terms of image and reputation in major capitals and other places that matter, Canada's influence, long on the [wane](#), has [dissipated](#).

Once respected as a peacekeeper, longstanding proponent of North-South relations, and determined promoter of sustainable development - an honest broker, helpful fixer and provider of good offices and innovative ideas - Canada has come to be regarded as an obstruction to progress, a country with little to bring to the table. [Unrecognizable](#) to many of its citizens, former partners and friends, the country has become something of an international pariah, the country that others don't want in the room.<sup>1</sup>

The one-time boy scout became under the Conservatives a noisy [free rider](#) in the international system, sometimes ostracized but more often simply ignored.

In a world in which next to nothing can be achieved by acting alone, Canada's presence has become spectral, and the orchestration of action in concert, through the United Nations and most other international organizations, next to [impossible](#).

Among the [warrior nation wannabes](#) who presided in Ottawa, spin ruled. Ideology displaced [rationality](#), and the costs of our decade-long record of international scientific, diplomatic and multilateral [underperformance](#) have been enormous.

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<sup>1</sup> I have received this message repeatedly from former colleagues still working at DFATD.



Notwithstanding the dismal Canadian experience over the past decade, issues related to international science and technology (S&T) - and science diplomacy<sup>2</sup> (SD) in particular - have lately attracted renewed interest among analysts and diplomatic practitioners alike. This is welcome, if unsurprising in face of recent events: the July, 2015 agreement brokered with Iran by the United Nations Security Council Permanent-5 plus Germany, a pact which imposes international controls and safeguards Iran's nuclear program in exchange for a partial end to sanctions, has been widely applauded. Similarly, in 2013 a completely unanticipated [train of events](#) between the USA and Russia, which resulted in the UN-certified elimination of Syria's chemical weapons storage and production activities, has made the Middle East a somewhat less dangerous place.

All of this has been headline news, but it is also somewhat misleading. The exceptions do not make the rule.

In the larger scheme of things, the essential question must be put: how much has actually been accomplished in recent years? When it comes to addressing the [new threat set](#) - climate change, diminishing biodiversity, species extinction, resource scarcity, environmental crises, and a daunting array of other global order challenges which now jeopardize the future of life on earth - the answer is painfully obvious.

Very little.

Although S&T-based files now crowd the international political and diplomatic agenda, they have not been accorded top [priority](#), nor allocated anything approaching the resource sufficiency required for remedial action. Most everywhere, defence spending continues to command the lion's share of international policy resources, at the expense of diplomacy and development assistance.<sup>3</sup>

And there's the rub. In international policy as elsewhere, there exists a demonstrable dialectic between results and resources. Improved performance and a more comprehensive understanding of the scientific and technological basis which is central to a whole constellation of science-based transnational issues has become imperative, yet the emphasis remains on the use of armed force, thus inhibiting the construction of a more effective capacity to manage S&T files. If that does not change, and absent a commitment to the practice of science diplomacy, insecurity and underdevelopment will flourish.

To best to address the most complex and difficult threats and challenges imperilling the planet, I would propose to begin with three propositions:

International policy, the broad subject area, is the *what*.

Diplomacy, and in particular science diplomacy, is the policy instrument, the *how*.

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<sup>2</sup> For a general overview of science diplomacy, see Davis, Lloyd and Patman, Robert (eds.), (2014). *Science Diplomacy: New Day or False Dawn*. Singapore: World Scientific. Introduction available at: <http://www.worldscientific.com/worldscibooks/10.1142/8658>.

<sup>3</sup> The US government, for example, spends more on defence research than *all* other types of research combined. See Congressional Research Service (2013), "Federal Research and Development Funding: FY 2013, *CRS Reports for Congress*, 05 December, <http://www.phibetaiota.net/2013/07/congression-research-service-catalog/>.



Science and technology, crucial to both development and security, are the *drivers*.

And yet, and yet... Raise any one of these subjects separately and most people's eyes glaze over. Combine them, and an even more disturbing picture emerges. In popular culture, this combination represents something akin to a "triple whammy."

Science is widely perceived as complex and impenetrable, and recalled by most as a demanding, often bewildering high school subject that they could not wait to drop. Remember, for instance, having to memorize the Periodic Table, identify the endoplasmic reticulum, or contrast relativity theory to quantum mechanics?

Diplomacy, when it is thought of at all, is commonly viewed as irrelevant and ineffective, and associated with inefficiency and waste, with weakness, appeasement, and caving in to power. Think Chamberlain in Munich, lavish receptions, boozy dinners, pinstripes and pearls.

International policy? Most casual observers perceive it as esoteric and exotic, an almost unknown quantity, existing somewhere far from the front door and light years away from more proximate preoccupations such as employment, vacations, personal and family relations, health care or taxes.

SD, then, while essential, occupies a remote, even tenuous place in the collective consciousness, and has a serious image problem. That burden is compounded by a raft of substantial, structural and resource-related challenges which will be assessed later.

George Harrison once memorably [observed](#): "If don't know where you're going, any road will take you there." How, then, to get from where we are to where we need to be?

In the pages that follow, we will first examine the conceptual underpinnings of international S&T, then review the current state of play, and conclude with a closer look at the [Canadian](#) case. To better understand the complexity and depth of this riddle - how to engineer the embodiment of a Venn diagram with significant overlapping spaces for the spheres of science and technology, diplomacy and international policy<sup>4</sup> - we must start by drilling down into the constituent elements.

First up is the *idea* of science...

## SCIENCE, TECHNOLOGY, DIPLOMACY AND INTERNATIONAL POLICY

*Science knows no country, because knowledge belongs to humanity and is the torch which illuminates the world.*

Louis Pasteur

*Science* is founded upon empirical methods of experimentation and the repeated verification of results. It is an evidence-based form of knowledge acquisition, but its rules and assumptions are

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<sup>4</sup> For an excellent summary of the relationship between science and diplomacy, see Nichols, Rodney (2015), "Hardly Academic: Why Diplomacy and Science Need Each Other", *Foreign Affairs*, 25 June, <https://www.foreignaffairs.com/articles/2015-06-25/hardly-academic>.



subject to constant change and reconstruction - as physicist [Thomas Kuhn](#) has observed, all established theories eventually collapse under the weight of new facts and observations. These anomalies can accumulate to the point where they become unexplainable, at which point the once useful theory becomes obsolete and implodes as the paradigm shifts.<sup>5</sup>

Neither inherently political nor ideological, as a type of universal language and milieu of global communications, science poses fundamental questions about the nature of things. Typically bottom-up in origin, science is long term in orientation and usually [collaborative](#) in practice. Although some commercial, pharmaceutical and, especially, defence-related science is conducted secretly or in private, the findings of most scientific enquiry become part of the public realm.<sup>6</sup>

Proceeding from the assumption that all events are caused, science posits that these causes can, and ultimately will be determined. The implications of that conviction are sweeping. Poverty and suffering, for instance, are not seen to constitute necessary elements of the human condition. Problems can be solved, and adversity rolled back through the creation of new knowledge. Disease can be prevented and cured. Alternative energy sources can be discovered and used. New materials and nanotechnology can be creatively deployed in everything from building design and construction, to the transportation and information sectors.

By enlarging our understanding of the world and encouraging broadly-based development, science hones the cutting edge of progress.

But that's not all. In its quest for precision and deeper understanding, science also plays an important role in the formation and conditioning of national values and intellectual culture. The scientific ethos of trial and error as embodied by objective experimentation has profound appeal; in its methodology and scope, science helps to educate enquiring minds and to inform analysis. Science involves learning in a participatory, inclusive and transparent fashion. Through the publication of findings, it supports openness; through peer review, it supports merit; through the encouragement of discussion and diverse perspectives, it encourages criticism and dissent. As such, science fosters accountability and trust, civic values and democratic culture - public access to scientific findings checks propaganda and the arbitrary exercise of political power. It represents a foundation stone of human advancement.<sup>7</sup>

*Technology*, although often considered as an extension, or product of science, is different in important respects; the relationship between science and technology is not, as is commonly assumed, always linear. In other words, a specific program of scientific investigation may or may not be related to the eventual deployment of a new technology, and many of the latest technologies are grounded in existing science.

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<sup>5</sup> See Kuhn, Thomas (1962), *The Structure of Scientific Revolutions*, Chicago: University of Chicago Press.

<sup>6</sup> More open access to scientific journals, specialty publications and data is needed, and this is the objective of an ongoing campaign. The Global Research Council and the Research Data Alliance are championing the democratization of scientific results. See <https://rd-alliance.org/>; <http://www.globalresearchcouncil.org/>.

<sup>7</sup> These attributes may help to explain why in a public opinion survey reported nationally in New Zealand, scientists were identified as the most trusted people in the country, and science as the most respected profession. See TVNZ, "Scientists top 'most trusted' list", 20 June 2011, <http://tvnz.co.nz/national-news/scientists-top-most-trusted-list-4247442>.



Rather than a set of general principles which are thought to govern observable phenomena, technology is the product of applied knowledge. It expresses and mediates - rather than theorizes and explains - our interaction with the world.

And there are other substantial points of differentiation. In its development, technology is often top-down, short term, competitive, and demand-driven. This is largely because technology typically touches more directly and immediately than science upon private sector or government interests. Not least because the possession and use of technology frequently confers advantage, novel technological innovations - a faster chip, a better app, a new weapon - are often used to gain bargaining points in negotiations, or licensed, sold, or otherwise protected as private goods through patents, copyrights and trademarks.

New technological applications, either practical or intellectual, and in particular if vested with value-adding, revolutionary or transformative qualities, are referred to as *innovations*. As a rule, innovation involves a better way of doing, making or thinking about something, thrives in a fluid work environment, and is most likely to occur when boundaries are crossed.

In world politics, and as a tool in the hands of man, technology is more closely related than science to power, which is to say the capacity to achieve specified outcomes. Technology, therefore, tends to be regarded and used by governments as an implement of international policy. In that context, the deployment of technological innovations, ranging from new forms of cyber-surveillance to more accurate warheads, is often disruptive.

By way of illustration, during the Manhattan Project in the early to mid-1940s, nuclear fission was the science, explosive devices were the technology, and the atom bomb was the (highly disruptive) innovation.

*Diplomacy* is a non-violent approach to the management of international relations characterized by dialogue, negotiation, compromise, advocacy and representation. Since the advent of alliance politics and the proliferation of weapons of mass destruction, complex balancing and knowledge-based problem-solving have also emerged as prominent elements.

It is the connection to the policies and interests of states which sets diplomatic practice apart from the international lobbying and public relations activities, which are the province of business and civil society actors. Unlike corporate lobbyists or non-governmental organization (NGO) reps, diplomats pursue and deliver international policy objectives on behalf of governments.

Even in the age of globalization, there is still a significant place for traditional, state-centric diplomacy, especially in delicate, sensitive areas such as conflict resolution, the Middle East Peace process and treaty negotiation, implementation and verification. Increasingly, however, much diplomatic activity takes place in public. [\*Public diplomacy\*](#) (PD) is a modern form of triangulation which features diplomats using the tools of public relations to connect directly with populations in the receiving state in order to achieve specified results. Rather than designated envoys transacting the business of government with each other, PD practitioners count instead on host country nationals to sway their government in the desired direction. It is this model of diplomatic discourse which offers particular potential for both reaching out to the





science community and for placing science-based issues more squarely on the public and political agenda.

*Science diplomacy*, unlike its constituent elements of science and diplomacy, is a relatively new and unfamiliar term. Even among students and teachers of diplomacy, the placement together of these two nouns does not resonate deeply. Not unlike the term *military intelligence*, there is an implied tension, a hint of something oxymoronic.

While the expression suggests some sort of unified whole, science diplomacy is nevertheless set forth in the [literature](#) as an activity best understood as consisting of three distinct areas: informing foreign policy objectives with scientific advice (science in diplomacy); facilitating international science cooperation (diplomacy for science); and using science cooperation to improve international relations (science for diplomacy).

Although this definition is useful, the categories tend to overlap and have some heuristic weaknesses. Many S&T issues cannot easily be pigeon-holed: attempts to manage climate change have involved science advice (both to governments and the UN Secretary-General), science for diplomacy (the reports of the Intergovernmental Panel on Climate Change) and diplomacy for science (the Conference of the Parties meetings). Other science-based issues, however, such as weapons inspections or fisheries monitoring and surveillance, fall more convincingly under a single heading (science for diplomacy). For these reasons I favour use of the umbrella term SD, even if it is somewhat of an amorphous catch-all.<sup>8</sup>

However inadequate the syntax, the principal constituent elements of science diplomacy are sufficiently clear to conclude that it is crucial, if under-utilized specialty within the diplomatic tool kit which can be used both to address transnational, global issues and to showcase S&T capacity. It combines international political agency with the scientific method of knowledge production, and is an effective emissary of essential values such as evidence-based learning, factual accuracy, openness and sharing. As a specialized sub-set of public diplomacy, SD is also a significant generator of [soft power](#). It is this potent, and often technologically-enabled (through the use of social and digital media) form of attraction which intimately connects SD to national image, reputation, and brand.

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<sup>8</sup> Nina Fedoroff, the Science Advisor to former US Secretary of State Hilary Clinton, speaks of SD as: "The use of scientific collaborations among nations to address the common problems facing 21<sup>st</sup> century humanity and to build constructive international partnerships," See Fedoroff, Nina (2009), "Science Diplomacy in the 21<sup>st</sup> Century," US Dept. of State, 09 January, <http://www.state.gov/e/stas/2009/116182.htm>; <http://www.sciencedirect.com/science/article/pii/S009286740801636X>. A consensus on the definition of science diplomacy has yet to be forged.



## SCIENCE DIPLOMACY UNPACKED

*The soft power of science has the potential to reshape global diplomacy.*

Ahmed Zewail

A large part of science diplomacy's value proposition resides in its potential to address many of the planet's most urgent challenges, the “wicked” issues such as the [tragedy of the global commons](#), ecosystem collapse, pandemic disease and public health. What makes these issues wicked? By my reckoning, a wicked issue CUTS all ways and displays four shared characteristics: C for cross-sectoral; U for unresolved; T for transnational; S for science-based. This combination of attributes underscores the versatility and utility of SD, but also helps explain why the management of such issues is so notoriously difficult.

Secondly, as was so often the case during the Cold War, by using neutral, non-ideological language SD can be used to overcome, or at least mitigate international political differences when regular diplomatic channels are strained, blocked, or non-existent.<sup>9</sup> Even at the height of the Cold War, Soviet and American scientists maintained programs of collaboration in areas such as polar, atmospheric, health and deep sea research, and radioactive waste disposal. Similarly, Western scientists have sustained or established contact with their Cuban, North Korean and Iranian counterparts despite the existence of sanctions and other formidable political and economic barriers.<sup>10</sup>

More recently, during the conflict over Crimea and eastern Ukraine, US and Russian scientists have continued to work closely on arctic issues, in manning and managing the International Space Station and on negotiating the multilateral nuclear pact with Iran.<sup>11</sup>

Not all countries have access to the same range of SD possibilities. Major players, such as the [US](#), [UK](#), [France](#), [Japan](#), [South Korea](#) and the [EU](#), can engage in a wide spectrum of activity, but

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<sup>9</sup> This characteristic helps to explain the current focus within US foreign policy on expanding science diplomacy with the Arab and Islamic worlds, and aptly illustrates the use of *science for diplomacy*. See, for example, Lord, Kristin, and Turekian, Vaughn, “Time for a New Era of Science Diplomacy”, *Science*, 09 February 2007, pp. 769-70. An extraordinary, but all too rare multilateral example is the SESAME Synchrotron project in Jordan, where Palestinians, Israelis, Iranians, Turks and Cypriots all cooperate in co-management. See Llewellyn Smith, Chris, “Synchrotron light and the Middle East”, *Science and Diplomacy*, 16 November 2012, <http://www.sciencediplomacy.org/perspective/2012/synchrotron-light-and-middle-east>. Another interesting project of the type is the Square Kilometer Array, which is at present advancing construction of the world's largest, most powerful radio telescope. See <https://www.skatelescope.org/>.

<sup>10</sup> The prospects for SD are also to some extent contextual and situational, and thus can vary with time and place. For example, it is difficult to imagine initiating SD activity at this time with the Islamic State, or, in the late 1930s, with Nazi Germany.

<sup>11</sup> Though less common, science diplomacy can also help maintain relations between friends at times of tension-generating policy differences. In 1985 the Government of New Zealand formally banned visits by potentially nuclear-armed ships. In response, the US government, while leaving the ANZUS treaty in place, withdrew security guarantees from its traditional ally, downgraded its diplomatic dealings, and excluded New Zealand from the “Five Eyes” intelligence sharing arrangement, which also included the UK, Australia and Canada. Bilateral relations were not fully normalized until 2014, and it was a surprisingly nasty row. Yet through it all the US base in Christchurch, which provides forward supply and logistical support for American scientific research activities in Antarctica, remained fully operational, and cooperation between US and NZ scientists continued without interruption.



smaller states, such as [Switzerland](#) (technological innovation) or New Zealand<sup>12</sup> (agricultural greenhouse gas emissions, phytosanitation) have wisely chosen to specialize. In general, less developed nations are at a disadvantage due to limitations on S&T capacity.<sup>13</sup> And while developing countries have frequently found themselves on the receiving end of “technical cooperation” programs, but successful examples of genuine technology transfer are harder to come by.

Science diplomacy is frequently conflated with international scientific co-operation, a mistake which has given rise to some confusion. The distinction, however, is clear. While the latter is sometimes commercially oriented and often occurs without direct state participation, the former is animated by its direct relationship to government interests and objectives. In the case of international scientific co-operation, private sector or civil society partners work together to produce, for example, better medications, cleaner water, improved hygiene, or more disease-resistant crops. Typically a win-win proposition, under the aegis of international scientific cooperation all parties to the research enterprise can reap the rewards.

Not all science diplomacy is devoted to the achievement of pacific ends. A striking case in point was the widely condemned program of covert collaboration involving, variously, Pakistan, Iran, North Korea, China, and Libya on nuclear-explosive and missile-propulsion technologies orchestrated by Pakistani physicist Abdul Qadeer, or “AQ”, Khan. Although revered as a national hero in Pakistan, his [efforts](#) have not been not universally appreciated elsewhere.

To recap, in the emerging *heteropolis*<sup>14</sup> in which the sources and vectors of power and influence are characterized more by difference than by similarity, development - equitable, sustainable, long-term and human-centred - has in large part become the new security. S&T are germane to both development, which implies the existence of circumstances in which every citizen can reach something approaching their potential without encountering inordinate obstacles or constraints, and security, a condition characterized by the absence of want and fear and the meeting of basic human needs. Development and security in this respect are two sides of the same coin. S&T content - whether expressed in terms of food and agriculture, public health and hygiene,

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<sup>12</sup> See Gluckman, Peter, et. al. (2012), “How a Small Country Can Use Science Diplomacy”, *Science and Diplomacy*, 24 May, <http://www.sciencediplomacy.org/perspective/2012/how-small-country-can-use-science-diplomacy>. New Zealand has also convened a network of science advisors (see <http://www.globalscienceadvice.org/>) and recently launched a new SD initiative featuring small developed economies. See <http://twas.org/article/small-countries-strong-voices>.

<sup>13</sup> The BRICS, however, have made some notable strides forward in (largely) South-South with South Africa playing a key role. See Republic of South Africa (2014), “First BRICS Science, Technology and Innovation Ministers Meeting”, 10 February, <http://www.dst.gov.za/index.php/media-room/latest-news/834-first-brics-science-technology-and-innovation-ministerial-meeting/>; <http://www.brics.utoronto.ca/docs/150318-sti.html>.

<sup>14</sup> Among the various terms vying for notoriety, I prefer *heteropolarity*, see <http://www.policyschool.ucalgary.ca/?q=content/diplomacy-globalization-and-heteropolarity-challenge-adaptation>. For alternative models of world order beyond the received wisdom concerning a return to “multipolarity”, see also Kupchan, Charles (2012), “Getting Ready for a World Transformed”, *Council on Foreign Relations*, November, <http://www.cfr.org/europerussia/getting-ready-world-transformed/p29392>; Bremmer, Ian (2012), “Every Nation for Itself: Winners and Losers in a G-Zero World”, Interview transcript, 07 May, Public Affairs Program, *Carnegie Council*, [http://www.carnegiecouncil.org/studio/multimedia/20120605/transcript.html/res/id=sa\\_File1/Winners\\_and\\_Losers\\_in\\_a\\_G-Zero\\_World.pdf](http://www.carnegiecouncil.org/studio/multimedia/20120605/transcript.html/res/id=sa_File1/Winners_and_Losers_in_a_G-Zero_World.pdf); Haas, Richard (2008), “The Age of Nonpolarity”, *RealClearPolitics*, 16 April, [http://www.realclearpolitics.com/articles/2008/04/the\\_age\\_of\\_nonpolarity.html](http://www.realclearpolitics.com/articles/2008/04/the_age_of_nonpolarity.html).



demographics and urbanization, genomics and cybernetics, or the control of weapons of mass destruction - is central to each.

Science, especially when coupled with diplomacy, is a complex matter, and very much a double-edged sword, offering the keys to security and development, but capable as well of generating insecurity and underdevelopment, of courting war and devastation. Still, in a contested and competitive world of radical politics and religious extremism, voodoo economics and bundled derivatives, the *idea* of science - that all events are caused, that misery is not fated, that the answers are out there and that all problems can eventually be solved - shines brightly.

## CAN THE CHASM BE BRIDGED?

*The scientific world is fast becoming interdisciplinary... but the biggest interdisciplinary leap needed is to connect the worlds of science and politics.*

David Miliband

In examining the conceptual and theoretical underpinnings of *science* and *diplomacy*, it was noted that together the two are rather strange bedfellows. So, too, on the practical side.

Science and technology, on one hand, and diplomacy and international policy, on the other, exist in separate, floating worlds which rarely intersect. Diplomats and scientists have relatively few occasions to meet, their backgrounds, skill-sets, cultures and worldviews differ markedly, and the two career paths rarely intersect.

On the institutional side, S&T capacity is largely alien to, and almost invisible within most institutions of global governance. [Foreign ministries](#), development agencies, and multilateral organizations are typically without the scientific expertise, technological savvy, cultural predisposition or research and development (R&D) network access required to manage S&T-based issues effectively. While R&D and innovation thrive in a lateral, interconnected and networked setting, most diplomatic services and international agencies feature bureaucratic silos, rigid occupational hierarchies and authoritarian social relations.

Small wonder that many scientists, often concerned as well about the possible “politicization” of their work, prefer the lab to the polis. As for the diplomats, in my experience most of them are among those who couldn’t wait to drop science in high school...

Major hurdles would remain even if the environment was more solicitous, and if scientists, politicians, diplomats, foreign ministries and multilateral institutions were more favourably disposed and better equipped. When it comes to S&T, R&D and innovation, the perspectives and interests of the public sector, private sector, NGOs and the academic community are not always aligned or complimentary. More often they are competitive or contradictory.

Divergent objectives and entrenched special interests represent huge barriers to progress. For the private sector, the over-arching goal is to maintain exclusive ownership and control over essential S&T intellectual property (patents, trademarks and copyrights limit transfer of



technology and spread of innovation). For the constituent elements of what President Eisenhower famously described as the Military Industrial Complex,<sup>15</sup> the issues are budget protection, public policy advocacy and the influence over the research agenda (most governments are still spending more on defence research than on health research).<sup>16</sup> Add to that the [militarization of international policy](#) more generally - with few exceptions defence departments are accorded a disproportionate share of international policy resources, while diplomacy and development assistance struggle - and scope and dimensions of the problem come into stark relief. Given the nature of the new threat set, and particularly at a time of resource reductions, the negative impact of these misallocations is not to be underestimated.

Overcoming these sorts of obstacles will be difficult. But the task of bringing the solitudes together is not impossible, and as already noted some countries and organizations - including the US State Department, at present the best practices leader - are further ahead than others.

Again, however, the exceptions are not to be confused with the rule.

## A TATTERED MAPLE LEAF

*We have guided missiles and misguided men.*

Martin Luther King, Jr.

If all of this seems discouraging, the multiple problems set out above pale in comparison to the situation facing Canadians. For several decades, but especially since 2006, Canadian science - its practitioners, institutions, and ethos - has taken a [beating](#). Science diplomacy has been eschewed, and the free flow of Canadian-origin scientific information obstructed or blocked, particularly when that data underscores the negative consequences of energy production and industrial development. In one comprehensive survey, twenty-five per cent of respondents reported that they were forced to [modify their research for non-scientific reasons](#). The Canada Revenue Agency was ordered to [investigate the charitable status](#) of environmental groups and development NGOs, while anti-science views, ranging from climate change denial to vaccine refusal to creationism, have become commonplace.

Attacking science, and the ability of scientists to communicate freely, undercuts empirical [knowledge creation, understanding and the democratic process](#), and blunts a key tool in the management of international relations.

The deception and dissembling [displayed](#) so prominently in national politics during the run-up to the election may be attributed at least in part to the war on science. Scientific information has been [controlled](#) through [censorship](#), the elimination of unpalatable research programs, and the

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<sup>15</sup> Eisenhower's 1961 farewell address is essential viewing. Today "The Complex" consists of the three original components - the uniformed armed services, Congress and the defence industries - plus special interest groups, right-wing think tanks, and elements of the media/entertainment industry. Together they exercise a stranglehold on US international policy. See [https://www.youtube.com/watch?v=CWiIYW\\_fBFY](https://www.youtube.com/watch?v=CWiIYW_fBFY).

<sup>16</sup> The US government spends more on defence research than *all* other types of research combined. See Congressional Research Service (2013), "Federal Research and Development Funding: FY 2013, *CRS Reports for Congress*, 05 December, <http://www.phibetaiota.net/2013/07/congression-research-service-catalog/>.



[muzzling](#) of scientists. Examples over the past decade are legion, but the most disturbing dozen follow:

1. [The public service](#) has been sidelined, with particularly drastic measures imposed on Department of Foreign Affairs, Trade and Development (DFATD), Citizenship and Immigration Canada, science-based departments and agencies, and certain international NGOs;
2. High-level science advice had been [removed](#) from central agencies and is non-existent in DFATD, despite trends to the contrary in countries most [everywhere](#);
3. All government communications have been centralized, controlled or [suppressed](#), while decision-making has been concentrated in the Prime Minister's Office (PMO);
4. Science-based departments, funding agencies and [NGOs](#) have faced crippling budget [cuts and job losses](#) - 1,075 jobs at Fisheries and Oceans and 700 at Environment Canada alone;
5. The [Pearson Peacekeeping Centre](#), Canadian Centre for Human Rights and Democratic Development, North-South Institute and National Roundtable on the Environment and Economy have been shuttered;
6. Opaque, underhanded techniques, such as the passage of the [omnibus Budget Bill C-38](#) in June 2012, have weakened, reduced or eliminated scientific bodies, programs and legislative instruments. These include the *Canadian Environmental Assessment Act*, the Canadian Environmental Assessment Agency, the *Canadian Environmental Protection Act*, the *Fisheries Act*, the *Navigable Waters Protection Act*, the *Nuclear Safety Control Act*, the *Parks Canada Agency Act*, the *Species at Risk Act* and the [Experimental Lakes Area](#);
7. Canada has withdrawn from the Kyoto Protocol and [earned](#) distinction as a “Lifetime Unachiever” and “[Fossil of the Year](#)”, while promoting oil sands, pipelines, asbestos exports, and extractive industries generally;
8. The government has refused to [attend](#) important multilateral meetings, and [rejected](#) or [withdrawn](#) from a variety of international agreements;
9. At a time when scientific research and development activities are rising rapidly, Canada's relationship with the Asia-Pacific region - the emerging centre of the world political economy - has been badly [bungled](#);
10. The long-form census was abolished - against the advice of [everyone](#) dependent upon that data - prompting the [resignation](#) of the Chief Statistician; rare science books have been destroyed and specialized federal libraries and archives [closed](#) or down-sized;
11. [Commercially-promising](#), business-friendly, applied R&D has been [privileged](#) over knowledge-creating basic science in government laboratories;



12. Scientists have been publicly [rebuked](#), are [prevented](#) from speaking freely about their research findings to the public, the media, or even their [international colleagues](#), and are required to submit scholarly papers for political pre-clearance.

Conservative policies [knocked back](#) Canadian science at a time when it was needed most. Canadian [democracy](#) was subverted, and the country left at greater risk, less able to contribute to international efforts address the whole host of science-based, technologically-driven threats. The Harper Government's record of [contempt](#) for Parliament, [due process](#) (Afghan detainee [hearings](#)) and [civil liberties](#) (Bill C-51) was exceeded only by its contempt for science, diplomacy and multilateralism.

It has not always been thus.

### CANADA AND THE WORLD, THEN AND NOW

*The saddest aspect of life right now is that science gathers knowledge faster than society gathers wisdom.*

Isaac Asimov

From the end of the Second World War through the mid-1990s, Canada put its shoulder to the wheel and tried to advance global order issues - eliminating poverty, feeding the hungry, preventing war, reforming international organizations. Moreover, it was Progressive Conservative governments that led the world in tackling environmental challenges ranging from acid rain, ozone layer depletion and the organization of the [Earth Summit](#), to the resettlement of Indochinese refugees and combating apartheid in Southern Africa.

Later, after it became clear that Canada could no longer engage in the really heavy international lifting, Foreign Minister Lloyd Axworthy excavated a useful diplomatic niche with his [Human Security Agenda](#). In under five years this country brought in a treaty banning land mines, helped establish the International Criminal Court, launched the Responsibility to Protect doctrine, and moved forward initiatives on small arms, blood diamonds, and child soldiers and children in conflict.

That was diplomatic and international policy activism, often in a multilateral context, and backed in large part by the use of scientific data and methods.

And today? Until October 19<sup>th</sup> it was all fight, with hectoring rhetoric substituted for real talk, and a pattern of debilitating [retrogression](#) across the board.

Over the past decade those in power in Ottawa preferred to preside over disastrous years of war in Afghanistan, to help open a Pandora's Box of multiple misfortunes by participating in an [illegal](#) regime change exercise in Libya, and to join recklessly in the anti-ISIL bombing of Iraq and Syria, thus assisting President Assad, worsening the refugee crisis and exposing Canadians to a heightened risk of retaliation at home and abroad.

Delivery of the Government's ideologically-driven, evidence-dismissing [agenda](#) has cost Canada's reputation and influence dearly. Through its adulation of the military and [writing-off](#)



of science, democracy, and internationalism, the Conservatives eroded Canadian values and interests, diminished Canada's prosperity and security, ran down our formerly admirable soft power, and [spoiled](#) the Canadian brand.

Canada's hard-won standing as a generous, open, engaged and compassionate actor has been squandered... But recovery is possible.

[Declarations](#) to the contrary notwithstanding, religious extremism, political violence and terrorism are not among the foremost threats faced by Canadians. There are no military solutions to the most profound challenges imperilling life on the planet. You can't garrison against pandemics, call in an air strike to stop a warming planet, or despatch a team of commandos to capture the alternatives to a carbon economy.

Unprepared, ill-equipped and bereft of grand strategy, Canada's defences have been degraded, our capacity diminished and our resilience undermined.

This is not the way forward, and Canadians should now call upon their political leaders to re-direct international policy resources in response to the new threat set.

## THE VITAL NEED TO RECONSTRUCT

*We have to imagine the kind of world we want and then work to create it.*

David Suzuki

A spate of high profile [commentary](#) on Canada's tarnished [reputation](#) and transformed international [role](#) has recently attracted attention. And indeed, the closing of the Canadian mind has been [troubling](#).

National science policy plays directly into the capacity to deliver science diplomacy. When the scientific community was under siege, that group was unable adequately to contribute to the achievement of international policy objectives. Moreover, scientific research informs and conditions society's ability to understand and engage with the natural world. By breaking the link between science and society, the polity has become - at least in part - alienated from nature.

Much has been lost - scientists have [departed](#), science-based departments and agencies have been weakened, our R&D capacity diminished. If Canada is to achieve its [promise](#) in the area of science diplomacy, Canadians can never again abide the triumph of ideology over evidence or the risk of stumbling blind into an uncertain future.

To improve our security, restore our democracy, and strengthen our defences against the most vexing challenges facing the planet, the damage attributable to the ten year war on science must be [acknowledged](#) and repaired.

What, then, by way of advice and an agenda for the new government? Consideration could be given to the following proposals:





- Restore the position of Chief Scientist in the PMO/Privy Council Office, remove inordinate controls over scientific and diplomatic communications, and reconnect with the public service in the tradition of confidence, trust and respect
- Create a Parliamentary Science Officer to scrutinize the quality of evidence and to provide data-driven advice and assistance to legislators and committees;
- Reverse the cuts, and strategically re-invest to restore capacity in science-based departments and agencies, especially Environment Canada, Health Canada, Parks Canada, Fisheries and Oceans, Natural Resources Canada, the National Research Council, and the Natural Sciences and Engineering Research Council;
- Increase funding for knowledge-creating basic science and provide increased financial support to S&T-related activities in universities, research institutes and think tanks;
- Re-establish a Ministry of State for Science and Technology as an interface with other levels of government and to coordinate and integrate S&T programs and activities across the federal government and among civil society actors;
- Reinstate the long-form census and provide Statistics Canada with a new mandate which will ensure its independence from political interference;
- Re-invest in DFATD, appoint a senior departmental Science Advisor, and establish a Directorate-General of International Science and Technology Policy;
- Offer courses in science diplomacy/international S&T at the Canadian Foreign Service Institute and encourage the practice of public and science diplomacy;
- Enlarge and more effectively integrate the network of Science Councillors and Attachés at Canadian diplomatic missions abroad; investigate the creation of an S&T career stream;
- Through recruitment, secondments, exchanges, promotions and incentives, encourage Foreign Service Officers to skill-up and specialize in international S&T issues management.

After a prolonged period of inactivity, Canada is once again positioned to seize opportunities for global leadership and diplomatic initiative. International S&T, and science diplomacy in particular should figure centrally in all such calculations.

The last words, like the first, go to Einstein:

*Learn from yesterday, live for today, hope for tomorrow. The important thing is to not stop questioning.*

## ► About the Author

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Daryl Copeland is an analyst, author, educator and consultant specializing in the relationship between science, technology, diplomacy, and international policy. His book, *Guerrilla Diplomacy: Rethinking International Relations*, was released in 2009 by Lynne Rienner Publishers and is cited as an essential reference by the editors of *Oxford Bibliographies Online*. A frequent public speaker, Mr. Copeland comments regularly for the national media on global issues and public management, and has written over 100 articles for the scholarly and popular press. His work has appeared in many anthologies, as well as in the *International Journal*, *World Politics Review*, *Foreign Policy in Focus*, *The Hague Journal of Diplomacy*, *Place Branding and Public Diplomacy*, *The Globe and Mail*, *Toronto Star*, *Ottawa Citizen*, *Embassy*, *The Mark*, *iPolitics* and elsewhere. He was awarded the 2010 Molot Prize for best article published in *Canadian Foreign Policy* (“Virtuality, Diplomacy and the Foreign Ministry”, 15:2).

From 1981 to 2011 Mr. Copeland served as a Canadian diplomat with postings in Thailand, Ethiopia, New Zealand and Malaysia. During the 1980s and 1990s, he was elected a record five times to the Executive Committee of the Professional Association of Foreign Service Officers. From 1996-99 he was National Program Director of the Canadian Institute of International Affairs in Toronto and Editor of *Behind the Headlines*, Canada’s international affairs magazine. In 2000, he received the Canadian Foreign Service Officer Award for his “tireless dedication and unyielding commitment to advancing the interests of the diplomatic profession.”

Among his positions at the Department of Foreign Affairs and International Trade (DFAIT) in Ottawa, Mr. Copeland has worked as Senior Intelligence Analyst, South and Southeast Asia; Deputy Director for International Communications; Director for Southeast Asia; Senior Advisor, Public Diplomacy; Director of Strategic Communications Services; and, Senior Advisor, Strategic Policy and Planning. He was DFAIT representative to the Association of Professional Executives (APEX) 2001-06.

Mr. Copeland is a Visiting Professor at the Diplomatic Academy of Vienna, and has delivered courses at the University of Ottawa’s Graduate School of Public and International Affairs, the London Academy of Diplomacy (UK), Otago University (NZ) and the Institute of Diplomacy and Foreign Relations (Malaysia). He serves as a peer reviewer for University of Toronto Press, the *International Journal* and *The Hague Journal of Diplomacy*, and is a member of the Editorial Board of the journal *Place Branding and Public Diplomacy* and the International Advisory Board of the *Canadian Foreign Policy Journal*. From 2009-11 he was Adjunct Professor and Senior Fellow at the University of Toronto’s Munk School of Global Affairs. In 2009 he was a Research Fellow at the University of Southern California’s Center on Public Diplomacy.

Mr. Copeland is a Fellow with the Canadian Global Affairs Institute and a Policy fellow at the University of Montreal’s Centre for International Studies (CERIUM).

## ► **Canadian Global Affairs Institute**

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The Institute was created to bridge the gap between what Canadians need to know about Canadian international activities and what they do know. Historically Canadians have tended to look abroad out of a search for markets because Canada depends heavily on foreign trade. In the modern post-Cold War world, however, global security and stability have become the bedrocks of global commerce and the free movement of people, goods and ideas across international boundaries. Canada has striven to open the world since the 1930s and was a driving factor behind the adoption of the main structures which underpin globalization such as the International Monetary Fund, the World Bank, the International Trade Organization and emerging free trade networks connecting dozens of international economies. The Canadian Global Affairs Institute recognizes Canada's contribution to a globalized world and aims to educate Canadians about Canada's role in that process and the connection between globalization and security.

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