# Evaluative Voices

# Impact = Content x Influence: Evaluation, evidence and policy in Canadian Government contexts

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This paper is based on a presentation I was invited to give on aspects of Canadian policy and evidence infrastructure to open the 'Evidence and Policy' symposium.[1]

To contextualise my remarks, I would like you to know this about me. I have been a program evaluator for more than 30 years, largely inside, or for, the federal government of Canada. I have also worked for one provincial government and several not-for-profit organisations in Canada. I have spent pretty much all my working hours developing and providing empirical evidence and fact-based advice to these organisations. My perspective is of an evaluation practitioner. That said, the invitation to speak at the symposium gave me an opportunity to stop and think about evidence-based policy-making and whether and how it is used in Canada, particularly in the federal government - the environment I know best.

Now that we have established my pedigree, I would like to make three points in this talk. First, there is no such thing as evidence-based policy-making, anywhere. Second, the Canadian infrastructure for evidence-based policy-making is complex. Third, in the dynamic of policy-making, although evidence is only a small part of the equation there are factors that can increase the likelihood of evidence use.

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[1] This document does not necessarily reflect the views of the CES.

# 1. The Illusion of Evidence-Based Policy-Making

My first point is evidence-based policy-making (EBPM for the initiated) is an illusion. Policy choices are not *based* on evidence, at least not primarily. Policy decisions are a function of a number of inputs and processes. Evidence may be one of these inputs, while producing evidence may be one of these processes.

Rather than 'evidence-based', the literature on the topic now tends to talk about 'evidence-informed policy-making', 'evidence-influenced policy-making' or 'evidence-aware policy-making'. This may just be a question of dosage: more or less evidence for a given dose of policy decision. Still, the semantics are important. The key contrast, however, is between these variations around the theme of using evidence for policy decisions and what some called 'opinion-based policy-making' - or worse, 'policy-based evidence making'. As an observer of Canadian Government, Mel Cappe[2] wrote:



> In the recent past, some governments have privileged ideology and doctrine over evidence. In turn, we have witnessed an evolution toward policy-based evidence. That phenomenon was astutely captured in a New Yorker cartoon that depicted a policy manager handing a sheet of paper to an underling and saying, 'Here are my policy conclusions. Go find some evidence to base them on'.
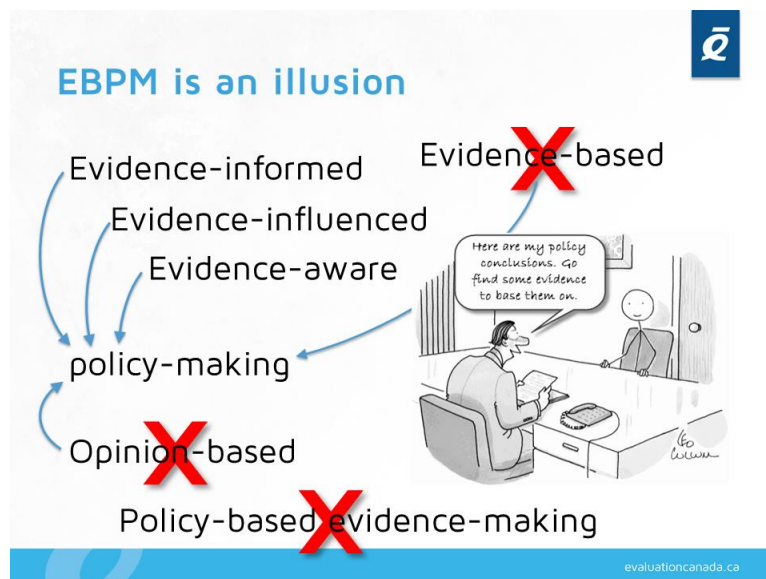
Maybe we should define the word 'evidence' now.

If I told you I had in my hands a study that shows eating chocolate makes one lose weight[3], would that add up to substantial evidence? You would question the quantity of evidence - a single study. You would question the quality of the evidence—how was the study conducted? You would also assess how congruent this evidence is with your initial beliefs or with your deep-seated desire that it be true. (It might be helpful to know this research was a hoax that was credulously broadcast by hundreds of media outlets.)[4]

For some, the opinion of a trusted colleague is evidence. For others, only randomised clinical trials qualify as evidence (or, in relation to the comic strip, a notarised document or DNA traces). In the evidence-informed policy-making camp, it is probably safe to say evidence means 'knowledge developed using the tenets of the scientific approach'. That's because science is supposed to be rational, independent and unquestionable. This too, of course, is an illusion. Science is not rational, nor is it independent, and scientists routinely question the results reported by other scientists. No, the real benefits of science are that it proceeds on the basis of principles of transparency, inter-subjectivity and reproducibility. At least, that's how it should work, but there are many barriers to these principles as well, such as trade secrets, limitations to public speaking (which Canadian scientists are keenly aware of), limitative partnership agreements and intellectual property management rules. Science as evidence has justification but make no mistake, if scientific evidence is unavailable, policymakers will make policy nonetheless - using whatever other evidence they have at hand.

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[2] Mel Cappe, "Foreword" in Shaun P. Young, Evidence-Based Policy-Making in Canada, Don Mills, Oxford University Press, 2013, p. xi.

[3] http://fr.scribd.com/doc/266969860/Chocolate-causes-weight-loss

[4] http://io9.com/i-fooled-millions-into-thinking-chocolate-helps-weight-1707251800

Evidence-informed policy-making appears to be a no-brainer; who would want to establish policy without evidence? There are limitations, however, to the use of evidence in policy-making:[5]

- any amount of evidence still leaves some uncertainty with which policymakers have to contend;
- factual success at addressing social or economic issues may not be as important as satisfying the electorate;
- data collection and analytical techniques used by specialists to develop evidence are not necessarily superior to the experiential judgments of policymakers;
- the gold standard of systematic reviews established in the last 15 or so years in medicine, where results from hundreds of studies are synthesised, is simply beyond reach in most other areas of policy interest;



- even where they exist, systematic reviews typically focus on individual interventions, whereas policy-making is concerned with entire populations or large systems;
- for many complex or controversial issues, no significant amount of evidence has yet been amassed;
- evidence competes with many other influences, including organisational and societal values, fiscal constraints, time constraints, public opinion, political strategy, election campaign commitments etc.;
- in a pluralist society, reasonable disagreement is expected and valued; we cannot give in to the tyranny of empirical evidence;
- in a democratic society, the majority has a legitimate expectation that its wishes will influence the decisions of policymakers;
- who decides what constitutes 'valid evidence'? Who has the power over these choices?; and
- evidence is not equally available to everyone who wants to influence policy-making; more powerful and resourceful groups can produce evidence more readily than those with less power and fewer resources, while the demand for some forms of evidence may serve to exclude some actors from the policy discussion.

In brief, evidence-based policy-making is an illusion, and even evidence-informed policy-making raises significant issues, including social justice issues, that should cause us to reflect on the consequences of valuing scientific evidence over other types of evidence.

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[5] See, *inter alia*, Shaun P. Young, "Evidence-Based Policy-Making: The Canadian Experience" and Michael Howlett and Jonathan Craft, "Policy Advisory Systems and Evidence-Based Policy: The Location and Content of Evidentiary Policy Advice", in Shaun P. Young, *op.cit.*.

## 2. Decision-Making Infrastructure of the Federal Government of Canada

Let's turn to my second point: the Canadian infrastructure for evidence-based policy-making is complex.

I don't claim to have developed an exhaustive description of the Canadian infrastructure for policy-making. As with all other aspects of this talk, I am presenting some literature and reflecting on my personal experience.

One common conceptual framework used to discuss research knowledge utilisation—which I find parallels evidence-based policy-making - is built around three groups of organisations:

- Evidence producers: universities, private sector firms, think tanks, special commissions, governments, etc.
- Evidence brokers: sometimes called Research Brokering Organisations or RBOs, they typically don't produce knowledge but they package it in ways that further their interests. This group includes think tanks, interest groups, unions, media, etc.
- Evidence users: government departments and agencies, also service delivery networks such as school systems or health services.
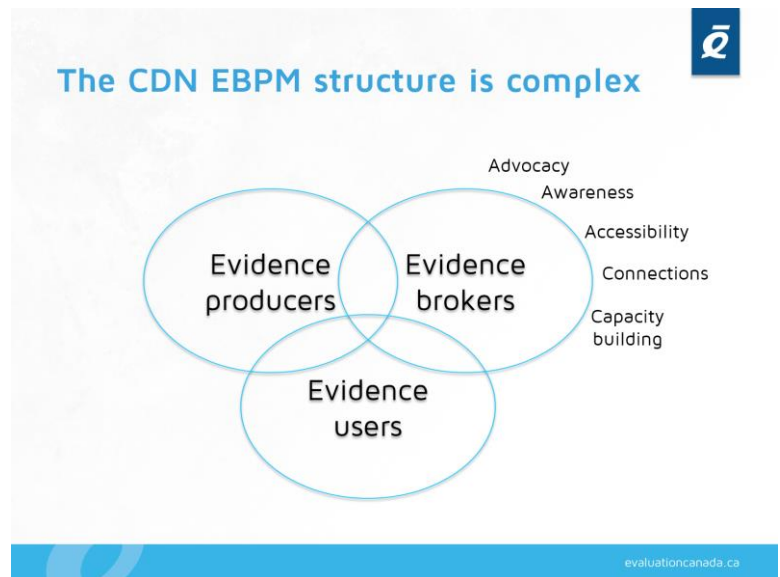


While it is fairly clear that evidence producers produce and that evidence users use, what do evidence brokers do? Amanda Cooper[6] suggested evidence brokers have different functions:

- they use research to advocate for policy changes;
- they increase awareness of empirical evidence on certain issues;
- they increase accessibility to research by tailoring information to particular audiences and making it more experiential;
- they facilitate connections among diverse stakeholders and support collaboration;
- they support capacity building around evidence sharing.

I think there is a component missing in this picture. These three groups interact within the bounds of various mechanisms that define their relationships and the cycle of influence. Such mechanisms may include planned policy development or review processes in government, as well as rules of engagement that allow or disallow certain connections.

Regarding evidence producers, there are about 100 universities and university colleges in Canada[7], an untold number of private sector firms active in policy research (there are 72 listed on a procurement list for evaluation services to the federal government) and some 40 think tanks[8]. While the evidence production capacity of the federal government may have diminished in recent years (more about that later), it still spends measurable amounts on such things as program evaluation - $60 million annually at last count.[9]

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[6] See Amanda Cooper, "Research-Brokering Organizations in Education across Canada: A Response to Evidence-Based Policy-Making and Practice Initiatives", in Shaun P. Young, *op.cit.,* pages 67-92. Cooper lists eight but the list can be reduced to five.

[7] http://www.univcan.ca/canadian-universities/facts-and-stats/enrolment-by-university/

[8] https://www.mcgill.ca/files/caps/CanadianThinkTanks.pdf

[9] Centre of Excellence in Evaluation, Treasury Board Secretariat (2012) 2012 Annual Report on the Health of the Evaluation Function. http://www.tbs-sct.gc.ca/report/orp/2013/arhef-raefe/arhef-raefe-eng.asp#Toc384280509. Note that the Treasury Board Secretariat "is a

It is not easy to enumerate evidence brokers. Cooper[10] found 44 evidence brokers in the area of education in Canada by defining them as organisations that connect producers with users and that have a mission statement explicitly related to connecting research to policy and practice. That includes think tanks, professional associations and some public administrations. This list could be more inclusive if the media, unions, interest groups and lobbies were added to the operational definition. In any event, there is clearly a constellation of groups and organisations who are active in evidence brokerage.

The Government of Canada has formal mechanisms to support evidence gathering:



- the Policy on Evaluation,[11] which defines the goals of the evaluation activity and sets responsibilities with line departments and specifically with deputy ministers;

- the Policy on Internal Audit,[12] which does the same for the audit function;

- the Policy on Management, Resources and Results Structures,[13] which aims to 'to ensure that the government and Parliament receive integrated financial and non-financial program performance information for use to support improved allocation and reallocation decisions in individual departments and across the government';

- the Communications Policy,[14] which includes a section on consultation and citizen engagement;

- the Policy on Information Management,[15] which fosters informed decision making and facilitates accountability, transparency and collaboration;

- the Statistics Act,[16] which created Statistics Canada 'to collect, compile, analyse, abstract and publish statistical information relating to the commercial, industrial, financial, social, economic and general activities and condition of the people';

- the Federal Accountability Act,[17] which provides measures respecting administrative transparency, oversight and accountability;

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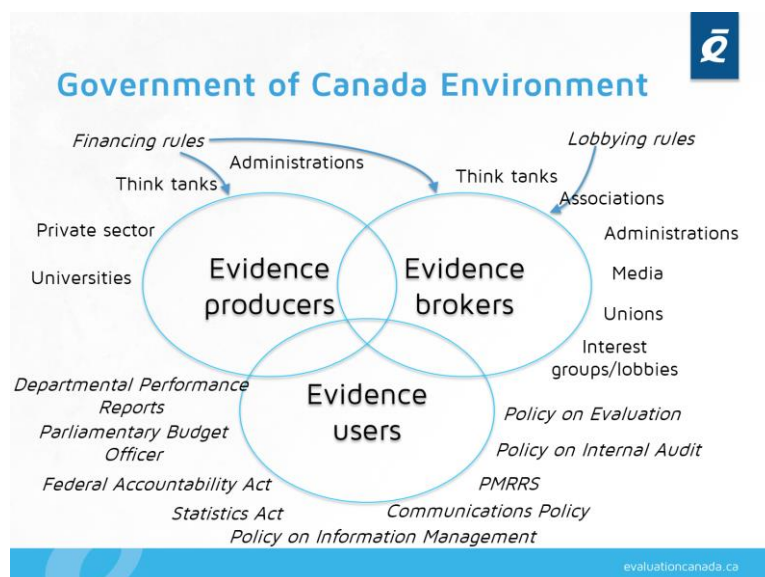
Cabinet committee of the Queen's Privy Council of Canada. […] The Treasury Board is responsible for accountability and ethics, financial, personnel and administrative management, comptrollership, approving regulations and most Orders-in-Council." http://www.tbs-sct.gc.ca/tbs-sct/abu-ans/tb-ct/abu-ans-eng.asp

"The Secretariat is tasked with providing advice and support to Treasury Board ministers in their role of ensuring value-for-money as well as providing oversight of the financial management functions in departments and agencies. The Secretariat makes recommendations and provides advice to the Treasury Board on policies, directives, regulations, and program expenditure proposals with respect to the management of the government's resources. Its responsibilities for the general management of the government affect initiatives, issues, and activities that cut across all policy sectors managed by federal departments and organizational entities (as reported in the Main Estimates). The Secretariat is also responsible for the comptrollership function of government." http://www.tbs-sct.gc.ca/tbs-sct/abu-ans/tbs-sct/abu-ans-eng.asp

[10] See Amanda Cooper, *loc.cit.*, page 71.
[11] http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=15024
[12] http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=16484
[13] http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=18218
[14] http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=12316
[15] http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=12742
[16] http://laws-lois.justice.gc.ca/eng/acts/S-19/FullText.html
[17] http://www.parl.gc.ca/content/hoc/Bills/391/Government/C-2/C-2_4/C-2_4.PDF

- the Parliamentary Budget Officer,[18] which provides independent analysis to Parliament on the state of Canada's finances; and

- Departmental Performance Reports,[19] which are individual department and agency accounts of actual performance for the most recently completed fiscal year against Departmental plans, priorities and expected results.

As for evidence producers and brokers related to the federal government of Canada, many are subject to the vagaries of unstable financing, including grants and contributions that are subject to changes in magnitude and accessibility. For example, Cochrane Canada produced hundreds of systematic reviews very efficiently, but it is losing 70 percent of its funding because of changes in the funding policy of the Canadian Institute of Health Research.[20] Also, evidence brokers might well be subject to the Lobbying Act,[21] which requires registration and declarations of advocacy activity.
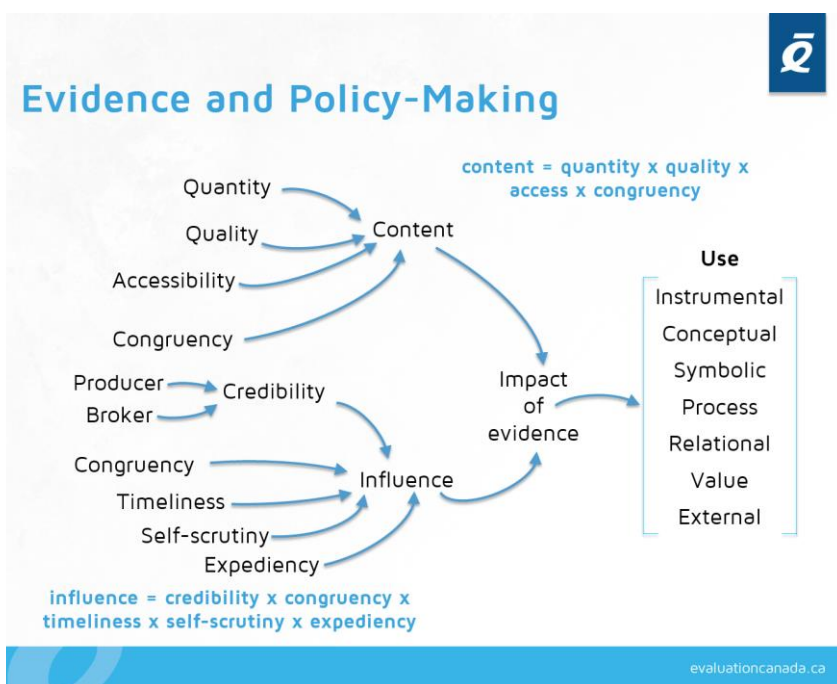
This is a partial picture of the Canadian infrastructure for evidence-based policy-making. Nonetheless, it shows it is a complex system.

## 3. How Evidence is Only One Element in the Decision Equation

How does evidence (particularly evaluation) get used in policy-making? This question demands use be defined before I turn to the notion of impact.

Much of the literature on knowledge use focuses on three uses, but more recent sources suggest there could be as many as seven.[22] These seven uses are:

1. Direct or instrumental use has an immediate impact on decisions and actions, and may be the type of use anticipated by most people.

2. Conceptual use affects how one thinks about certain issues and approaches them.

3. Symbolic use affects how one justifies their action.

4. Process use stems from being involved in the knowledge creation process; it may mean adopting a new approach to decision making.



5. Relational use changes how roles and functions are shared within the organisation.

6. Value use means fundamental goals, aspirations, or motivations are modified.

7. External use affects how individuals outside the organisation adapt and the position they adopt.

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[18] http://www.pbo-dpb.gc.ca/en/

[19] http://www.tbs-sct.gc.ca/dpr-rmr/index-eng.asp

[20] http://ccc.cochrane.org/news/future-funding-cochrane-canada

[21] http://laws.justice.gc.ca/eng/acts/L-12.4/

[22] Kusters, Cecile et al. *Making Evaluations Matter: A Practical Guide for Evaluators*, Centre for Development Innovation, Wageningen University & Research Centre, Wageningen, The Netherlands, 2011.

Now the nature of the use of evidence is defined, let's turn to the notions of impact. What are the mechanisms at play in transforming knowledge into policy impact?

There is a body of literature that deals with evaluation utilisation.[23] It focuses on such themes as user engagement, reliable methodologies, professional standards, communication, utilisation support etc. Much of this literature was written with a single evaluator and an individual manager in mind. Unfortunately, policy-making involves more than individual managers. An entire system of production, intermediation and utilisation is at play, as we saw in the second section of this talk. We need a different model to connect evidence with utilisation in this context.

Howlett and Craft[24] suggested

> *'Evidence-based policy-making's explicit emphasis on 'evidence' - that is, a particular form of advice - places the content dimension of policy advice at the fore of the analysis. However, such an emphasis can operate to the neglect of influence.' That is, to have an effect not only must evidence be present (content), but it also must be used, and used in a way that significantly affects policy outputs (influence).*

Let's see how this may work.

What do we mean by 'content' in the context of evidence-based policy-making? I suggest there are four components to the notion of content:

1. Quantity: the evidence must exist, which is far from a given, even today. Program evaluation has been criticised often for not being available (quantity = zero). Policymakers have to make decisions on innumerable topics; there is simply not enough empirical evidence to support all of those decisions. Also, there is no consensus on what constitutes scientific evidence or research. As Levin put it: 'In regard to research, there are debates about appropriate methodologies, the quantity of evidence required to come to any sound conclusion, the role of the local or practitioner research vis-à-vis expert knowledge, and the degree to which any research can be separated from the situation and the views of the person(s) doing the work'.[25]

2. Quality: the quality of the evidence defines the volume of content available. Everything else being equal, better quality evidence produces more content than poor quality evidence. The concept of quality, however, is not defined the same way by everyone. As social scientists, we tend to insist on rigorous methods and disciplined protocols. We even apply standards[26] and codes[27] of good behaviour. However, quality, like beauty, is to a certain extent in the eyes of the beholder. Even speaking of scientific evidence, the quality criteria have evolved over the years. For example, in evaluation, the old standard of randomised control trials has been under severe criticism, at least in Canada.[28] The importance of the quality of the content also depends on the claims drawn from it; as Carl Sagan wrote, 'Extraordinary claims require extraordinary evidence'.[29]

3. Accessibility: content must be presented in a manner accessible to the receptor. Much of this is covered by the literature on knowledge translation (also knowledge transfer, knowledge mobilisation, knowledge

[23] Michael Quinn Patton, *Utilization-Focussed Evaluation, first edition*, Sage Publications, 1978.Michael Quinn Patton, *Essentials of Utilization-Focussed Evaluation*, Sage Publications, 2012; Marlène Läubli Loud and John Mayne, *Enhancing Evaluation Use, Insights from Internal Evaluation Units*, Los Angeles, Sage Publications, 2014.

[24] Michael Howlett and Jonathan Craft, "Policy Advisory Systems and Evidence-Based Policy: The Location and Content of Evidentiary Policy Advice", in Shaun P. Young, *op.cit.,* p. 29.

[25] Ben Levin, "The Relationship between Knowledge Mobilization and Research Use", in Shaun P. Young, *op.cit.*, page 47.

[26] For example, http://evaluationcanada.ca/evaluation-standards.

[27] For example, http://evaluationcanada.ca/ethics.

[28] But not only in Canada. See the very good account of the current arguments in Leonard Bickman and Stephanie M. Reich, "Randomized Controlled Trials: A Gold Standard or a Gold Plated?" in Donaldson et al, op cit., pages 83-113.

[29] Carl Sagan, The Demon-Haunted World: Science as a Candle in the Dark, Ballantine Books, 1996.

exchange, knowledge implementation and translational research[30]. Knowledge must be adapted, tailored and packaged.

4. Congruency: the more congruent content is with pre-existing beliefs, the more likely it is to be accepted as valid. This statement is supported by the work of psychologists on cognitive dissonance.

So, how is content evaluated? I propose that

$$content = quantity \times quality \times access \times congruency$$

such that the absence of any one of them means the absence of content.

Now, thinking about public policy, how much content do we have at our disposal? What is the quality of that content? How much cognitive dissonance do decision makers accept before they disqualify any given content?

Let's turn to the notion of 'influence' in the context of evidence-based policy-making. I suggest there are five components to it:

1. Credibility of the source of the evidence: of course, the credibility in the eyes of the receptor of the information. Early literature on the subject suggested the proximity of the source to the receptor is the key to credibility.[31] But more recently, the hypothesis that influence is really built through a web of policy advisors has surfaced. It is also possible to distinguish the credibility of the producer of the evidence and of the knowledge broker. For our purposes, let's remember the credibility of the source concerns both the producer and the broker of the evidence.[32]

2. Congruency of the source with the aims of the decision maker: maybe of lesser importance because it may already be captured under the credibility of the source of the evidence, the ideological congruency of the source with the aims of the decision maker increases the likelihood of influence.[33] A right-wing think tank is more likely to exert influence over a conservative government than a labour union, for example.

3. Timeliness of the evidence: it is patent that evidence supplied after a decision is made cannot exert influence over it. This is an obvious but frequent barrier. In a recent evaluation[34] of the Government of Canada Policy on Evaluation,[35] timeliness of the evidence was identified as a key barrier to use. As evidence users from central agencies put it, 'we will use evaluations if they are available but if they are not we still have to make a decision'.

4. Self-scrutiny: for evaluation, or more generally for knowledge, to be used in decision making, the organisation must be ready to accept the challenge of questioning itself. There has to be permeability to new ideas and data. An organisation founded on ideology and unwilling to put its bases to the test will simply not use performance information contradicting its foundations.

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[30] Ian D. Graham et al., "Lost in knowledge translation: Time for a map?" in *The Journal of Continuing Education in the Health Professions*, Volume 26, 2006, pp. 13–24. See also Ben Levin, op. cit.

[31] Howlett and Craft, op. cit., pages 30 and following.

[32] Marthe Hurteau et al ("Les processus de production et de crédibilisation du jugement en évaluation", in Marthe Hurteau, Sylvain Houle, and François Guillemette, *L'évaluation de programme axée sur le jugement crédible*, Québec, Presses de l'Université du Québec, 2012, pages 77-99) suggest that credibility is built via six factors : (1) evidence and credibility are constructed simultaneously; (2) valid data is necessary but insufficient; (3) the evaluator (or evidence producer) must be flexible and adaptable; (4) the development of judgement is non-linear; (5) stakeholders must be involved all through the evidence building process; and (6) evidence production demands specific interpersonal competencies.

[33] Robin Lin Miller ("How People Judge the Credibility of Information" in Stewart I. Donaldson, Christina A. Christie, and Melvin M. Mark, *Credible and Actionable Evidence: The Foundation for Rigorous and Influential Evaluations*, Los Angeles, Sage Publications, 2015, pages 39-64) emphasises the importance of heuristic information, or "simple rules of thumb that allow us to make assessments in an automated manner and with little effort and minimal conscious awareness" (page 49). One of these heuristic devices is "consistency with previously available information or with widely held opinions" (page 50).

[34] Treasury Board Secretariat of Canada, *Evaluation of the 2009 Policy on Evaluation*, 2014, http://www.tbs-sct.gc.ca/report/orp/2015/e09poe-epse09-eng.asp. For total transparency: the author was involved as a member of the external evaluation team on this evaluation.

[35] http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=15024

5. Expediency: often external events or a time crunch trumps everything else. Given constraints of time and the necessities of public relations, the information offering the most expeditious avenue to a solution is more likely to be valued than the one that draws a longer road to remedy. In the words of the American philosopher H. L. Mencken, 'For every complex problem there is an answer that is neat, simple, and wrong'.[36]

So, how is influence determined? I propose that

$$influence = credibility \times congruency \times timeliness \times self\text{-}scrutiny \times expediency$$

such that the absence of any one of them means the absence of influence.

Try this on yourself: which is more likely to influence your car purchase decision? A magazine to which you subscribe, or a promotional flyer? Information brought to you the day after you sign a contract, or the day before? A car maker, or a consumer group?

Coming back to the relationship between content and influence for a minute then, I suggest that:

$$impact = content \times influence$$

such that there is no impact without content but there is also no impact without influence.

It also means that

$$impact = quality(content) \times quantity(content) \times accessibility(content) \times$$
$$congruency(content) \times credibility(source) \times congruency(source) \times$$
$$timeliness(evidence) \times self\text{-}scrutiny(decision\text{-}maker) \times expediency(evidence)$$

such that there are many ways in which impact can be reduced or annihilated. Any zero or near-zero value reduces the impact to zero or nearly zero. It is, in fact, surprising any evidence ever has impact on policy-making.

The equation can guide action in a number of ways. For example, in an effort to improve the impact of evidence on policy-making, one could:

5. plan more systematic data collection and more rigorous study designs to connect the problem with potential solutions (quality of content);
6. develop more information on the problem situation and its dynamics (quantity of content);
7. prepare pre-packaged syntheses of information on the problem (accessibility of content);
8. present the evidence in a manner that connects with the preconceived notions held by the decision makers (congruency of content);
9. route the evidence through an interest group or a brain trust that has the decision maker's ear (credibility and congruency of the source);
10. conduct strategic analysis of the policy landscape to forecast when a social problem will surface in the decision maker's agenda and ensure the availability of required evidence in time (timeliness of evidence)

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[36] "The Divine Afflatus", *New York Evening Mail*, November 16, 1917, reprinted in *Prejudices: Second Series* (1920) and *A Mencken Chrestomathy*, chapter 25, 1949.

11. select battles that can be won and move on when the decision maker is not open to evidence information (self-scrutiny of the decision-maker); and/or

12. identify the information that is most likely to feed the public policy debate in the direction of evidence informed decision making (expediency of the evidence).

# 4. Conclusion

The Canadian landscape of evidence-based policy-making can be considered [as of September 2015] bleak.

In 2013, Howlett and Craft[37] wrote

> *recent empirical investigations of the actual policy work undertaken by Canadian policy workers reveal that government capability to provide or integrate exogenous sources of evidence-based policy advice is limited. They identify a government-dominated policy analytical community characterised by a mixed pattern of policy analytical capability across different jurisdiction and administrative units—that is, some central and departmental-level units in the federal government displaying the highest capacity and some provincial and local government agencies the lowest, with all involved primarily in short-term fire-fighting kinds of activities.*

The Government of Canada used to have an Economic Council, a Science Council, a National Roundtable on the Economy and the Environment, among others[38]. Many evidence-producing bodies located within the government walls have disappeared over the years.

Much of this action is a reaction to a decade of, at best, inattention and at worst, attack on the evidence infrastructure by the governing party in Ottawa. A recent column in the *New York Times* summarised the situation well:[39] by gagging scientists on topics like global warming, ending the mandatory long-form census, refusing to submit decisions to public debate, 'in the age of information, [the federal government] has stripped Canada of its capacity to gather information about itself' leading to that the columnist calls 'a subtle darkening of Canadian life'. A dossier by *MacLean's*[40] and a *Science* editorial[41] led to the same conclusion.

Recently, advocacy groups have started to voice concerns about the weakening of the federal government's evidence production and utilisation capacity. For example, Evidence for Democracy[42] positions itself as 'the leading fact-driven, non-partisan, not-for-profit organization promoting the transparent use of evidence in government decision-making in Canada'. It organises issue-based campaigns, maintains a capacity-building education program, and coordinates a research program to address knowledge gaps at the interface of policy and evidence.

One final thought from early suffragettes: "The truth! But it is just the truth that cannot be known of the multitude, for truth is revolutionary."[43]

There is hope for rational thought.

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[37] *loc.cit.*, pages 38-39.

[38] G. Bruce Doern, Innovation, Science, Environment 06/07, 2006-2007, Canadian Policies and Performance, 2006-2007, McGill-Queen's University Press, 2007, pages 16-17.

[39] Stephen Marcheaug, The Closing of the Canadian Mind, The New York Times, August 14, 2015, http://www.nytimes.com/2015/08/16/opinion/sunday/the-closing-of-the-canadian-mind.html

[40] Anne Kingston, "Vanishing Canada: Why we're all losers in Ottawa's war on data", MacLean's, September 18, 2015, http://www.macleans.ca/news/canada/vanishing-canada-why-were-all-losers-in-ottawas-war-on-data/. MacLean's is one of Canada's well read magazines; see http://www.thecanadianencyclopedia.ca/en/article/macleans/.

[41] Brian Owens, "In Canada, science campaigns for attention from voters", Science, October 9, 2015, page 143, http://www.sciencemag.org/content/350/6257/139.summary

[42] https://evidencefordemocracy.ca/

[43] "The Great Conspiracy", *The Vote: The Organ of the Women's Freedom League*, Edited by Charlotte Despard, June 29, 1912.

## Postscript

On 19 October 2015, the Conservative Party which governed Canada for almost 10 years was defeated in general elections and replaced by the Liberal Party of Canada who will form a majority government.[44] This change could allow for an interesting natural experiment addressing the question of the effect of an increase in the predisposition of political decision makers to consider empirical evidence. It is expected that the 'self-scrutiny' element of the influence equation will augment, leading to more use of evidence. Time will tell.

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