

What can a biologist learn about the science–policy–politics spectrum from working with social scientists?

OUT OF THE LAB

Being the director of IRIS (York University’s Institute for Research and Innovation in Sustainability) from 2006 to 2014 gave me the chance to get out of my lab and into the science–policy–politics space. This is an area that members of the STEM (science, technology, engineering, and medicine) community have tended to avoid in the last 25 years. However, increasing anti-science rhetoric and declining public trust in and knowledge about scientists have prompted scientists to engage with diverse publics and inspired conversations about the politics and policy of STEM research within the science community. At the 2014 Genomes to Biomes conference in Montreal, biology professor Scott Findlay of the University of Ottawa, a founder of the advocacy group Evidence for Democracy, gave a plenary presentation entitled “Recent Developments in the Support and Use of Science by the Canadian Federal Government.” York University’s Steacie Science Librarian John Dupuis has documented the Harper government’s cuts to research in general, and he organized the “Death of Evidence Funeral and Eulogies” during the 2013 International Open Access week celebrations at York University.

My own perspective on how my science community colleagues view their work in relation to policy formation and the politics of science has been informed by research collaborations with several political scientists, including Gunhild Hoogensen of Tromsø University. We have collaborated on the question of whether the human security concept, commonly applied to the global south in international relations, is relevant to the global north, particularly in arctic areas, where Indigenous peoples often

BY DAWN R. BAZELY

Dawn R. Bazely is an impatient, collaborative York University biology professor and former director of the Sustainability Institute: *mihi cura futuri* (the future concerns me greatly).

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have poorer health, higher suicide rates, and environmental conflicts with distant government centres over their access to land and traditional lifestyles. Our International Polar Year project examined the multi-faceted short- and long-term issues of oil and gas development from different kinds of security perspectives.

One of my research areas has been to determine whether the overtly political human security policy framework has any relevance for ecologists doing applied research with possible policy implications. Part of my research involved

reviewing the science education, outreach, and engagement literature exploring the public understanding of science, to help understand what options are available for scientists who believe that their research and its implications are generally ignored in the wider world. Since I began this research in 2004, many more scientists have been discussing the need for us to better communicate our research to broader publics. These conversations are largely motivated by alarm at the declining number of Canadian and US citizens who trust and believe in science—for example, that of climate change and vaccination.

SHARED VALUES

While doing my research into the public understanding of science, I became intrigued by Ray and Anderson’s (2000) sociology research examining common values that people hold regardless of their political affiliation. Their surveys found 18 shared *cultural creative* values that cut across partisan political boundaries, including an interest in ecological sustainability and respect for women’s rights, both of which are components of the ethical frameworks for sustainability theory. This was some of the earliest research, subsequently expanded substantially, that has examined how personal values shape a person’s political views. Ray and Anderson (2000) also examined the link between individuals’ knowledge of natural and physical sciences research and the kind of environmental policies they are likely to support. Their research identifies subgroups within particular political groups with whom scientists interested in issues of science com-

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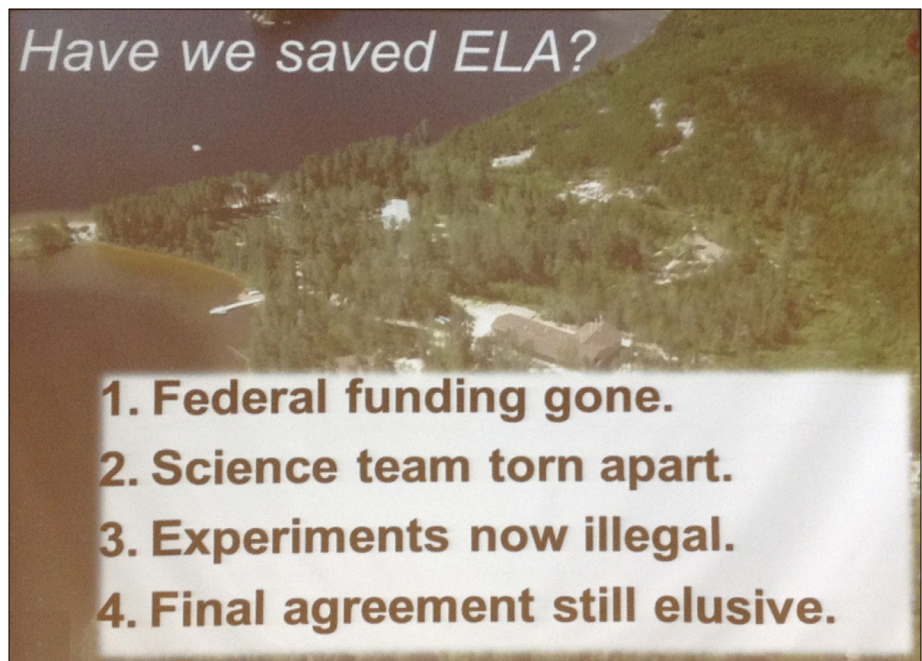
munication and the public understanding of science should connect.

The extent to which ideology-driven policy persists, even in the face of contradictory data, is not only of concern in STEM research subjects. Greenspan and Doob (2012) raised the issue of federal Canadian criminal justice policy that runs in direct opposition to research results: “The minister of justice said he is not interested in evidence-based policy: ‘We’re not governing on the basis of the latest statistics,’ he said. ‘We’re governing on the basis of what’s right to better protect victims and law-abiding Canadians.’”

Scientists tend to consider themselves as being in a privileged and particularly apolitical, neutral, and objective position. The challenge for the science community is to understand how and why this is a mistaken view, although this may alienate some allies. Scientists must realize that all STEM research operates within political and policy frameworks. A better understanding of these frameworks will help scientists navigate the policy and politics interface, without mistakenly thinking that such negotiation must compromise the quality of their science research.

CLOSURE OF THE EXPERIMENTAL LAKES AREA

A variety of actions and responses to the current policy situation by “real scientists” illustrate this point. Retired biology professor emeritus, Ken Davey, FRSC, organized a 2012 science policy discussion panel consisting of provincial and federal members of Parliament, including Dr. Ted Hsu, the MP for Kingston and the Islands, at his local Liberal riding association. Dr. Hsu, the Liberal critic for science and technology, is a physicist who went into business and then into politics. He has been one of the most active Canadian politicians in bringing attention to the Harper government’s cuts to science, including the closure of the Experimental Lakes Area. Another York University biology



From “The Watershed,” after being resuscitated. Dr. Diane Orihel gave a presentation about the struggle to save the Experimental Lakes Area after the Canadian federal government cut funding. The ELA is one of the most important long-term ecological research sites in the world. Photo by Dawn Bazely.

professor, Norman Yan, spoke at a 2012 University of Toronto event, “Unmuzzled—The Urgent Need for the Vocal Aquatic Scientist in Today’s Political Climate in Canada,” about the Experimental Lakes closure. Neither of these actions compromised Yan’s and Davey’s science research, which is distinct.

One reason Canadian science has suffered so much at the hands of the current federal government may be that Canada has been a laggard in supporting and promoting the public understanding of science, though it is hard to tell which may be the driver. In the United Kingdom and the United States, there is more highly organized and institutionalized advocacy for STEM research. Science academics like Richard Dawkins and Jim Al-Khalili are mandated with boosting the public profile of basic research and hold chairs in public engagement with science.

PUBLIC SCIENCE IN CANADA

One of the solutions to closing the Canadian public’s science engagement gap is the “journalism boot camps” for sci-

entists, organized to help them learn how to improve their interactions with the media and the public. These are run by the charity the Science Media Centre of Canada. At a 2012 York University journalism boot camp, I was asked to explain why I believe that scientists *should* communicate with the public about science. Here are my reasons:

1. The public are taxpayers, they fund you, and they deserve to hear directly from you, particularly in an era when there is evidence that some research is being suppressed by governments.
2. Outreach and engagement are increasingly written into funding requirements.
3. If scientist don’t communicate in plain language, someone else will do it for them.
4. Learning how to communicate in plain language can have the collateral benefit of enabling better interdisciplinary communication within academia, and increased research opportunities where




In November 2013, the group Our Right to Know organized an event held at the University of Toronto, to publicize federal cuts to science research in Canada. In this tableau, we see the Ontario government providing a cash infusion to resuscitate the Experimental Lakes Area, portrayed by Dr. Diane Orihel, who is rising up from her stretcher. Photo by Dawn Bazely.

large, interdisciplinary collaborations are required for funding.

5. Such communication would help Canada catch up with the UK and US, which are ahead in the area of encouraging the public understanding of science.
6. Communication helps position research that may have significant implications for scientific, medical, and environmental safety and security, policy, knowledge, and the future of the planet where people can find it. These implications may only be followed up if there is public knowledge of it and the publicly generated will to do so.

A March 2011 national public opinion poll carried out for Research Amer!ca found that only 34 percent of Amer-

icans can name a living scientist. While there are few comparable data for Canada, the Expert Panel on the State of Canada's Science Culture found in their 2014 survey that Canadians express high support for basic science research. Clearly, one means of building support for STEM subjects in Canada may be for civil society, including scientists, to connect the dots better between research and science policy by engaging with Canadian *cultural creatives* from all parts of the political spectrum. If scientists want to build support for basic research and evidence-based policy, Ray and Anderson (2000) argue that it could be a very good thing to link with a group that shares 2 of their 18 characteristics and values: being "strongly aware of the problems of the whole planet (global warming, destruction of rainforests, overpopulation, lack of ecological sustainability, exploitation of people in poorer countries)" and wanting "politics and government spending to put more emphasis on children's education and well-being, on rebuilding our neighborhoods and communities, and on creating an ecologically sustainable future." 

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However, the most likely answer is that they want us to be ignorant, and, perhaps even more troubling, they want to fly blind. Why? Because eliminating the census allows the government to gloss over a great number of issues—if we don't know about a problem, we can pretend that it does not exist.

For instance, Canada is becoming increasingly polarized into the rich and the poor, as the middle class shrinks. That, however, is not the image we get from the voluntary survey (since the rich and the poor disproportionately failed to answer)—therefore we need not worry about it.

This hypothesis falls in line with a number of other actions by the Harper government, such as the abolition of the ocean pollutants and contaminants program. We no longer have a federal agency that informs us whether the fish we eat are safe or not, but since we don't know, there cannot be a problem.

Or the abolition of the small (7 people!) smokestack team that used to travel the country measuring cancer-causing emissions and working with enforcement officers and industry to crack down on toxic pollution. Now that we don't have this small team any longer, we can ignore the problem.

Or the muzzling of scientists who can no longer speak freely with the media, the public, or even among themselves. Reporting on climate change dropped by 80% within one year following the introduction of this policy. But if we're not hearing about climate change, it must not be a problem.

It seems that our government likes to fly blind. The problem is, we are all sitting in the same plane. Once instruments have been as thoroughly destroyed as they have been by this government, it is not a simple matter to re-install them. And the crash will affect us all. 