

Dollars and Sense: The Payoffs from Basic Research

by Silver Donald Cameron

ISLE MADAME, NS --

"Look," said the dog trainer, "you have to reward or punish *immediately*. If you delay even a minute, the dog's completely confused. He can't connect the cause with the effect."

Maybe that explains the mindset of our deficit-cutting heroes in Ottawa. Maybe they're just too far down the evolutionary ladder to be capable of foresight. Chop income support programs, for instance, and child poverty rises to a 17-year high of 20.9% in 1996, compared to 14.9% in 1980.

"But we have no choice!" cry the Deep Thinkers. "We can't leave a huge government debt to our children." Right. Why procrastinate? We'll starve them now instead.

It isn't a question of whether or not to pay. The research shows that we can pay a dollar now, or five dollars later -- in crime, vandalism, prostitution, welfare, lost productivity and mangled lives. But to understand that, you have to be able to connect cause and effect at a bombing range greater than 30 seconds.

The same with basic research -- the inquiries which simply seek answers to fundamental questions. You can stop doing it and save a few dollars, and for a few years you'll appear to be better off. But what you've really done is to cut off a major source of future wealth.

Consider, for example, the Bedford Institute of Oceanography, which no longer exists. Oh, there's a building by that name on the shore of Halifax Harbour, and it once housed the third-largest assembly of ocean scientists in North America. It was an anomalous place, jointly supported by the federal departments of Fisheries and Oceans; Environment; and Energy, Mines and Resources, and operated like a university campus without the inconvenience of students. Its agenda wasn't driven by industrial priorities; its scientists investigated all kinds of things -- the continued spreading of the ocean bottom, the configuration of the continental shelf, the evidence that sea level had risen inexorably for the past 10,000 years.

In 1986, the Institute itself was abolished, though the facility continued to shelter scientists employed by the three departments. Later cuts reduced the scientific complement by about 30%. Why not? They were doing pretty pointless stuff, right?

Wrong. As the BIO scientists mapped out the continental shelf, they developed elaborate atlases which showed the exact location of certain anomalies which suggested the presence of hydrocarbon deposits. The eventual result was an offshore oil industry which employs hundreds of Nova Scotians now and will employ many more in the future.

"No oil company surveyed the offshore banks," says George Steeves, an engineer who builds sophisticated oceanographic instruments used by BIO scientists. "That was all done by the Government of Canada. There would have been no offshore petroleum development without the Bedford Institute."

A second example: when Canada went to the World Court to arbitrate its dispute with the United States over the international boundary line through the rich fishing grounds on Georges Bank, it came away with a far larger slice of the Bank than predicted -- because Canada went to court with superior data. Our negotiators knew where the Bank's sediments originated; they knew which ecosystems involved the Bank;

they knew the shape of the undersea terrain. They based their arguments on knowledge which the Americans simply couldn't match, and the Canadian fishing industry reaped a bonanza. The same knowledge base routed the French over the offshore boundary lines around St. Pierre and Miquelon.

"The Georges Bank decision alone probably repaid the total cost of the BIO many times over," Steeves reflects. "But the government has forgotten – or simply doesn't know – where all that information came from. It wasn't obvious how important it was until they needed it. Similarly, it's impossible to say what information now being collected will be crucial in the future, and what will be trivial."

University research suffers from the same short-sighted frugality. At a recent panel discussion organized by the Nova Scotia Institute of Science, a physicist, a biologist and a philosopher made exactly the same point. For instance, said Dr. Jeff Hutchings of Dalhousie University, "the questions we're asking now about what happened to the cod or why is the Atlantic salmon on the decline, are all questions of basic research, and we don't have any answers for them." The future of our fishing industry will be decided on the basis of what we don't know.

Basic research serves the long-term interests of the country, not just the immediate needs of business. It satisfies one of the deepest and most likeable human impulses, the urge to discover and understand. And it's slowly starving.

Time to send our Deep Thinkers for re-education. Put the program in charge of my dog trainer. He understands their limitations.

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AUTHOR NOTE: Silver Donald Cameron's current book, *The Living Beach*, germinated during a conversation with a Bedford Institute scientist. He lives in D'Escousse, Cape Breton.