How Is Basic Science Faring in Canada?

The new Canadian budget and a recent report raise concerns about whether applied industrial research is expanding at the expense of basic research in universities

As scientists in the United States are scrutinizing the new Bush budget, their counterparts in Canada are doing the same—and asking many of the same questions. On 20 February the Conservative Party released its sixth budget since coming to power in 1984. Canadian scientists are asking how much emphasis will be put on applied, commercial research? How much on defense? And they are also wondering whether basic research is being adequately supported.

Concern over the last question has been heightened by the release of a report on funding for research and development during the 1980s. That report, released by a federal agency called Statistics Canada, shows that over the decade federal support for research carried out at universities barely kept pace with inflation. Support for certain types of applied research, on the other hand, particularly those related to defense, handily outpaced inflation over the decade.

Two of the biggest winners in the 1980s funding derby were the Strategic Technologies Program and the Defense Industrial Procurement Program (DIPP). Both programs are intended to funnel federal money to certain key areas of industry. They are part of an umbrella agency called the Department of Regional and Industrial Expansion (DRIE) that has recently been folded into a new "superministry" of Industry, Science and Technology.

Reflecting DRIE's mission, of the funds it spends, 90% goes to industry. Part of DRIE's mission is to encourage certain "strategic technologies." And in 1988 those key technologies were identified by the government as biotechnology, information technology, and advanced industrial materials.

How big a winner was DRIE in the 1980s? Of the more than 60 federal agencies that support or conduct activities related to science and technology, the DRIE budget was the one that increased the most. Between mid-decade and decade's end, that budget rose a whopping 58%—from $173 million to $273 million.

To put the increase in its economic context, inflation in Canada during the second half of the 1980s ran at a rate of a little more than 4% per year, yielding a total compounded increase of 22.5%. DRIE's budget was clearly outpacing inflation.

Over on the university side, however, things weren't so rosy. Three major granting councils provide the bulk of support to academic researchers in Canada. During the second half of the decade the budget for the three councils rose 27%, which represents an increase after inflation of less than 1% per year. In some areas that are of concern to basic research the figures seem downright catastrophic. For example, during the last half of the 1980s the total allocated for capital expenditures for natural sciences and engineering research in all laboratories decreased by 30%.

None of the proposals in the current budget is likely to alter these trends very much. Shortly before the budget was released the Toronto *Globe and Mail* suggested in an editorial that DIPP—the part of DRIE directly related to defense—could stand some trimming. "The list of DIPP recipients reads like a who's who of Canada's aerospace, defence and high technology industries," the editorial said. It concluded that "there can be no question that the forthcoming budget must include spending cuts as part of the federal government's attempt to reduce its $30-billion annual deficit. . . . In calling for precisely such cuts the country's business community has repeatedly said that it is prepared to do its part by sacrificing some of the subsidies and benefits it now receives from Ottawa."

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—William Winegard

In the budget, however, the amount allocated for DIPP remains unchanged at a 5% annual increase. The Strategic Technologies Program, which had been expected to grow substantially, was also capped at 5% annually for the next 2 years.

The results for the granting councils in the new budget are mixed. The overall allocation to the three councils increased by 9.6%. Within that total, some agencies did better than others. The National Science and Engineering Research Council (NSERC), which has done better than the other councils in the past few years, got a hefty increase of 9.9%—from $390 to $423 million.

Yet even that increase is due to the council's proximity to industry. Some $90 million of the council's budget comes from a Matching Fund, set up in 1986 to encourage links between universities and industry. That policy expires at the end of this fiscal year, leaving some major figures in the research arena worried about the prospects for science in Canada.

Arthur May, president of the NSERC, expressed his concern in a letter to university presidents a week before delivery of the budget. "Despite the increased budget which Council has enjoyed over the last few years," May wrote, "the budget remains inadequate to cope with a growing [scientific] community anxious to increase Canada's R&D effort through both research and training activities."

And even those in industry, who might be expected to be delighted by the government's emphasis on industrial research, aren't necessarily thrilled by the stress put on defense. The agency that receives the most criticism is DIPP, which comes in for a lion's share of the DRIE funds. "I'm not a great believer in DIPP," said Denzil Doyle, who was the first president of Digital Equipment Canada and has since left to head his own consulting firm. "But I'd get really excited if there was a DIPP for the resource industry."

Others have more fundamental criticisms of the ruling party's way of doing things. Liberal opposition critic John Manley claims the government as a whole has a "policy vacuum" in relation to science and technology. "The entire government doesn't really have a strategy," Manley says.

Minister of Science William Winegard, who has a Ph.D. in metallurgy, seems content for the moment with fighting a rearguard action. "I think we did quite well," he told *Science* in relation to the proposed budget. "The cuts were relatively minor." But Winegard sounded a bit wistful when he was asked about the future of basic research. "We do what we can in terms of basic research," he said, "but the new programs are focused on industry."

■ **Doug Powell**

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