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Astronomy's star lobbyists A Canadian case study in raising Byline/Source: By PETER CALAMAI Toronto Star

OTTAWA WHEN IT COMES to lobbying for science dollars, this town has never seen anything like the full-court press mounted by Canada's astronomy community over the last two years.

And even though the federal budget Monday didn't mention astronomy, the community's strategy and tactics actually worked.

Without the lobbying effort, the astronomers feel, their grand blueprint for the next decade of astronomy research would have been doomed as the government chopped and trimmed back promised programs to find billions for the security agenda.

Instead, an unannounced pot of $15 million was quietly set aside in the budget so Canada could sign up for the most urgent aspect of the astronomer's plan: the Atacama Large Millimetre Array (ALMA), a large cluster of radio dishes atop the Chilean Andes that will peer into the farthest and coldest corners of the universe (www.alma.nrao. edu/).

And other money is being found to keep alive developmental aspects of the Long Range Plan (LRP) that have a more forgiving timeline (www.casca.ca /LRP/).

"The arrangements we are able to put in place now keep the whole LRP viable for a year or two," says Russ Taylor, a University of Calgary astronomy professor who helped lead the campaign as president of the Canadian Astronomical Society. "We're victims of the terrorists just like everyone else, but we're rising above it."

Here's how the saga unfolded, a case study in lobbying for science:
Two years ago, the country's 160 professional astronomers hammered out the LRP blueprint of what the country must do to ensure that Canadian astronomers and industry both got a slice of the action in new international observatories on Earth and in orbit. The price tag was $264 million over 10 years.

Their efforts were supported by the National Research Council (NRC), which is responsible for managing our national observatories and our share of current international ones, and by the Natural Sciences and Engineering Research Council (NSERC), the federal granting body that funds university-based astronomers.

In February last year, again with help from NRC and NSERC, the astronomers produced a glossy magazine with spectacular sky images and accessible prose to explain the Long Range Plan, packaged as The Origins Of Structure In The Universe.

Then the astronomers identified the key federal departments and crucial Commons committees and assailed them with all the tools of modern lobbying - including the services of a public-relations firm.

Like the owls arriving en masse at Privet Drive in Harry Potter, letters poured into ministers' offices from university presidents, engineering firms, professional associations and hometown industries. The astronomers even confronted MPs in their constituency offices.

None of this would be out of the ordinary for drug companies or even gun owners. But these were research scientists, who traditionally have stood aloof from such lobbying in the expectation that they'd be supported because their cause was deserving.

Canada's current bottom-of-the-heap ranking in research intensity among industrialized countries demonstrates the folly of that naive belief. For astronomers, however, the injustice is even more galling.

Among the G7 economies, Canada has the lowest per-capita funding for astronomy. Italy, France, Germany and Japan all spend more, Britain spends five times as much, the United States seven times.

Yet research by Canadian astronomers is extensively quoted elsewhere, a standard yardstick of the impact of scientists in a discipline. Measured by the frequency of citation, astronomy is the scientific field in which Canada has the greatest international impact, followed by medicine and chemistry.

Perhaps more revealing, this impact ranking also places Canada third in the world in astronomy, behind only the United States and Britain.

These particular figures always caught the attention of MPs when the coalition appeared before parliamentary committees. But the astronomers provided a lot more ammunition in making their pitch for a guaranteed level of federal funding over the next 10 years.

First came examples of recent scientific advances by Canadian astronomers:
Our home-grown approach to adaptive optics, the ultra-fast mirror movements that take the twinkle out of stars, so telescopes observe their light without the distortions from the Earth's atmosphere.

The invention of techniques for ultra-precise measurements of the wobbling of distant stars, a gravitational pull that reveals the presence of Jupiter-sized planets no existing telescope could ever detect directly.

The first unambiguous observational evidence that massive black holes commonly exist at the centres of large galaxies, a finding that provided a major leap in unravelling the mystery of how galaxies form in the first place.

Alas, some MPs, and especially cabinet ministers, are more impressed by the bottom line than the pursuit of knowledge. The coalition had ammunition for them as well, ranging from the $150 million in observatory contracts won by a construction firm in Port Coquitlam, B.C., to the $200 million in annual export sales of Montreal's Matrox which makes video cards for personal computers.

Yet Matrox got its start in 1979 producing electronic cards to store images from the Mont Megantic Observatory in Quebec. And AMEC Dynamic Structures of Port Coquitlam began designing and building observatories because of Canada's participation in a shared telescope in Hawaii two decades ago.

Together the knowledge-and-profits arguments produced endorsements of the Long Range Plan by the finance and industry committees of the Commons (although the industry committee complained that the process for evaluating such Big Science programs was entirely ad hoc).

In the end, however, what is keeping alive the astronomers' grand blueprint is a lucky reform of the budgetary process and some old-fashioned money management.

The reform involves the Canadian Space Agency, which was switched two years ago from unpredictable project-based financing to a guaranteed base budget in a five-year framework. Set aside in the current budget is $38 million for the first half of Canada's share of the Next Generation Space Telescope, the replacement for the orbiting Hubble telescope (ngst.gsfc.nasa.gov/).

The space agency had also earmarked almost $10 million over the next five years for Canada's stake in a pair of European astronomy satellites. All together the space agency will be funding $100 million of the $264 million LRP over the next decade.

But the budget left the $164 million ground portion virtually unfounded. The most urgent aspect was the ALMA project. Canada is supposed to sign an agreement next summer pledging $50 million in cash or equipment toward a total capital cost of $850 million.

But how do we pony up millions when the budget didn't specify a penny for astronomy? Because not everything is spelled out in budget documents. The finance department listed an extra $30 million for the National Research Council this fiscal year but left the strong impression this was earmarked for technology clusters.

In fact, $15 million is unattached year-end money that NRC president Art Carty says is going to go to ALMA. There's a good chance of a further $22 million over five years from the Canadian Foundation for Innovation, which is considering a submission for international astronomy infrastructure from a group headed by Taylor.

The approximately $13 million shortfall will somehow be found within NRC's existing budget, says Carty, because the LRP is essential to the nation's scientific well-being.

There is, after all, a heritage dimension. Canada is the country that built what was briefly the biggest optical telescope in the world - the 72-inch Plaskett outside Victoria - and also the world's most sophisticated radio telescope for its time, now abandoned in Algonquin Park.

They were also the result of lobbying. Back then, however, it was all backroom stuff.