

POLICY BRIEFING: INNOVATION

The world's largest telescope: ambitious project made in Canada

If Canada is to have a future in astronomy, it's through projects like the Thirty-Metre Telescope

By GRETCHEN HARRIS
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Did you know that astronomy is one of Canada's leading sciences? Or that Canadian astronomical discoveries are the most highly-cited in international scientific journals? Or that last year, *The New York Times* recognized Canadian astronomical excellence? You should. Canada is an international leader in astronomy and is now involved in an ambitious project to build the Thirty-Metre Telescope (TMT)—the world's largest telescope—which will allow

astronomers to see the edge of the universe. The TMT builds on Canada's illustrious history in astronomy. In 1917, Canada built the world's largest telescope, that of the Dominion Astrophysical Observatory in Victoria, propelling Canadian astronomers to the top of the field. Some 60 years later, our partnership in the Canada-france-Hawaii Telescope strengthened and solidified Canada's international reputation.

Canada's continued success in astronomy comes from two factors. First, Canada's astronomy community has a remarkable ability to adapt and capitalize on innovation. The future of astronomy lies in 'big science'—multi-decades world projects conceived, designed, funded and operated by international partnership groups that cost hundreds of millions of dollars. If Canada is to have a future in astronomy, it is through these projects.

Therefore, the astronomical community developed the Long Range Plan for astronomy (LRP) to chart a course for continued

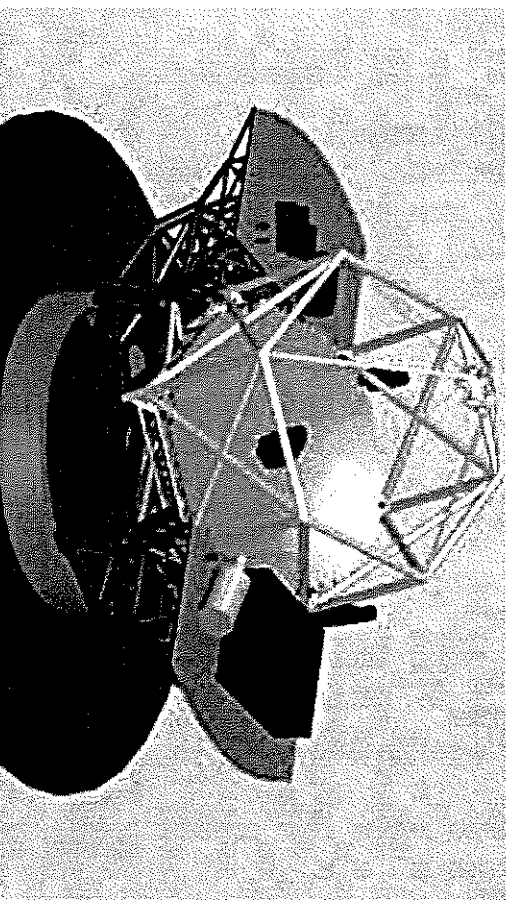
Canadian astronomical excellence. The LRP set out a limited set of priorities for Canada, one of which is the TMT. Projects like this provide Canada with an ownership stake that allows our astronomers and students to have access and use of these facilities.

The second key factor in Canada's astronomical success is government support. In 2000, the Coalition for Canadian Astronomy was formed with representation from the astronomy community, universities and industry to make the case for government funding for the LRP.

Partial funding was secured, but more is required to ensure the completion of the LRP and Canada's role in projects like the TMT. The business case for further investment is sound. Universities are seeing higher enrolment in astronomy and unprecedented faculty renewal, ensuring Canada has the next generation of astronomers who will keep us at the forefront of this field.

Canadian industry is reaping huge benefits as well. The direct economic return to Canada from astronomy projects is at least two-to-one, with some estimates as high as eight-to-one. High-tech companies have been awarded contracts for project design and construction. Canadian jobs have been created through the construction and operation of astronomical facilities.

Work in astronomy generates indirect spin-offs for Canadian industry through knowledge generation and technology development. These spin-offs have had a tremendous effect on our daily lives. MRI and CAT scan technology, breast cancer screeners, airport baggage x-rays, the Netscape web program, and digital cameras are all derived



Here's something: A drawing of the thirty-metre telescope with human figures to give some idea of its size. Technology being developed for the TMT by Canadian companies is already finding applications elsewhere.

from astronomy research. One Canadian company, AMEC has even parlayed its structural design expertise building telescopes into becoming a world leader in the design and construction of theme park rides.

Canada's excellence in astronomy is a real success story for science, academia and industry. The Coalition for Canadian Astronomy is seeking renewed federal funding to support LRP projects like the TMT. Rest assured you will hear much more about Canada's leadership role in astronomy for years to come.

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