

**Statement from the CASCA Optical/IR Astronomy Committee on
the “Second to None” Policy Regarding Canada’s Participation in
a Very Large OIR Telescope Project**

The ACURA LOT steering committee and the CASCA LOT Science Steering Committee have recommended to the ACURA Council and to the CASCA Optical and Infrared Astronomy Committee (OIRAC) that Canada must take a “second to none” share in a 30m class telescope. OIRAC has endorsed the “second to none” principle and transmitted the recommendation to the CASCA Board. The ACURA-supported CFI proposal incorporates this principle in the application through the proposal that we join the TMT project as one of three or four equal partners.

Every element of the case for Canada to engage in a 30m class telescope argues for a second to none share.

- **Scientific returns** are a steep function of the share of the facility—the benefits to cost ratio goes down with small shares. A large share allows astronomers to get the number of nights needed to undertake significant new programs of research. There is ample evidence to show that innovative or large research programs tend to give way to less risky or to smaller programs if telescope time is very limited. Creating a critical mass of cutting edge research in the community leads to a high internal standard through competitive allocation and collaboration. The optical-infrared research community and the related technological community in Canada are exceptionally strong and well prepared to make ground-breaking use of the facility. These facts can be demonstrated on the basis of returns and impact from the use by Canadians of international astronomical facilities in which we are partners: CFHT, JCMT and Gemini.
- **Multi-wavelength astronomy** requires that a wide range of facilities be brought to bear on a common sample of objects. Canadian participation in such projects can either be bringing to a collaboration a large share of facility in which we are expert users and thereby gaining access to other facilities, or, by having a small share of all the facilities.
- **Economic returns** are an important strategic reason to support frontline research in the leading economies. Large shareholders demand a proportional division of the key areas of economic return amongst themselves and take the riskier, higher return items. The huge returns from our investment in CFHT (\$14M multiplying to more than \$200M) will never be realized again if we universally take small positions.
- **Leadership** in science and innovation depends on being able to take a no less than equal position for scientists, managers and engineers. The alternative is to become a small player in a big team, or even to have a superior Canadian solution to an engineering problem rejected because it has been allocated to a larger partner. Encouraging a selective culture of leadership is central to maximizing impact in those fields where Canada’s position is amongst the strongest.

- **Selectivity and focus** in our investment in facilities has been a key element of Canadian success in Astronomy. A major stake in a LOT is an important complement to the positions we have taken in the Atacama Millimetre Array (ALMA), the James Webb Space Telescope (JWST) and the planned participation in the Square Kilometer Array (SKA). The LOT telescope is a key facility in our national plan.
- **Positioning** relative to our competitors. In the 4m telescope era (1973-1993), with the CFHT we enjoyed 42.5% of the best of eight telescopes. This inspired a vibrant sense of ownership that fired-up the community. The high quality of CFHT was realized through a strong partnership in which our scientists were able to bring innovative Canadian solutions to the telescope. In the current 8m era we had to not quite halve our access whereas virtually all our peers have been able to double theirs. We have gone from a nearly half share of management to a 15% share, with a correspondingly reduced control on the direction of our most important research facility. On a per capita basis, Canada's contribution to world-class astronomical facilities, pre-eminent in the mid-XX century and the origin of a still highly respected community, has now sunk to half the average for the G7 countries.
- **The Financial feasibility** of the "second to none" policy is within the announced goals of the federal government to double the Canadian budget for research. Combining NSERC, NRC, CSA, CFI and provincial funding, the base budget for astronomy in Canada is approximately \$31M per year. This, combined with new LRP and CFI construction funds, rises to about \$40M per year. Some of those new funds have been provided to NRC (LRP funds) and through NSERC (the IOF grant). The LOT project will require from Canada an ongoing total of about \$25M per year for operation and upgrades beginning ca 2015.

Therefore, it is proposed that OIRAC conveys to the Long Range Plan Mid-Term Review Panel, and to the astronomical community in Canada, its enthusiastic support for the "second to none" policy that underpins the process to ensure Canada's participation in a very large OIR telescope project.

Proposed by: Ray Carlberg
 Seconded by: Harvey Richer
 Adopted unanimously
 March 24, 2004

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D. Crampton	P. Martin
R. Doyon	R. Racine, Chair
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