



MATHEMATICS & STATISTICS DEPARTMENT
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Nancy Reid
Chair of the Steering Committee
Long Range Plan for Canadian Mathematics and Statistics

Dear Professor Reid:

We are writing in response to the request for input from the Steering Committee for the Long Range Plan for Canadian Mathematics and Statistics. This letter conveys the views of our department in response to questions raised on the [Long Range Plan website](#) and in Professor Ivanoff's presentation to our department on 23 March 2011.

The long-range planning exercise is an extraordinary opportunity to advance mathematics and statistics research within the National Science and Engineering Research Council (NSERC). Promoting the wide range of exceptional Canadian research in the mathematical and statistical sciences must be the central theme of the plan. Although this particular exercise is funding neutral, the community should hope and expect the long-range plan to influence future funding decisions. The plan should contain some meaningful metrics that indicate the relative strength and importance of mathematics and statistics in Canada. A few specific examples highlighting the recent international impact of Canadian research supported by NSERC should probably be included. In addition, the acute demand for new mathematical and statistical tools in all branches of science and social science should be emphasized. However, one needs to carefully avoid prioritizing the research in any subfield. The plan must stress both the far-reaching benefits of investing in mathematics and statistics and the incredible breadth of talent shoehorned into this single evaluation group.

The Discovery Grants program is clearly the most valuable funding source for Canadian research in mathematics and statistics. Despite the challenges arising from flat funding levels (and other technical issues), the Discovery Grant program works surprisingly well at supporting outstanding research across the mathematical and statistical fields, especially when compared with the systems in other countries. The support for MSc and PhD students is simply indispensable for graduate programs. Because it is extremely difficult to predict where the major advances will occur and by whom, it is vital that NSERC continue to support a diversified base of high-quality research in mathematics and statistics. The flexibility derived from supporting research programs rather than specific projects has been crucial in fostering excellence. Although this funding paradigm does not lend itself to 'matching funds' opportunities, this gap is small because the Discovery Grants are the dominant (often the only) source for research support in mathematics and statistics. Protecting the limited funds in the Discovery Grants program must be the highest priority of the long-range plan.

The Institutes (BIRS, CRM, Fields, and PIMS) are a very important resource for mathematics. They do a great job of leveraging their NSERC funds by tapping into many resources which do not normally support Canadian mathematics. Moreover, they have become the key source of funds for organizing mathematical conferences in Canada. Primarily through these activities, the Institutes (especially BIRS) have raised the international profile of Canadian mathematics. Unavoidably, the Institutes disproportionately benefit their host universities. Nevertheless, they could do a better job of reaching out to the entire community (i.e. statistics and “non-member” universities). One way to broaden their impact might be to have a new program for research groups that funds a series of meetings to foster new collaborations between researchers who don’t normally or wouldn’t otherwise get together. We hope that the long-range plan will inspire the Institutes to initiate activities that serve a broader segment of our community. Since the Institutes collectively represent the large-scale research facilities required for world-class research in mathematics, they must be part of the long-range plan.

There are some inherent dangers to incorporating the Institutes into the Mathematics and Statistics Evaluation Group (1508). Despite the short-term benefits of funding stability, such an arrangement will probably lead to a long-term decline in support. For the Institutes, it will be very difficult to compete against the individual Discovery Grants. The natural temptation of any evaluation group will be to “shave a little” off the Institute grants to fund many more individual researchers. Combining the Institutes with the Discovery Grants will also mask the underfunding for mathematics and statistics research — undoubtably the total budget will be compared with that of other evaluation groups. It seems reckless for our community to put basically all federal support of mathematics and statistics in a single program. From this perspective, some questions come immediately to mind. Will such an arrangement effectively make mathematics and statistics ineligible for other support from NSERC or the Canadian Foundation for Innovation (CFI)? Would a combined application for all the Institutes be more competitive in the new funding system for the major resources? Could the Institutes form a separate evaluation group? We hope that the long-range plan will include viable recommendations that better mitigate the risks to our community.

Given the apparent likelihood of a single evaluation group handling both the Discovery Grants and the Institutes, we encourage the steering committee to provide detailed guidelines covering this possibility, particularly as concerns the long-term risks indicated above. At the very minimum, the guidelines should address the following questions. How will applications for a new institute be handled? Will the same Conference Model be used to evaluate both the individual research grants and the institutional grants? The evaluation group will be in a very difficult position without clear and specific instructions from our community.

Sincerely,
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