McMaster University

Department of Mathematics & Statistics

1280 Main Street West
Hamilton, Ontario, Canada
L8S 4K1

Phone 905.525.9140 ext. 23417
Fax 905.525.0935
Email boden@mcmaster.ca

May 3, 2011

Dear Members of the Long Range Planning Committee,

First, let me begin by saying that I strongly agree with the public letter drafted by the Math-NSERC Liaison committee and posted online April 26, 2011. I realize that many of the issues raised by that letter were deemed (by NSERC) to be off limits for the long range planning committee, but this conveniently overlooks the fact that the process for evaluating grant proposals has a driving effect on the development of our research community. I would urge the long range planning committee to disregard the advice from NSERC and to use this as an opportunity to not only develop a long term plan but also to push NSERC to review their evaluation system and consider its impact on the long-term development of research in mathematics and statistics in Canada.

The most pressing issue, the elephant in the room if you will, is the underfunding of our discipline by NSERC. This has been an issue for a long time, and there was hope that this would be corrected in the new system of evaluation, but so far the problem has not been fixed. The new system of evaluating grant proposals has helped to highlight the fact that there are severe and unjustified funding discrepancies between our discipline and virtually every other NSERC-funded field. I would be interested to see direct bin-to-bin funding comparisons across disciplines and to hear NSERC explain the rationale for these discrepancies. Are the typical expenses of research in other fields really so different from our own? Certainly, NSERC would be well-advised to rebalance their investment across the many disciplines by engaging in a realistic (not historical) cost-based reallocation exercise.

NSERC's response in the past to questions about the budget for math & stats is to point out that we also receive the funding for the institutes BIRS, CRM, Fields, and PIMS. Certainly NSERC should be applauded for its support here, but I object to the suggestion that institutes draw funding away from DG program. First of all, the institutes help raise money for research, and their funding is generally leveraged from numerous other sources, including provincial funding and private donations. More troubling is the aspect that the institutes are responsible for having raised both the profile and the level of research in mathematics and statistics in Canada. In this sense, the only "problem" with institute funding is that they are victims of their own success. I personally reject the notion that the envelope for DG funding in math & stats is balanced by institute funding. The fact is, their presence in Canada has played a decisive role in attracting a new generation of international scientists to come and conduct their research programs here, and the rational response to an increase in the number and quality of active researchers is to increase the availability of funding.

This brings us to perhaps the most important and one of the most delicate issues with the current state of research funding, which is the veritable transmogrification that has taken place within Canada's research community in mathematics and statistics, and NSERC's inability to adjust to the consequent demands and expectations. Certainly the institutes, as well as NSERC itself, are a big part of the successful recruitment of scientists into Canada. As a departmental chair, I can speak to the central role that NSERC plays in attracting top faculty here, and the

key point is that NSERC provides (or has provided) a stable base of program funding with awards decided by an independent, peer-review process. This is obviously highly desirable for the individual researcher, and our system for research funding is envied the world over. What's more, the decisions made at NSERC are used as independent metrics by departments for questions of appointments, tenure and promotion, merit increases, virtually everything having to do with career progress for academicians. The aggregate results are even used by the upper administration (Deans and Provosts) to guide their own institutional strategic planning initiatives.

For these reasons, even small changes in grant allocations are guaranteed to raise numerous questions, sometimes even a public outcry. The present system is seen by many as chaotic. Large changes in the outcome seem to result from rather small changes in the input, and this discontinuity is present not only at the level of the individual NSERC applicant, but also for our entire field. The decisions at NSERC have a ripple effect, and the threat to our field is both real and grave. If NSERC decides that our research is not worthy of adequate funding, then who is to say that Deans and Provosts should not begin to question the value of investing any new resources to our departments. The entire structure that we have all worked so hard to build and support could collapse.

Specific recommendations:

1. NSERC needs to implement a more dynamic budget allocation system to EGs

Currently, NSERC makes awards using a more dynamic decision process, but that is built on top of a *historic* budget allocation system. The effect of this mismatch is that it has created a bottleneck in funding dollars, and this ends up punishing fields like ours that are growing fastest and rewarding fields that are shrinking.

2. NSERC needs to restore confidence by creating stronger links to the research community

Questions have been raised about NSERC's credibility, and this is due in part to a lack of transparency in decision making and an apparent disconnect between the research community and the scientific decisions made at NSERC. It is not helpful that key policy changes are often announced at the eleventh hour (sometimes even after the fact), and the perception (at least) of excessive bureaucratic interference in the peer-review system. The single most important thing NSERC could do to address this growing concern would be to hire academics as permanent staff for fixed periods of time (3 to 5 years). These individuals would serve as a conduit between NSERC, the research communities, and the ministry. This kind of arrangement has been used for many years to great effect by NSF, and having academicians make the difficult decisions regarding funding would go a long way to restoring credibility within the research community. Another benefit is that these individuals would provide a voice for the community to lobby the government for more resources, which is a matter of vital importance to both NSERC and to scientists.

3. In reviewing grants, the EG panelists should *separately* address the two basic questions for each application:

(a) should the research proposal be funded?

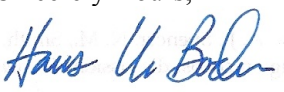
(b) if yes, what is the appropriate level of funding?

The current system conflates the two issues: the first is answered and then used as the sole deciding factor to address the second. Lost in the new system is any method for incorporating need for funding into the award decision. This is not just a minor flaw, but a major oversight. What's more, EGs panelists are unaware of the budgetary implications of their decisions, and

missing in the new system is any mechanism for fiscal restraint in the recommendations. I'm imagining something akin to the "mini-budgets" used in the previous system. This could have prevented, for instance, the fiasco that occurred this year (with VVV and OVV bins funded at historically low levels).

There are many other ideas out there that would help our research community develop in positive ways, restructuring of NSERC programs and so forth. This letter is not intended to be comprehensive but rather is a focused one. As a GSC member during the time (2009) when the new system of grant evaluations was introduced, I thought it best if my letter concentrated on these issues. In closing, I would like to extend my sincere thanks to the members of the Long Range Planning Committee for the time you have taken and all the hard work you have done.

Sincerely Yours,



Hans U. Boden
Professor & Chair