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April 14, 2011

Professors Margaret Beattie and Thomas Salisbury,  
CMS Representatives to the NSERC Liaison Committee  
mbeattie@mta.ca salt@yorku.ca

Prof. Dr. Nancy Reid, Chair of the Long Range Plan Steering Committee  
reid@ustat.utoronto.ca

**RE: NSERC and Funding of Mathematics in Canada**

Dear Professor Beattie, Dear Professor Salisbury, and Dear Professor Reid:

I am writing to you as you are representatives to the NSERC Liaison committee or chairing the long range plan committee. I am copying in this letter also the president of the CMS, Professor Hurtubise, who kindly answered a somewhat related email as well as Professor Rachel Kuske, who kindly took the time to visit us in Kelowna to discuss the long range plan, and Professor Sylvie Desjardins, who will contact you also as our Department Head.

It is with deep concern that I witness the recent developments on funding of mathematical research in Canada. It appears that funding is shifting from smaller institutions to larger institutions and institutes.

Some background: I am a Mathematics Professor (and Canada Research Chair) at the Okanagan campus of UBC, in Kelowna. We have a total of 10.5 continuing Mathematics faculty members here, of whom 5 were funded with (moderately sized) NSERC discovery grants. Unfortunately, the recent announcement of new grant holders was a disaster for our department: one faculty member, Professor X, lost his NSERC funding. UBC Okanagan is a very young institution — it used to be Okanagan University College until the transformation and split of the university college in 2005. I spent a good chunk of my first year as a CRC here developing the graduate program, which is small but offers PhD and MSc degrees in three core areas that we can support: Optimization, Mathematical Biology and Number Theory.

I have had the fantastic opportunity to be a graduate student at Dalhousie, Waterloo, and SFU (as my supervisor, Dr. Jonathan Borwein, was “on the move” while I was his student). I also was a tenured Associate Professor at Guelph before I returned to Kelowna when it became UBCO. Thus, I have had the opportunity to get to know mathematicians at various campuses across the country, and I experienced first-hand working conditions at a well established university and at a small university. For instance, during my years at Guelph, the teaching load was  $2 + 1$  for NSERC grant holders. These 3 courses/year

included graduate courses, which could be fairly small. In contrast, the regular load at UBCO is 2 + 2 and this **excludes** graduate courses. Basically, we offer Graduate courses that are not cross-listed with undergraduate courses in our spare time. Professor X has been with the college for a considerable time and even when he was under teaching loads of size 3 + 3, he managed to produce good and many (nearly 100) mathematical research papers. Professor X has a distinguished teaching record as well, and he supervised numerous NSERC USRA student, some of whom pursued successfully graduate degrees elsewhere. He currently has 1 PhD student (who won earlier a Governor General's medal!) and 2 MSc student who will defend this summer and just have accepted to pursue a PhD degree. One would think that things couldn't go better for Professor X! Unfortunately, and most bizarrely, NSERC thinks otherwise and has terminated Professor X's funding, which he spent almost exclusively on HQP anyway. The morale among researchers is quite low (and this is incidentally also true for other disciplines such as Chemistry). Professor X is expected to have 3 PhD students and 1 MSc student this Fall 2011 — the termination of his NSERC discovery grant makes the support of his students especially in the GTA-free summer semesters extremely difficult.

Unfortunately, these developments are consistent with the editorial *Whiter Funding?* by Prof. Robert Dawson (Saint Mary's University) in the CMS Notes (volume 42 no. 3, June 2010) concerning rejection rates of NSERC applications. The conclusion that one can draw from this article and informal discussions with colleagues is that NSERC is moving away from a fairly moderate but broadly based funding model towards increased funding for fewer people.

I am writing you in the hope that you can express and consider a viewpoint from a smaller university. The funding model NSERC employed used to be the envy of the world. The basic idea of the binning system is good, but it appears that the basic principles leading to its implementation are poorly implemented; please see Prof. Nassif Ghoussoub's blog

<http://ghoussoub.wordpress.com/2011/04/14/a-quick-reality-check-on-nsercs-principles-at-discovery/>

Here are some concrete suggestions:

- The evaluation process needs an infusion of common sense. The two fundamental principles of the binning system, namely *1. that the level of a grant should be commensurate with scientific or engineering merit, and 2. that within a given discipline group, proposals with similar scientific merit should have similar grant levels regardless of the applicants granting history with NSERC* need to be augmented by a principle that takes into account **where** the applicant is, i.e., what obstacles an applicant faces. Having been at UBCO and at Guelph, I know first-hand that it is much harder to write  $x$  papers and train  $y$  HQP at UBCO than at Guelph as the administrative help is so much more limited and the teaching load is so much higher. To expect identical research productivity from researchers, say at Toronto and Acadia, is (to be frank) ridiculous: One may well argue that writing 3 papers/year and having 2 graduate students might be just as hard, if not harder, than having twice the amount of papers and graduate students in Toronto (factoring in a higher teaching load and less local funding opportunities at Acadia). However, the binning system appears to be blind at this, which might lead to a loss of funding at the smaller institution. I believe the unhappiness with the recent outcomes stems from the fact that the binning system discourages common sense and focuses on raw data viewed outside a proper context.
- If NSERC's top priority is HQP and it feels it might not get good value from smaller institutions, then it makes sense to reserve a major portion of the discovery grant exclusively for salary and support of HQP. Somewhat similarly, a graduate counterpart of the highly successful NSERC USRA program

would help stopping the erosion of research at smaller institutions and satisfying NSERC's HQP training goals.

If this troubling funding trend continues, larger universities will profit in the short term with increased grant sizes. But smaller institutions do form an important and vital part of the research ecosystem. I would fear that in the long run, large universities would be able to recruit their graduate students only from other large institutions or from abroad. The impact on morale and motivation of mathematics researchers at smaller institutions would be devastating.

With Mathematical Reviews, Google Scholar, Web of Science etc. at your fingertips, it is easy for you to evaluate our department. I do not wish to speak for the entire mathematics faculty here at UBCO, but having coordinated the Optimization seminar series, I am confident that the interdisciplinary Optimization group, which is one of the most active on campus, compares very well even nationally. Please feel free to check out our activities at

<http://ocana.ok.ubc.ca/seminars.html>

and learn more about us at <http://ocana.ok.ubc.ca/>.

I am urging you to do what you can to preserve a rich and diverse ecosystem of mathematical research in Canada that includes smaller institutions.

Thank-you for taking the time to read this letter, and best wishes for your immensely important work in these committees.

Sincerely yours,

A handwritten signature in black ink that reads "Heinz Bauschke". The signature is written in a cursive, slightly slanted style.

Heinz Bauschke, Full Professor and Canada Research Chair  
<https://people.ok.ubc.ca/bauschke/>

cc:

Professor Sylvie Desjardins, Head of Unit 5 at UBC Okanagan [sylvie.desjardins@ubc.ca](mailto:sylvie.desjardins@ubc.ca)

Professor Jacques Hurtubise, President of the CMS [jacques.hurtubise@mcgill.ca](mailto:jacques.hurtubise@mcgill.ca)

Professor Rachel Kuske, Head of the Math Department UBC Vancouver [rachel@math.ubc.ca](mailto:rachel@math.ubc.ca)