



AMSI News

Geoff Prince*

AMSI's new Research & Higher Education Committee

This committee advises the AMSI Board and provides high level advice to AMSI management. It is chaired by the AMSI Deputy Director, Mark Gould and its terms of reference include:

- To advise the Board on the overall R&HEd program directions and their alignment with AMSI's mission.
- To initiate and oversee formal and informal reviews of AMSI's R&HEd events and programs. To make recommendations to the AMSI Director, Program Manager and the Board as a result of these reviews.
- To provide advice to the AMSI Program Manager (Research and Higher Education) and the AMSI Director on the resourcing and management of the R&HEd program.
- To monitor and comment on strategic developments affecting AMSI and its membership in Australian R&HEd, both at university/agency/industry levels and at government level.

The committee's members are Mark Gould (chair), Jan de Gier (Summer School), Joe Grotowski (Winter School), Matt Ritchie (BioInfoSummer), Andy Eberhard (Access Grid), Jon Borwein (Scientific Advisory Committee), Norm Dancer (Full Member rep.), Stan Miklavcic (Associate Member rep.), Peter Forrester (AustMS), Geoff Prince and Simi Henderson. A student representative is yet to be appointed as is a representative of AMSI's agency members. Society members are welcome to raise any issues covered by the terms of reference with the committee.

The committee will be reviewing the three annual schools over the next 12 months but the most immediate task is to plan a renewed bid for a *national research centre*. A working party has been set up with a view to having a proposal for the Commonwealth government and its agencies to consider prior to the 2014 budget. The planning process will involve extensive consultation with the AMSI membership and will build upon our last bid and the discussions that have taken place as part of the decadal plan process.

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The disastrous state of the school workforce in mathematics

There have been many reports over the years pointing to the declining numbers of qualified secondary teachers of mathematics in Australia. The latest AMSI discipline profile www.amsi.org.au/images/stories/downloads/pdfs/general-outreach/Discipline_profile_2013.pdf indicates the extent of the problem. In 2008 36% of teachers of years 7 to 10 mathematics had at most one year of tertiary maths or stats and in 2010 this had risen to almost 39%. At years 11 and 12 the figure is around 20% and this didn't change although the percentage with three years of maths or stats slid from 68% to 64% over this period. This raw data is shocking in itself and does not stand up well in international comparisons as Nalini Joshi and I discovered while sitting on an expert working group of the combined academies charged with benchmarking our STEM (Science, Technology, Engineering & Mathematics) performance. But there are deeper and more worrying aspects:

- No Australian government, state or federal, knows how many secondary mathematics teachers graduate each year!
- No Australian government is making any significant effort to upgrade the content knowledge of the roughly 35% of teachers of mathematics who lack the discipline qualification, this is the only measure that will deal with the scale of the problem.
- Two-year pre-placement training for secondary teachers has been mandated by the Commonwealth through the Australian Institute for Teaching and School Leadership www.aitsl.edu.au/, making teaching even less attractive to maths and stats graduates.
- The very significant demand for maths and stats graduates generated by secondary teaching is being masked by the failure of employers to insist on employing qualified graduates. Doubling our graduation rates won't even touch the extent of this shortage.
- The significant low performance tail in our PISA results for mathematics seems to be generated in low SES and regional areas where the shortage of qualified teachers is far more acute than indicated by the national figures above.
- Enrolments in calculus-based mathematics subjects at years 11 and 12 continue their almost 20-year slide, choking the supply of future school maths teachers.

In my view this situation is dire and AMSI will be ramping up its advocacy as the election approaches. I urge everyone reading this column to apply pressure through blogs, social media, opinion pieces and direct contact with politicians. You might want to read AMSI's policy around school teaching at http://www.amsi.org.au/images/stories/downloads/pdfs/general-outreach/policy_document2013.pdf.

On a happier note, have a look at the forthcoming major conference on the Mathematics of Planet Earth theme coming up in July in Melbourne <http://mathsofplanetearth.org.au/events/2013>. Apart from the remarkable range of the program this is one of the very few occasions when the universities, the government agencies and the private sector have collaborated. Please come along and contribute to the science and the public impact!



I was a Monash undergraduate and took out a La Trobe PhD in 1981 in geometric mechanics and Lie groups. This was followed by a postdoc at the Institute for Advanced Study in Dublin. I've enjoyed teaching at RMIT, UNE and La Trobe. My research interests lie mainly in differential equations, differential geometry and the calculus of variations. I'm a proud Fellow of the Society, currently a Council and Steering Committee Member. I became AMSI director in September 2009.