

## A National Strategic Review of Mathematical Sciences Research

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A National Strategic Review of Mathematical Sciences Research is currently under way, with the final report scheduled for July 2006. The review is being held under the auspices of the Australian Academy of Science, with financial support from the Australian Research Council, the Australian Mathematical Society, the Australian Mathematical Sciences Institute and the Statistical Society of Australia, Inc.

The present review commenced in September 2005 and the final report is scheduled to be completed by July 2006. It comes a decade after a previous comprehensive review (“the 1995 review”)<sup>1</sup>, which identified a number of challenges to the Australian mathematical sciences community, including: the need to improve our image; unbalanced age distributions in university departments; gender imbalance at senior levels; attracting good undergraduates students; increasing opportunities for post-doctoral researchers; broadening the funding base for research; educating potential users to the value of the mathematical sciences; and improving technology transfer programs.

Several of the recommendations of the 1995 review have now been achieved at least in spirit, if not in the anticipated way. I note in particular the following twin recommendations, which were directed to the ARC and the then National Committee for Mathematics of the Australian Academy of Science.

**19a** The Australian Research Council should facilitate application under the SRC program by the mathematical sciences disciplines for a National Research Centre in the mathematical sciences.

**19b** The National Committee for Mathematics should conduct a competitive tender amongst universities prepared to offer funds to be the site of a proposed National Research Centre in the mathematical sciences in similar style to MSRI, IMA, the Fields Institute or the Newton Institute.

We now have the Australian Mathematical Sciences Institute, with premises in Melbourne but partner institutions spanning the nation as our national centre. Significantly, this centre did not come to pass from an ARC initiative, or even with initial ARC funding, but through a strategic initiative of the Victorian State Government, a major commitment from the University of Melbourne, and significant funding from other partner institutions. Since the establishment of AMSI, welcome direct Federal Government and ARC funding for specific activities has followed. I can see no better example than this of the need for the profession to work to secure its own future, rather than waiting to be rescued by a prospective saviour who may have other priorities.

Since the 1995 review, great changes have taken place in the Australian higher education sector generally, and in the mathematical sciences in particular. Many of the challenges identified in 1995 remain, while the shifting funding base of universities presents new threats to the viability of mathematical science departments. This comes at a time when the critical national importance of the mathematical sciences, identified so forcefully in the 1995 review, may have increased. Consider, for example, recent developments

<sup>1</sup>*Mathematical Sciences: Adding to Australia* (Australian Government Publishing Service, 1995). For extracts, see <http://www.maths.anu.edu.au/other/ncms/NCMDiscRev.html>.

in bioinformatics, environmental and financial risk assessment, and information security.

In the context of reviewing research, the review will consider teaching, research and practice in the mathematical sciences in universities and beyond, and the present use and anticipated future needs of mathematical sciences in business and in the wider community.

Groundwork will be laid by a Working Party including distinguished international reviewers and the review will be guided by an Advisory Board that includes both local and international mathematical scientists. This international perspective distinguishes the present review from the 1995 review, and this aspect was especially important in securing the ARC contribution towards the cost of the review. The review will include a national tour by the international reviewers and other members of the Working Party in February 2006 to meet stakeholders and interested persons from academia, business, government and the broader community. The *International Reviewers* are

- Professor Jean-Pierre Bourguignon, Director, Institut des Hautes Études Scientifiques, France
- Dr Brenda Dietrich, Director, Mathematical Sciences, IBM Thomas J. Watson Research Centre, U.S.A.
- Professor Iain Johnstone, Stanford University, U.S.A.

The *Working Party for the Review* consists of the International Reviewers and five local members: Professor Hyam Rubinstein (Melbourne, Chair of the Working Party), Dr Barry Hughes (Melbourne, Executive Director of the Review), Professor Peter Hall (Australian National University), Ms

Jan Thomas (Australian Mathematical Sciences Institute), and Dr Edwin van Leeuwen (BHP–Billiton). Dr van Leeuwen was a member of the Working Party for the 1995 review.<sup>2</sup>

The chair of the *Advisory Council* is Professor Michael Cowling, University of New South Wales, the current President of the Australian Mathematical Society. Other professional societies are represented on the council by the President of ANZIAM, Professor Peter Taylor (Melbourne); the President of the Australian Society for Operations Research, Professor Lou Caccetta (Curtin); and the current President and immediate Past-President of the Statistical Society of Australia, Inc.<sup>3</sup>, Professor Kaye Basford (Queensland) and Dr Neville Bartlett (N.R. Bartlett Consulting). To offer a perspective to the council from beyond our shores we have Professor John Coates (Cambridge) and Professor Marston Conder (Auckland). Other academic members of the council include Professor Andrew Bassom (Western Australia), Professor Nigel Bean (Adelaide), Professor Phil Broadbridge (Director, Australian Mathematical Sciences Institute), Professor Nalini Joshi (Sydney), and Professor Garth Gaudry (Director, International Centre of Excellence for Education in Mathematics). For a view from outside the university environment, we have Dr Murray Cameron (Divisional Chief, CSIRO Mathematical and Information Sciences), Ms Judith Downes (ANZ Bank) and Dr Les Trudzik (Executive Director, KPMG Risk Services).

Material related to the review will be available on-line<sup>4</sup>, including the terms of reference, questionnaires suitable for completion by individual mathematical scientists, progress up-dates and details of cities to be

<sup>2</sup>The other members of the 1995 review Working Party were Professor A.J. van der Poorten, Macquarie University (Chair); Dr N.G. Barton, CSIRO (Executive Officer and Editor); Professor M.N. Barber, University of Western Australia; Professor T.C. Brown, University of Melbourne; and Professor D.W. Robinson, Australian National University.

<sup>3</sup>The Statistical Society of Australia commissioned a recently completed review of the specific discipline of statistics in Australia, and the present review should benefit considerably from the work of that review.

<sup>4</sup><http://www.review.ms.unimelb.edu.au>.

visited by the International Reviewers and the appropriate dates. Several members of the Working Party will be in attendance at the ANZIAM Conference (Mansfield, Victoria 5-9 February 2006), which takes place shortly before the arrival of the international reviewers. Written submissions from individual mathematical scientists, professional societies, academic departments, industry clients and all other stakeholders in mathematical sciences research or advanced mathematical sciences will be gratefully received. Submissions and enquiries may be sent to [barrydh@unimelb.edu.au](mailto:barrydh@unimelb.edu.au) or to Dr

Barry Hughes, Executive Director, National Strategic Review, at the address below.

In the findings of the 1995 review it was noted that if the challenges identified by that review were not met

*“there will be a significant diminution in Australia’s capabilities in the mathematical sciences, to the detriment of the nation.”*

Indeed. I encourage you to assist us in the present endeavour to document the state of the mathematical sciences profession, to develop a clear vision for where we need to be in a decade, and to identify realistic ways in which we might arrange to get there.

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