President's column

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I was fortunate to have a meeting with the CEO of the ARC, Professor Margaret Sheil, just before Christmas. This conversation started me on the path of realising how important it is to seek, continue and maintain conversations with key leaders in research, education and politics.

I have realised that Presidents need to be like ducks: gliding on the surface with calm while pedalling like crazy under the surface to make sure we sense and can navigate the currents that rule over all our lives. I want to thank Peter Hall for the remarkable energy he brought into maintaining such important conversations and calmly guiding us as President through the currents we have had recently.

One of those roiling currents was the journal-ranking exercise for the ERA. Did you remember that the journal ranking exercise in the mathematical sciences was anticipated to be finalised by Christmas? Well, the ARC wants to have another round of consultations with the mathematical sciences before they are finalised. The draft journal-ranking lists will be sent back to an expert panel for final input.

Do you know how individual researchers will be ranked by the ERA? What an international performance norm is? What changes are afoot in the ARC that might assist you in preparing research proposals? Such information came my way serendipitously. Now I feel that I should be trying to seek meetings with everyone, from the Prime Minister down, to make sure we understand what is happening and to seek to make others understand our situation in the mathematical sciences.

Aside from questions about the journal ranking, which has been an emotive topic in the mathematical sciences, I posed questions about the bibliometric analysis that is to be undertaken by the ERA. First, each person's published research is classified into six-digit field-of-research (FOR) codes. Each of you should have been asked to do this by your home institutions. This research is then compared with the *international performance norm* inside the six-digit code to which their work belongs.

I asked how this international performance norm would be arrived at, seeing that no-one outside Australia uses these codes. This is the way I now understand it. Consider an article by an Australian author X in a journal. (Recall that all journals that are ranked have been assigned a four-digit FOR code.) The ERA will identify the author(s) Y of each article cited by X and attempt to assign a six-digit FOR code to other articles published by Y. This mapping algorithm produces clusters of areas, populated by researchers whose research is now allocated an Australian

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six-digit FOR code. Each such cluster will have a performance norm calculated. Author X's research output and quality will then be compared to the norm for the corresponding cluster.

I am told that this type of clustering algorithm[1] is very well known in statistical data analysis. It is also used in many other contexts[2]. For example, it is used to organise or present search results on the web in clusters of relevance, in genetic sequencing analysis to group gene families, and in medical imaging to distinguish different tissues.

I suggested that we needed to know more about such measures and algorithms and reiterated that the mathematical sciences believe a peer-reviewed system would be more accurate than a purely bibliometric analysis. I found it encouraging that the ARC's ERA bibliometric experts have agreed to make a presentation to one of our Steering Committee meetings to explain their algorithms.

Now for changes in the ARC that we should all know about. Due to a budget cut, an Executive Director will be shared by the Mathematics, Information and Communication Sciences (MICS) panel and the Physical Sciences panel. You may recall that Michael Cowling's position on the MICS panel needed replacement for two years, because of his move to the UK. However, his replacement, Alan Carey, was only available for one year. So there will be another replacement whose name should be announced shortly.

There is another issue that affects mathematicians in an essential way. Last year, the ARC excluded support for international travel for collaborative visitors on an ARC funded project. The Society's argument that international travel by collaborators was essential for research in the mathematical sciences has led to further conversations and some change. The Frequently Asked Questions link[3] for Discovery Programs starting in 2010 has now been changed twice (updated 20 January and 17 February 2009). This now allows for requests to be submitted for support for international travel by 'collaborators working on the project'. Please make sure this is argued clearly in your proposals if you intend to ask for support for international travel for visitors.

Whether it is simple information about such changes, or glimpses of currents coming our way, strategic conversations, as I mentioned above, are incredibly important. Strategic conversations have been at the heart of actions undertaken by AMSI. One of the crucial activities it supports is the Australian Council of Heads of Mathematical Sciences meeting which takes place each year. It was also instrumental in the support of the National Strategic Review of Mathematical Sciences Research. AMSI's National Summer Schools have been extremely successful. Moreover, it has provided much of the financial support for workshops held around Australia. Less well-known is the political lobbying it has undertaken on behalf of the mathematical sciences around Australia. Not all these activities

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[1] I am grateful to Peter Hall for identifying this type of algorithm and telling me about its usage by climate change skeptics!

[2] http://en.wikipedia.org/wiki/Data_clustering

[3] See http://www.arc.gov.au/ncgp/dp/dp_instructions.htm

could be taken over by our professional societies, which rely on the voluntary time and effort provided heroically by our members.

So it would be worrying if funding for this institution was not ensured beyond next year. Membership contributions are an essential part of its operating budget. It has been argued that the Australian Mathematical Society should become a member. There are ideas being floated to ensure that communication between the Society and AMSI becomes very clear and automatic through positions created on each other's executive committees. I will let you know how this dialogue develops.

In pursuing and building the health of mathematical sciences in Australia, I would suggest that all of us in the Society should also become more active in pursuing strategic conversations with political, research and education leaders. Happy letter-writing!

Nalini Joshi holds a PhD and MA from Princeton University in Applied Mathematics and a BSc (Hons) from the University of Sydney. She has held lecturing positions and fellowships at ANU, UNSW and the University of Adelaide, as well as visiting positions at institutions including Princeton, Kyoto, Manchester and the Isaac Newton Institute of Mathematical Sciences at Cambridge University. In 2002, she returned to the University of Sydney to take up the Chair of Applied Mathematics and became the first female mathematician to hold a Chair there. In 2008, she was elected a Fellow of the Australian Academy of Science. She is currently the Head of the School of Mathematics and Statistics. Her research focuses on longstanding problems concerning the asymptotic and analytic structure of solutions to non-linear integrable equations. She has solved open problems for the classical Painlevé equations (differential equations that are archetypical non-linear models of modern physics) and discrete systems. Currently, she is obsessed with the analysis of cellular automata.