

DRAFT MINUTES

Australian Council of Heads of Mathematical Sciences Annual Meeting

Tuesday 19th February 2019, 1:30pm-6.30pm

Level 1, Theatre 4, Alan Gilbert Building
The University of Melbourne, Parkville campus, Victoria

Chair: Professor Jacqui Ramagge (University of Sydney)

Minutes: Ms Gayani Gunawardana (AMSI)

In Attendance

ACHMS Executive Committee

Professor Jacqui Ramagge
Chair, University of Sydney

Emeritus Professor Neville Weber
Executive Officer, University of Sydney

Professor Bruce Henry
Deputy Chair, University of New South Wales

Professor Adrian Barnett
Statistics Representative, Queensland University of Technology

University Representatives

Associate Professor Murk Bottema
Flinders University

Associate Professor Peter Johnston
Griffith University

Professor Peter Bouwknegt
Australian National University

Dr Michael Kemp
Charles Sturt University

Professor Brenton Dansie
University of South Australia

Professor Inge Koch
University of Western Australia

Professor Jan de Gier
University of Melbourne

Professor James McCoy
University of Newcastle

Professor Troy Farrell
Queensland University of Technology

Associate Professor Ute Mueller
Edith Cowan University

Professor Andrew Francis
Western Sydney University

Professor Luke Prendergast
La Trobe University

Associate Professor Linda Galligan
University of Southern Queensland

Professor Asha Rao
RMIT

Professor Gary Glonek
University of Adelaide

Professor Aidan Sims
University of Wollongong

Professor Joe Grotowski
University of Queensland

Associate Professor Sergey Suslov
Swinburne University of Technology

Professor Graeme Hocking
Murdoch University

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Societies, Agencies, Groups, Observers and Non-member Invited Speakers

Dr Bob Anderssen

Education Advisory Committee Chair, AMSI

Dr Catherine Attard

MERGA

Professor Tim Brown

Australian Mathematical Sciences Institute (AMSI)

Ms Janine McIntosh

Australian Mathematical Sciences Institute (AMSI)

Dr Robert Mun

Australian Research Council

Ms Chloe Pearse

Australian Mathematical Sciences Institute (AMSI)

Professor Jessica Purcell

AustMS Women in Mathematics Special Interest Group (WIMSIG)

Professor Hyam Rubinstein

Australian Mathematics Trust (AMT)

Dr Nicolette Rubinsztein

Actuarial Institute

Professor Peter Taylor

ACEMS

Ms Jan Thomas

Australian Mathematical Sciences Institute (AMSI)

Professor David Wood

MATRIX

Proxies

Professor Howard Bondell

University of Melbourne

Professor Mikhail Isaev

Combinatorial Mathematics Society of Australasia

Ms Allason McNamara

Australian Association of Mathematics Teachers

Professor Guillermo Pineda-Villavicencio

Federation University

Apologies

Professor Hussein Abbass

Australian Society for Operations Research

Professor Irfan Altas

Charles Sturt University

Dr Simon Barry

Data61, CSIRO

Professor Andrew Bassom

University of Tasmania

Professor Gleb Beliakov

Deakin University

Dr Shaun Belward

James Cook University

Dr Philip Charlton

Charles Sturt University

Professor Jim Denier

Applied Maths Representative, Macquarie University

Professor Tony Dooley

University of Technology, Sydney

Dr Michael Evans

Australian Mathematical Sciences Institute (AMSI)

Professor Peter Forrester

National Committee for the Mathematical Sciences

Dr Kuldeep Kumar

Bond University

Professor Tom Lowrie

ACHMS Education Representative

Dr Jeanette McLeod

Combinatorial Mathematics Society of Australasia

Professor Lyle Noakes

University of Western Australia

Mr Duncan Raynor

Australian Association of Mathematics Teachers

Professor Gerd Schmalz

University of New England

Associate Professor Juan Shi

Victoria University

Professor Jai Singh

Charles Darwin University

Dr Siu-Ming Tam

Australian Bureau of Statistics

Professor Natalie Thamwattana

CARMA

Dr Patrick Tobin

Australian Catholic University

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Professor Richard Gerlach
University of Sydney - Econometrics

Professor Philip Hall
Monash University

Professor Graeme Hocking
Murdoch University

Professor Mark McGuinness
ANZIAM

Professor Chris Matthews
ATSIMA

Dr Isaac Towers
Australian Defence Force Academy

Professor Song Wang
Curtin University of Technology

Dr Aaron Wiegand
University of the Sunshine Coast

Dr Geoff Woolcott
Southern Cross University

Professor Brian Yates
Australian Council of Deans of Science

1. Welcome and apologies

1.1 The Chair gave a **Welcome to Country** and recognised all present, the attendance will be minuted.

1.2 Minutes of 2018 ACHMS meeting

Comments:

Error: Prof Emma Thomson change to Prof Emma Johnston (page 5)

Report on compulsory mathematics - ethical considerations - to be noted as representative views (page 4)

Neville Weber change to Emeritus Prof Neville Weber (page 6)

Word “endowments” change to “Philanthropic donations”, 3 year should be changed as 5 years (page 7)

Minutes approved.

1.3 Matters arising

2018. 1 Professor Ramagge and Emeritus Professor Weber to draft and circulate a ToR
Status : Completed

2018. 2 Professor Bruce Henry to convene the working group for an Australian national research model
Status : Closed

2018. 3 Working group for an Australian national research model to explore all existing global research institute models
Status: Closed

2018. 4 Working group for an Australian national research model to explore opportunities for the Australian mathematical sciences research model to work with cognate disciplines and industry
Status: Closed

2018. 5 Working group for an Australian national research model to present its conclusions to the mathematical sciences community
Status: Closed

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National Research Model

Prof Bruce Henry commented that the landscape changed significantly between the 2018 ACHMS meeting and this meeting. The current issues are therefore different to what was discussed last year. There has been a view within the community that Australia should have a national research institute and that it should belong to the whole community. It was discussed that AMSI be the lead due to it already being national, however AMSI needs government funding to make this happen.

Issues raised and comments:

- Need for support from the DVCR's of various universities. At the moment, it may be seen as a particular university contributing to another's brand.
- Need to get government funding as a group. Is there a way to collectively contribute to these initiatives without having a unique brand?
- Professor Peter Bouwknecht confirmed that MSI and MATRIX are in discussion, there is a challenge of coordination and collaboration.

Suggestions:

- Have something that is not uniquely branded as an institution or belonging to an institution.
- The possibility of getting government funding that is agnostic to institutions.
- Look to attract philanthropic donations where the donors clearly want to have a national impact.

ACTION: Revisit the topic of a National Research Model at the 2020 meeting

3. Matters of discussion

3.1 Terms of Reference

The Draft Terms of Reference was circulated as a paper for this meeting. The second version circulated incorporated feedback.

The second, updated version has amendments to:

- Recognise of the role of AMSI
- Define what constitutes a "School"
- Comment on the importance of a unified public voice
- Membership of the council
- Include a paragraph relating to voting rights

A discussion was held over the following proposed paragraph:

Universities that have Schools that teach aspects of the mathematical sciences but have no

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formal School of Mathematical Sciences are eligible to request observer status at Council meetings. Their representatives will not have voting rights.

Options for changes:

Voting right should be held by representatives of any University in the country irrespective of whether they have a school or unit of Mathematical Sciences or a Major in Mathematical Sciences

or

Voting right to be limited to those institutions who have a formal identifiable *School of Mathematical Science or Units* or a Major in Mathematical Sciences

Majority voted in favour of the second option.

Proposed Change:

Universities that have Schools that teach aspects of the mathematical sciences but have no formal School or Unit of Mathematical Sciences or a Major in Mathematical Sciences are encouraged to attend as observer participants. Their representatives will not have voting rights.

The Executive of the Council

Constitution of Chair, Deputy Chair and Executive Officer will change every year.

Individuals who are non-voting delegates can be included in the Executive Committee to ensure that the Executive Committee includes representation from each of pure mathematics, applied mathematics, statistics, and mathematics education.

Special Interest groups to be included as affiliates; the Women in Mathematics Special Interest Group (WIMSIG) to be added. The aim is not to limit the discussions in any way, affiliation is to reflect what the body of the ACHMS is to do.

The Terms of Reference was approved pending the amendments stated at this meeting.

3.2 Elections

The Chair encouraged representation from different profiles in the Executive Committee.

Nominations for Chair: Professor Tony Dooley
Professor Bruce Henry second the nomination

Nominations for Deputy Chair: Associate Professor Linda Galligan

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Nominations for Executive Officer: Professor Gary Glonek

Main role of the three people is to deal with anything that arise out of cycle, to decide on an agenda and to check the Minutes.

The Chair thanked Professor Neville Weber for putting together the Draft Terms of Reference.

AMSI to continue with the coordination of ACHMS Meetings.

ACHMS to be a think tank that refers certain matters on to AMSI for advocacy.

3.3 Actuaries Institute – Nicolette Rubinzstein

Introduction: An actuary is someone who combines business, statistical and economic knowledge to prepare for future financial uncertainty. Actuaries is a small but growing profession. The Institute currently has 5000 members with big segments in general insurance and life insurance. One of the biggest growing areas is data analytics. About 33% of members are female.

Data analytics and data sciences

- 24% of actuaries list data analytics as their primary or secondary practice area
- Data analytics is being included in each of the three phases of actuary education
- An actuarial community working in data analytics has been formed
- Member support includes a dedicated one-day data analytics seminar, which has run for the last four years, a monthly data analytics newsletter and more.
- Looking at a post qualification course

Gender diversity in Actuaries

Actuaries Institute has a female president, a female vice president, and a female CEO.

Female participation:

- Actuarial fellows qualified in the last 15 years - 33% female participation
- Actuarial fellows - 25% female participation
- Actuarial associates - 40% female participation
- University actuarial degree - 33% domestic female participation
- *Advanced Mathematics* in last 10 years - 33% female participation
- Year 12 students - 49% female participation

Conclusion

Until strategies are implemented to increase the percentage of girls who are doing advanced mathematics at school, there cannot be significant improvement in gender diversity of actuaries.

Suggestions

- Partner - To see what opportunities there might be.

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- Improve marketing of profession (social belonging, value proposition, positioning – emphasis on the creativity of the profession)
- Support female associates in journey to fellow qualification.

This Council and the Actuaries Institute have common interests and there are areas both parties can collaborate.

Break 30 mins

3.4 Australian Research Council – Robert Mun, Jacqui Ramagge

The Chair introduced Dr Robert Mun, Executive Director of Engineering and ICT panel on the Australian Research Council which deals with Mathematics, Physics, Chemistry and Earth Sciences (MPCE).

Introduction – Dr Robert Mun

Dr Robert Man thanked the Council for the invitation to this meeting. Discussions are being carried out on how to cover the gap in the skill sets needed for special sub disciplines and getting the expertise that is currently available to the ARC. Dr Mun's broad remit is to look at how to improve the engagement of ARC with industry and the industry assessment processes, as well as how to better assess the grants where they have an industry component.

Issues/questions and comments raised:

Use of 'word cloud' in assigning assessors

The applicant used to put in key words that are available to the people assigning assessors to ensure the assessors are appropriate. Now some material from section "A" is harvested and turned into a "word cloud", this word cloud is used in lieu of key words to select the assessors.

RMS generates a "word cloud" of an application based on application summary, application title, impact statement, FoR codes, and SEO codes.

Implementing a new function to link the FoR codes between the applicant and the assessor. Also looking at the top 10 outputs of the applicant to be linked to appropriate assessors.

FoR Codes classification

A review of the codes is currently underway. It was suggested that council members provide a list of codes of interest to Dr Mun.

Many engineers and other users of mathematics put 0102 as a primary code, under the belief that they are applied mathematicians and they then get funded under 0102. There is a feedback loop because the way the ARC selects panel members is according to the FoR identification.

ACTION: Send questions about use of FoR codes to Dr Mun. ARC will investigate and provide feedback.

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Membership of the panel

In the past the membership of panel was known and now it is hidden.

Part of the reason is to expand the panel, which is currently sitting at 17. The workload on the individual was very high, if they are to sit in every selection panel. It was also partially to stop bad behavior towards the college managers.

Currently goal of MPCE is maintain 17 people in the panel, evenly split across the disciplines, largely irrespective of the number of applications.

Desire for the applicant to know which panel is reviewing their application so they can write to the correct audience. ARC has made the decision to put the FoR code panel for Discovery Projects up on the web to give an indication. If there is a change of distribution of the panel it will be published in advanced.

Random funding

It has strengths and weaknesses. There are models in use. The ARC has a huge paperwork overhead. As public servants, the ARC is required to identify value for money. The challenge is that it needs to legislatively justify the funding.

A mix model may be possible. There can be a possibility of the panel deciding who the clear non-fundable and who the clear much fundable are, and there is a rather gray area where only part can be funded and that's where a random allocation may be a possibility.

Simplifying the Scheme

The goal across the board is to get it simplified as much as possible, the hard part is to get consensus agreement. The system has improved to retain your data so that all you have to include are your new papers. One of the key concepts was to have standardised CVs; getting that across to all the disciplines is challenging. Simplifying is not easy.

Funding Research projects and how one values mathematics

Research in mathematics may not be project based. Non-project based funding is challenging to the ARC in its currently set up and against its requirements as public service.

The value of mathematics is not in the forward looking but is retrospective. One of the ways of assessing if the investment on mathematical sciences is appropriate is to see the return on investment over the last 50 years. Then to continue the investment into the future.

LIEF scheme

Mathematics may have a challenge in accessing the scheme. The scheme is actually quite small. The guidelines are wide and approval can't be guaranteed. No longer covers gaps where NCRIS doesn't cover enough. Won't support a research institute but will support access to a research institute of some form if it is of significant value.

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The scheme could support building a database and subscription system, if appropriate. Securing the scheme funding to undertake this activity will depend on the strength of the written justifications in the submission.

3.5 Mathematics and Statistics Departments Gender Splits – Jan de Gier, Gary Glonek, Peter Bouwknecht

Professor Jan de Gier noted that the recognition of the gender issue in mathematical sciences eventually led to the idea of advertising female only positions at University of Melbourne in 2016. This was controversial in many ways, though it turned out to be an overwhelming success. The culture of the school has changed for the positive and there is a much broader acceptance that there is an issue. Now there is much larger contingent of women, more a diverse workforce.

Professor Peter Bouwknecht agreed that it was controversial to advertise female only positions but that it has been an enormous success for the department at ANU. The process started off with an all staff meeting initially, which was highly controversial with lot of negative feedback. In 2016, three female applicants were hired which doubled the number of female mathematicians in the department. Everyone was encouraged to look for more suitable female candidates in their field. ANU has repeated this again in 2017 and 2018 but didn't have as much success as the 2016 round due to more competition. He recommends advertising for female only appointments.

Professor Gary Glonek stated that the University of Adelaide had considered advertising for female only positions shortly after Melbourne did but it was advised against because it was thought that female only would narrow the field and may not lead to a successful appointment. The most recent female only appointment was one that was mandated by the Faculty of Engineering, Computer and Mathematical Sciences, where the faculty responded to University targets and approached it from an engineering point of view. It did turn out to be a very positive experience. It appeared that the Faculty did not receive any significant negative feedback but by then the pioneers had taken most of the heat. Since it was centrally mandated, it led to changes to the makeup of panels. Overall there were strong applicants, high participation by existing staff in the department and very good appointments.

Comments, feedback and questions:

Reaction of the current female staff, the feedback

Much initial feedback from female applicants is that they want to be chosen on merit, they think that if they were chosen for a female only position it would be because of gender not because they are good mathematicians. The women who were hired for the advertised female only positions would have been hired anyway. ANU made a promise that they wouldn't fill the position if they couldn't find good candidates, in an effort to balance gender with merit. It does change the culture to have more female mathematicians.

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Change of culture

Dr Mun noted this year ARC had a discussion relating to the topic of changing the culture through hiring for gender balance. The advice was it depends how willing the school is to change their culture, it will be based on how those new hires are treated.

The objective of the whole concept is to normalise gender balance. It is not really about one particular person's job, it is about changing culture.

Reaction by Students

This change of culture is definitely seen by the younger generation. Experience is showing that female staff members are much more involved in outreach and improving the culture of the school, they are much more interested in it than the male cohort.

Woman applying for female only positions – application behaviour

ANU has not comparison markers because they targeted and recruited women for the female only positions.

At University of Melbourne, that there were many more very strong female applicants for female only positions than expected.

Greater society

News is being constructed by people with other interests and influencing society's opinion in a way which is unacceptable. AMSI can assist with media as a liaison and could work on an article on this topic.

Getting more woman to apply for jobs and promotions has raised the proportion of female participation. The notion of tapping people on the shoulder and encouraging women is important.

4.2 Report form the Australian Mathematical Society – Prof Jacqui Ramagge

Minor point about accreditation - Heads of Schools to have input.

Prof Joe Grotowski raised:

- How do we start an accreditation process?
- What goals do we have to have?
- Who is going to do what?
- How do we distribute the workload?
- What are we going to use as a model?
- What will the framework be?
- Need to start asking such questions

A majority welcomed an accreditation process for majors and degrees.

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Different levels in the accreditation process would be good if it becomes too demanding. It would be very helpful to have some sort of accreditation.

Meeting concluded - 3.45 pm

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ACTION LIST

New Actions

Meeting.#	Action	Responsibility
2019.1	Revisit the topic of a National Research Model at the 2020 meeting	Chair
2019.2	Send questions about use of FoR codes to Dr Mun. ARC will investigate and provide feedback	Executive Officer

Completed Actions

Meeting.#	Action	Responsibility
2018.1	Professor Ramagge to circulate the ACDS ToR as an example	Professor Ramagge
2018.2	Professor Ramagge and Neville Weber to draft and circulate a ToR	Professor Ramagge Emeritus Professor Weber
2018.3	Professor Bruce Henry to convene the working group for an Australian national research model	Professor Henry
2018.4	Working group for an Australian national research model to explore all existing global research institute models	Professor Henry
2018.5	Working group for an Australian national research model to explore opportunities for the Australian mathematical sciences research model to work with cognate disciplines and industry	Professor Henry

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2018.6	Working group for an Australian national research model to present its conclusions to the mathematical sciences community	Professor Henry
2017.1	Seek a nomination for a Statistics representative from the SSA President	Bruce Henry
2017.2	Prepare a Working Group report on the direction to take on a National Centre for the Mathematical Sciences	Bruce Henry
2016.1	Link to STEM Benchmark Report on the ACHMS website	ACHMS administrator
2016.2	Link to Decadal Plan on the ACHMS website	ACHMS administrator
2016.3	Link to SAGE on the ACHMS website	ACHMS administrator
2016.4	Circulate study on well-being as mentioned in the MERGA report – Action superseded by 2015 ERA	Professor Lowrie
2016.5	Link to Watt Review, ACOLA review on the ACHMS website	ACHMS Administrator
2016.6	Link to ATSIMA website on the ACHMS website	ACHMS Administrator
2015.1	Scope the production of a benchmarking report for the mathematical sciences to be produced by the ACHMS	Professor Marchant Professor Henry