Research dynamics in the ERA era

Professor Margaret Sheil

CEO, Australian Research Council
An overview of ERA

ERA data: what does it all mean?

ERA: On-going sector contribution

Mentors and Role Models

Tips for Grant Writing
An overview: Excellence in Research for Australia (ERA)
Objectives of ERA

• Establish an *evaluation framework*;

• Provide a *national stock take* of discipline-level research;

• Identify *excellence* across the full spectrum of research performance;

• Identify *emerging research areas* and *opportunities for further development*;

• Allow for *comparison* of Australia’s research *nationally* and *internationally* for all discipline areas.
Overseas Quality Assessment Exercises

1986—The United Kingdom
1993—Hong Kong
1997—Germany
1998—Ireland
2002—The Netherlands
2003—New Zealand
2005—France
### ERA Process Overview

<table>
<thead>
<tr>
<th>Volume &amp; Activity</th>
<th>Ranked Outlets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citation Analysis</td>
<td>Esteem</td>
</tr>
<tr>
<td>Research Income</td>
<td>Applied Measures</td>
</tr>
</tbody>
</table>

**Peer Review**

International Benchmarks

![ERA 2010 National Report](era_report.png)

Research Evaluation Committees

Web: arc.gov.au  |  Email: info@arc.gov.au
## ERA Unit of Evaluation – the FoRs

<table>
<thead>
<tr>
<th>2-digit</th>
<th>4-digit</th>
<th>6-digit</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Studies in Creative Arts and Writing</td>
<td></td>
</tr>
<tr>
<td>+ 1901</td>
<td>ART THEORY AND CRITICISM</td>
<td></td>
</tr>
<tr>
<td>+ 1902</td>
<td>FILM, TELEVISION AND DIGITAL MEDIA</td>
<td></td>
</tr>
<tr>
<td>+ 1903</td>
<td>JOURNALISM AND PROFESSIONAL WRITING</td>
<td></td>
</tr>
<tr>
<td>- 1904</td>
<td>PERFORMING ARTS AND CREATIVE WRITING</td>
<td></td>
</tr>
<tr>
<td>&gt; 190401</td>
<td>Aboriginal and Torres Strait Islander Performing Arts</td>
<td></td>
</tr>
<tr>
<td>&gt; 190402</td>
<td>Creative Writing (incl. Playwriting)</td>
<td></td>
</tr>
<tr>
<td>&gt; 190403</td>
<td>Dance</td>
<td></td>
</tr>
<tr>
<td>&gt; 190404</td>
<td>Drama, Theatre and Performance Studies</td>
<td></td>
</tr>
<tr>
<td>&gt; 190405</td>
<td>Māori Performing Arts</td>
<td></td>
</tr>
<tr>
<td>&gt; 190406</td>
<td>Music Composition</td>
<td></td>
</tr>
<tr>
<td>&gt; 190407</td>
<td>Music Performance</td>
<td></td>
</tr>
<tr>
<td>&gt; 190408</td>
<td>Music Therapy</td>
<td></td>
</tr>
<tr>
<td>&gt; 190409</td>
<td>Musicology and Ethnomusicology</td>
<td></td>
</tr>
<tr>
<td>&gt; 190410</td>
<td>Pacific Peoples Performing Arts</td>
<td></td>
</tr>
<tr>
<td>&gt; 190499</td>
<td>Performing Arts and Creative Writing not elsewhere classified</td>
<td></td>
</tr>
<tr>
<td>+ 1905</td>
<td>VISUAL ARTS AND CRAFTS</td>
<td></td>
</tr>
<tr>
<td>+ 1999</td>
<td>OTHER STUDIES IN CREATIVE ARTS AND WRITING</td>
<td></td>
</tr>
</tbody>
</table>

The ERA Unit is **not** the department nor the individual researcher.
# The ERA 2010 Rating Scale

<table>
<thead>
<tr>
<th>Rating</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>The Unit of Evaluation profile is characterised by evidence of outstanding performance <strong>well above world standard</strong> presented by the suite of indicators used for evaluation.</td>
</tr>
<tr>
<td>4</td>
<td>The Unit of Evaluation profile is characterised by evidence of performance <strong>above world standard</strong> presented by the suite of indicators used for evaluation.</td>
</tr>
<tr>
<td>3</td>
<td>The Unit of Evaluation profile is characterised by evidence of average performance <strong>at world standard</strong> presented by the suite of indicators used for evaluation.</td>
</tr>
<tr>
<td>2</td>
<td>The Unit of Evaluation profile is characterised by evidence of performance <strong>below world standard</strong> presented by the suite of indicators used for evaluation.</td>
</tr>
<tr>
<td>1</td>
<td>The Unit of Evaluation profile is characterised by evidence of performance <strong>well below world standard</strong> presented by the suite of indicators used for evaluation.</td>
</tr>
</tbody>
</table>
Scale of ERA 2010

• All 41 eligible institutions submitted data
• Over 330,000 research outputs and 55,000 researchers represented
• 2,435 units of evaluation assessed at the two- and four-digit level
• 149 Research Evaluation Committee (REC) members and 500+ Peer Reviewers contributed evaluations
• All aggregated data presented in the *ERA 2010 National Report.*
ERA data: What does it all mean?
Reading the national results

86% of assessed UoEs received a rating at or above world standard (i.e. rating of 3 or above).

Of all assessed UoEs at the four-digit FoR code level (58 UoEs), the average rating is 3.4. See Section 1 for two-digit FoR code average rating.

<table>
<thead>
<tr>
<th>Mathematical, Information and Computing Sciences</th>
<th>01 Mathematical Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>% assessed UoEs rated at or above world standard</td>
<td>86%</td>
</tr>
<tr>
<td>FTEs</td>
<td>880</td>
</tr>
<tr>
<td>Research outputs</td>
<td>8,659</td>
</tr>
<tr>
<td>Research income $</td>
<td>104,624,740</td>
</tr>
<tr>
<td>UoEs assessed</td>
<td>58</td>
</tr>
<tr>
<td>Esteem count(s)</td>
<td>106</td>
</tr>
<tr>
<td>Patent(s)</td>
<td>1</td>
</tr>
<tr>
<td>Research commer. income $</td>
<td>22,368,469</td>
</tr>
<tr>
<td>Average National Rating</td>
<td>3.4</td>
</tr>
<tr>
<td>Rating:</td>
<td>1</td>
</tr>
<tr>
<td>Distribution:</td>
<td>1</td>
</tr>
</tbody>
</table>

There were seven UoEs which received a rating of 2.

A total of 58 UoEs were assessed for Mathematical Sciences at the four-digit FoR code level.
ERA 2010 at a glance

✗ Averages and Rankings
✗ Sciences v. Social Sciences & Humanities

✓ ERA does *not* evaluate individuals
✓ ERA does *not* evaluate individual outputs
✓ Ranked Journals do *not* drive ERA ratings
✓ ERA evaluations utilised metrics and peer review moderated by expert judgement
Where is the best place to publish?

Where your research will receive the most appropriate exposure!

<table>
<thead>
<tr>
<th>Discipline</th>
<th>FoR</th>
<th>A*</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immunology</td>
<td>1107</td>
<td>7%</td>
<td>14%</td>
<td>24%</td>
<td>55%</td>
</tr>
<tr>
<td>Plant Biology</td>
<td>0607</td>
<td>3%</td>
<td>8%</td>
<td>14%</td>
<td>74%</td>
</tr>
<tr>
<td>Ecology</td>
<td>0602</td>
<td>9%</td>
<td>18%</td>
<td>36%</td>
<td>37%</td>
</tr>
<tr>
<td>Zoology</td>
<td>0608</td>
<td>1%</td>
<td>7%</td>
<td>18%</td>
<td>73%</td>
</tr>
<tr>
<td>Historical Studies</td>
<td>2103</td>
<td>6%</td>
<td>22%</td>
<td>32%</td>
<td>38%</td>
</tr>
<tr>
<td>Electrical and Electronic</td>
<td>0906</td>
<td>6%</td>
<td>16%</td>
<td>28%</td>
<td>49%</td>
</tr>
<tr>
<td>Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macromolecular and Materials</td>
<td>0303</td>
<td>14%</td>
<td>19%</td>
<td>31%</td>
<td>36%</td>
</tr>
<tr>
<td>Chemistry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Research Outputs by Discipline Cluster
Strengths in Australian universities

- Astronomical and Space Sciences
- Optical Physics
- Quantum Physics
- Macromolecular & Materials Chemistry
- Physical & Structural Chemistry
- Geology
- Ecology
- Evolutionary Biology
- Plant Biology
- Zoology
- Clinical Sciences

- Electrical and Electronic Engineering
- Historical Studies
- Cardiovascular Medicine and Haematology
- Human Movement and Sports Science
- Immunology
- Oncology and Carcinogenesis
- Pharmacology and Pharmaceutical Sciences
- Medical Physiology
Gaps

• Agriculture, Land and Farm Management
• Automotive Engineering
• Maritime Engineering
• Engineering Design
• Complementary and Alternative Medicine

Pockets

• Classical Physics
• Aerospace Engineering
• Transportation and Freight

Strong Applied Research

• Electrical and Electronic Engineering
• Crop and Pasture Protection
• Resources Engineering
• Materials Engineering
• Extractive Metallurgy
• Nursing
ERA 2010 Ratings by Cluster

- Public and Allied Health Sciences
- Mathematical, Information and Computing Sciences
- Biomedical and Clinical Research
- Engineering and Environmental Sciences
- Biotechnology and Biological Sciences
- Physical Chemical and Earth Sciences
- Humanities and Creative Arts
- Social, Behavioural and Economic Sciences

Web: arc.gov.au  |  Email: info@arc.gov.au
ERA 2010 Rating by Cluster - at, above, or well above world standard (i.e. 3s, 4s, & 5s)

- Public and Allied Health Sciences
- Mathematical, Information and Computing Sciences
- Biomedical and Clinical Research
- Engineering and Environmental Sciences
- Biotechnology and Biological Sciences
- Physical Chemical and Earth Sciences
- Social, Behavioural and Economic Sciences
- Humanities and Creative Arts

Legend:
- 3&4
- 5
Ongoing Sector Contribution
ERA Development 2008-2010

- Several major rounds of consultation with sector
- Indicator Development Group (specialist sub-groups)
- Ranked journals and conferences
- Esteem indicators
- Full trial in 2009 of two clusters (PCE and HCA):
  - test of systems, processes
  - feedback from sector, RECs, peer reviewers to improve methodology for 2010
  - Trial institutional results were not made public
ERA 2010 Reviews for ERA 2012

**Targeted Reviews**
- Ranked Outlets
- Research Evaluation Committees (REC) process
- Applied Indicators
- ERA Submission Guidelines

**Broad Feedback**
- Low volume thresholds (plus outputs that contribute)
- FORs allocated to clusters
- Indicator matrix for each discipline
- Definitions/timeframes: reference periods and researcher eligibility
Summary

• ERA one source of information at one point in time

• Important to maintain behaviours that are driven by international norms for your disciplines

• ERA can guide future policy at the national level

• The sector’s role in the establishment and ongoing development of ERA is essential
Mentors and Role Models
Presentation Overview

- Mentors and Role Models
  - Leadership
  - Guidance
  - Bridging gaps

- Achieving Excellence
  - Applying for grants
  - Peer Review process
  - Dos and Don’ts
Role Model

- An inspiration
- You in the future?
- Personal/Professional
- Examples of pathways or behaviours

Mentors

- A guide
- You in the present
- Impartial
- Career advice
Secure your own leadership skills and attributes

• #1  Don’t cater
  Avoid feeding others
  Avoid making notes, coffee & copies

• #2  Be prepared
  Don’t believe others know more than you

• #3  Learn to let go
  Don’t look back
  Don’t do the work of others
Set the example

Encouraging opportunity; not simply *providing* it

Reinforcing leadership

Changing the landscape and the language we use
Reinforcing Leadership –
Australian Laureate Fellowships

FOCUS:
• International repute
• Sustained leadership & mentoring

OBJECTIVES:
• Attract and retain outstanding research leaders
• Build and strengthen world-class research capability
• Provide excellent research – training environment
• Expand knowledge base
• Forge strong links
• Support research

Kathleen Fitzpatrick

Georgina Sweet
Encouraging Opportunity

Career interruptions

For ECRs and women researchers

Options to convert & teaching transitions
Changing the landscape and language we use – Research Opportunity and Performance Evidence (ROPE)

• Changing how we measure excellence
  Track record v. Performance evidence

• Assessors take into account any career interruptions, such as:
  – Childbirth
  – Carer’s responsibility
  – Misadventure
  – Debilitating illness
Achieving Excellence
The ARC aims to:

- Provide opportunities for researchers at every career stage
- Foster a range of different cohorts

- Researchers in industry
- Teaching and research
- Women
- Research-only
- Indigenous
The ARC does not:

• Employ researchers directly

• Aim to provide a complete externally funded career structure

• Fund all the excellent research proposals it receives
Australian Laureate Fellowships
- 2x PhD
- 2x Post-Doc
- 17 5-year awards

Discovery Early Career Researcher Award (DECRA)
- $125,000
- 200 p.a. 3-year awards

Researchers in Industry Training Awards
- $30,000
- 100 3-year awards (biannual)

Future Fellowships
- Up to $143,000
- 200 p.a. 4-year fellowships
A few tips for grant writing

• Messages to pass on
• Advice on proposals
• Peer review
• Career advice more generally
What do I want to do?

• You *must* believe in the importance of the research you are proposing to do

• You *must* be able to *convince* your peers of its importance

• Think about the research in the *whole context* of your professional career
Do you need a grant?

• You don’t always need to get money to do your research

• If you do need money, where can you get it?

• Do you need to work on publication records first?
What grant program can I use?

- What are the aims of the various grant programs?

- There is no point in applying for funding if your research is not consistent with the aims.

- Think of the scale of $$, the level of competition, the time to apply and the time for funds to arrive.
How can I write a successful proposal?

EXERCISE:

• Write down a 100-word summary of your proposal

• Show it to your neighbour and talk about it with them
TOP RANKED PROPOSALS

- Manage to balance technicality and accessibility
- Present problems and/or controversies and explain how they will solve them
- Explain how the momentum of the subject demands funding now
- Show how Australian work fits into the international picture
- Back up compelling claims with evidence and others' judgments
TOP RANKED PROPOSALS

• Carefully temper ambitious goals with plausible approaches
• Display evidence of responsible but often daring approaches to the problem
• CIs have strong international track records
• Present excellent progress reports on previous grants
LOW RANKED PROPOSALS

• Use too much technical jargon
• Make grandiose and implausible claims about outcomes
• Don't support claims of excellence or progress with evidence
• Relate to research areas without momentum
• Are weakly linked into national and international research networks
LOW RANKED PROPOSALS

• Emphasize the collection of data rather than the solution of controversies
• Set a negative or depressive tone about the state of the subject in Australia
• Contain a high rate of spelling and grammatical errors
• Are badly structured and difficult to follow
Problems of Peer Review

**Matthew effect**

- The accomplishments of those who have already achieved distinction are overestimated (e.g. do athletes really know about banking?)

**Halo effect**

- The accomplishments of those associated with successful people are overestimated
Problems of Peer Review

Bias against novelty

• Peer review sometimes fails to respect the value of attacks on the fashionable paradigm

Cronyism

• Assessors may use standards that are narrower than the overt criteria, defined by expectations in a ‘social group’
Don’t interpret ERA superficially

Secure your own leadership skills

Aim to become an excellent mentor

Exercise care in guiding younger researchers in grant applications