Peer review and alternative review methods

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Source: Gläser 2016
“When proposals are abundant and money is scarce, [...] a large number of proposals are rejected that are statistically indistinguishable from an equal number accepted” Thorngate (2002)
Ample budgets give leeway for innovative/risky projects. Tight budgets tend to strengthen established research."
Langfeldt (2001)
Change needed

- Improve ability to identify and fund groundbreaking research
- Improve efficiency
- Improve reliability
Improve efficiency

- Introduce restrictive measures
  - Constraints on possibility to re-apply
  - Institutional-level sifting

- Benefits:
  - Improved success rates
  - Higher quality applications

- Risks:
  - Transfer of peer review effort into universities
  - May lead to greater conservatism in proposal submission
  - Could compromise the ability to fund research in a timely manner
Improve efficiency

- Reduce restrictions
  - Eliminate grant deadlines

- Benefits:
  - Improved success rates
  - Higher quality applications

- Risks:
  - None apparent
## Improve efficiency

<table>
<thead>
<tr>
<th>Overall Competition Success Rate Scenario (%)</th>
<th>C (Reject without further review)</th>
<th>B (Further review required)</th>
<th>A (Success without further review)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>75</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>15</td>
<td>60</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>25</td>
<td>45</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>35</td>
<td>30</td>
<td>60</td>
<td>10</td>
</tr>
<tr>
<td>50</td>
<td>15</td>
<td>70</td>
<td>15</td>
</tr>
</tbody>
</table>

Source: Snell (2015)
Improve reliability

Use panels of sufficient size

- Decisions will vary widely with the number of reviewers
- Marsh et al (2008): “require at least 6 assessors per proposal to achieve more acceptable reliability”
- Snell (2015): “Five reviewers per application represents a practical trade-off”
- International peer review expert panel (2017): “Applications should be assigned to a minimum of five individuals”
- ESF (2011): “provide at least three expert assessments before a final decision is made”
# Improve reliability

## Use diverse panels

<table>
<thead>
<tr>
<th>Cognitive constraints</th>
<th>Interests</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scholarly/professional bias</strong></td>
<td><strong>B: Research interests:</strong> Taking effects on economic and political standing of the field/research area into consideration. Nepotism = helping ‘heirs’ or other colleagues because of ‘school’/scholarly viewpoint or research topic.</td>
</tr>
<tr>
<td><strong>Non-professional/personal bias</strong></td>
<td><strong>C: General or personal cognitive constraints:</strong> Sub-optimal thoroughness and information seeking. Nepotism = disregarding information due to routines/limited capacity for handling information.</td>
</tr>
</tbody>
</table>

A: *The constraints of a professional platform:* Preconceptions of good and valuable research. *Selective perceptions* = looking through ‘the glasses’ of your ‘school’/scholarly viewpoint/profession.  

D: *Personal interests:* Taking effects on personal situation or situation of friends, partners or competitors into consideration. Nepotism = helping colleagues because of friendship.
Improve reliability

Make the most of broad and diverse panels

- Avoid the traditional method of assigning the application to two main reviewers
  - Amplifies negative group dynamics
  - Increases the impact of extreme reviews

- Ensure well structured, detailed discussions
  - Limits sampling bias in favor of shared information
  - Ensures a more equal treatment of applications

- Ensure sufficient time for discussions
  - Limits groupthink
  - Limits drive for cognitive closure
Improve ability to fund groundbreaking research

- Use broad, heterogeneous panels
- Avoid rating scales that are too fine-grained
- Avoid consensus-based decisions
- Avoid traditional peer review altogether
Alternatives to peer review

- Single person selection
  - DARPA
  - NSF small grants for exploratory research

- Sandpit selection