

Impact, excellence and beyond: Reframing the science-society relationship

Revisiting the role peer review plays in governing research relationship with
itself and society

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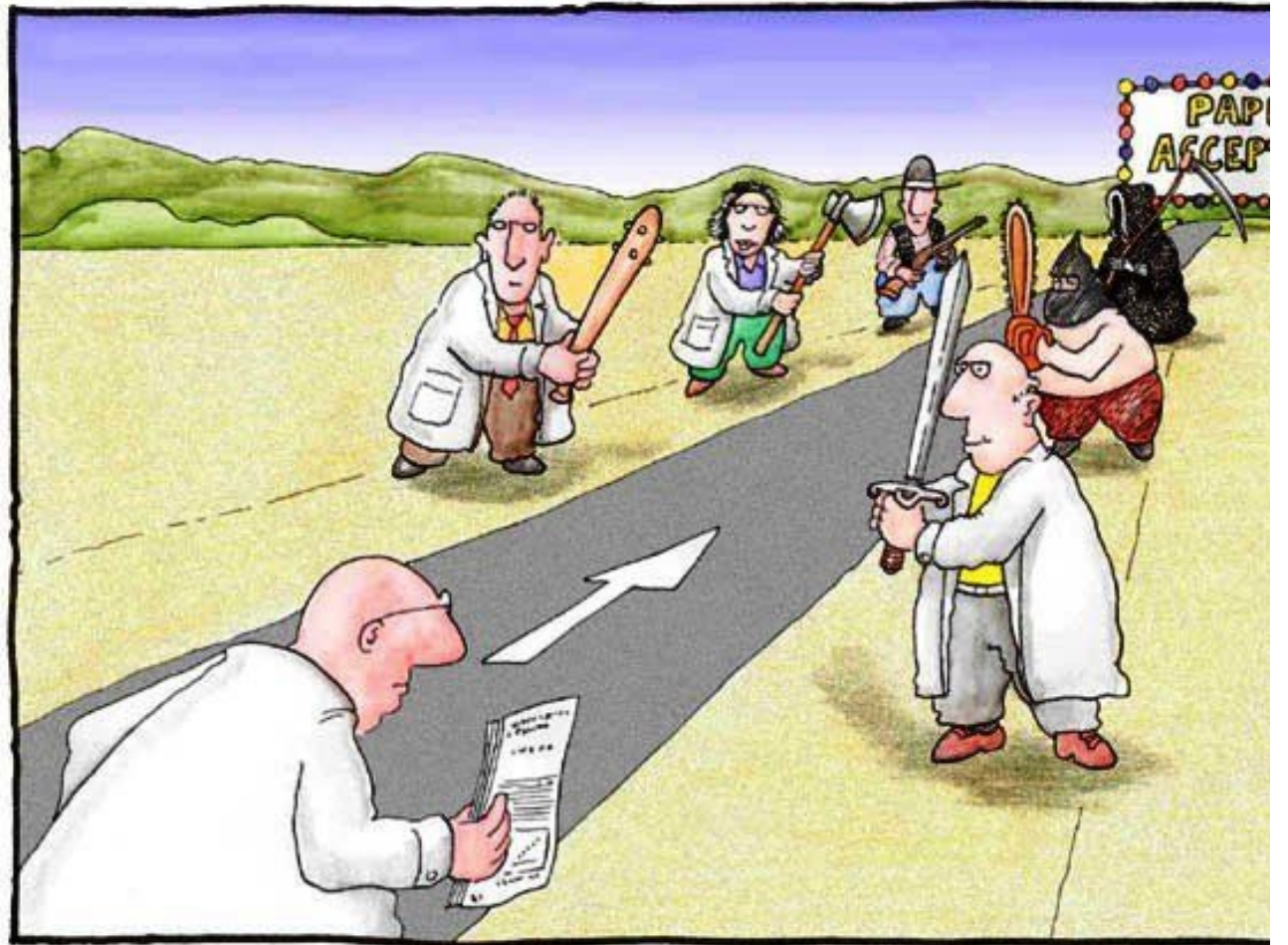
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What are the benefits of peer review?



We ask a lot
from peer
review



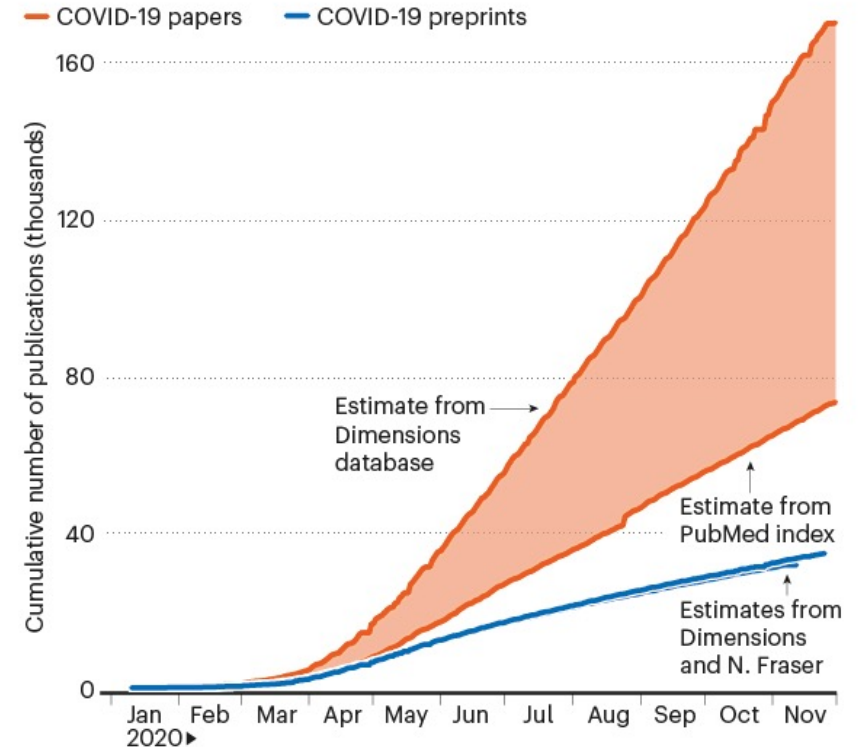
Peer review and the pandemic

"...this research has yet to undergo peer review"

- Rise in pre-print ahead of peer review
- Rise of rapid-peer review to boost funding for COVID-19 research (e.g. In the UK, UKRI Covid-calls)
- Whereas previously used as a stamp of approval to boosting integrity and trust in results and 'evidence'
- This rapid and informal "de-regulation" has decoupled the role peer review plays in governing good research.
- Now can we have a more direct role in governing good research behaviour?

CORONAVIRUS CASCADE

One estimate suggests that more than 200,000 coronavirus-related journal articles and preprints had been published by early December.



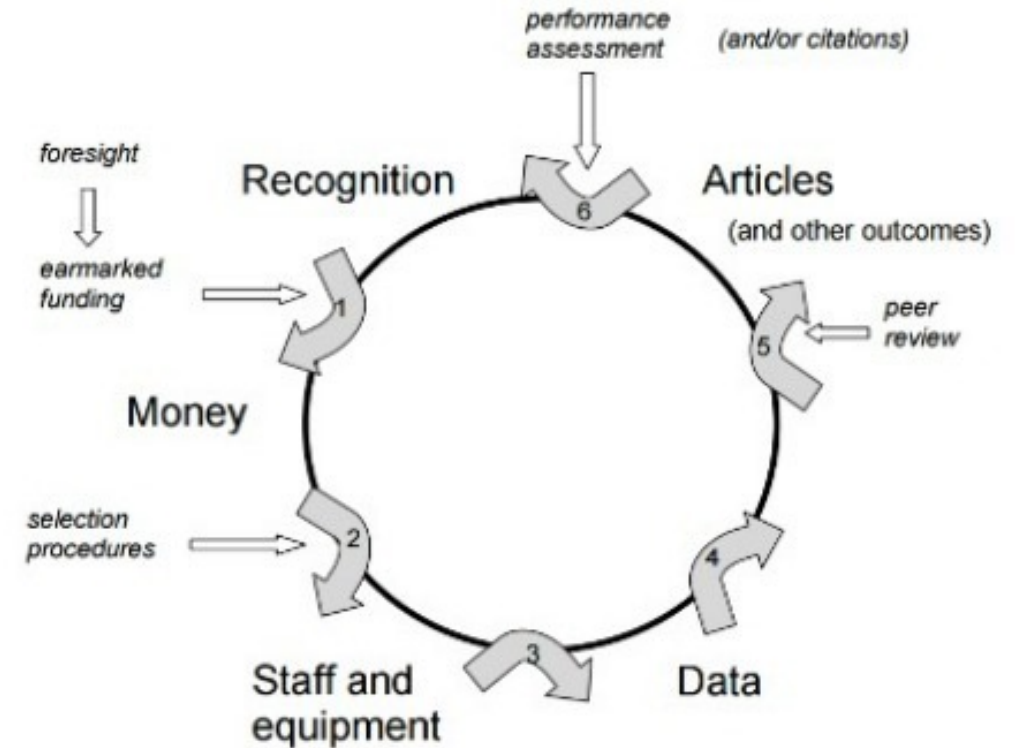
*Estimates differ depending on search terms, database coverage, and definitions of what counts as a scientific article; some preprints were posted on multiple sites online.

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Taken from: Else, H (2020) How a torrent of COVID science changed research publishing – in seven charts. Nature. 16 December 2020

Role of peer review in research culture

- Cornerstone of academic self-governance
- Mitigating the science-society relationship in assuring connection between excellence, value, trust and public-funding.
- Embedded throughout our research reward cycle



Adapted from: Latour and Woolgar (1986) and from, Hessels et al (2009) In search of relevance: The changing contract between science and society. Science and Public Policy 36(5): 387-401

When things go
wrong

**It is because peer review is
'broken' and we seek to
replace it**



~~Un-excellence~~

There is no such thing as a 'lack' of excellence

Research ~~value~~ values

Not the same for everyone and everything

What is 'peer review'?

It is

- A verb, not a noun
- A process that is employed differently in all settings
- A system that is bound to criteria, procedures and politics
- Not only about selection, but also about governance and participation
- Is ours.



Good decision-making ≠ Efficient decision making

- Good decision-making is;
 - Messy
 - Slow (it is not fast)
 - It recognises mistakes and makes moves to correct mistakes
 - Involves many different values and perspectives
 - Is accountable
 - It changes behaviour and minds



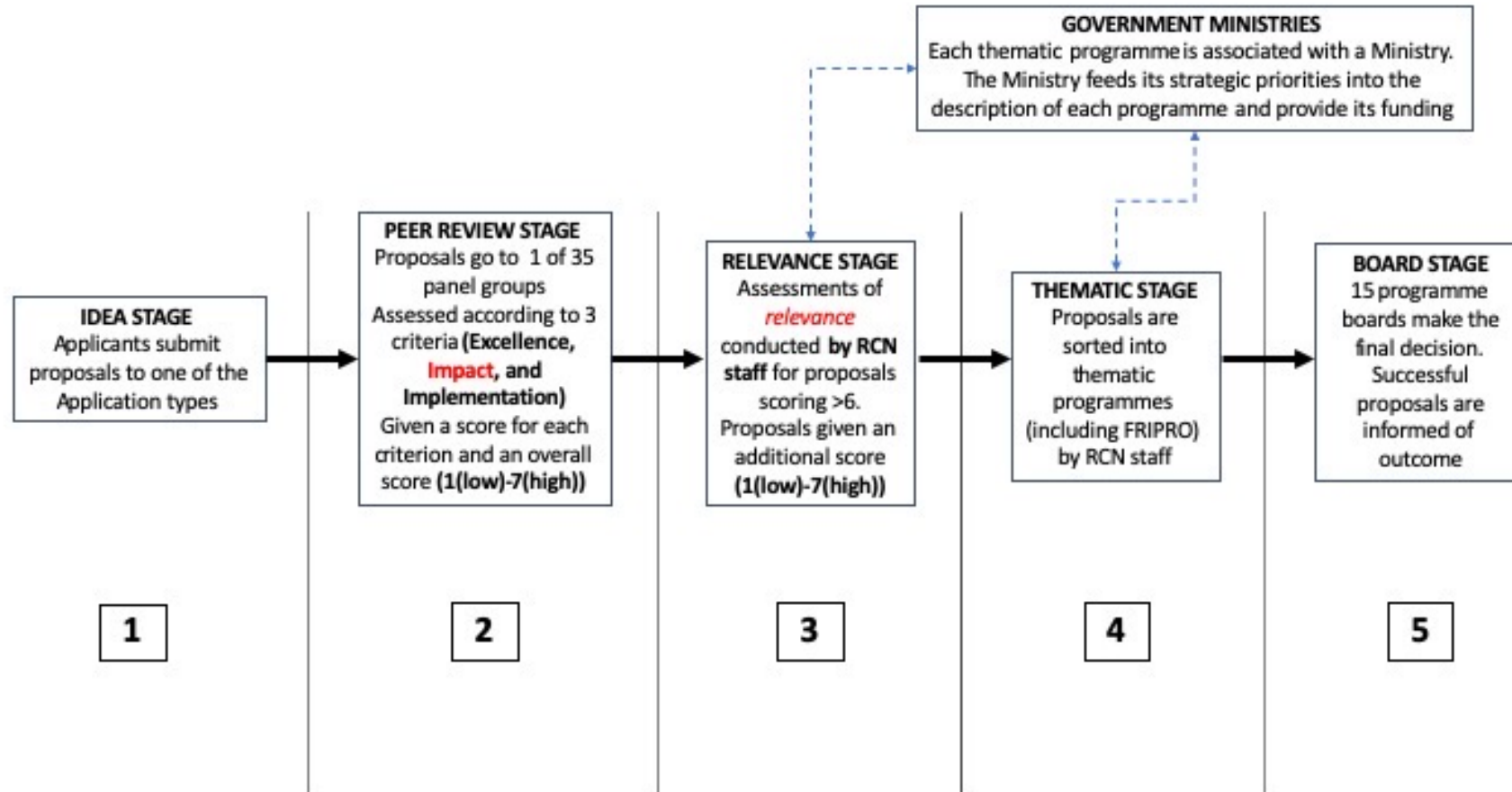
Research Phoenix project



Lancaster
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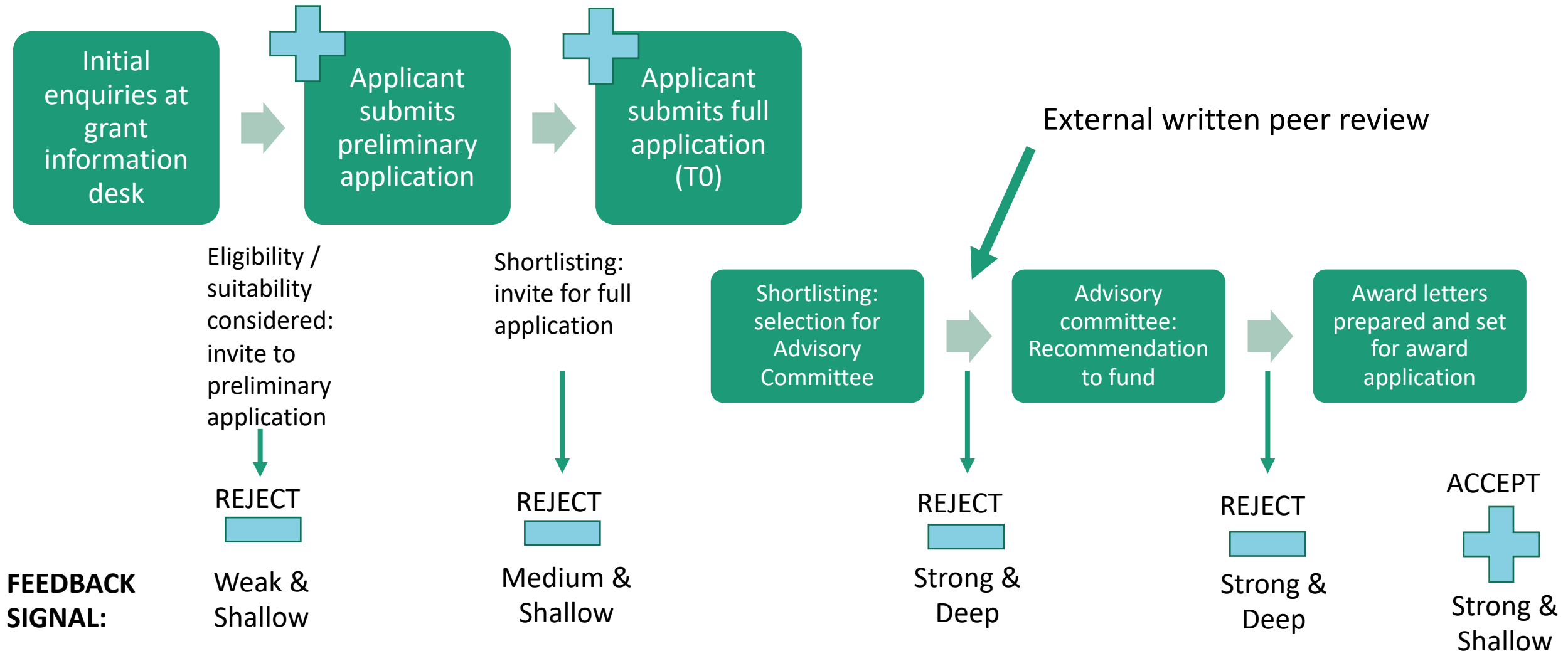


The peer review process at RCN (simplified)



From Derrick & Benneworth (2020) Guidelines for the peer review of ex-ante impact. ENRESSH Report provided to RCN.

The peer review process at The Wellcome Trust (simplified)



Signals in Science: Reviewer feedback

Feedback provides +ve and –ve signals but also:

Formative/summative:

Allow room for improvement or just conveys the decision

Weak or Strong:

Dependent on the level of investment by the candidate

Shallow or deep:

Depending on the level of feedback received (e.g. Shallow feedback would be limited or even absent. Deep feedback would be a combination of high quality constructive and implementable feedback)

Strong signal (Blunt) versus Weak (Diffuse):

Conveys power-relationships between reviewer and applicant and possibly

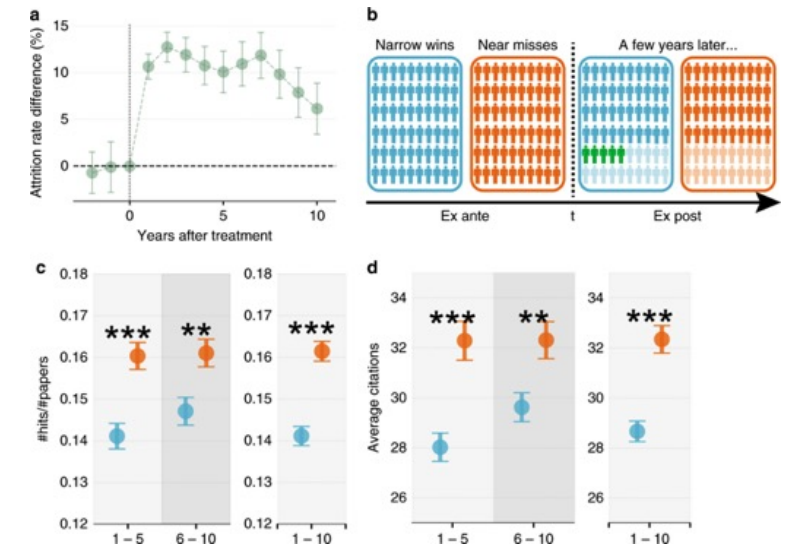
Live or detached (Interview/paper):

The mechanism for which feedback is received can either be live (in person, dialogue based) or detached (remote and creating lag in dialogue)

Signals matter a lot at the ECR stage

- Gaining research initial research success through funding is a right of passage for ECRs despite difficulties in the system
 - Precarious contracts
 - Choice to leave academia
 - Lack of ongoing mentorship
- Signals received at an early stage of a career is not evenly disbursed.
 - Cultural capital counts
- Single-blind reviews can allow for biases - which impact the retention and persistence of ECRs

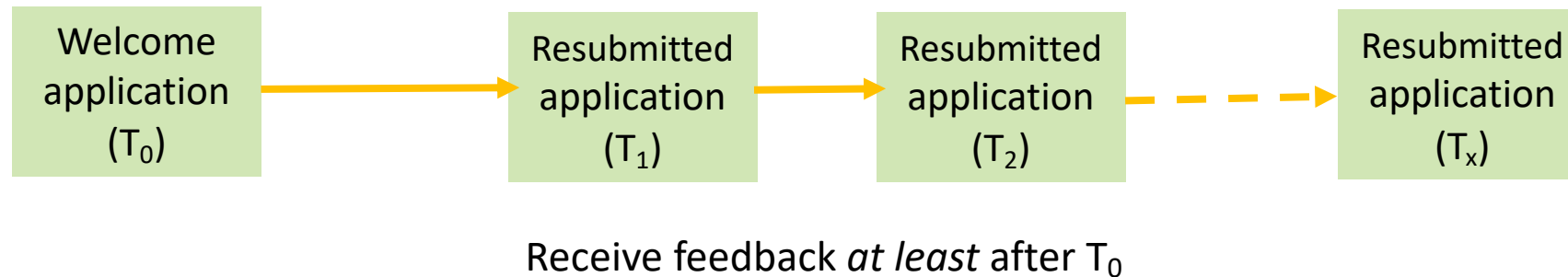
Derrick-Klavans hypothesis: *near misses are given a 'signal' early on to persist or quit.*



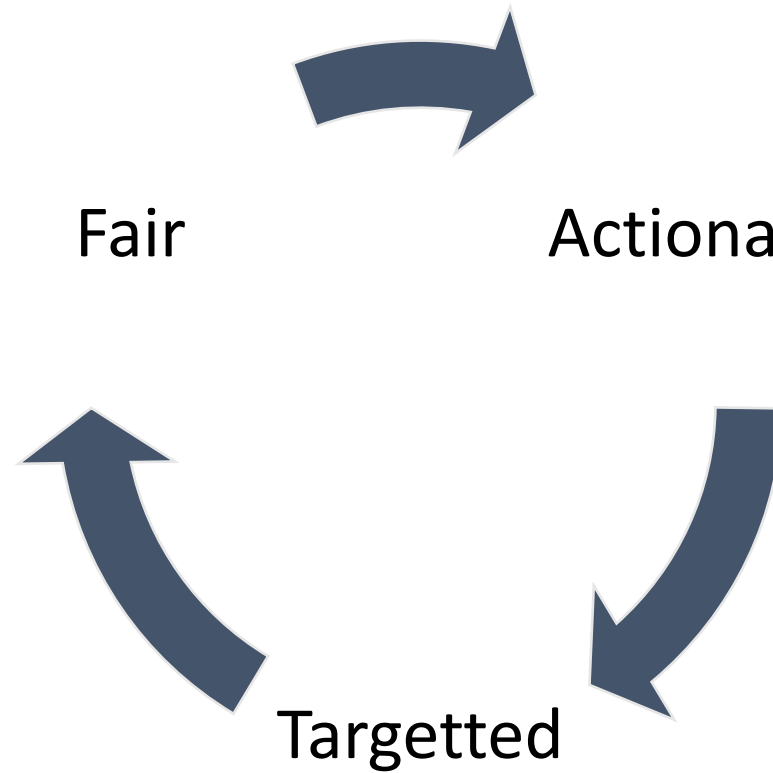
Wang et al (2019) *Early-career setback and future career impact*.
Nature Communications. 10:4331

Research design

1. Survey of Wellcome applicants (2009-2019; n=4109)
2. Interviews with past (*failed*) applicants (n=25)
3. Linguistic-driven thematic coding of reviewer reports provided to applicants as feedback
4. Bibliometric analysis of long-term career development at 2-, 5- and 10-years post-outcome (unsuccessful versus successful)



Feedback should be:



Not *just* a selection tool but a mechanism to change behaviour



Interview data has shown how applicants are sensitive to the tone, and fairness detected in reviewers' comments



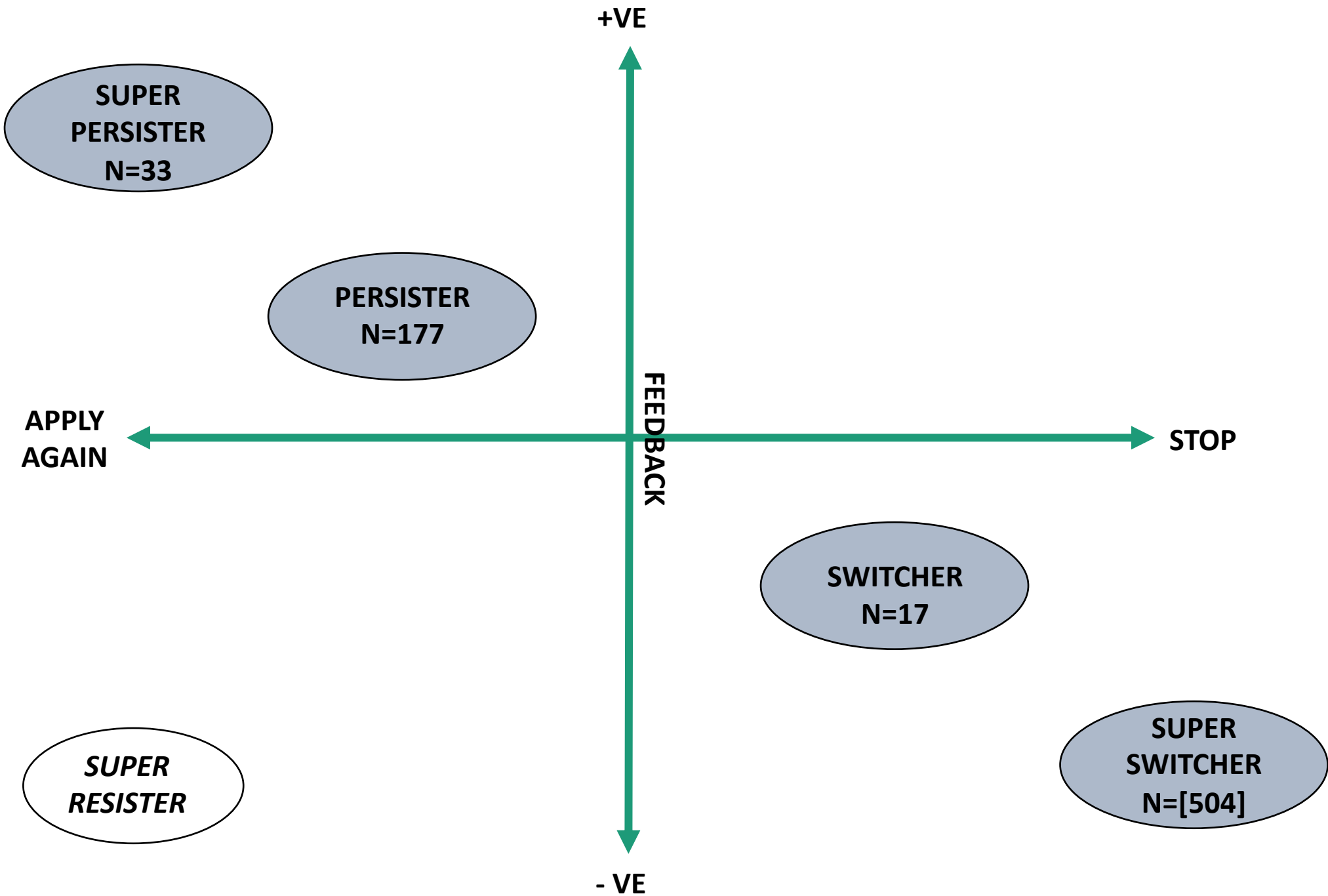
Cross bibliometric analysis has shown that the existence of one-positive comment, is associated with higher research performance (citations) 5 years post failure.

"I have some reservations about the suitability of the candidate. For someone who has been working in the field with a PhD since 2009, the publication rate is extremely slow and the venues, with one exception, are not the top journals."

Reviewer feedback

"the shock since probably still haunts me to this day. Some of the reviewers, but not all of them had commented on my publications as being outstanding..I had lots of high impact publications but not a lot. I've had a good few more than the average person in terms of high impact. I was first author on two Nature journal articles from my PhD and again in my postdoc...but then that came at the expense of not having a lot of other smaller publications or first author publications. So, some of them had commented on that, that there was a minor low number of first author publications or minor low publications and that my publication output was limited."

Unsuccessful candidate



Findings from analysis of reviewer reports

- Reviewers' reports varied in range, length and focus. There was little cohesion across reviews, despite template use.
- [SIGNAL] This led to disillusionment from applicants
 - *".....how am I meant to use this, what do I do"* **Unsuccessful applicant in 2012**
- There was a tendency for reviewers to see the review as an opportunity to demonstrate authority (power imbalance), by reasserting their disciplinary expertise, rather than an opportunity to promote the career of others.
 - e.g *"Frankly, I think the research question is not original."* **Reviewer comment in 2015**
 - This was highlighted by interviewees as decreasing their trust in the decision-making at Wellcome.
 - Feedback should be clear, constructive and actionable and written in 'collegiate' style *'like a discussion rather than a declaration'* **Unsuccessful applicant**

Feedback signals to try again...

- Using a hazard rate (likelihood of reapplying) 21 % of applicants re-apply for funding on the same idea.
 - Constant for up to 8 years.
 - Starts at 7% and then increases by 2% per year.

"So yeah, those were the two big things I kind of took from it actually. The feedback wasn't particularly disturbing because I thought I can do something about the things which they appear to be most obviously criticising". (unsuccessful candidate)

"I let some time pass and then for my next application, I reviewed the reviews. I always took into consideration what they said because it's a process. One learns how to make applications. Unfortunately, you learn it the hard way. There is not a nice way to learn how to make applications". (unsuccessful candidate)

- Using bibliometric analysis of ECR applicants to the Wellcome Trust (n= 4109), that the existence of one piece of positive feedback compared with no feedback or average negative feedback was associated with a higher incidence of reapplying for funding after first-failure (F=4.66; P<0.05).

..... or feedback
can signal to stop
trying

- *It is very difficult to feel it is worth it after a consistently negative feedback. (unsuccessful candidate)*
- *It doesn't matter how negative each [review] is in itself when the outcome is that you don't continue. So I am not sure whether the reviewer himself or herself (sic) knew the impact of their review. (unsuccessful candidate)*

NOTE: Individual resilience was not a factor. Grit scale utilised in survey showed no significant relationship between "grit" and; tendency to reapply, or future success.

Signals matter!

- It is not "**what does not kill you makes you stronger**" (Wang et al, 2019) but good signals received through reviewer feedback.
- There are mixed (unhealthy) signals about how to survive in academia;
 - *"You remember I told you about my supervisor. She told me, okay you must learn rejection. Remember it's nothing personal. Just try to keep that in mind. But it's so difficult because every single time it feels personal."*
- Myths about the importance of 'resilience' in research success fail to harness the governance and participation role in peer review;
 - *"Down the drain goes social life. Down the drain go relationship. It was not my case, but I know about people who have been devastated personally from you know, you know to sacrifice all on the altar of resilience."*
- Difference in how reviewers see their role in peer review and the current rhetoric of 'excellence' and 'selection' and what applicants need from the peer review process.

Peer Review is.....worth protecting.

- Peer review has more value in our research culture than we previously appreciated.
- Its value lies in more than *"just getting it right"*
- Plays an important role in attributing value in an ex-post evaluation; and in instilling trust in an ex-ante evaluation
- Relies on the interactions of teams, and the good will of individual members of research culture to make it work well.





SUCCESSING IN RESEARCH

Through Failure

THANK YOU.

Also thank you to my co-authors and partners-in-crime:

The @failurephoenix team (Dr Richard Klavans, Dr Alessandra Zimmerman, Dr Jonathan Best & Helen Greaves);

Dr Jon Holm;

Prof Paul Benneworth (xoxo)

For more information visit www.pearlaboratory.org

The research presented here is funded by The Wellcome Trust, and the Eu-COST Action ENRESSH (European Network for Research Evaluation in the Social Sciences and Humanities, CA15137)