

How to improve the value of your research by making it verifiable



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at osf.io/9jhwc



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**Comparative
Behavioral
Ecology**

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We won't be...



Corina Logan & Laurent Gatto



Leading individuals and
institutions in adopting open
practices to improve research rigor

Ross Mounce, Stephen Eglen, Adrian Currie, Lauren Maggio

Early Career Researchers (ECRs) often feel pressured into taking actions **against our ethics** to pursue an academic career (e.g., publishing in particular journals)

ECRs: Sign the **petition** to help us change academic culture

Non-ECRs: Join the list of **supporters** by valuing open practices, especially when making decisions about hiring, promotion, and grants

www.BulliedIntoBadScience.org

#BulliedIntoBadScience



Conducting & evaluating research depends on the ability to:

1. **read, understand, and verify** it.

*Massive amounts of money paid to publishers
= barrier to researchers, academia, and the public*

2. have anyone **generate and disseminate** it,
regardless of wealth, access to opportunity,
perception of prestige, and evaluator implicit biases

How scholarly publishing works

Exploitative route



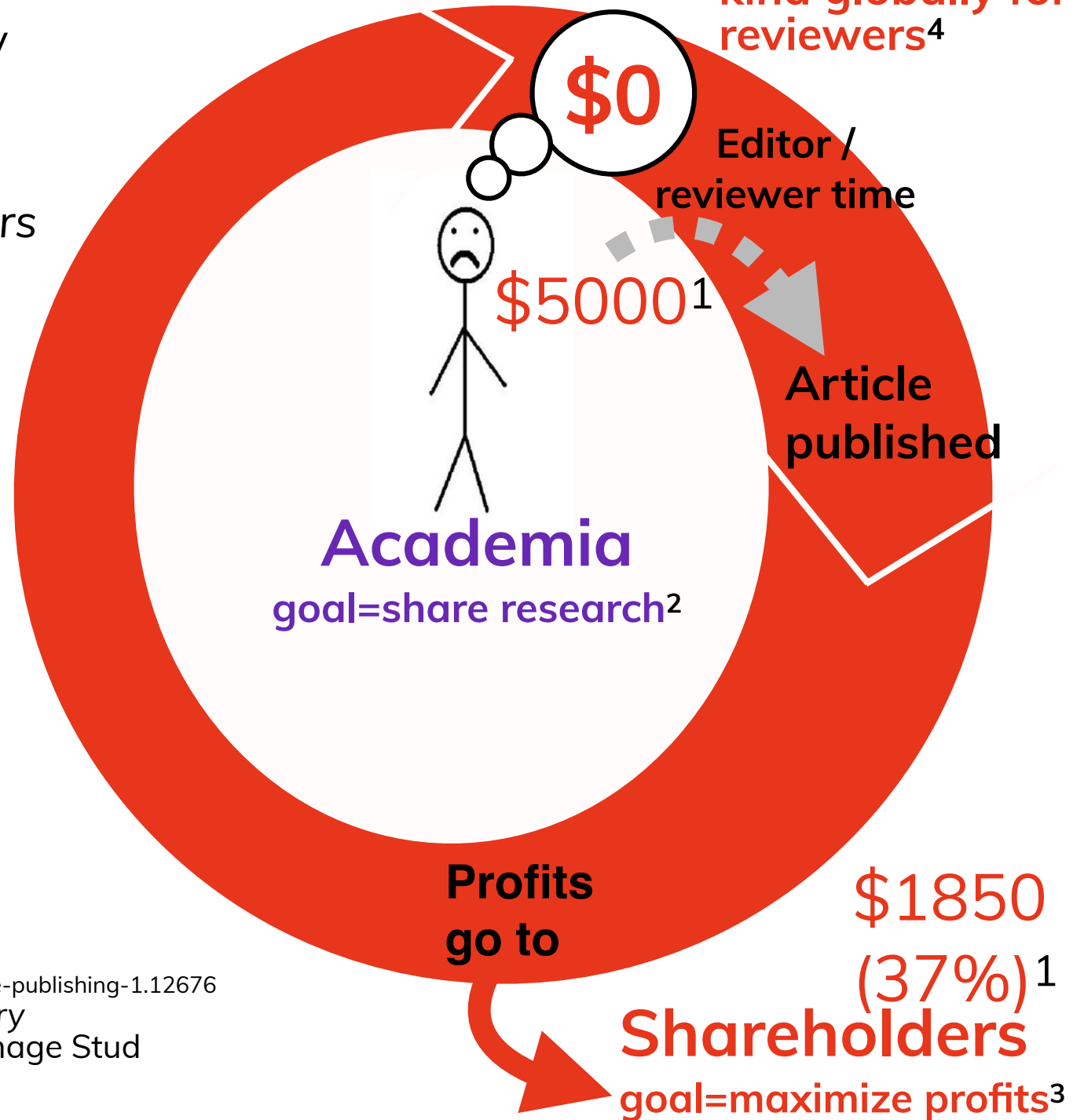
¹Van Noorden 2013 [nature.com/news/open-access-the-true-cost-of-science-publishing-1.12676](https://www.nature.com/news/open-access-the-true-cost-of-science-publishing-1.12676)

²Nosek & Bar-Anan 2012 *J Psych Inquiry*
Logan 2017 F1000Research

Exploitative route

Academics perform quality control at no cost to publishers

What services do publishers actually provide?



¹Van Noorden 2013

[nature.com/news/open-access-the-true-cost-of-science-publishing-1.12676](https://www.nature.com/news/open-access-the-true-cost-of-science-publishing-1.12676)

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³Husted & de Jesus Salazar 2006 *J Manage Stud*

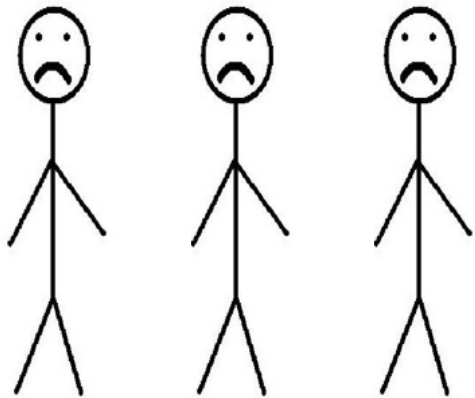
⁴Research Information Network 2008

Logan 2017 F1000Research

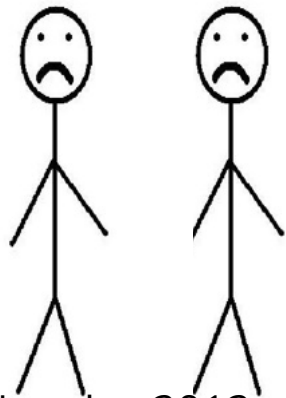
Exploitative route

Indirect
discrimination

Patient MD Public



Other
researchers



PAYWALL

Public
funds
research

\$0

£1.9 billion/yr in
kind globally for
reviewers⁴

Editor /
reviewer time

\$5000¹

Article
published

Academia

goal=share research²

Available
to read by
scholarly
rich



Profits
go to

\$1850
(37%)¹

Shareholders
goal=maximize profits³

¹Van Noorden 2013 nature.com/news/open-access-the-true-cost-of-science-publishing-1.12676, ²Nosek & Bar-Anan 2012 *J Psych Inquiry*, ³Husted & de Jesus Salazar 2006 *J Manage Stud*, ⁴Research Information Network 2008, Murray-Rust 2011 blogs.ch.cam.ac.uk/pmr/2011/10/05/the-scholarly-poor-dentists/, Tennant et al. 2016 *F1000Research*, Logan 2017 *F1000Research*

The ethical framework

- 1) **Researchers** and **publishers** have a **responsibility to the public** to provide them with **free access to publicly funded products**, which are a common good^{1,2}
- 2) **Publishers** of research products have a **responsibility to researchers** to value the generation and packaging of knowledge³
- 3) **Researchers** have a **responsibility to the public** to **conduct rigorous research** because it will serve as the foundation for the advancement of discoveries, it provides the best value for money, and earns public trust⁴

¹Stilgoe et al. 2013 *Res Policy*

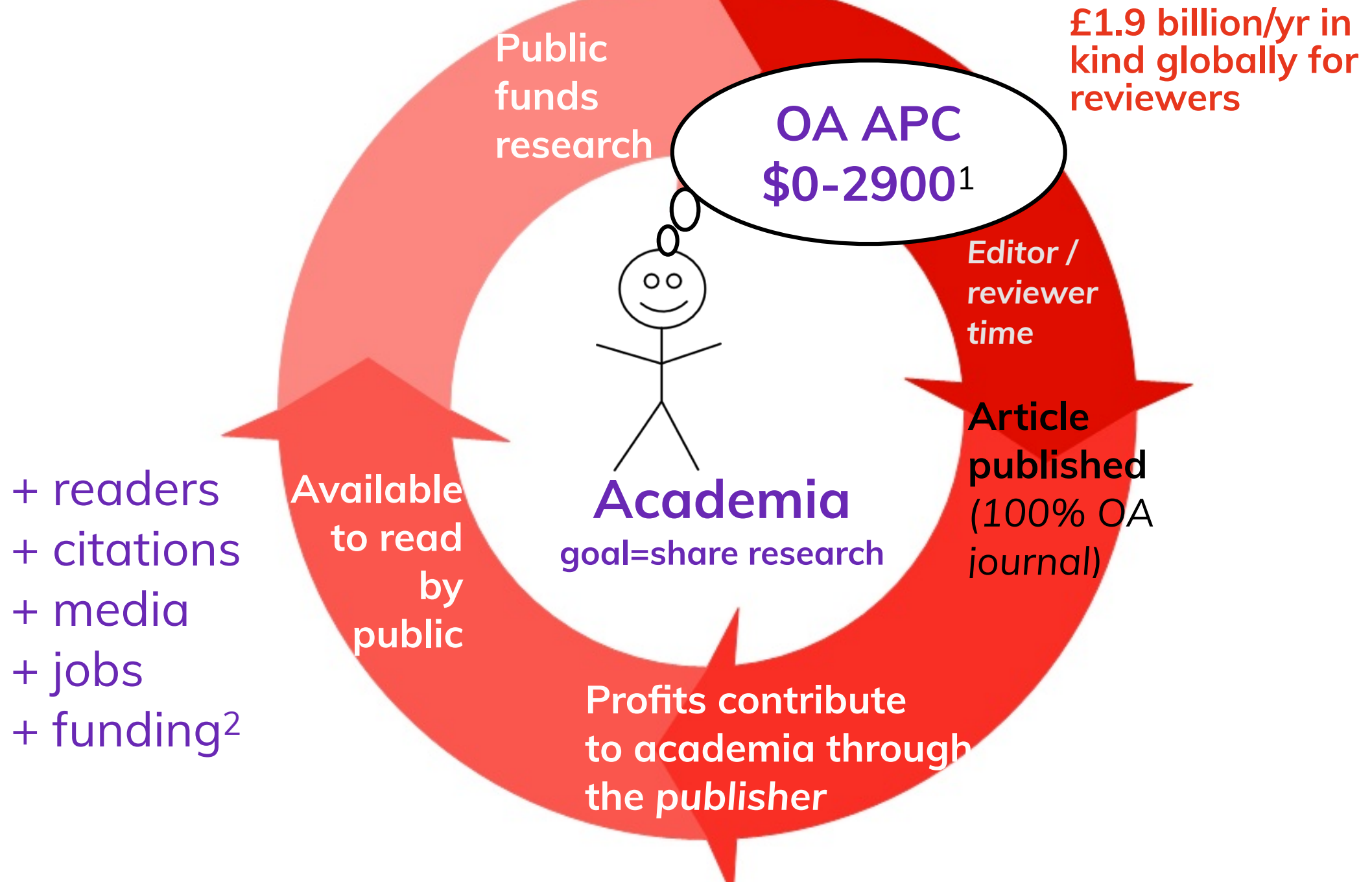
²Woodward 1990 *Library Trends*

³Fuchs & Sandoval 2013 *TripleC: Communication, Capitalism & Critique*

⁴Nosek & Bar-Anan 2012 *J Psych Inquiry*

Logan 2017 *F1000Research*

Ethical route



¹SPARC <http://sparceurope.org/oaca/>, ²McKiernan et al. 2016 eLife, Tennant et al. 2016 F1000Research, Logan 2017 F1000Research

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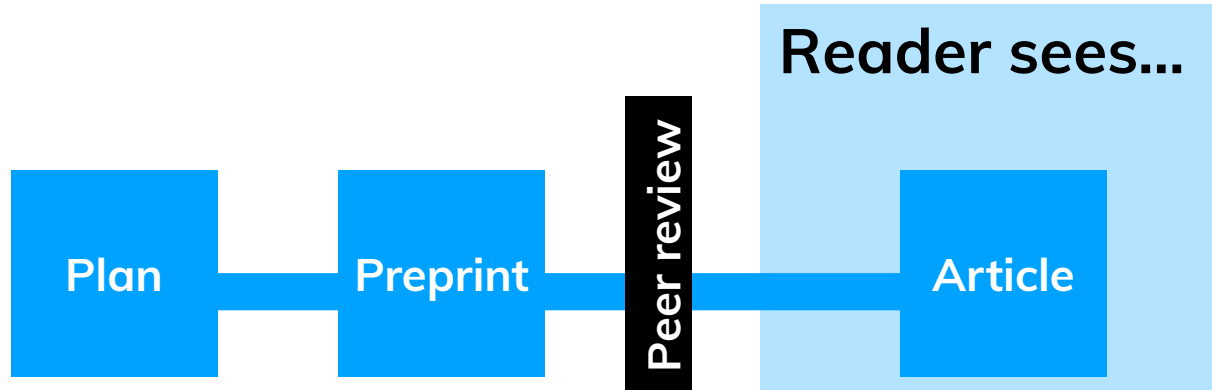
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Closed peer review = unverifiable

Closed peer review prevents verifiability of the evaluation of the research process

- Prohibits quality control
- Reviews can be inadequate, biased, subjective
- Editors = key to high standards in research and ethics



My closed peer review horror story

- I reviewed an article, raised many issues, some insurmountable
- Decision = **Major Revision**
- Not cc'ed on further decisions, **no re-review**
- Asked to publish a response to accepted article. **Accepted version didn't address comments**; many factual errors
- Executive editor + handling editor + president of society **refused to acknowledge they accepted the article without proper revision and didn't seem to care it was low quality / incorrect**
- I am mentioned in Acknowledgements

I control where I donate my reviewer/editor time

Reviewing Ethics

If I am invited to review a paper for a journal and/or publisher that is not aligned with my commitment to conducting rigorous science, I accept the review, write the below text in the Comments to the Authors section, and submit the review. I got this idea from the [Peer Reviewers' Openness Initiative](#) and modified it to suit my particular ethics.

- - -

My goal is to ethically conduct and promote rigorous science. I avoid exploiting myself as a scientist, I facilitate equality and diversity by ensuring that no one is discriminated against when reading scientific literature I contribute to, and I keep funds in academia (see my [paper](#), [presentation](#), and [website](#) for background). I use the mechanism of transparency to achieve my goal so anyone can evaluate my contributions at every step of the process.

Therefore, I am only willing to review papers that:

- 1) are going to be published gold open access under a CC-BY license,
- 2) will publish the review history alongside the paper,
- 3) are submitted to a journal where 100% of the articles are open access, and
- 4) are submitted to a journal that is published by an academic non-profit organization, or a for-profit corporation that
 - a) has low or no article processing charges, and/or
 - b) heavily invests profits in academia, and/or
 - c) are working to modernize publishing infrastructure for researchers

I am not willing to review this paper at this journal because criteria 2-4 are not met, and it is unclear whether criterion 1 is met.

Sincerely,

Corina Logan

Max Planck Institute for Evolutionary Anthropology

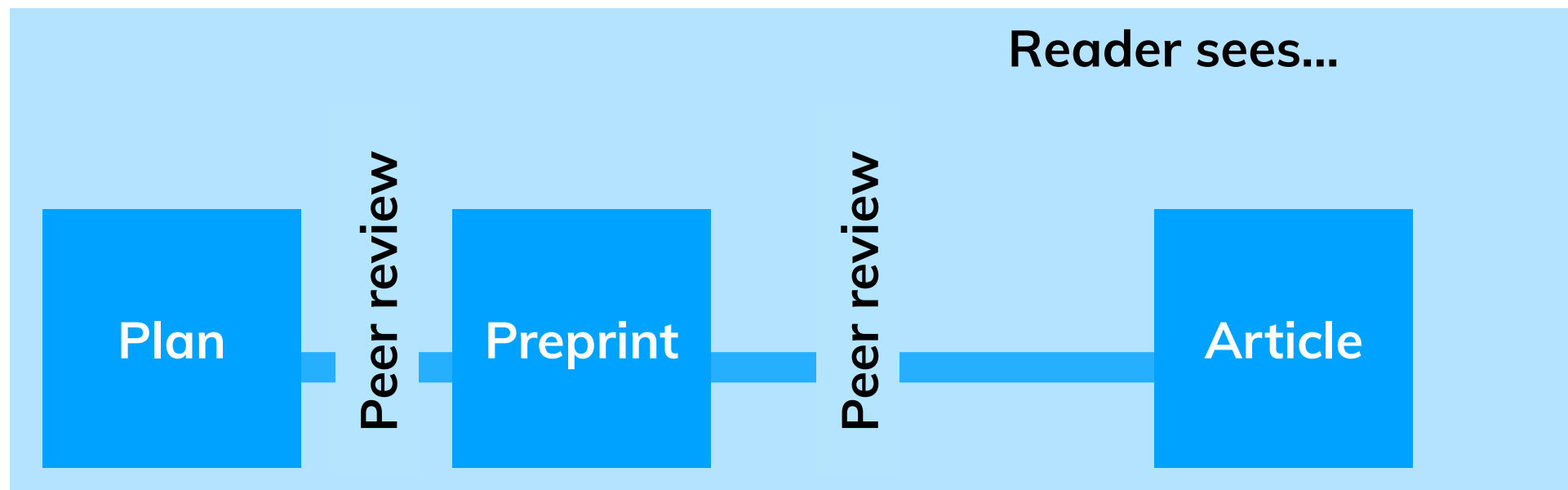
Peer review of preregistrations at PCI

Prevents wasting resources by improving research before it begins

“Flexible registered report”



Allows verification of research process and evaluation process



Conducting & evaluating research depends on the ability to:

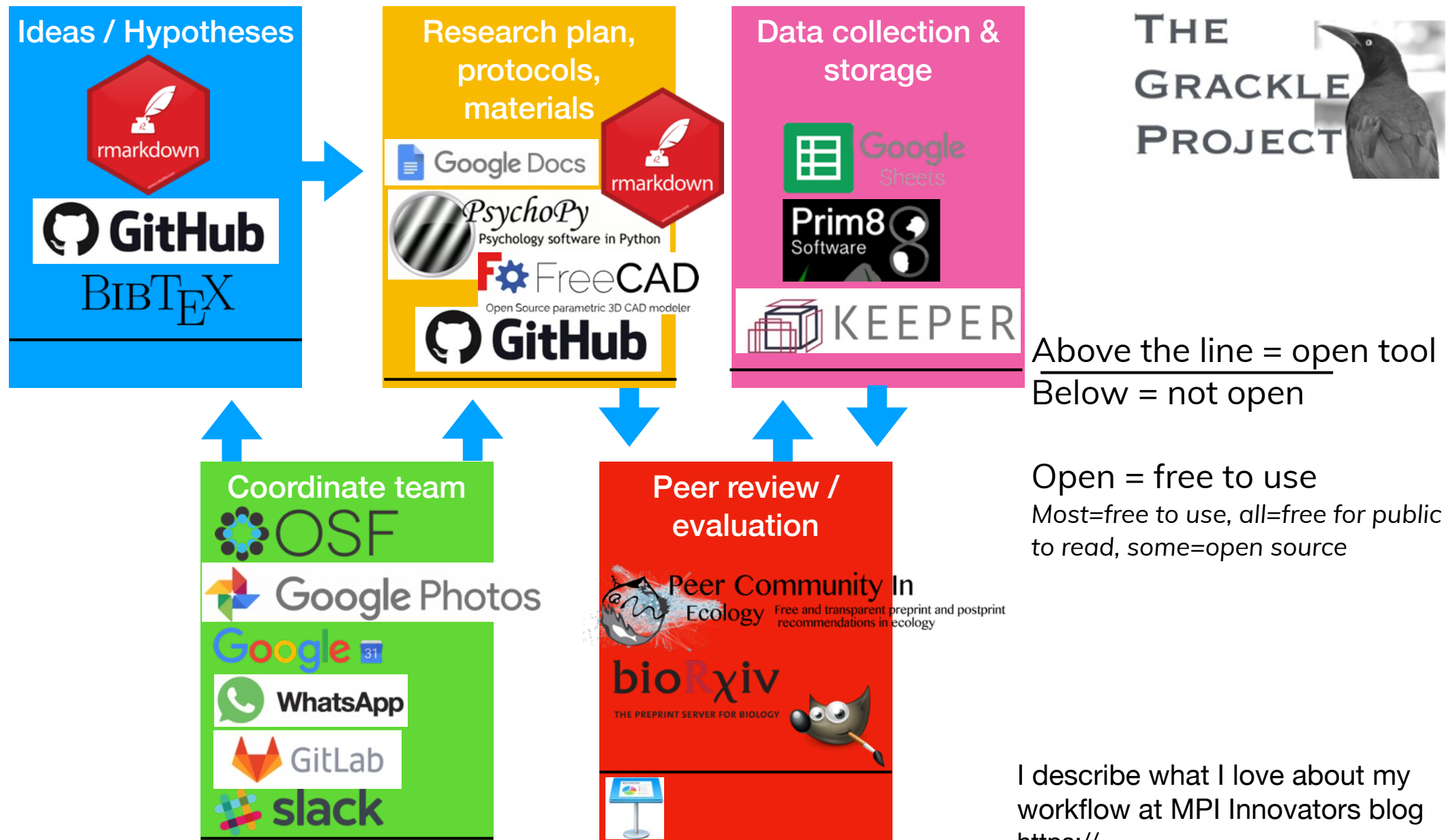
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**Making my research readable and
verifiable = better & faster**

Making my research readable & verifiable saves time and increases its value



See GenR blog for a conversion of this work flow to all open source tools:
<https://genr.eu/wp/making-research-workflow-open-source/>

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Incentivizing open, evaluating ability

Barriers to knowledge generation

Only people like us can access the knowledge we generate: English-speaking academics at wealthy institutions^{1,2} = blocks progress in research & applications

Increasing diversity in research & researchers can help address this limitation^{3,4}



Rachael G. S.
@rach_scholcomm

Follow

#OpenGlobalSouth Do we agree on "access"? i.e. Who gets to read (access to scholarship) v. who gets to publish (access to publishing system)

4:45 PM - 25 May 2017



Corin@ Logan
@LoganCorina

#Prestige=subjectively defined by the privileged. No wonder only privileged have it. Prestige=bad 4 science & bad 4 non-privileged scientists

21 September 2016

Around the world, poverty and social background remain huge barriers in scientific careers.

Is science only for the rich?

Arianna Becerril @ariannabec · 25 May 2017

Two different models, hey latin people we're doing good in #OpenAccess #OpenGlobalSouth #DangerousAPC amp.theguardian.com/higher-educati.

Two different OA models



¹Amano & Sutherland 2013 Proceedings B, ²Amano et al. 2016 PLOS Biology, ³diversityinacademia.strikingly.com, ⁴NIH 2018 <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-18-210.html>, livestream.com/UCDavis/OpenDigitalSouth2017/videos/157043119, blogs.scientificamerican.com/voices/diversity-in-stem-what-it-is-and-why-it-matters/, twitter.com/ariannabec/status/867808894613020672, twitter.com/rach_scholcomm/status/867889362070941696

Tackling the prestige barrier to knowledge generation

Essential requirements in **job adverts**:

- require evidence/willingness to engage in open practices
- assess research quality directly (DORA¹)
- must be good role models for groups traditionally underrepresented in STEM



...because **metrics** can be gamed and are more a **sign of privilege** than quality²

Increase diversity via...

- Sign & implement DORA sfdora.org
- Open Science Massive Online Open Course
<https://opensciencemooc.eu>

¹osf.io/afwre/ & jobs.zeit.de/jobs/muenchen_professur_w3_fuer_sozialpsychologie_121431.html, twitter.com/chrisdc77/status/871733428433104897, ²Balla 2019 Mol Biol Cell

Counteracting implicit biases to evaluate ability, not privilege

Women = **less likely to be first authors** of articles in journals with high impact factors¹,
thus men are more likely to have a “good” CV, but only because of implicit biases

Women’s research rated **lower quality** than men’s²,
thus risk taking (publishing) = more costly (lower payoff)

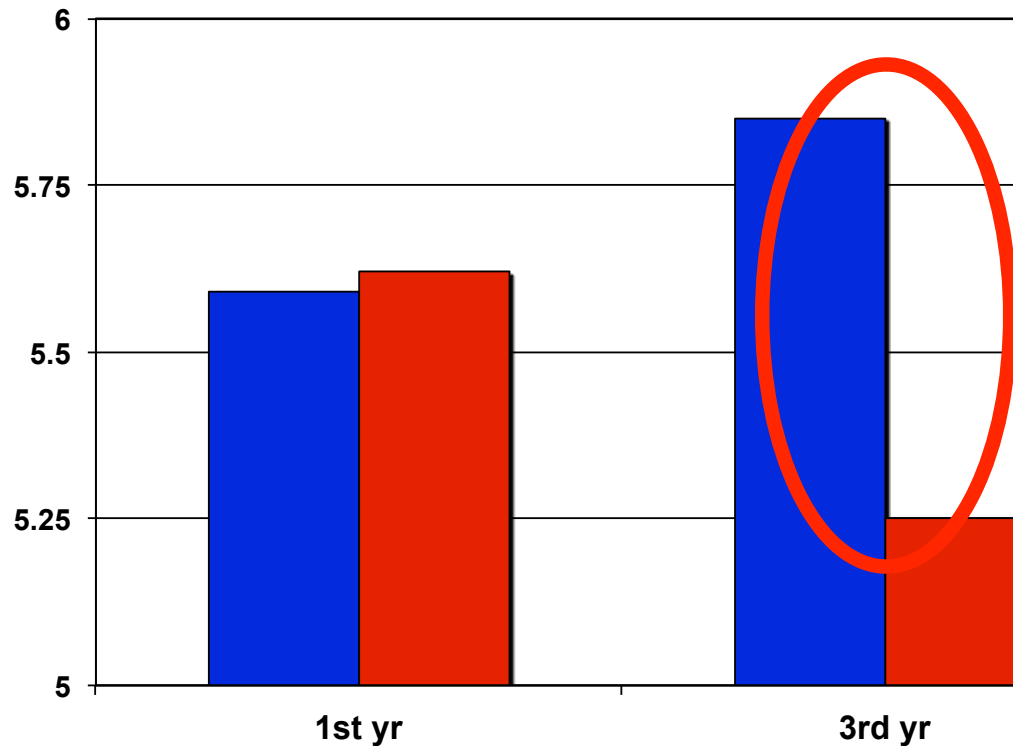
But are women more risk averse?

¹Filardo et al. 2016 *BMJ*, ²Knobloch-Westerwick et al. 2013 *Sci Comm*
Applies to other URM as well - see Balla 2019 *Mol Biol Cell*

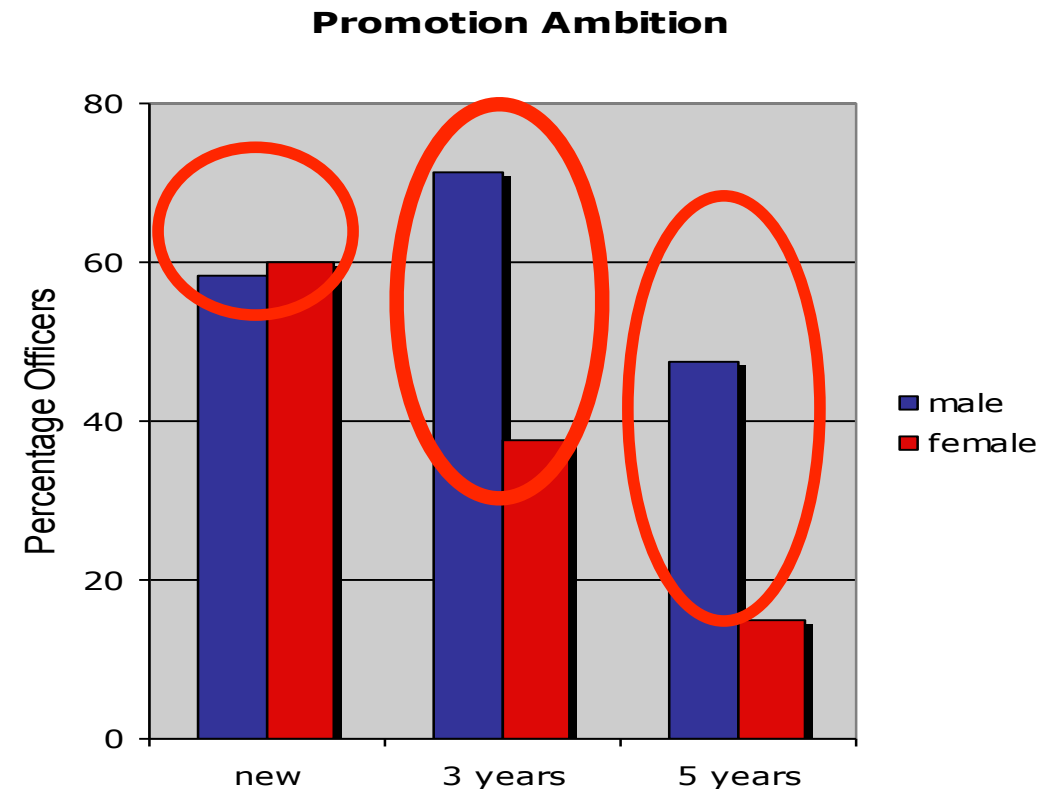
Women are **NOT** more risk averse than men

Differences in Ambition?

Surgeons



The Police service



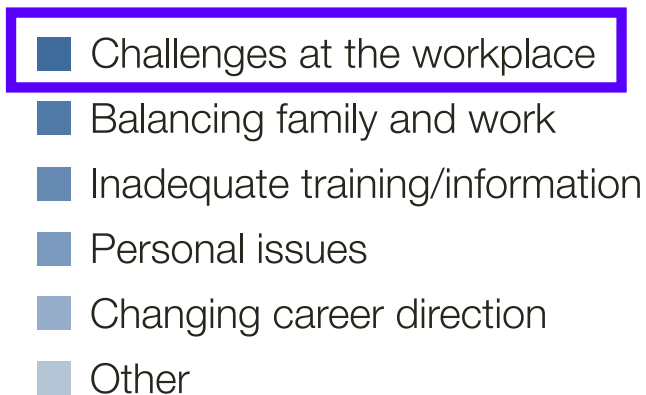
Women are **NOT** more risk averse than men

Women are less likely to take risks

(apply, interview, do research, ask for promotion, etc.)

because they are **less likely to receive a reward** for such efforts

“the underrepresentation of women at the top in terms of voluntary decisions not to pursue leadership may be a **strategic response** to discrimination” (Ryan et al. 2007 *Soc Pers Psych Compass*, p. 267)



*Non-supportive
workplace culture*

n=954 female alumna of
Murray Edwards College 2014

Prestige blocks knowledge generation: Tackling implicit biases

- Consider background of person behind the CV: do they have enough privilege to **access** opportunities considered “good”?
- Consider the **evidence** before judging a top woman harshly¹
- **Discover** your implicit biases
<https://implicit.harvard.edu>
- Gender language **calculator**, use “they”, avoid names
<http://gender-decoder.katmatfield.com/about>
- Call on a **woman to ask the 1st question**²
<http://diversityinacademia.strikingly.com>
- When offering an opportunity (e.g., job, seminar, etc.), **recruit** via groups that support Underrepresented Minorities in the sciences (URMs).

ALWAYS well qualified URMs - stop and think



Request a woman scientist
500womenscientists.org

- Checklist to improve equity in faculty hiring
- Databases of URMs
Bhalla (2019 *Mol Biol Cell*)



¹Sandberg 2013 Lean In, ²Carter et al. 2018 PLOS ONE, twitter.com/LoganCorina/status/868491581145444352, [nature.com/news/is-science-only-for-the-rich-1.20650?WT.mc_id=FBK_NatureNews&sf81929464=1](https://www.nature.com/news/is-science-only-for-the-rich-1.20650?WT.mc_id=FBK_NatureNews&sf81929464=1)

I have argued research value increases when...

1. one can **read, understand, and verify** it.
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2. anyone is able to **generate and disseminate** it,
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We can **stop exploiting and discriminating now** because...

- ethical open options exist
- we can address our implicit biases