

Gender Bias and Peer Review in an arXival Age

Ben Almassi
College of Lake County
FEMMSS 4

Peer Review

“the worst form of evaluation – except for all the others.”

- Shatz 2004

“So many of us have long been aware that certain physics journals currently play NO role whatsoever for physicists. Their primary role seems to be to provide a revenue stream to publishers.”

- Ginsparg 1996

How can open-access “e-print” scholarly communication make social processes of science better justified **and** more just?

Can open-access & unreviewed e-print platforms like arXiv fulfill the social-evidential roles of traditional peer review?

Can open-access & unreviewed e-print platforms exacerbate **or** mitigate problems of implicit gender (or other social-identity) bias?

Outline

1. Varieties of Scientific Publication, New & Old
2. Epistemological Strengths of arXiv?
3. Epistemological Problems for arXiv?
4. On arXiv & gender bias: A Range of Responses

Varieties of Scientific Publication

Platforms:

- print journals / online journals / linkfarms / online archives

Stages of Review:

- desk review / pre-publication peer review / post-pub peer commentary / no review

Review Formats:

- unmasked / anonymous / double-anon / triple-anon

Funding Sources:

- subscriber models (reader-pays or library-pays);
open-access models (author-pays or 3rd-party subsidy)

What are e-prints?

Contemporary descendants of “preprints,” copies of forth-coming journal article circulated informally by the authors throughout their research communities. The period between acceptance and publication could be many months, so preprints allowed faster social dissemination of research.

But preprints were costly (copiers, postage, time spent) and limited access to established networks. The internet enabled e-print improvement: no copying, no mail, and once posted on an open-access online archive, accessible to anyone with basic internet access.

What is arXiv?

“The arXiv is an automated distribution system for research articles, without the editorial operations associated with peer review. As a pure dissemination system, i.e. without peer review, it operates at a factor of 100 to 1000 times lower in cost than a conventionally peer-reviewed system.”

- Ginsparg 2003

Originally the Los Alamos National Laboratory (LANL) Archive, **renamed arXiv** when founder Paul Ginsparg took it to Cornell a decade after its inception.

arXiv is free to both authors and readers, and posted work is made available without delay – or review.

“What then is so essential about the arXiv to its users?
The immediate answer is, “Well, it’s obvious. It gives
immediate communication, without having to wait a
few months for the peer review process.”

- Ginsparg 2003

Epistemological Problems for arXiv?

“Trekking through Junk”

Philosophers writing on peer-reviewed publication and open-access often address peer review’s practical and evidential to filter, curate, or cull the vast amount of material to a credible, individually digestible literature.

“A successful peer review process would weed out instances of ...papers with mistakes, that add little, flatout inaccuracies... and include papers with major findings and original reasoning. In the absence of such a process, what will happen? Readers will have to decide for themselves from all papers available which ones to read.”

- Goldman 1999

Epistemological Problems for arXiv?**“Trekking through Junk” cont’d.**

But Ginsparg is unconcern about this challenge for arXiv:

“The number of papers published...vastly exceeded the ability of any one researcher to read and absorb. Once the mere fact of publication in a journal no longer gives a particularly useful guide, readers are forced to perform the majority of the selection on their own by some set of additional criteria, and their primary need is simply access to the information as quickly as possible.”

- Ginsparg 1996

Epistemological Problems for arXiv?**“The Invisible Hand”**

arXiv offers high-quality papers without peer review. But is it parasitic on continued pre-pub peer review by journals? After all, most work that is posted on arXiv is simultaneously submitted to traditional journals.

Shatz and Harnad each raise this point, which Harnad calls the ‘invisible hand’:

authors do better research when they anticipate having to survive peer review, and without this threat they will be less motivated to write quite so well.

Epistemological Problems for arXiv?

“The Invisible Hand”

Fitzpatrick (2010) argues that post-pub peer commentary could fulfill this role as an **even firmer** invisible hand than traditional peer review.

The specter of public embarrassment, she argues, can be more motivating than double-anonymous prepub review.

Epistemological Problems for arXiv?

Gender Bias & Other Implicit Biases

Reader / reviewer bias in evaluation of research credibility given gender, racial, and other authorial social identities is a well-documented phenomenon, for which anonymous review is often urged to mitigate explicit & implicit bias.

[cf. Lloyd 1990; Wenneras & Wold 2001; Bornmann 2007]

Yet arXiv by its nature (like other open-access e-platforms for scholarly communication) lacks any such mechanisms for gender bias mitigation.

arXiv and Gender Bias:

Range of Responses

1. It's morally troubling, but not 'bad science'
2. 'Tu quoque' – failures of anonymous pre-pub peer review (cf. Peters & Ceci 1982; Fitzpatrick 2010)
3. Retreat from arXival platforms for scholarly communication and publication (cf. Shatz 2004)

arXiv and Gender Bias:

Range of Responses

4. Acknowledged and accepted as an ethical-evidential cost
5. Eliminating review may actually reduce bias (cf. Wray 2007)
6. Proposal: maskable/unmaskable post-pub commentary

arXiv and Gender Bias:**Range of Responses**

7. Feminist critique: beyond gender blindness?

- gender as a **functionally irrelevant** factor (cf. Bornmann 2007)
- gender as **epistemologically relevant factor** (cf. Rolin 2002; 2004)
- **social-structural** bias mitigation (cf. Longino 2002; Lee & Schunn 2011)
- persistence of implicit biases?

Concluding Remarks

- ❖ Taking lessons for the epistemology of peer review from one epistemic community to others should be done with caution.
- ❖ In at least some arXival communities, the value of peer review to make the literature manageable is apparently minimal and outweighed by increased access & faster social dissemination.
- ❖ Yet unreviewed (or post-pub-reviewed) platforms like arXiv lack mechanisms to address gender & other implicit social-identity biases, absent anonymous peer review.
- ❖ Perhaps this is to be accepted as a cost worth arXiv's benefits; alternatively, this could spur moving beyond 'gender-blindness' to social-structural mechanisms sensitive to both implicit bias and to the epistemic significance of social identity.

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