Fostering Diversity, Equity, and Inclusion in Open Science

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Science and Open Science

- Science has long held openness and sharing as norms (Merton, 1973).
- Open science extends upon and adds expectations to that due to technical affordances (i.e., the web and internet).

The Problem with Openness

- Openness as a system does not necessarily entail a more diverse, inclusive, and equitable system.
- We suspect that the openness in open science does not necessarily entail better DEI because it does not entail better DEI in comparable models, like Open Source software development

(Open) Science and Open Source: Comparisons

- Comparable Goals
  - Transparency
  - Sharing
- Comparable Problems
  - Gendered
  - Demographically homogeneous
  - Discriminatory

What Openness Does Offer for DEI

- However, as a potentially more transparent system, it may reveal *invisible colleges* (Price & Beaver, 1966), *social circles* (Crane, 1969), or *social networks* (Zuccala, 2006).
- Invisible colleges include in-groups of scientists with considerable influence over questions, ideas, prestige, direction, etc of the practice of their discipline or field
- In summary, in-groups possess most of the *social capital*

Social Capital: Toward a DEI-Open Science

- Social capital "refers to features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit" (Putnam, 1995).
- Social capital enhances, encourages, builds:
  - Reciprocity
  - Social trust
  - Coordination
  - Reputation
- Putnam's work is directed at civic life, but it *seems applicable* to scientists who also form social organizations (invisible colleges, social circles, social networks, etc).
  - Since science is not epistemologically privileged and scientists are not an epistemologically privileged group (Haack, 2007)

Diversity: Toward a DEI-Open Science

- Despite the promise that possessing *social capital* offers, social capital largely thrives when the demographic is homogeneous and dominant; in civic/poli-sci studies, when issues like gender and racial equality are ignored (Levitsky & Ziblatt, 2018).
- Increased diversity is a threat to those who hold the most social capital because it may involve redistributing that capital.
- Therefore, whether overt or subtle, there is often push back or inaction against diversity, equity, and inclusion (Hawes & Rocha, 2011) ...
- ... even in the academy and the sciences, including STEM related fields (Miriti, 2020).

Positive Benefits: Toward a DEI-Open Science

- Women editorial board members of journals recruit more women to peer review than men, who recruit more men to review (Fox, Burns, & Meyer, 2015).
- Women are more likely to be authors on papers if the last (senior) author was female.
- Papers authored by women were more likely to be reviewed by women because women were more likely to be invited to review if the authors were women (Fox, Burns, Muncy, & Meyer, 2015).
- When authors can suggest reviewers, women are more likely to suggest women as potential reviewers (Fox, Burns, Muncy, & Meyer, 2016).
- Socioeconomics (health, wealth, education levels) is a strong predictor of peer review success (Burns & Fox, 2017).

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