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Navigating Openness: The Philosophy of Open Science

Transparency, Reproducibility, and the Normative Challenges of Scientific Inquiry

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Open Science is a transformative movement that seeks to make scientific research, data, and dissemination more accessible and transparent to all. It is driven by ideals of openness, collaboration, and reproducibility, and it challenges the traditional structures of scientific inquiry. But what does it mean for the philosophy of science? How does the push for openness reshape our understanding of knowledge production, the role of ethics in research, and the dynamics of scientific communities?

In her book, Philosophy of Open Science, Sabina Leonelli explores these very questions. She delves into the implications of open science for epistemology, examining how the sharing of data and methods changes the way knowledge is validated and circulated. By promoting transparency, open science disrupts established hierarchies of expertise and reconfigures the relationship between scientific communities and the public. This raises important questions: How do we ensure that open access to scientific knowledge leads to epistemic justice rather than simply amplifying existing inequities? What new ethical responsibilities emerge when scientific practices are no longer confined to closed systems?

Leonelli's work also engages with the political and practical challenges of open science, such as issues of data governance, intellectual property, and the sustainability of research infrastructures. She asks how open science might alter the nature of trust within scientific collaborations, and interrogates whether openness can sometimes lead to misuse or misinterpretation of data. By addressing these philosophical and ethical questions, the study of open science opens up a rich field of inquiry into the norms, values, and practices that shape our understanding of science in society.

The philosophical investigation of open science thus invites us to critically examine the epistemic, ethical, and institutional dimensions of this movement. How can openness contribute to scientific progress while safeguarding the integrity of research? In what ways might open science challenge traditional notions of scientific authority and the role of expertise in society? Does the push for openness in science require new frameworks

for evaluating the credibility and trustworthiness of research, especially in interdisciplinary contexts? These are the types of questions our group will explore, drawing on perspectives from philosophy of science, epistemology and ethics.

Why is this topic so intriguing, and why should you care?

1. **Explore epistemic justice and inclusion:** The philosophy of open science provides a framework for investigating how open access to scientific knowledge can promote or hinder epistemic justice, particularly for marginalized communities. This topic encourages critical engagement with the ethical implications of who has access to knowledge and whose voices are heard in scientific discourse.

2. **Investigate the epistemic implications of transparency:** Openness in research methods and data sharing raises important questions about the reliability of scientific knowledge. Engaging with this topic allows for an examination of the balance between transparency and the potential for misinterpretation or misuse of data, contributing to a deeper understanding of how knowledge is constructed and validated.

3. **Challenge traditional paradigms of expertise and authority:** The open science movement disrupts established hierarchies within the scientific community. This topic invites analysis of how shifts in scientific practice affect our understanding of expertise, the role of public engagement in science, and the implications for trust in scientific knowledge.

Introductory reading

Leonelli, S. (2023). »Philosophy of Open Science. Cambridge elements in the philosophy of science« (»Introduction« and »Rethinking Communication: Research in a Changing World«). Cambridge: Cambridge University Press.

Further literature

Andersen, H., & Wagenknecht, S. (2019). »Epistemic Dependence in interdisciplinary groups«. In: Philosophy of Science 86(4): 669-690.

Bright, L. K. & Heesen, R. (2023). »To Be Scientific Is To Be Communist«. In: Social Epistemology, 37:3: 249-258.

Cartwright, N. et al. (2022). »The Tangle of Science«. Oxford: Oxford University Press.

Dupré, J. et al. (2016). »How Do Scientists Define Openness? Exploring the Relationship Between Open Science Policies and Research Practice«. In: Bulletin of Science, Technology and Society 36 (2): 128-141.

Leonelli, S., (2023). »Philosophy of Open Science. Cambridge elements in the philosophy of science.« Cambridge: Cambridge University Press.

Leonelli, S. & Levin, N. (2017). »How Does One "Open" Science? Questions of Value in Biological Research«. In: Science, Technology, and Human Values 42 (2): 280-305.

Lusk, G. & Elliott, K.C. (2022). »Non-epistemic values and scientific assessment: an adequacy-for-purpose view«. In: European Journal for Philosophy of Science 12, 35.

Merton, R. (1973 (1942)). »The Normative Structure of Science. In The Sociology of Science«. Chicago: University of Chicago Press, 267–78.

Politi, V. (forthcoming). »The collective responsibilities of science: towards a normative framework«. In: Philosophy of Science.

Schomberg, R. v. et al. (2024). »Towards a New Ethos of Science or a Reform of the Institution of Science? Merton Revisited and the Prospects of Institutionalizing the Research Values of Openness and Mutual Responsiveness.« In: Novation 1 (6): 1-33.

Sciglitano, C. J. (2023). »Beyond data sharing in open science«. In: Metascience 33: 119–122.

Xiyuan, Z. et al. (2023). »Open science in China: Openness, economy, freedom & innovation«. In: Educational Philosophy and Theory 55 (4): 432-445.

Possible keynote speakers

Sabina Leonelli	Technical University of Munich
Rena B. Alcalay	2023–2025: Flagler College 2025–2026: Technical University of Munich
Nancy Cartwright	University of Durham

	University of California, San Diego
Holly Andersen	Simon Fraser University (Canada)
Vincenzo Politi	Universitat Autònoma de Barcelona
Greg Lusk	University of Durham
Kevin C. Elliott	Michigan State University
Carl Joseph Sciglitano	University of Melbourne