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PROJECT

Excellence and Diversity in Global Scientific Practice

Science is a global phenomenon, with research sites located around the world across highly diverse cultural, technological, and institutional settings. Communication and exchange across these sites is crucial to tackling transnational and cross-cultural challenges, and yet it remains unclear how the diverse characteristics of research environments affect how scientific knowledge produced in them is communicated, evaluated, and used. Philosophers have long discussed the role of theories and models in the creation of scientific knowledge and the significance of nurturing a diversity of theoretical perspectives, styles of reasoning, and ways of doing within the sciences. There is also a growing historical and social scientific literature on how diversity in research environments - defined as the equipment, material resources, and infrastructures available to researchers - affects research practices and thus the content of the knowledge being produced. However, little has been written on the relation between such diversity and the understanding of good science that underpins the many research practices and related institutional expectations. What constitutes good science in different research contexts? What types of knowledge are created by research environments with different characteristics? Should there be global standards for best practice given such diversity, and what would they look like? I plan to address these questions through a historically and ethnographically informed philosophical account of the relation between types and understandings of research environments, the outputs generated in them, and the criteria and procedures by which such outputs are circulated, evaluated, and legitimised. My aim is a broad theorisation of what counts as "best research practice" within globalised networks linking diverse environments, building on my ongoing research on: (1) the philosophy, history, and social studies of data-intensive and open science; (2) the epistemology and history of experimental practices and organisms; and (3) the transnational political economy in which research systems are embedded and its effects on knowledge production and assessment.

Recommended Reading

Leonelli, Sabina. *Data-Centric Biology: A Philosophical Study*. Chicago: Chicago University Press, 2016.
Ankeny, Rachel A., and Sabina Leonelli. *Model Organisms. Elements in the Philosophy of Biology*. Cambridge: Cambridge University Press, 2020. <https://doi.org/10.1017/9781108593014>.
Leonelli, Sabina. "Data Science in Times of Pan(dem)ic." *Harvard Data Science Review* 3, no. 1 (Winter 2021). <https://doi.org/10.1162/99608f92.fbb1bdd6>.

Whither Open Science?

The Open Science movement seeks to enhance the dissemination, scrutiny, and re-use of the diverse outputs produced in the course of inquiry – including publications and data, models, software, techniques, instruments, and samples. The potential of Open Science to enhance research quality, reliability, integrity, and societal impact has been widely discussed as an antidote to the troubles plaguing contemporary academia. Despite vast efforts to implement Open Science, however, it remains unclear how this vision relates to the highly diverse epistemic practices of different research communities. Open Science appears to require the adoption of common metrics, principles, standards, and platforms, which fosters communication but also unavoidably privileges some ways of knowing over others – sometimes resulting in the abrupt dismissal of important research traditions and the widening of existing divides between research domains and locations. I argue that underpinning many Open Science initiatives is a vision of openness as sharing, which collides with a long-standing framing of the epistemology of research as a matter of ownership and accumulation, with potentially disastrous results for both science and democracy. This is not, however, the only possible interpretation of openness within research; and there are good reasons to hold on to openness as a core value for scientific work. I thus propose an alternative conception of openness as judicious connection, which is grounded in an epistemology of science focused on the inclusive and imaginative investigation of diverse research outputs, rather than their mindless accumulation and unequal compartmentalization. I conclude that unless both the conceptualisation and the implementation of Open Science become centrally concerned with epistemic diversity and justice, Open Science policies risk acting as a reactionary force that reinforces conservatism, discrimination, commodification, and inequality in research. This situation exemplifies ways in which the philosophy, history, and social studies of science can contribute to research governance and in turn use such contributions as a crucial source of insight.

Leonelli, Sabina (Singapore,2023)

Artificial intelligence in plant and agricultural research

<https://kxp.k1oplus.de/DB=9.663/PPNSET?PPN=1856315746>

Leonelli, Sabina (Cham,2023)

Towards responsible plant data linkage : data challenges for agricultural research and development

<https://kxp.k1oplus.de/DB=9.663/PPNSET?PPN=1820339769>

Leonelli, Sabina (Cambridge,2022)

Open science and epistemic diversity : friends or foes

<https://kxp.k1oplus.de/DB=9.663/PPNSET?PPN=1853193143>

Leonelli, Sabina (Ann Arbor, MI,2022)

Process-sensitive naming : trait descriptors and the shifting semantics of plant (data) science

<https://kxp.k1oplus.de/DB=9.663/PPNSET?PPN=1830526367>

Leonelli, Sabina (Rio de Janeiro,2022)

A pesquisa científica na era do Big Data : cinco maneiras que mostram como o big data prejudica a ciência, e como podemos salvá-la

<https://kxp.k1oplus.de/DB=9.663/PPNSET?PPN=1809107075>

La ricerca scientifica nell'era dei Big Data

<https://kxp.k1oplus.de/DB=9.663/PPNSET?PPN=1809107075>

Leonelli, Sabina (Berlin, Heidelberg,2022)

Process epistemology in the COVID-19 era : rethinking the research process to avoid dangerous forms of reification

<https://kxp.k1oplus.de/DB=9.663/PPNSET?PPN=1795636270>

Leonelli, Sabina (Los Angeles,2022)

Data and society : a critical introduction

<https://kxp.k1oplus.de/DB=9.663/PPNSET?PPN=1784858684>

Leonelli, Sabina (Cambridge, MA: MIT Press,2021)

Data science in Times of pan(dem)ic

<https://kxp.k1oplus.de/DB=9.663/PPNSET?PPN=1762553481>

Leonelli, Sabina (Cambridge,2020)

Model organisms

<https://kxp.k1oplus.de/DB=9.663/PPNSET?PPN=1756671753>

Cambridge elements

<https://kxp.k1oplus.de/DB=9.663/PPNSET?PPN=1756671753>

Leonelli, Sabina (Cham,2020)

Data journeys in the sciences

<https://kxp.k1oplus.de/DB=9.663/PPNSET?PPN=169157421X>