

Values in Science

This section explores the ways in which values intersect with science. It introduces the core values of the scientific community and invites participants to make their own manifesto based on the ideal values of their academic community.



Reflexivity in Research

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Values in science

Values intersect with science in three primary ways. First, there are values, particularly epistemic values, which guide scientific research itself. Second, the scientific enterprise is always embedded in some particular culture and values enter science through its individual practitioners, whether consciously or not. Finally, values emerge from science, both as a product and process, and may be redistributed more broadly in the culture or society. Also, scientific discoveries may pose new social challenges about values, though the values themselves may be conventional.

Allchin, D. (2012). [Values in science: an introduction.](#)

Re-thinking reproducibility

The sociologist Robert K. Merton was the first to propose (in 1942) that the scientific community relies on normative values. These norms have been identified in the form of “prescriptions, proscriptions, preferences and permissions” and “legitimized in terms of institutional values”. Below are the four key values that Merton identified as binding the research community.

Communism	All scientists should have common ownership of scientific goods (intellectual property), to promote collective collaboration; secrecy is the opposite of this norm
Universalism	Scientific validity is independent of the sociopolitical status/ personal attributes of its participants
Disinterested-ness	Scientific institutions act for the benefit of a common scientific enterprise, rather than for the personal gain of individuals within them
Organized skepticism	Scientific claims should be exposed to critical scrutiny before being accepted: both in methodology and institutional codes of conduct

Merton, R. K. (1973) [1942]. The Normative Structure of Science. In Merton, Robert K. *The Sociology of Science: Theoretical and Empirical Investigations*. Chicago: University of Chicago Press.

However, the research community is diverse and research practices are many, so there can be gaps between these values and actual research practices. These values are still discussed, both with respect to the current research community and its practices and with further work in sociology of science & epistemology (see the Reflexivity in Research section of this toolkit).

PERFORM researcher reflection

“ Science itself is not neutral, it depends dramatically on the political and economic context. As scientists and as part of society, we should have a critical approach towards the choices that are made in terms of research policies, and remember that this impacts not only the scientific community but the whole of society. ”

Activity

Build a manifesto

Build your own manifesto with your colleagues for the academic community you belong to.

1. Read out loud a manifesto (choose either the Slow Science or Critical Engineer Manifesto).
2. Invite each participant to answer the following questions individually. Encourage participants to share in detail their personal points of view on the global and political issues at stake within academia:
 - According to you, what is the goal of scientific research in general?
 - Do the institutions that manage research (from universities to publishers) contribute to these goals? How do they state these goals on their webpage (check the institutions you belong to)?
 - What impact does the increasing presence of private and industrial interests in scientific research have on these goals?
 - Why should anyone choose research as a job? Would you recommend the job? In what way does your institution describe these jobs in recruitment advertisements? Is there any discrepancy between these advertisements and the actual jobs?
 - Who should be doing research? For example, should only paid workers do research or should anyone else? If so, who and on what areas of research?
 - Is research a job for which workers' rights should be better respected or is it just a passion that should be freed of any constraints?
 - According to you what is a good impact of scientific research on society?
3. Form groups of two to three, and find a consensus statement based on your different answers to the previous questions. Iterate: do a second round with groups of four to five and then eight to nine if needed.
4. Build a unique manifesto out of this process of convergence. Acknowledge the key disagreements on a separate statement.
5. Consider printing and posting your manifesto on the walls of your lab!

References and additional resources

Example of manifestos and oaths:

- British Student/Young Pugwash Group. The Student Pugwash Oath. <https://goo.gl/qb5J3R>
- Munafò, M. et al. (2017). A manifesto for reproducible science. *Nature Human Behaviour*, 1. <https://goo.gl/H7WY34>
- Slow Science Academy (2010). Slow Science Manifesto. <https://goo.gl/GZ1itm>
- The Critical Engineering Working Group. (2017). Critical Engineer. <https://goo.gl/B2JUdQ>

Two key readings on values:

- Allchin, D. (2012). Values in science: an introduction. <https://goo.gl/AavgWR>
- Merton, R. K. (1973) [1942]. The Normative Structure of Science. In Merton, Robert K. *The Sociology of Science: Theoretical and Empirical Investigations*. Chicago: University of Chicago Press.

On values at the crossroad between policies, science & society:

- Butler, D. et al. (2015). Science oasis under pressure. *Nature*, 518(7537). <https://goo.gl/9hUFpb>
- Ottinger, G. (2015). Is it good science? Activism, values, and communicating politically relevant science. *Journal of Science Communication*, 14(02), CO2. <https://goo.gl/ucVsxD>
- Radder, H., 2010, Mertonian values, scientific norms, and the commodification of academic research. In H. Radder (ed) *The Commodification of Academic Research. Science and the Modern University* (pp.231-258). Pittsburgh: University of Pittsburgh Press.
- UNESCO. (2017). Recommendation on Science & Scientific Researchers. <https://goo.gl/jixTxU>



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