

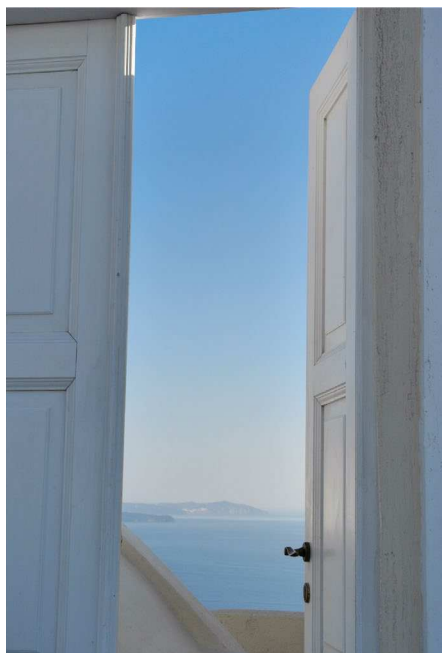
Science–policy research collaborations need philosophers



Wicked problems' are tricky to solve because of their many interconnected components and a lack of any single optimal solution^{1,2}. At the science–policy interface, all problems can look wicked: research exposes the complexity that is relevant to designing, executing and implementing policy fit for ambitious human needs^{3,4}. Expertise in philosophical research can help to navigate that complexity⁵.

First, not all philosophers are ethicists. Philosophical expertise includes expertise in conceptual work: drawing out the necessary and sufficient conditions to secure desired conclusions given the concepts introduced in the statement of an argument. This work is especially valuable in teasing apart solvable – albeit difficult – problems in evidence-based policymaking from those that are impossible to solve. For instance, as part of an international collaboration on the epistemology of evidence-based policy⁶, we targeted the basic mechanics of decision-making during ongoing empirical research to cut to the heart of what it means for the policymaking process to proceed in light of current science. This enabled us to identify root causes of disagreement in policymaking: for example, placing different importance on different kinds of evidence, miscommunication or misinterpretation of evidence, or misunderstanding of the policy process. We concluded that without a particular type of transparency – transparency of reasoning – it is impossible to determine whether anything has gone wrong in specific episodes of evidence-based policymaking based only on studying outcomes of the policymaking process (R.H. et al., unpublished).

We also identified upcoming challenges in research within the biosecurity space by teasing out which residual questions for future research extracted during a survey of the literature were themselves formulated in such a way as will require philosophical expertise to solve. For instance, many of the extracted questions were identified as involving a give-and-take between values (for example, principles, ideals or morals). Merely allocating



funding towards additional empirical research is insufficient in these cases, as answering questions concerning a give-and-take of values involves some amount of reasonable disagreement, must be negotiated among relevant parties, and cannot be settled by any empirical method. How to identify when disagreement is reasonable and how to properly incorporate values into science and policy are questions discussed by philosophers, generally in the research subfield known as 'values in science'. Importantly, the philosophical work to be done is only effectively integrated with empirical research through active collaboration: scientific research and philosophical analysis can only adequately answer crucial questions at the science–policy interface in tandem.

Second, philosophical expertise includes expertise in normative work (some philosophers are ethicists!). Policymaking inevitably concerns matters that are of profound human import: affecting our ways of life, how we see ourselves, and how we act in and apart from nature. Policy-adjacent, mission-led or even demand-driven scientific research is crucial

(particularly where science funding is scarce), but there is an important task in separating research expediency from human goals of applying the science: what it is that we want, ultimately, to achieve by means of the science, and what it is that we should want to achieve. For instance, we argue that when intending to apply evidence in policymaking (such as during the design of a pandemic response), philosophical research should be conducted to bring to the surface what specific ethical commitments are present that affect the kinds (and quantity) of evidence required of responsible policymakers, given the details at hand (including what stage within the policy process evidence is being considered for uptake) (A.S. et al., unpublished). Attention to the specific ethical commitments at hand is also needed to spell out bespoke responsibilities of the many different actors involved in the occasion of such policymaking, to engage with the science. Relatedly, philosophers can help the public to critically engage with publicly funded science by interrogating dominant patterns of knowledge demand and working to curtail epistemic injustice.

The question then arises of why it is that philosophical engagement in interdisciplinary scientific research is not standard, despite the benefits. Two challenges exist. First is a challenge of numbers: there are far fewer academic philosophers than scientific researchers. So, not many scientists have had the opportunity to experiment on the best ways to cocreate and/or innovate with philosophical expertise. This state of affairs can lead to frictions in interdisciplinary scientific collaborations where philosophers are newly invited. Reducing those frictions is key for successful collaboration. One mitigation strategy is to invest in time spent together (preferably physically) and, especially in early stages, to dedicate time to explicit discussions on the experimental nature of the collaboration itself. Interest in engaging with scientists does appear to be growing among philosophers^{7,8}, so the time is ripe for more of such experimentation.

There is also a challenge of pacing: philosophical argument and the continued back-and-forth that philosophers often use

to gain conceptual clarity can feel jarring to scientists. It can be difficult at times to mesh such different methodologies in day-to-day collaboration. However, this is a challenge relevant, ultimately, to any interdisciplinary endeavour: how to blend methodologies and how to efficiently learn the best uses of each other's time.

In an increasingly interdependent world, there is no question that broad interdisciplinarity among the sciences is needed to tackle ambitious problems at the science–policy interface. Expanding that collaboration to include philosophers will reap untold benefits as well.

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References

1. Rittel, H. W. J. & Webber, M. M. *Policy Sci.* **4**, 155–169 (1973).
2. Waddock, S., Meszoely, G. M., Waddell, S. & Dentoni, D. *J. Organ. Change Manage.* **28**, 993–1012 (2015).
3. Humphreys, S. *Nature* **619**, 35–36 (2023).
4. Bortolus, A. & Schwindt, E. *Ecologia Austral.* **32**, 767–783 (2022).
5. Schwenkenbecher, A. et al. *Front. Mar. Sci.* **10**, 1178949 (2023).
6. The epistemology of evidence-based policy: how philosophy can facilitate the science-policy interface. Center for Interdisciplinary Research (ZiF), Bielefeld University, https://www.uni-bielefeld.de/einrichtungen/zif/groups/previous/evidence_based_policy/ (2023).
7. McLevey, J. et al. *Scientometrics* **117**, 331–349 (2018).
8. Plaisance, K. S. & Elliott, K. C. *Philos. Sci.* **88**, 594–615 (2021).

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Competing interests

The authors declare no competing interests.