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Book review: Potochnik, Angela (2024): Science and the Public

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In her book *Science and the Public*, Angela Potochnik, a philosopher of science, undertakes a fresh and comprehensive examination of the multifaceted relationship between science and society. Published by Cambridge Elementals in 2024, this insightful work transcends conventional disciplinary boundaries to offer a profound philosophical exploration, enriched by empirical insights from the philosophy of science. Potochnik's objective is not only to analyze the intricacies of this relationship but also to suggest ways to improve the relationship between science and the public. She accomplishes this by demonstrating the value of combining philosophical exploration with empirical insights. She emphasizes the importance of interdisciplinary collaboration, drawing on the Vienna Circle as a model for integrating philosophy, science, and public discourse. Empirical studies, such as Feinstein's work on scientific literacy, are employed to inform philosophical discussions on public engagement and trust in science. The book examines the cognitive role of idealizations in science, connecting philosophical theories with practical teaching strategies. It also advocates for 'responsive science,' aligning research with societal values and needs, thus demonstrating how empirical insights can enrich philosophical inquiries to address real-world issues effectively.

Values and the notion of objectivity

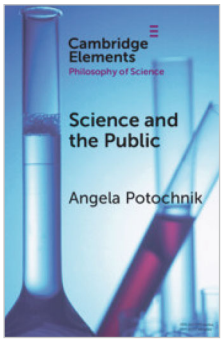
Central to Potochnik's inquiry is the recognition of science's prominent position in society, its intrinsic value, and the ongoing challenge of its accessibility. This trifecta of factors has generated sustained interest and concern about the nexus of science and the public sphere. First, science holds a significant role in shaping public health, economic growth, and societal development. Second, its intrinsic value lies in its capacity to generate essential knowledge, predictive power, and practical innovations that benefit society. Third, despite the aforementioned benefits, the intricate and specialized nature of scientific knowledge presents a challenge for the general public in terms of accessibility and comprehension, creating a gap between scientific advancements and public comprehension.

A major contribution of Potochnik's work is – against this backdrop – her exploration of feminist perspectives within the philosophy of science. Drawing on decades of feminist scholarship (like Helen Longino's rejection of the Kuhnian-List and Donna Haraway's works on the impossibility of objectivity in scientific inquiry), she draws attention to how science is until this day imbued with (not always explicated) social values and moral judgements, necessitating a broader consideration of the interplay between values and scientific research – even in general discourse. These values include the prioritization of research that addresses social needs, ethical standards in scientific practices, and the importance of diversity and inclusion within the scientific community. By incorporating feminist perspectives, she highlights how acknowledging and integrating diverse social values can lead to more equitable and socially responsive scientific practices.

Potochnik's critical perspective calls for a re-evaluation of traditional notions of scientific objectivity and urges scholars to reckon with the entanglement of social and epistemic as well as their respective contextual dimensions in scientific inquiry. She states: "In my view, specific priorities regarding what is to be understood shape the nature of the resulting understanding in significant ways. Scientists may say they aim to understand the western bluebird's colonization pattern, for example. But actual scientific research always targets a more specific question: how this colonization pattern relates to mountain bluebirds' dispersal, or how the pattern is influenced by variable testosterone levels in incubating eggs, or how the pattern is influenced by the introduction of a novel resource, and so on. As a result, scientific theories and models capture just a few of the features of the phenomena they aim to understand, ignoring or simplifying features that are incidental to present purposes" (p. 30).

Linking science and the public

Throughout *Science and the Public*, Angela Potochnik dissects the intricate relationship between science and society, emphasizing the importance of public engagement with scientific knowledge. She underscores the pervasive influence of science on societal norms and policies, advocating for active public involvement in scientific discourse. For instance, Potochnik argues that



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scientific institutions must actively address societal issues and injustices, reflecting a broader moral and social responsibility.

The author also points out the necessity of interdisciplinary efforts and community engagement to achieve effective public engagement with science. In her opinion, science must be responsive to the needs and values of diverse communities to fulfill its societal obligations. In addition, Potochnik argues for broadening pathways into scientific careers in terms of diversity and inclusivity. Thus, she discusses the ethical and practical reasons for increasing diversity in science, arguing that science has an obligation to address social inequalities and create inclusive career opportunities.

One significant implication in her concept is the shift towards participatory technology assessment, where stakeholders, including the public, are actively involved in the evaluation process. Potochnik's emphasis on public engagement and interdisciplinary collaboration suggests that effective technology assessment (TA) should involve diverse voices to ensure that the social, ethical, and environmental dimensions of technology are thoroughly considered. In her opinion, this participatory approach can lead to more democratic and transparent decision-making processes, enhancing the legitimacy and acceptance of technological advancements.

Science communication

The connection between science and the public inevitably also concerns science communication. Potochnik advocates interdisciplinary collaboration and emphasises the central role of science education in fostering informed citizenship. These "formal and informal opportunities for science education are not incidental to the scientific enterprise, but crucial for discharging its obligation to society" (p. 66). In her opinion, effective public engagement with science should go beyond mere acceptance of scientific findings. This requires understanding what is valuable to society, supporting career pathways, and addressing social problems through interdisciplinary and community engagement.

By advocating for a comprehensive engagement strategy that includes ethical reflection, educational initiatives, and inclusive research practices, Potochnik envisions a future where science and society are in a dynamic, reciprocal relationship, fostering trust and collaboration to address complex global challenges.

How to do 'responsive science'?

Throughout her book, Potochnik argues for the concept of 'responsive science,' advocating for aligning scientific research priorities with public interests and concerns. This approach emphasizes the importance of broadening participation in science, both from diverse professional scientists and the general public. She acknowledges the challenges inherent in this approach, such as the potential marginalization of basic research and the risk of perpetuating societal biases. However, she contends that responsive science offers a pathway to more equitable and socially just outcomes.

Potochnik defines responsive science as a "proposal for ensuring scientific research priorities are responsive to societal and community needs" (p. 58). Important factors are "diversifying professional participation in science" and "incorporating sufficient public participation in scientific research" (p. 58). She also addresses concerns about the balance between applied and basic research. While there may be a shift toward more practical research, to Potochnik, this does not mean the abandonment of basic science. Instead, it ensures that scientific endeavors are more closely aligned with the values and needs of diverse communities, thereby enhancing the societal relevance and ethical grounding of scientific research.

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Conclusion

At its core, *Science and the Public* by Angela Potochnik offers a comprehensive and nuanced examination of the intricate relationship between science and society. Potochnik's positions and vision are distinguished by several elements that set her work apart from traditional approaches – especially by established actors in the field of philosophy of science.

By reconceptualizing the relationship between science and society as one of dialogue, inclusivity and mutual accountability, the author offers a comprehensive and integrative vision for the future of science communication and public engagement. Her emphasis on addressing historical and ongoing social inequalities within scientific research underscores the significance of inclusive TA practices. Ensuring that marginalized and underrepresented communities have a voice in the assessment process can help prevent the perpetuation of biases and inequalities in the deployment of new technologies. This aligns with the ethical obligation of science to contribute to social justice, making TA a critical tool for achieving more equitable technological outcomes.

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