

BOOK REVIEWS

Review of Maya J. Goldenberg's *Vaccine Hesitancy: Public Trust, Expertise, and the War on Science*

Maya J. Goldenberg, *Vaccine Hesitancy: Public Trust, Expertise, and the War on Science*. Pittsburgh: University of Pittsburgh Press (2021), 264 pp., \$32.00 (paperback).

Maya Goldenberg's timely and well-argued book fits nicely into the theme of the University of Pittsburgh Press's new series: *Science, Values, and the Public*, edited by Heather Douglas. Although Goldenberg's focus is childhood vaccine hesitancy, the arguments that she makes bear more generally on the place of science in public policy. She diagnoses the public health problem of childhood vaccine hesitancy using various resources from contemporary philosophy of science: feminist philosophy of science, the social character of science, the role of values in science, and trust as crucial to both good science and the implementation of policies guided by it. It has sometimes been suggested that ideas from science studies and philosophy of science have contributed to public skepticism of science. Goldenberg argues that, on the contrary, the failure to fully understand the implications of this work contributes to the inability to address policy issues like vaccine hesitancy. The urgent need to correct course has been vividly revealed with the public health emergency of Covid-19.

Her primary argument is that childhood vaccine hesitancy has been wrongly framed as resulting from a "war on science" where the adversaries are an ignorant, misinformed, or irrational public opposing the scientific experts and rational, "right-minded" people who embrace science. A consequence is that efforts to improve vaccine compliance focus on "fixing" the public by correcting these supposed deficiencies. She argues that this framing directs attention away from the real issue—a failure of public trust in science. The first three chapters of Part 1 are devoted to considering the plausibility of various explanations for vaccine hesitancy that have been proposed under this adversarial framing: scientific illiteracy, irrationality (cognitive biases), and the rise of antiexpertise sentiment (the death of expertise). In Part II she presents an alternative framing—failure of trust in the relevant institutions—and proposes some solutions.

Chapter 1 reviews the "ignorant public" thesis that parents are hesitant because they are uninformed or misinformed. Goldenberg claims there is little evidence supporting this account, and what evidence there is seems to show that providing more and better information does little to change behavior. Furthermore, when parents are asked about their reasons for hesitancy many seem to be neither uninformed nor antisience, but rather "... many parents approach the question of vaccine safety

from a different perspective, namely, concern for their children; this approach makes the presence of rare but serious adverse side effects a safety priority rather than . . . a reasonable risk” (Goldenberg 2021, 31). The sort of scientific evidence proffered for vaccine safety, efficacy, and necessity gives information about the average effect in populations, not the effect on any individual child, and, consequently, cannot answer parents’ question about how the vaccine will affect their child. Goldenberg argues that hesitancy in the face of this evidence does not indicate that parents are antiscience but rather that they would like to see more targeted research relevant to the individual characteristics of their own children.

Goldenberg’s analysis might seem to support the scientific illiteracy hypothesis since hesitant parents can be understood as lacking knowledge of the appropriate standards of evidence in scientific research. But I think that Goldenberg’s interpretation is plausible—parents understand the research methods but deem them inadequate for the purpose of the decisions they see themselves as charged with making for their children. But shouldn’t parents have a commitment to public welfare and so want to contribute to herd immunity? If so, then evidence of average effects is appropriate. This takes us to one of Goldenberg’s core points. The dispute is not about science but about values. What we want scientific knowledge for—what our goals are—is crucial to an evaluation of the appropriateness of evidence. The intertwining of facts and values is unavoidable. As Goldenberg sees it, a negative outcome of the war on science framing is that it shuts down a needed dialogue on values.

The next two chapters explore the “stubborn mind” and the “death of expertise” explanations of vaccine hesitancy. The stubborn mind hypothesis proposes that various cognitive biases account for the persistence of vaccine hesitancy in the face of evidence. Goldenberg finds features of this explanation helpful, although she laments that the focus has been on the irrationality of cognitive biases rather than on various successful strategies for addressing them. She describes one such strategy employed in an Australian ad campaign featuring parents who appeared to share values with the vaccine-reluctant. In one ad a woman professing to “use cloth nappies” and “grow veggies” but who also immunizes her children is pictured. This campaign produced an uptick in those who reported an intention to vaccinate their children. While such approaches are promising, Goldenberg cautions that when such persuasive techniques fall short ethically (through manipulation or deception) they may backfire and further undermine trust.

The “death of expertise” explanation postulates an “epistemological populism,” in which everyone is their own expert (“I’ll do my own research”). Goldenberg argues that vaccine hesitators don’t reject expertise but rather choose which “experts” they will rely on, an indication that expertise is still prized. This sets up the shift to the alternative framing about the importance of trust that she proposes in the second half of the book.

Chapter 4, “Politicized Science and Scientized Politics,” offers a deeper philosophical diagnosis of how the war on science framing fails. Goldenberg argues that the value-free ideal of science is implicit in that framing. The ideal discourages dialogue about the role of values in the use of science to inform public policy. The war on science debates consequently become proxies for “value conflicts and differing visions of democracy.” In this way both science and politics are impoverished by the value-free ideal. Science suffers because it is made to serve unexamined political ends and politics suffers because public deliberation about those core values is curtailed (91).

Goldenberg identifies scientism—the view that science provides comprehensive knowledge of everything relevant to the human condition—as contributing to this mutual impoverishment. Scientism fuels two related ideas—the linear model of the relationship between science and policy and the evidence-based policy movement. The linear model assumes a direct path between science and the policies that should be adopted and thus fails to recognize that decisions about what to do also depend on what outcomes are valued. The movement for evidence-based policy assumes “that evidence could be (and should be) generated using noncontextual standards and that the results could be applied in numerous complex situations” (95). Both ignore the role of contextual values in knowledge production.

The value-free ideal is appealing because it promises a resolution to issues of moral pluralism, but in a pluralistic (and democratic) society, differences about what scientific knowledge should be produced and how to use it are unavoidable. Because “the legacies of evidence-based everything and scientized politics have made the language of science the currency of political discourse” (107), the only way to show disapproval for values is to challenge the science. In this way, debates about science become proxies for debates about values.

In the second half of the book, Goldenberg provides an alternative framing of childhood vaccine hesitancy as a crisis of trust. Following Annette Baier (1986), she argues that trust requires good will and so is a sign of our interdependency due to the cognitive labor specialization that is needed in complex human societies. There must be trust *within* the scientific community for it to fulfill its epistemic goals, but also between the scientific community and the public in order for scientific knowledge to effectively guide policy.

The inner workings of science are mostly invisible to the public, and even if they were visible the public lacks the ability to check the knowledge claims based on those workings; consequently, the only means through which the public can assess trust is by evaluating the character of the scientists or integrity of the scientific community and its institutions. Such an evaluation requires that the interests those institutions serve must be transparent, as must what positions they might privilege and, importantly, what values guide them.

Some have argued that the rise of social media causes the spread of misinformation that fosters distrust. Goldenberg sees it as a symptom rather than a cause. Parents turn to Facebook groups for information because they do not trust mainstream sources. Once there they latch onto misinformation. She points instead to historical medical racism and the commercialization of science—particularly medical science—as sources of mistrust. For the first she lists a variety of injustices: quarantines of minority groups; eugenics; the destruction of “unsanitary” neighborhoods occupied by marginalized groups; and unethical practices, such as the well-known Tuskegee experiment. For the second she notes that commercialization of science produces the perception that safety takes a back seat to the profit motive—a belief reinforced by several high-profile incidents and certainly by the recent opioid crisis.

Goldenberg concludes with recommendations for rebuilding trust. The first of these is to move beyond the false ideal of scientism and to appeal to shared values and priorities of public stakeholders (Goldenberg 2021, 169). She also recommends addressing the sources of distrust—specifically, discrimination within scientific and health-care institutions and the susceptibility of those institutions to industry

influence (financial incentives). Framing the problem as a crisis of trust shifts attention to the scientific community and institutions charged with public health care and policy rather than assigning sole blame to the public. This change of focus requires both acknowledging the still very low participation of minorities in the science and health-care professions and inequities in the distribution of health care. Additionally, given that research shows that parents believe that they are the best judge of what will benefit their children, she suggests that offering information that acknowledges this belief is one way to improve vaccine uptake. She notes that the call to increase diversity and inclusion acknowledges that social and epistemic ends must function together, an idea that is prevalent in feminist philosophy of science.

Although Goldenberg's book is aimed primarily at the issue of childhood vaccine hesitancy, she touches on other issues where science informs policy debates. Climate science is one, and although the book was finished at the start of the pandemic, she also mentions Covid-19. Indeed, in this third year of the pandemic, it is impossible to read the book without thinking of Covid-19 vaccine hesitancy and other negative public responses to pandemic mitigation policies. How applicable are the arguments of the book to our current crisis? Certainly, lack of trust plays some role in Covid vaccine hesitancy. Questions have been raised about the vaccine approval process, the institutions that advocate getting a vaccine (both political and health care), and in the rapid development and rollout of the vaccines. There is also evidence that one factor in the lower vaccination rates in minority neighborhoods is mistrust that results from the history of neglect and injustice that minority populations have experienced.

But there are dynamics at work in the current situation that are not part of the childhood vaccine hesitancy story and so not covered by Goldenberg's analysis. The pandemic's appearance at a time of extreme political polarization allowed for questions of how to respond to be framed as political questions—sometimes using science as a proxy—but primarily using values as a means of mobilizing people for political ends. In this scenario, science has been a victim of a battle over values, not merely a proxy for them. Political polarization facilitates the marshalling of misinformation to further undermine trust in institutions. Goldenberg's account paints those who purvey misinformation (the mavericks) as successful because of a preexisting lack of trust, but she does not explore the deliberate use of misinformation as a means of fostering mistrust for political ends.

Although this point is beyond the scope of Goldenberg's analysis of childhood vaccine hesitancy, the book nonetheless provides tools for understanding why rational people might reject policy informed by science. Addressing values directly rather than through the proxy of science means tackling the polarization that creates an environment dangerous for democracy. Goldenberg offers some practical first steps for addressing childhood vaccine hesitancy and in this way also suggests what further work needs to be done if we are to have successful public policy informed by science. Alas, rebuilding trust will be a difficult task.

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Review of Peter Godfrey-Smith's *Metazoa: Animal Minds and the Birth of Consciousness*

Peter Godfrey-Smith, *Metazoa: Animal Minds and the Birth of Consciousness*. Glasgow: William Collins (2020), 288 pp., \$24.99 (hardcover; also available in paperback, nook, and audiobook formats).

Few philosophers have pushed more forcefully in favor of a strongly gradualist, phylogenetic, and ecological approach to consciousness than the Australian philosopher of biology and mind, Peter Godfrey-Smith. Nothing emphasizes this more elegantly than his 2020 book *Metazoa*, which forms the ambitious sequel to his critically acclaimed and commercial bestseller *Other Minds: The Octopus, the Sea, and the Deep Origins of Consciousness*, published in 2016 and subsequently translated into multiple languages. In his earlier book, Godfrey-Smith beautifully described the peculiar lives, behavior, and intelligence of octopuses (alongside their cephalopod cousins) as forming a natural experiment of "alien-like" minds, able to challenge our mainstream human-centric thinking about consciousness. While one could certainly read his new book without having read its predecessor, *Metazoa* could be well described as a deep dive into new territory from precisely where *Other Minds* left off. Whereas the latter focused on octopuses as a possible case of an independent evolution of consciousness within this animal branch of life, *Metazoa* broadens its focus and ambitions to the entire titular animal kingdom: discussing crustaceans, fish, sponges, corals, insects, and mammals. There is a notable focus on marine life, which is unsurprising given the account provided, as the ocean is where Godfrey-Smith suspects a distinct animal *way of life* to have evolved. This way of life is implicated in the evolution of consciousness and can be distinguished from more plant-like *modes of being*—an idea familiar from the recent 2019 treatise by Simona Ginsburg and Eva Jablonka on the evolution of consciousness (see Browning and Veit 2021). Yet, despite some similarity in content, *Metazoa* differs both from its predecessor and Ginsburg and Jablonka's competing title, and it will be useful in this short book review to contrast these pieces to emphasize what makes the Godfrey-Smith's approach to the problem of consciousness distinctive—not only from Ginsburg and Jablonka, but many others in the field.

Once again, Godfrey-Smith offers a book with a notable emphasis on his personal diving experiences with life under the sea, making it a compelling and accessible read even for those with little to no familiarity with academic work on consciousness, with unnecessary jargon kept to a minimum. Not only, however, does Godfrey-Smith here dive deeper into the evolutionary history of animal life—from the single-celled world