Philosophy of Medicine
Book Review

Vaccine Hesitancy by Maya J. Goldenberg
The Publics Are Not Ignorant but Distrustful

Inmaculada de Melo-Martín[1]

1 Division of Medical Ethics, Weill Cornell Medicine—Cornell University, New York, NY, USA. Email: imd2001@med.cornell.edu

As I write this, the press announces that the Covid-19 pandemic is still killing nearly 10,000 people a day worldwide, with countries in Asia, Africa, and Latin America suffering staggering rates of infections and deaths (NYT 2021). In the United States and Europe, even when infections are rising due to the Delta variant, infection numbers remain well below pick levels (NYT 2021). These differences are, at least in part, the result of vaccination rates in these different parts of the world. While more than half of the population has received at least one shot of the coronavirus vaccine in the United States and Europe, the numbers are significantly lower for India, with about 30 percent, and Indonesia, with about 22 per cent (NYT 2021). Of course, even in places like the United States and Europe, rates of vaccination vary across states or countries. These variations result from various factors, such as access to vaccination sites and supply problems. But some eligible people with access to vaccine supplies are also hesitant or unwilling to get a shot. Many people who express hesitancy are likely to end up vaccinated and even some of those who are now unwilling will change their minds at some point. Still, given the higly contagious Delta variant, vaccine hesitancy and refusal are delaying the rates of vaccination and thus impeding control of the pandemic (NYT 2021).

Correctly understanding what leads people to be skeptical of vaccines, or refuse them altogether, is thus a particularly pressing problem. This is what Maya J. Goldenberg sets out to do in her recent monograph *Vaccine Hesitancy: Public Trust, Expertise, and the War on Science* (2021). Goldenberg's main focus is parental hesitancy regarding childhood vaccines, but her analysis is of relevance to discussions about vaccines for other infectious diseases, such as Covid-19.

This book could thus not be more welcome. Its subject, vaccine hesitancy, is particularly significant at this juncture, given the effect that such attitudes can have in the control of the Covid-19 pandemic. Moreover, Goldenberg challenges the dominant biomedical, public health, and popular science narratives that purportedly explain people's hesitancy or refusal. It also calls attention to their problematic assumptions and negative consequences. Importantly, her reframing of the problem opens paths to more successful strategies.

ISSN 2692-3963 | Date Received 16-06-2021 | Date Accepted 05-07-2021 | Date First Published 30-07-2021
Philosophy of Medicine | DOI 10.5195/pom.2021.57 | Volume 2 | Issue 2 | pp.1–7

Goldenberg's monograph is also welcome because her analysis joins the work of other philosophers of science in questioning the way in which various problems affecting science and its interactions with society are framed, and in calling attention to the importance of non-epistemic values in science and policy debates. She also joins other philosophers of science in pointing out the importance of trust and trustworthiness in producing knowledge, and ensuring that science benefits society, as well as in highlighting the role that scientific and health institutions have in undermining such trust (De Melo-Martín and Intemann 2018; Wilholt 2013; Anderson 2011; Grasswick 2010; Rolin 2002; Scheman 2001;).

As one of those philosophers of science who has called for a reframing on the debate over what Kristen Intemann and I have termed "normatively inappropriate dissent," I applaud Goldenberg's work. In our work on scientific dissent, we were concerned with what is usually presented as the intractability of dissent in certain areas of science that are particularly relevant to public policy; for example, climate change and genetically modified organisms (GMOs), among other things (De Melo-Martín and Intemann 2018). Other philosophers of science and science scholars have framed the problem of what is usually variously referred to as "bad dissent" or "manufactured dissent" as one that calls for finding criteria that could allow us to identify such dissent (Biddle and Leuschner 2015; Harker 2015; Oreskes and Conway 2010). Instead, we argue that it would be more productive to attend to the factors that make such dissent particularly harmful: damaged trust and lack of attention to the role of values in science and its relations to policy. When trust is damaged, normatively inappropriate dissent is more likely to have seriously adverse epistemic and social effects (De Melo-Martín and Intemann 2018). Moreover, when values are brought into the picture, it becomes clear that many of the debates presented as disagreements about the science in fact involve disagreements about values. I say this in order to explain why I have few, if any, quibbles with the arguments that Goldenberg advances in *Vaccine Hesitancy*. Indeed, as already mentioned, I welcome Goldenberg's reframing of the problem because I share her belief that attention to trust—or lack thereof—when dealing with vaccine hesitancy and refusal is likely to be more productive than the traditional way of framing the problem.

Vaccine Hesitancy is divided into two parts. The first presents, and skillfully debunks, the dominant narrative regarding vaccine hesitancy and refusal: this phenomenon represents a war on science, a disregard for scientific evidence, and a rejection of expertise. The second part provides an alternative framework that better captures vaccine hesitancy and refusal and allows for a more productive engagement: the problem lies not with misguided publics but with a lack of trust in scientific institutions.

Framing societal problems as a war has often been not only utterly unproductive but also downright harmful. Consider, for instance, the "war on crime" or the "war on drugs," which ended not with a reduction of crime and drugs but, among other disastrous consequences, staggering levels of imprisonment, particularly of poor and Black Americans, punitive prison sentences for minor offenses, stigmatization, and lack of attention to the medical needs of those suffering from drug addiction (Hari 2015; Alexander 2010).

Unsurprisingly, the narrative of vaccine hesitancy and refusal as a war on science has not been particularly helpful either. It is, as Goldenberg indicates, both descriptively incorrect and normatively unhelpful. It presents vaccine-skeptical members of publics as the enemy and healthcare workers, public health practitioners, and science researchers as the courageous defenders of science. Enemies are to be defeated and punished, rather than acknowledged, respected, or persuaded. In this view, vaccine advocates hold the truth, and with it the moral high ground. This framing makes vaccine hesitancy and refusal appear to be an intractable conflict that can only be solved by legislative action (Goldenberg 2021, 16).

The war on science narrative, the dominant narrative in academic and public discourse on vaccine hesitancy and refusal, is grounded in two problematic assumptions about science and its relationship to society, Goldenberg argues: scientism and the linear model of the science-to-policy relationship (Chapter 4). While scientism presents science as capable of providing us with knowledge regarding anything we experience and attempt to understand, the linear model of science–policy interactions contends that the right science will lead to the right policy. These assumptions thus present disagreements about policy strictly as disagreements about the scientific evidence. Given these assumptions, what alternative do those who disagree with the values underlying various public policies have? They must challenge the science; they must be at war with science. But, of course, these assumptions are wrong. Though it may well be the case that the publics might at times disagree with particular scientific claims, debates regarding vaccine hesitancy and refusal do not represent a war on science, Goldenberg shows, but rather value conflicts and differing visions of democracy (2021, 91).

Goldenberg analyzes in detail the war on science framework in the first three chapters. She first describes aspects of the dominant discourse—the public as ignorant; the public as irrational; the public as anti-expertise—and some of the assumptions underlying those views. She then offers a different, more productive way to understand the problem. In the first chapter, Goldenberg discusses one of the most common tropes in this dominant narrative: vaccine hesitancy and refusal are the result of a misinformed or altogether ignorant public. This trope, grounded in the knowledge-deficit model, takes scientific evidence and scientific consensus as determinant of public policies. Given the strong scientific consensus on the safety and effectiveness of childhood vaccines, refusal or hesitancy on the part of parents to vaccinate their children can only be understood as the result of ignorance. Parents have been duped by callous dissenters, such as Andrew Wakefield, or swayed by celebrities in search of more fame. The science is clear and, according to this model, what the science says is that parents should have no doubts about childhood vaccines.

Nonetheless, although, as Goldenberg acknowledges, the public may have some misconceptions regarding vaccine science and may not always appreciate relative risk, these problems do not explain vaccine hesitancy and refusal. What is being challenged by hesitant and refusing parents is not—or need not be—the scientific evidence regarding the safety and effectiveness of vaccines as public health interventions. What they are challenging is the focus on public health benefits and risks as the only relevant concerns. What is worrying to parents is whether vaccines are safe for their particular children; they are apprehensive about the rare but adverse events that public health officials present as a reasonable risk (Goldenberg 2021, 31). Thus, what concerns parents is not the same as what is of relevance to public health officials and vaccine advocates. Importantly though, if ignorance is not the root problem, strategies that insist on simply transmitting more scientific information are not going to be an appropriate solution.

In the terms of the dominant narrative, however, if educational strategies fail, it has to be not because they are inadequate but because it is simply impossible to change vaccine hesitators' minds. Goldenberg's Chapter 2 thus focuses on "the public as irrational" trope. Armed with current evidence on the existence of human cognitive biases, vaccine advocates give up on human rationality, and take such evidence as an indication that beliefs about vaccine hesitance and refusal are unchangeable. If communication and educational campaigns fail, it is not because those campaigns are grounded in problematic assumptions. Rather, communication strategies are unsuccessful because the publics are afflicted by various cognitive biases. The extensive research on cognitive biases, Goldenberg points out,

conveniently allows scientific and public health institutions to continue placing blame on the publics while maintaining the credibility of science and related institutions (2021, 70).

Of course, such a fatalistic—and self-interested—view is not the only one that can be inferred from current research on cognitive biases. Although admittedly reading the literature on the behavioral sciences might cause one to lose all hope, the implications of cognitive biases work for human rationality are contested (Wheeler 2020; Gigerenzer, Hertwig, and Pachur 2011; Kahneman 2011). However, as Goldenberg argues, the insights offered by cognitive biases scholarship actually undermine a fatalistic view of the problem of vaccine hesitancy and refusal. Instead of ignorance, the focus on cognition calls attention to a different causal account of these problems. The values that people hold, values associated with their identities, with their ways of understanding the world and their place in it, also affect how they receive and interpret scientific information. These insights bring hope to a problem that vaccine advocates often present as hopeless. Rather than using communication strategies that simply hit people over the head with corrective information about vaccines, cognitive science invites alternative strategies that take into account people's values so as to make factual information less threatening.

The third iteration of the war on science framework has the scientific expert as the casualty of war. In this narrative, vocally defended by Thomas Nichols in *The Death of Expertise* (2017), those who reject scientific claims do so because they believe they know more than the experts. In this view, parents who refuse or are hesitant about vaccines are not simply ignorant and irrational, they loathe experts. Moreover, because their rejection of expertise is willful, rather than the result of misinformation or misunderstandings, they are also seen as blameworthy. This again allows scientific and public health experts to maintain their blameless status. In this narrative, science and its institutions are conveniently let off the hook once more.

Goldenberg, however, takes Nichols and other proponents of "the death of expertise" narrative to task. It is not, she argues, that people are not paying attention to experts anymore because they believe they know better than the experts do. What the publics are doing, Goldenberg argues, correctly in my view, is actually challenging what expertise is and who counts as an expert. This challenge from publics should be unsurprising. After all, science studies scholars and philosophers of science have presented serious challenges to the traditional understanding of expertise (Selinger and Crease 2006; Knorr-Cetina 1999; Epstein 1996; Wynne 1989). Traditional notions of expertise have difficulty accounting for the increasing complexity of knowledge production where large national and international teams of researchers with multiple forms of disciplinary expertise are necessary (De Melo-Martín and Intemann 2018). Think, for instance, of climate change or genomic science. More importantly, traditional notions of expertise disregard the value-ladenness of science and thus inappropriately grant scientists sole authority to make value judgments that affect a variety of stakeholders. Indeed, as Goldenberg indicates, understanding vaccine hesitance as an instance of a denial of expertise is in part a refusal to recognize as legitimate alternative sources of expertise. Furthermore, the challenge to traditional notions of expertise reveals an essential aspect of knowledge production: the relevance of trust both in creating knowledge and in the relationships between science and society (De Melo-Martín and Intemann 2018; Rolin 2015; Grasswick 2010; Scheman 2001).

This deficit of trust, rather than a deficit of scientific knowledge, is what Goldenberg proposes as a more accurate and fruitful way of framing the problem of vaccine hesitancy and refusal. The second part of *Vaccine Hesitancy* is dedicated to discussing this framework and its implications for how to deal with vaccine hesitators and refusers in more respectful ways. Through the lens of this trust framework, Goldenberg reassesses concerns about the

death of expertise. The problem, she contends, is that the publics do not trust the anointed experts, both because they do not find them credible and because they mistrust scientific institutions (Chapter 6). Alternative expert voices appear in this context of mistrust, voices that take advantage of the publics' ambivalence or skepticism and stoke those sentiments. These "maverick"—as Goldenberg calls them—dissenting voices, people such as Wakefield, might have few trustworthy traits. But they challenge the power of institutional medicine and represent the concerns of those the scientific community views as ignorant and irrational. Rather than ridiculing vaccine hesitators and refusers for raising concerns and questioning expert testimony, these mavericks embody, from the publics' point of view, the important function of dissenting perspectives in scientific inquiry (Goldenberg 2021, 162). From the publics' perspective, it is the scientific establishment and not mavericks such as Wakefield who simply fail to live to the requirements of good scientific practice.

The sources of distrust are indeed various. Goldenberg discusses several factors known to affect people's attitudes about vaccine acceptance in Chapter 5. Among those factors she includes some that philosophers of science have proposed as sources of distrust in science and scientific institutions, for example, the increasing commercialization of the biomedical sciences and its negative effects on the common good (De Melo-Martín and Intemann 2018). Goldenberg expands on this to incorporate other factors that are more discussed in the context of bioethics or science communication studies but less so in philosophy of science, for example, medical racism and social media. While the commercialization of science and social media has various effects on the publics in general, medical racism is especially relevant because it negatively impacts certain communities—minority communities in general and Black Americans in particular. The problems of medical racism are not limited to historical events such as the infamous Tuskegee study, but to the presence of institutional racism and its well-researched effects on discrimination, lack of access, and health outcomes, among others (Bajaj and Stanford 2021; Evans et al. 2020).

What advantages does Goldenberg's reframing of the problem of vaccine hesitance and refusal have? Multiple ones. It makes the problem tractable. It focuses our attention on the real offenders: not the publics' ignorance, irrationality, and disregard for scientific expertise, but the presence of scientific institutions that do not engender trust, a stubborn ideology of scientism, and a disregard for the role of values in public policies. It proposes alternatives that are likely to be more productive in dealing with vaccine hesitancy and refusal. It calls for leaving behind educational campaigns that insist on simply asserting the reliability of the scientific evidence on vaccine safety and efficacy. It suggests putting aside strategies that continue to see the public as suffering from some moral or epistemic failing. Instead, this new framework calls for communication strategies that consider people's values, urges scientists and health professionals to pay attention to the legitimate worries that vaccine hesitators and refusers might have, and encourages scientific and public health institutions to work on transforming or minimizing the sources that produce warranted mistrust.

Of course, Goldenberg does not pretend that these alternatives are easy to accomplish or that they will persuade every single individual of the benefits of childhood—or Covid-19—vaccines. Clearly, however, current strategies, grounded as they are in faulty assumptions about science and its relationships to public policy, are not producing the desired results. It is a perfect time to try something else. A very good place to start is to read Goldenberg's *Vaccine Hesitancy*.

References

Alexander, Michelle. 2010. *The New Jim Crow: Mass Incarceration in the Age of Colorblindness*. Jackson, TN: New Press.

Anderson, Elisabeth. 2011. "Democracy, Public Policy, and Lay Assessments of Scientific Testimony." *Episteme* 8, no. 2: 144–164. https://doi.org/10.3366/epi.2011.0013.

Bajaj, Simar Singh and Fatima Cody Stanford. 2021. "Beyond Tuskegee: Vaccine Distrust and Everyday Racism." *New England Journal of Medicine* 384, no. 5: e12. https://doi.org/10.1056/nejmpv2035827.

Biddle, Justin B. and Anna Leuschner. 2015. "Climate Skepticism and the Manufacture of Doubt: Can Dissent in Science Be Epistemically Detrimental?" *European Journal for Philosophy of Science* 5, no. 3: 261–278. https://doi.org/10.1007/s13194-014-0101-x.

De Melo-Martín, Inmaculada and Kristen Intemann. 2018. *The Fight against Doubt: How to Bridge the Gap between Scientists and the Public*. New York: Oxford University Press.

Epstein, Steven. 1996. *Impure Science: AIDS, Activism, and the Politics of Knowledge*. Medicine and Society, Volume 7. Berkeley: University of California Press.

Evans, Michele K., Lisa Rosenbaum, Debra Malina, Stephen Morrissey, and Eric J. Rubin. 2020. "Diagnosing and Treating Systemic Racism." *New England Journal of Medicine* 383, no. 3: 274–276. https://doi.org/10.1056/nejme2021693.

Gigerenzer, Gerd, Ralph Hertwig, and Thorsten Pachur. 2011. *Heuristics: The Foundations of Adaptive Behavior*. New York: Oxford University Press.

Goldenberg, Maya J. 2021. *Vaccine Hesitancy: Public Trust, Expertise, and the War on Science*. Pittsburgh, PA: University of Pittsburgh Press.

Grasswick, Heidi E. 2010. "Scientific And Lay Communities: Earning Epistemic Trust through Knowledge Sharing." *Synthese* 177, no. 3: 387–409. http://dx.doi.org/10.1007/s11229-010-9789-0.

Hari, Johann. 2015. *Chasing the Scream: The First and Last Days of the War on Drugs*. New York: Bloomsbury.

Harker, David. 2015. *Creating Scientific Controversies : Uncertainty and Bias in Science and Society*. Cambridge: Cambridge University Press.

Kahneman, Daniel. 2011. *Thinking, Fast and Slow*. New York: Farrar, Straus and Giroux.

Knorr-Cetina, Karin. 1999. *Epistemic Cultures: How the Sciences Make Knowledge*. Cambridge, MA: Harvard University Press.

NYT (New York Times), 2021. "Coronavirus in the U.S.: Latest Map and Case Count." *The New York Times*, July 21, 2021. https://www.nytimes.com/interactive/2021/us/covid-cases.html.

Nichols, Thomas M. 2017. *The Death of Expertise: The Campaign against Established Knowledge and Why It Matters*. New York: Oxford University Press.

Oreskes, Naomi and Erik M. Conway. 2010. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*. New York: Bloomsbury.

Rolin, Kristina. 2002. "Gender and Trust in Science." *Hypatia* 17, no. 4: 95–118. https://doi.org/10.1111/j.1527-2001.2002.tb01075.x.

———. 2015. “Values in Science: The Case of Scientific Collaboration”. *Philosophy of Science* 82, no. 2: 157–177. https://doi.org/10.1086/680522.

Scheman, Naomi. 2001. “Epistemology Resuscitated: Objectivity and Trustworthiness.” In *Engendering Rationalities,* edited by Nancy Tuana and Sandra Morgen, 23–52. Albany, NY: SUNY Press.

Selinger, Evan and Robert P. Crease. 2006. *The Philosophy of Expertise*. New York: Columbia University Press.

Wheeler, Gregory. 2020. “Bounded Rationality.” In *The Stanford Encyclopedia of Philosophy,* edited by Edward N. Zalta. https://plato.stanford.edu/archives/fall2020/entries/bounded-rationality/.

Wilholt, Torsten. 2013. “Epistemic Trust in Science.” *British Journal for the Philosophy of Science* 64, no. 2: 233–253. https://doi.org/10.1093/bjps/axs007.

Wynne, Brian. 1989. “Sheepfarming after Chernobyl: A Case Study in Communicating Scientific Information.” *Environment* 31, no. 2: 10–39. http://dx.doi.org/10.1080/00139157.1989.9928930.