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BOOK REVIEW

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

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The ongoing COVID-19 pandemic has seen an explosion of urgent public debate around vaccines, all the way from development to distribution. Globally, 70% of the world's population has received at least one dose of a COVID-19 vaccine. At the same time, vaccination programs at unprecedented levels have been complemented by more vocal anti-vaccine voices, focusing especially on resisting state-mandated vaccination. In the United States, compulsory vaccines have been debated before the Supreme Court, and a vaccine mandate for businesses with more than 100 employees was struck down in 2022. Moreover, several US politicians have introduced bills to prohibit school-entry restrictions based on vaccination status. Maya J. Goldenberg's monograph, *Vaccine Hesitancy: Public Trust, Expertise, and the War on Science*, is a dissenting voice in this increasingly polarized and politicized public debate, by challenging narratives of an oppositional relationship between the public and the scientific establishment. Her insights into the location of the state and of politics in informing the science-publics relationship are also of relevance in light of COVID-19.

Goldenberg's work predates the pandemic; she addresses it only in her preface and concluding paragraph, where she suggests that the book may be a guide for the forthcoming months. She presents the problem of vaccine hesitancy in the United States as a symptom of a larger crisis of trust in science and scientific institutions. In conversation with philosophical and epistemological theories of knowledge production, expertise, science policy, and public trust, Goldenberg reframes strategies of science communication, especially as they relate to the choice to vaccinate. She builds her argument iteratively across six chapters. The book is divided into two distinct parts, with the first addressing current theories of vaccine denial and the second proposing a renewed understanding based on her findings. Goldenberg charts three distinct theo-

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ries that form the present paradigm of vaccine choice: public ignorance of science, cognitive theories like cognitive bias and dissonance, and the 'death of expertise', all of which are subsumed as constituents into a larger 'war on science'-framing that is often invoked to explain the science-public relationship. She proposes in its stead that vaccine hesitancy be viewed as the result of a multifactorial crisis of trust between the publics and science institutions. In doing so, the book redirects lines of responsibility away from the public to scientific and medical institutions, making them agents in directing the flow of scientific discourse.

Goldenberg's modus operandi in Part I of the book involves placing current theories of vaccine denialism into a wider sociocultural context. Though Goldenberg identifies three separate frameworks for viewing vaccine hesitancy, there is significant conceptual and temporal overlap between them. This is most noticeable in the links between the theories that arose to replace the rejected 'knowledge deficit model'. This includes cognitive theories of vaccine denialism as studied by Brendan Nyhan et al., and Tom Nichols' theory of the 'death of expertise'. In all these theories, the public is blamed for its lack of belief in science. However, the theories that followed the 'knowledge deficit model' makes the public more agential and intentional in its refusal of science, which Goldenberg links to social and community ties. These theories from within the scientific establishment are presented as constituent narratives within a wave of theorization around a culture war and an anti-intellectual movement that arose from post-truth and postmodern challenges to science. Goldenberg argues that they allow a defensive deflection of criticism of the scientific establishment, and prevent self-reflection.

In critiquing these narratives across the various chapters in the book, Goldenberg employs both specific and general arguments. For the theory of the 'death of expertise', for instance, Goldenberg points to the use of 'expert' testimonies by those against vaccines to bring up the problem of alternative expertise, and also points to the problem of villainizing the public, in 'war' and 'death' models that resist evolution and change. Her suggested reframing of the problem of expertise is supported by an examination of the meaning of expertise in science studies, which then becomes a springboard for arguing in favour of viewing science itself as a socially constituted body of knowledge. By focusing on agents and constituents of science, Goldenberg complicates the science-public relationship by viewing the public as stakeholders to whom science is accountable, who have now begun to question experts who wield enormous power by driving policy-making in welfare states. This leads her to examining 'scientized' politics and the preponderant use of evidence-based language to win policy debates. Goldenberg proposes that the scientized politics of today is based on the 'linear model' of science-to-policy, identified by Roger A. Pielke Jr., which suggests that correct science creates good policy, since science is objective and factual. Through Friedrich Waismann's theory of the 'open texture' of science, which proposes that scientific findings are interpretive and incomplete, Goldenberg argues that scientism exploits the idea of value-free scientific facts to shift debate around political values to debates around what is and isn't scientific. She comes to the conclusion that science becomes the battleground for proxy wars that are fundamentally unable to be resolved by science itself, representative of larger cultural anxieties in the US arising from both sides of the aisle, whether it is concerns about unchecked

regulatory powers of the state, corporatization of medicine, public health injustices, suspicions about technology, and more.

Part II of the book begins with a careful consideration of what it means to trust in science. This is as theoretical as Goldenberg's writing gets, and it is also where she is the most compelling. She breaks down the epistemological need for trust within science, placing both experts and laypersons in shared positions of vulnerability where they must take the 'leap' to trust in findings they have not seen. Through this discussion of trust, Goldenberg drives home the argument that she has been building so far in the book, taking a stand against a scientized discourse and positioning science as only one amongst many factors influencing policy making, and that it may hold sway if it earns the trust of the public through democratic values and transparency. Goldenberg uses vaccine hesitancy as a case study to make sweeping claims about science, media, culture, and communication in general. This reframed understanding of the relationship between science, politics, and culture is used by Goldenberg to propose strategies for reestablishing trust. These strategies include breaking with the 'linear model' of science and policy, and positioning science in the public consciousness as being subject to interpretation. Her analysis and rejection of popular representations of a flawed public permits her to turn the lens towards institutions, and identify some of the merits of arguments that are usually framed as 'anti-science.' She finds that the task of rebuilding trust can be fulfilled only by addressing the systemic concerns that have led the public to seek expertise from non-institutionalized sources, including improving patient encounters, addressing social injustice, breaking links to corporations and industry, and finding common ground with the public instead of constructing an oppositional binary relation. In finding different sources of mistrust, rather than some innate characteristic in the public, Goldenberg is able to suggest actionable areas where trust can either be reinforced or rebuilt.

Vaccine Hesitancy is concise, but it puts forth a detailed and well-considered argument in simple language that bears much clarity, even though it makes for a rather dry read. While Goldenberg addresses the book primarily to scientists and the science establishment, providing direct recommendations for change, the book is, despite its exhaustive attention to detail, readable enough for a general audience interested in the science-society-public relationship, or in science communication. Philosophers of science will perhaps at this point be familiar with some of Goldenberg's arguments regarding the complex nexus of social factors that influence individual and community decisions regarding vaccination, particularly after the flurry of scholarly articles on the subject in the last few years. Nonetheless, Goldenberg provides a broad bibliographic survey, and a generalized argument that will still be of interest to them. There is not much to be found here in the way of the history or science of vaccines; the book is vastly more interested in studying the underlying problem, and it is fundamentally about the dynamics of public trust viewed through the lens of vaccine hesitancy. Goldenberg is able to deftly bring together several interwoven themes into a neat, overarching conclusion in favor of the need for greater transparency and accountability within the scientific establishment. How one shall get there remains to be seen.