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Maya J. Goldenberg

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# Normative Theory and the COVID Pandemic: Author's Response to Miriam Solomon and Inmaculada de Melo-Martín

Maya J. Goldenberg

## 1. Introduction

It is a thrill to have two scholars whom I admire greatly commenting on my own work. I want to thank Professors Miriam Solomon and Inmaculada de Melo-Martín for their careful reading and attention to the book. I found their positive evaluation of the research very encouraging and still both commentaries offer critical challenges that warrant attention. This response will address two points of discussion: (1) normative theorizing on trust; (2) whether the conceptual resources, specifically the crisis of trust framework, can address the present situation of COVID vaccine hesitancy.

## 2. Normative theorizing on trust

Solomon and de Melo-Martín question the limited attention I give to evaluating the propositional claims (in the case of Solomon) and the underlying values (in the case of de Melo-Martín) of vaccine hesitators. Specifically, Solomon asks why I stop short of denouncing the antics of Andrew Wakefield as contemptible and why I do not point out the flaws in reasoning of parents who choose not to vaccinate a child they determine to be “too sickly” or too weak to endure the immunological response to the vaccine. De Melo-Martín worries that in my encouraging review of using self-affirming interventions to address cognitive biases, I endorse strategies that “give[] the impression that all values are equally justified” (111). Surely they are not, she says, and I agree. Both Solomon and de Melo-Martín are sympathetic to my thesis that vaccine hesitancy signals a crisis of trust rather than a war on science, but they want more evaluation of the assumptions, values and practices driving and perpetuating vaccine hesitancy. Solomon explains, “If we really want to know the actual reasons/causes for vaccine hesitancy, perhaps in order to address them directly, then we need to look at factors such as *unwarranted* distrust of conventional medical practices” (105). De Melo-Martín feels the same. She writes, “A focus on trust—which let

me repeat, I welcome—also requires that we pay attention to when trust is warranted or not” (112). In short, they want a normative theory of trust.

It is, of course, reasonable to demand answer to the pressing normative question, when is dis/trust warranted in the context of vaccine hesitancy? Science communicators face the challenge of responding to unjustified public skepticism over issues like climate change and COVID-19 while also acknowledging the fallibility and limitations of scientific knowledge. A focus on trust for science communications should be able to assist with this difficult task. While much of the philosophical literature on trust focuses on normative questions about warrants, my treatment of vaccine hesitators is largely descriptive (although the broader project is normative). I seek to understand the meanings and experiences vaccine hesitators bring to vaccination, science, scientific institutions, and government.

I offer a thick description (Geertz 1973) whereby the thinking and resulting behaviors are not only described, but context is additionally provided to explain how such attitudes and behaviors arise. This articulation of vaccine hesitancy can be interpreted as “charitable” insofar as I take the experiences of vaccine hesitators seriously. I am admittedly less interested in the propositional claims (i.e. “vaccines are not safe”) than in the life experiences that motivate resistance to the consensus or majority view on vaccines as safe, effective, and necessary.

Those life experiences include poor interactions with healthcare and concern about broader systemic issues. Some vaccine hesitators build on experiences of healthcare injustices, whether that be lack of access to care, epistemic injustices whereby patients’ complaints are not believed and their questions and concerns are not addressed, or harms associated with coerced treatment and bodily assault. Vaccine hesitators also commonly voice systemic concerns about commercialized medicine and regulatory weakness or mistrust of government more generally. They may subscribe to alternative epistemologies of health and wellness that do not include vaccination and bristle at the arrogance of biomedical stalwarts who dismiss these health modalities as “woo.” Solomon and de Melo-Martín are sympathetic to these sources of distrust—they are convinced that these are problematic features of healthcare. But what is missing, they claim, is some normative evaluation of the propositional claims, meanings, and identities that result from the crisis of trust.

My focus on life experiences and meanings rather than propositional content is influenced by communications scholars who view science communications as exercises in meaning-making rather than information transmission. Brian Wynne (1989; 1992; 1996), for example, famously detailed the now-classic case study of Cumbrian sheep farmers contesting the scientific analysis of post-Chernobyl radioactive contamination of the soil on the Cumbrian hillsides and the resulting shutdown of the local livestock trade. Wynne’s analysis highlighted not only the farmers’ “lay expertise”—their practical knowledge of the land and the grazing behaviors of the sheep—which was shamefully ignored by the scientists, but also the farmers’ challenge of the scope of the scientific

analysis and the framing of the problem that science was supposed to solve. The scientists saw the policy problem to be about immediate risk, “Is Cumbrian lamb safe to eat?”, and rejected farmers’ insistence that a wider scope of issues needed attention, including economic considerations as well as preexisting ground contamination from an earlier nuclear reactor leak (the 1957 Sellafield nuclear accident). We learn from this case study how science in the public sphere can go badly when scientific response fails to recognize the agency of the publics in defining and addressing a problem.

The science legitimacy problem that still vexes us today has much to do with scientists presuming the meaning and significance of the crisis issue at hand. Science communications runs the risk of contributing to this legitimacy problem by privileging scientists’ authority to determine the meaning of the issue (typically a narrow construal of risk) and thus ignoring other dimensions (such as institutional arrogance) which different publics evidently regard as core (Wynne 2003). Public meaning need not and should not be defined by the scientists alone. Numerous case studies and analyses of scientific controversies in the public arena (e.g., Nelkin 1992; Irwin and Wynne 1996) show that in public controversies over science “contestation is rarely about propositional truths, but about proper meaning and definitions of the issue(s) being contested” (Wynne 2003, 404).

It is along these lines that I take the Deweyan approach of investigating the meanings that vaccine hesitators make of their experience with vaccination in particular, or science, scientific institution, and government more generally. I argue at length in the book that the particular (vaccine attitudes) is informed by the general (attitudes and experiences with science and government). I agree with Halpern and Elliott (forthcoming) that

by paying attention to people’s differing experiences and meanings, we can better understand the basis for our misunderstandings and disagreements, and by seeking to form experiences together we can potentially develop shared meanings that enable us to create a more successful democracy.

I am also aware of new research into vaccine hesitancy and vaccine policy adopting methodologies that draw from the lived experiences and narratives of people impacted by vaccine policies (e.g., Gur-Arie et al. (2021) on vaccine mandates for American healthcare workers and Navin and Kozak’s (2022) narrative approach).

Descriptive work can have normative implications. My work on vaccine hesitancy is, as a whole, a normative project. The book’s broad goal is normative: changing the theoretical framework from a “war on science” to a “crisis of trust.” The evaluation, however, does not scrutinize the propositions and values of vaccine hesitators. Instead, the target is science communications itself, specifically the field practitioners<sup>1</sup> (typically media-trained scientists and health care workers) who work within a war on science framework and contribute to further entrenching polarization between us (the knowers) and them (the science

deniers). I argue that these science communicators mischaracterized vaccine hesitators and built communications programs around wrong assumptions that, unsurprisingly, failed to persuade vaccine hesitators to reconsider their views. Science communicators did not attend to the public meanings associated with vaccines, science, and science and governmental institutions in their messaging and outreach targeting vaccine hesitancy. It was the initial descriptive work—trying to understand the meanings vaccine hesitators attached to vaccination—that rendered these normative judgments. This fruitful connection between description and prescription is why I am more interested in the background histories and lived experiences of Wakefield’s admirers than I am in denouncing him for fraud and deceit. What made Wakefield’s fraudulent claims compelling to his admirers? Why have allegations of his deceit seemed incredulous or perhaps such deceit was excusable? To me, these are the more interesting questions rather than whether or not Wakefield deserved such admiration and trust. Furthermore, as [Trudy Govier \(1992\)](#) has argued, undeserved trust and/or foolish distrust remain issues to be resolved regardless of their epistemic warrant.

## **2. Does the crisis of trust framework offer enough to address COVID-19 vaccine hesitancy?**

Is this novel theoretical framework for understanding and addressing vaccine hesitancy, formulated prior to the COVID-19 pandemic, sufficient for understanding and addressing the polarized science and society landscape of the COVID-19 pandemic? Solomon writes, “while I am persuaded that her approach is necessary, and even preferable to other approaches, I doubt whether it is sufficient, especially given what we know in hindsight after a year of COVID vaccine hesitancy” (101). De Melo-Martín remarks that while the crisis of trust framework is “likely to be more fruitful in confronting vaccine hesitance and similar issues than the current strategy of hitting people over the head with more scientific information has been,” the plurality of factors contributing to COVID-19 vaccine hesitancy (educational level, religious beliefs, political affiliation, social identity, and more) may not be adequately addressed if placed under a singular overarching rubric, whether that rubric be vaccine misinformation or institutional mistrust (113).

The current situation of COVID-19 vaccine hesitancy is, by both of their accounts, dispiriting. The layers of complexity and competing demands make satisfactory solutions seem out of reach. A new theoretical framework cannot draw the necessary political will, resources, and institutional structures into compliance, of course, but it does offer insight into how we got to this dire situation and where we can go. That connecting line must be drawn, I think, before we can say confidently that the framework can or cannot offer theoretical resources for addressing the current situation. I will use the “crisis of trust” framework to highlight problematic features of pandemic response that could and should have been avoided. First, is dependency on the technological fix. Second, is the politicization of vaccines in the years prior to and during the COVID-19 pandemic.

The ‘war’ metaphor was advanced precipitously during the pandemic not only by vaccine refusers, but by government-led COVID vaccination initiatives that overrelied on punitive mandates and scientific rhetoric. A better theoretical framework could have steered pandemic response differently. I contend that the crisis of trust anticipated some of the policy missteps.

### ***a. The technological fix***

The COVID-19 vaccines were introduced to the world in late 2020 amidst much media fanfare as the “feel good” story of a difficult year ([National Staff Desk 2020](#)). Many citizens of High Income Countries revelled, anticipating a return to normalcy after a frustrating half year of watching their leaders flounder on nonpharmaceutical interventions (comprehensive lockdowns, contact tracing, frequent and systematic testing). The hope was that their governments’ bet on channeling considerable resources into expensive purchasing agreements with the vaccine manufacturers would pay off. The magic bullet, the technological fix, would hopefully bring an end to not only the virus and the disease, but also the hardships and social discord.

Infectious disease experts tried to temper public expectations, advising that vaccination will not immediately allow for resumption of normal life ([Weintraub 2020](#)). Community-wide vaccination will take time, and the immediate and long-term effectiveness of the vaccines were still not known. Yet, even their more modest projections (e.g. Chief Medical Advisor to the President of the United States, Dr. Anthony Fauci, claimed in November 2020 that “normality may not come until [the] end of 2021” [[Weintraub 2020](#)]) proved to be overstated. This was not only because COVID-19 vaccines have not performed as well as initially hoped,<sup>2</sup> but because these projections ignored key lessons from vaccine hesitancy and global health research, all of which point to vaccines *not* being the magic bullet solution to global health crises. Indeed, governments consulted narrowly in their promises to “follow the science”.

To start, COVID-19 vaccine hesitancy was surely going to be a major obstacle, such that no pandemic plan should have depended so greatly, if not exclusively, on a highly vaccinated public. When other public health directions are not followed, including disease surveillance, comprehensive testing, and buffering fragile health systems, all the blame is placed on vaccine hesitators and refusers for noncompliance. Highly restrictive vaccine mandates are introduced punitively, and antivaccine sentiment as well as social division only grow when government leaders like French President Emmanuel Macron admit that their policies aim to “piss off the anti-vaxxers” ([Melander and Guedj 2022](#)). Indeed, that is what happened. Putting primacy on public trust and public participation, in contrast, as the crisis of trust framework directs, would have steered political action away from overconfidence in and overreliance on the technological fix.

Had governments consulted wider among global health experts, the perils of “vaccine nationalism”<sup>3</sup> and market-driven solutions could have been avoided. Global crises require a global response. The early rush by high- and high-middle

income countries to buy large supplies of the rapidly developed COVID-19 vaccines left the remainder of the world without access (Bosely 2020). If western leaders thought global distribution would soon follow, they were unwise not to recognize how great the obstacles would be. Global distribution of COVID-19 vaccines was surely going to be a problem because it was largely left in the hands of an industry sector that does not prioritize global access. There is a known history of inequitable global distribution of essential medications (Hassoun 2020), and it is often western pharmaceutical companies blocking vital access. The market-driven COVAX scheme (WHO 2022) was doomed to fail at meeting its ambitious goals (Newney and Kelly-Linden 2020; Goldhill et al. 2021). The prolonged political stalemate over invoking a TRIPS waiver (a waiver on the World Trade Organization Agreement on Trade-Related Aspects of Intellectual Property Rights [TRIPS] is permitted during public health emergencies, as per the 2001 Doha Declaration<sup>4</sup>) to allow for COVID-19 vaccine manufacturing in and for the Global South (Canadian Centre for Policy Alternatives 2022) has been déjà vu for many working in global health. The stalled effort to address urgent human need is reminiscent of the late 1990's, at the height of the AIDS pandemic, when pharmaceutical companies refused to allow countries in the Global South to produce generic versions of their patent-protected antiretroviral medications. Millions died as a result (Merelli 2022).

Public health research has long disavowed the technological fix. Vaccines, pharmaceuticals, and all other health technologies operate in a social context, and the social forces that determine health need attention. Multimodal approaches and value pluralism, as well as attention to social determinant of health, characterize successful public health interventions (Valles 2018). The “magic bullet” effort to end the pandemic without attention participation, equity, and justice was more than likely to fail.

### ***b. Politicization of vaccines***

As I write in the Spring of 2022, political divisions are fully baked into vaccine attitudes: the COVID-19 vaccine has been the Joe Biden vaccine in America and the Joao Doria vaccine in Brazil, and the scarcity of global access to COVID-19 vaccines generated vaccine diplomacy between geopolitical powers that undermined global sharing and solidarity initiatives (Rajah et al. 2022). Vaccine refusal was folded into political opposition, broad ideological campaigns like the “Freedom Convoy” in Canada (Westfall 2022), and torrents of disinformation flooded the internet. Vaccines, as well as all other COVID-19 public health measures (Gollwitzer et al 2020) and COVID-19 risk perception (Leonhardt 2021), have become partisan issues. Vaccine hesitancy and policy researchers had hoped that this would not happen; a delimited public is not conducive to public health, after all.

When I began research on this book, in early 2015, vaccine partisanship was not the norm. Even in the United States, where political partisanship is said to have “broken” the national COVID-19 vaccine campaign (Lopez 2021), things



were once different. Looking back through my research notes and files, I found a telling comment by American professor of public affairs Brendan Nyhan, a specialist in how individuals assess political information, that captured the state of vaccine politics in American in February 2015. He told *Politico*:

Vaccines aren't a partisan issue. The consensus in favor of vaccination in this country is very strong and extends across every religious, racial and political group.... There's no reason it should be otherwise—communicable diseases don't care what party you support. (Haelle 2015)

How things have changed! Interestingly, that quote appeared in a news article that described an early sign of vaccine partisanship brewing in American politics. A week prior to the publication, early February 2015, two Republican presidential hopefuls made some ambiguous comments about vaccine safety and parents' choice. They quickly apologized upon criticism, but it was fair to assume that both Sen. Rand Paul and Gov. Chris Christie were testing the waters.

Why have vaccine politics changed so much in America and elsewhere since February 2015? The answer, I think, is that the meanings vaccine hesitators and refusers ascribe to vaccination have changed, and public health policy (especially during COVID) has not adequately reflected this change.

Antivaccine organizers in America had taken notice that their talking points regarding vaccines being unsafe—that pediatric vaccines cause autism or other developmental disabilities, for example—got only limited traction from public figures (Haelle 2021). The argument for freedom, instead, got more uptake (Chotiner 2020). Parents deserve to choose, after all.

Early 2015 was also a time when public disdain for unvaccinated children had reached new heights in the country. The outrage started when a measles outbreak that originated in Disneyland in late December 2014 spread throughout the country and into parts of Canada and Mexico, by unvaccinated presymptomatic tourists traveling home. The public anger helped rather than hurt antivaccine organizing. Pertussis and measles outbreaks had been increasing in frequency within undervaccinated American communities since around 2010, but the Disneyland outbreak clarified for many the threat of unvaccinated people to others. This led to vitriol and mockery of vaccine hesitators and refusers on social media and vicious commentary in the press. A few ambitious legislative bills were introduced aimed at seriously restricting and even removing nonmedical exemptions for school-entry vaccine requirements.

This uproar strengthened and mobilized the antivaccine movement, who fought hard against these restrictive bills in California (but lost) and in Texas (where they won; the bill never made it to vote). The messaging, tracked by researchers studying social media posts, evolved around that time to parents' rights and medical freedom, a message that appealed to Republican legislators at latter end of the Republican Party's Tea Party movement (Chotiner 2020).

With vaccine refusal reframed as "parent choice," Republican politicians could no longer strongly endorse the science behind and health benefits of

vaccination as easily. The freedom message also withstood social media platforms' growing attempts to remove false claims from their content. The COVID-19 pandemic invited new opportunity for the supposed freedom defenders. Vaccine refusers quickly allied with newly formed groups protesting mask mandates and lockdowns (Fernandez 2021; Ireland 2020). Tennessee briefly halted vaccine education and outreach for minors not just for COVID-19 but for *all* childhood vaccines, too (e.g., Kelman 2021). The decision was quickly reversed (Bella and Vilegas 2021).

With a pandemic upon us, and “freedom” the clear thread tying all vaccine and public health opposition (e.g., McAllister 2020), public health advocates and liberal politicians responded with strategies that are consistent with a presumed war on science: stringent vaccine mandates that came across as punitive; and overusing scientific rhetoric to justify policies. I argue against both of these actions in the following two sections.

### ***c. COVID vaccination mandates***

In the early months of vaccine distribution in high income countries, vaccine outreach efforts were commendable. Targeted messaging and virtual town-halls were offered to inform the publics about the new vaccines and to answer questions and speak to concerns. Rather than one uniform message, cultural sensitivity was at the forefront. Diverse publics were invited to regard the new vaccines as a necessary part of pandemic response. Vaccine acceptance and hesitancy were widely polled and understood not to reside in single pockets of society—eco-lifestyle yoga moms or right-leaning COVID deniers. A lot of excellent outreach was offered by grassroots organizers, reaching out to subpopulations to address specific contexts and concerns. They employed some of the methods known to be effective: creating safe spaces to ask questions; sympathetic regard of people's fear and uncertainty; collaborating with trusted community members like religious leaders, community organizers, and healthcare professionals from the community to deliver vaccine information that was culturally sensitive, trauma-informed, and language appropriate. These “local ambassadors” were trusted. They shared histories, attitudes, and experiences with members of the audience and could thereby speak effectively to the informational needs and the contextual concerns. Surveys showed increases in vaccine accepting attitudes across numerous subpopulations over time.

But progress came too slow for public health champions and government leaders. Vaccine passports were widely introduced, limiting access and movement in public and private spaces. Proof of vaccination was required to access many services, higher education, and some forms of employment. Introducing vaccine mandates during a public health emergency was not unexpected.

Vaccine mandates are *prima facie* justified by a range of political theories that converge on the idea that decisions that impact other people cannot be left alone to personal choice (as per J. S. Mill's Harm Principle and idea of “negative

rights”<sup>5</sup>). However, the harms to others must be significant enough to warrant restrictions to personal liberty. Furthermore, the least restrictive option ought to be selected. Vaccine mandates need to be administered with care (Omer et al. 2019), as overzealous policies can lead to public trust being undermined, vaccine resistance may be galvanized, and the public may be harmed by these and other unintended consequences.

Persuasion techniques are typically employed prior to enforcement (“carrots before sticks”), because a willing public is preferable for a variety of moral and practical reasons. But persuasion techniques take time and progress can be slow. There are many cognitive biases protecting people’s prior beliefs, making it very hard to change people’s minds (see chapter 2 of Goldenberg 2021). Some frustration about the slow movement is understandable. As the two-year mark of this pandemic passes, and a year of vaccine availability in High Income Countries, many weary members of the public say that unvaccinated people have had enough time to get informed and get vaccinated. Mandates are seen to be more justified now than they were earlier on. Writing in November 2021, Wynia et al. (2021) expressed this view that enough time had passed since vaccines were made available in America to ethically justify mandatory vaccination at this time:

Mandates should only be used if they are needed. Individuals should first be educated about vaccination and its effectiveness—along with any potential risks—and then be encouraged to get voluntarily vaccinated. Incentives to encourage voluntary vaccination should also be tried. A public health mandate should also only be instituted after robust public debate, in which there has been an opportunity for all people to voice their opinions. This has already happened. Indeed, social media have enabled all voices to be amplified and heard, sometimes over and over again. Those who prefer to remain unvaccinated will be disappointed to feel the pressure of a mandate. Not getting your way when you live in a democracy, however, does not mean you were excluded from the deliberative process.

It is difficult for me to ignore the war on science metaphor operating here. To call public discussion on social media “public deliberation” is surely a stretch; mandate opponents were hardly deliberative partners in the government and private sector decisions that impacted them, a limitation that arguably led to the outrage and online threats directed at their perceived persecutors. More pointedly, patience with unvaccinated people is assumed to be a privilege at most, where *we* decide when enough time has passed, and *they* need to get on board either by choice or by some degree of compulsion.

Furthermore, contra Wynia et al. (2021), the implementation of vaccine mandates should not be understood to be merely disappointing to those opposed to vaccination. Democracy theorists Fishkin and Mansbridge (2017) remind us that

democracies around the world struggle with the apparent gulf between political elites who are widely distrusted and mobilized citizens who fuel populism with the energy of angry voices. Disillusioned citizens turning against elites

have produced unexpected election results, including the Brexit decision and the 2016 U.S. presidential election.

Vaccine mandates have been a lightning rod issue for democratic struggle during COVID-19, signaling a collective responsibility for some and a breach of democratic legitimacy for others. With “freedom” being the linguistic currency of vaccine resistance, vaccine mandates have been reframed and weaponized. The “unintended consequences” of vaccine mandates have therefore been elevated, which arguably undermine the justification for mandates.

#### ***d. Scientism***

From January 28 to February 23, 2022, Canada’s capital city, Ottawa, was under siege (Staff 2022). A convoy of transport trucks and protesters, calling themselves the “Freedom Convoy,” traveled across the country to establish a noisy and disruptive blockade around Parliament buildings and the remaining downtown core. The Freedom Convoy began as a protest against federal vaccination requirements for Canadian long-haul truck drivers reentering Canada from the United States,<sup>6</sup> but soon amounted to a melange of political and ideological interests loosely tied by “freedom” and frustration with government and COVID-19 mitigation protocols.

Where does trust in science fit here? Indeed, the credibility of science has been under constant scrutiny throughout the pandemic, the intensity of which has only been heightened every time a politician promised to “follow the science” in their COVID-19 mitigation policies. During the Ottawa siege, the House of Commons convened for a session<sup>7</sup> where the leader of the Official Opposition, Conservative MP Candice Bergin, used the backdrop of the occupation taking place right outside of Parliament doors to stage a very public showdown with the governing Liberal Party on public health restrictions. In the recording that played on news channels that day, MP Bergin strongly demanded answers on when Canadians would see vaccine mandates and other public health measures removed. The response from Government House Leader Mark Holland was: science. Holland said, “we need to follow science, using evidence not politics” (Global News 2022).

This response captures much of the challenge for policy-relevant science: science sits precariously in relation to politicized issues in democratic regimes. Many of us are tired of hearing political leaders say “we are following the science” on COVID-19 mitigation policies. This response is evasive at best; the science is mostly not settled, and it is multiple (economic, immunological, sociological, virological, behavioral, and more). Which science is being followed? The science continues to evolve, and it is far from straightforward how the trade-offs between the plurality of diverse warrants for different courses of action ought to be handled. Thus “the science” can be selectively invoked to support opposing policies. That is not a problem with science but a problem with how it is used in the public and political spheres.

Why do politicians point to science at all when asked a political question? Because science is thought to rationalize political decisions; it is supposed to guide good governance without undercutting democratic choice. It supposedly does not matter what Prime Minister Trudeau and the Liberals Party of Canada think; *it's science*. Furthermore, the demos are supposed to *want* science-informed rule, to get the policies right (with democratic legitimacy, of course). Science-informed deliberative democracy is presumably the best option, better than technocracy on the one hand or rule by the populist mob on the other (Fishkin and Mansbridge 2017; Offe 2017; Gaus et al. 2020). This seems reasonable, but the values governing the science and its implementation get no attention. The value conflicts pitting liberals against conservatives on public health do not get addressed either. Additionally, when public trust in science waivers, science itself can be politically weaponized (Goldenberg 2021). It becomes easy for the people who feel excluded from society (for whatever reason) to draw the conclusion that science is a political tool, being used by power hungry leaders with antidemocratic intentions. Why not think this to be the case, if science is already seen as financially conflicted, racist, and more? If science itself is already perceived as poorly governed, why *not* attach a new nefarious agenda to science? Low public trust in science allows for this. It allows for the ideas behind the Ottawa insurrection to take hold.

I cannot confidently say that fixing science institutions—making them more trustworthy and credible—will calm the current storm, or that more sympathy for vaccine hesitant people will shift the tides. But past investment in such efforts would have changed the current problems, which I have argued to be fixed on those very sources of poor public trust. Committing to such efforts now *would* at the very least undermine some of the fight—a dispute that gets framed as science believers vs science deniers. Such efforts would also improve science by making scientific communities more inclusive, more responsive to public interests, more financially disinterested, and less tangled with state and corporate power. For those reasons, I think doing the hard work of building public trust in science is still worthwhile.

## ACKNOWLEDGMENT

Thank you to Jamie Shaw for a helpful conversation about epistemic trust.

## NOTES

1. The field of science communications can be understood to be comprised of researchers and practitioners. The two branches are notably disconnected, as science communications to the publics rarely reflect the research recommendations and the research is at times criticized for being too disconnected from the practical realities of public understanding of science (NAS 2017).
2. The clinical trial data shared by the vaccine manufacturers was not sufficient to warrant such high hopes in the first place (Doshi 2020; Houston 2020)

3. Vaccine nationalism is “an economic strategy to hoard vaccinations from manufacturers and increase supply in their own country. The aim is to stock up and vaccinate the nation as soon as possible regardless of the limited vaccine manufacturers' distribution for the rest of the world” (Riaz et al. 2021).
4. See the 2001 WTO Doha Declaration on the TRIPS Agreement and Public Health (WTO 2022).
5. Peter Singer (2021), writing in the *Sydney Morning Herald*, invoked Mill's principle as justifying compulsory COVID vaccination.
6. This was a confusing objection, however, since Canadian transport truck drivers needed proof of COVID-19 vaccination in order to first gain entry into the United States.
7. The House of Commons convened on February 7, 2022.

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### **CONTRIBUTOR INFORMATION**

**Maya J. Goldenberg** is Professor of Philosophy at the University of Guelph. Her research and teaching are in philosophy of medicine, science and values, science and the publics, feminist philosophy, and bioethics.