

The Sociotechnical Construction of Distrust during the Covid-19 Pandemic

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SARS-CoV-2, the virus responsible for the Covid-19 pandemic, has killed over one million Americans. Arguably, our collective trust in our health care system is another casualty of the Covid-19 pandemic. These two forms of loss—of lives and public trust—did not occur in isolation; rather, they have been mutually constituting and synergistic with each other. A lack of trust in public health authorities led to resistance to public health measures, such as social distancing and the use of face masks, and to adherence to vaccine recommendations and mandates, and this mistrust resulted in the political polarization of the pandemic, almost certainly contributing to the number of American deaths caused by Covid-19. At the same time, the resulting number of deaths further undermines trust in public health authorities, creating a vicious cycle.

This conceptual essay synthesizes insights from science and technology studies, information studies, and bioethics to explore sociotechnical factors that may have contributed to the breakdown of trust in public health information during the Covid-19 pandemic. The field of science and technology studies lays out the dynamic nature of facts, which helps to explain the rapid shifts

in public health messaging during Covid-19 and the reasons that they produced a lack of trust in public health authorities. The information field looks at how facts are sociotechnically constructed through systems of classification, illustrating how public health authorities are influenced by extrascientific factors. Putting these perspectives alongside the bioethics principles raises additional factors to consider during a public health crisis. The goal of this essay is to learn from past failures to point toward a brighter future where trust in public health authorities can be rebuilt, not on faith, but rather through striving for calibrated trust within which, through a virtuous circle, trust is validated.

Entitled to Our Own Facts: The Genesis and Development of Scientific Controversies

One of the most basic scientific principles taught in elementary schools is the distinction between a fact and an opinion. Children are taught that it is okay to have different opinions, but that there cannot be disagreement on facts. Indeed, Senator Daniel Patrick Moynihan is often quoted for arguing that people should be entitled to their own opinions, but not to their own facts. However, when one digs deeper into any particular “fact,” one finds that it is built upon a series of definitions that were developed within a particular cultural context. A simple fact might take the form of “the sky

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One of the properties of “thought collectives” is that they talk past each other, rather than directly addressing each other. They disagree not only on the answers but also on the questions.

is blue.” The designation of “blue” is, of course, culturally constructed, a subset of the color spectrum of visible light based on the physics of wavelengths of light, the physiology of eyes, and the cultural development of categories. As cultural anthropologist Marshall Sahlins documents, different cultures break the color spectrum into different categories.¹ Further, not all people perceive color in the same ways, given differences in their cones, optic nerves, brains, or other aspects of their physiology. So, even such a simple factual assertion as “the sky is blue” can be deconstructed based upon physiological, psychological, and cultural differences.

Ludwik Fleck’s concept of “thought collectives” provides a compelling way to understand science, as well as culture more broadly.² Fleck describes the process of building scientific consensus around the existence and diagnosis of syphilis. Fleck argues that ideas develop within thought collectives that are defined by shared agreement around facts and that scientific facts are culturally constructed within these contexts, rather than existing in a vacuum. Competing thought collectives may have different facts. Fleck’s writing was a significant influence on the work of Thomas Kuhn, Bruno Latour, and many others. Latour and Steve Woolgar developed the concept of modalities to explain how ideas that begin as artifacts become facts and may later return to the status of artifacts.³ At first, an idea is reported in context. In this lab, at this time, using this equipment, such and such result was achieved. The idea is in this instance an artifact of its context, bound by these circumstances. However, through the removal of these contextual statements, or modalities, the idea increasingly takes on the role of a fact—its truth is not limited by its circumstances but, rather, transcends those circumstances. At a later date, the fact may be called into question—at that point, the modalities that define its context may be re-introduced. If the idea is ultimately rejected, then the idea is relegated back to the category of an artifact.

Covid-19 provides a particularly fascinating study of the genesis and development of scientific facts—and controversies—in real time—a time when facts were particularly in dispute and the public attention was fixated on public health authorities to an uncommon degree. The thought collectives present during the Covid pandemic include not only different perspectives among scientific communities but also different media collectives and governments. One

of the properties of thought collectives is that they talk past each other, rather than directly addressing each other. They disagree not only on the answers but also on the questions. During the pandemic, governments around the world gave their citizens reasons to distrust. For example, there is compelling evidence that the discovery of Covid-19 was suppressed by the Chinese government, leading to uncertainty about whether the virus was spread by zoonotic means or through a laboratory leak. U.S. mainstream media and social media quickly began labeling content exploring the possibility of a laboratory leak as disinformation or deplating it. Yet, as of this writing, the origins of the virus remain unsettled. According to a report from the U.S. Office of the Director of National Intelligence that was declassified on June 23, 2023, “All agencies continue to assess that both a natural and laboratory-associated origin remain plausible hypotheses to explain the first human infection.”⁴ Based on this report, as well as earlier reports from the U.S. Department of Energy and the Federal Bureau of Investigations, the mainstream media and social media companies have softened their stance that the laboratory leak hypothesis is disinformation.

Similarly, the response of the U.S. Centers for Disease Control and Prevention was subject to some fairly abrupt about-faces, just one example of public health experts’ shifting guidance throughout the pandemic.⁵ The CDC’s “How to Protect Yourself” page, which was featured prominently on the main page of its website, shifted its guidance about face masks radically. The page was first indexed by the Wayback Machine on March 14, 2020, and at that time contained this guidance: “If you are NOT sick: You do not need to wear a facemask unless you are caring for someone who is sick (and they are not able to wear a facemask). Facemasks may be in short supply and they should be saved for caregivers.”⁶ On April 4, 2020, the guidance was modified substantially, “Cover your mouth and nose with a cloth face cover when around others . . . Do NOT use a facemask meant for a healthcare worker.”⁷ The prohibition on use of N95 respirators by members of the public was removed on January 28, 2021.⁸ By August 11, 2022, the guidance had transformed into this: “Respirators (for example, N95) are made to protect you by fitting closely on the face to filter out particles, including the virus that causes Covid-19. They can also block droplets and particles you breathe, cough, or sneeze out so you do not

spread them to others. Respirators (for example, N95) provide higher protection than masks.⁹ The efficacy of face masks in blocking the spread of Covid-19 shifted from an artifact to a fact and back several times over this period, even for this one information source. And guidance based on scarcity was at first asserted to be based on a lack of efficacy. Further, these statements lacked the nuance of “at this time” or “based on current conditions,” making it even more jarring when they were so quickly reversed. Making such strong declarative statements during a period of high uncertainty risks losing the public trust when they are later reversed. Therefore, even in the early stages of the pandemic, public health authorities in the United States lost the trust of much of the American public.

The Power to Count: “Lies, Damned Lies, and Statistics”

According to the saying attributed to Andrew Fletcher (among others), influencing the culture of a nation can be more powerful than influencing its laws. Hope Olson has demonstrated the many biases inherent in library classification systems such as the Dewey Decimal System, including but not limited to biases in terms of gender, geography, and language.¹⁰ These biases may range from unconscious to conscious. Megh Marathe documents that the classification of seizures is similarly constructed and idiosyncratic and may be influenced by a doctor’s interpretation of the most appropriate treatment for a given patient, as a means to document and justify the need for treatment (or the lack thereof).¹¹ As illustrated by the statement (of disputed origin) that there are three types of lies—“lies, damned lies, and statistics”—there is often a temptation to use numbers to craft a narrative.

Throughout the pandemic response in the United States, predictions and estimates were used to attempt to influence public policy and public opinion. The concept of herd immunity, a level where the amount of immunity within a community blocks the spread of an infectious disease agent, is particularly tricky. Public health experts changed their predictions about the vaccination rates required to achieve herd immunity, often making their predictions more declarative than might have been called for by the situation.¹²

Another controversy related to Covid-19 is the funding of gain-of-function research, which aims to alter microbes to be more virulent or more transmissible. Such research has particular significance to the pandemic given that the laboratory-leak theory holds that SARS-CoV-2 is the result of research to artificially enhance naturally occurring pathogens. Public health experts have been guarded about the definition of gain-of-function research, and there is evidence that some may have downplayed the degree to which

funded research involved gain of function.¹³ The lack of transparency on these matters by these public health experts is particularly troubling considering the degree to which the public relied upon their guidance during this important period. For example, a study of the general public’s attitudes toward a potential Covid-19 vaccine conducted before the first vaccine was approved in the United States found that the public would be significantly more likely to trust a vaccine if it was endorsed by public health experts.¹⁴

Trust is particularly valuable because it is built up slowly, over a long period, but can be lost in an instant and challenging to rebuild; for example, the Valdez oil spill in the 1980s and the Deepwater Horizon oil spill in the 2010s caused a loss of trust that the companies responsible, Exxon and BP, respectively, spent millions of dollars attempting to repair. BP spent \$100 million in advertising following the Deepwater Horizon spill to try to rebuild their public image, but it is not clear that this investment was effective in achieving this goal.¹⁵ One of the keys to crisis communications is to be honest about what is known and not known at any given time.¹⁶ In a public health emergency, this helps to avoid the lack of public trust that can result from public health guidance that overemphasizes potential solutions and understates the inherent uncertainty.

Trusting, Trustworthy, Both, or None of the Above: Transparency for Calibrated Trust

According to J. David Lewis and Andrew Weigert, trust has three components: cognition, emotion, and behavior.¹⁷ Trust is a belief that is informed by knowledge. Trust is influenced by an individual’s emotional state. Trust is also enacted, resulting in outcomes that inform future trust judgments. Miriam Solomon argues that trust is fundamental for science yet is not explicitly foregrounded within the teaching of the scientific method.¹⁸ As Gregory Kaebnick notes, trust in science is failing while the growing distrust of expertise is contributing to political polarization.¹⁹ During the pandemic, polarization of attitudes toward vaccines increased.²⁰ Comparative analyses of different European nations’ levels of social trust and the impacts of the Covid-19 pandemic suggest that low social trust is statistically correlated with and may have caused or contributed to excess mortality.²¹ We will never know how many of the over one million deaths due to Covid-19 in the United States were the result of a lack of trust in science.

Work on trust in the field of bioethics emphasizes the crucial role trust plays in health care and the importance of transparency and truthfulness to establishing and maintaining trust. Such work can inform efforts to rebuild trust in health care and science and could guide public health experts during future pandemics and other public health emergencies. Edmund Pellegrino’s principle of “benefi-

It is critical that public health experts be transparent about the limitations of their knowledge and be fully honest. Attempting to dumb down content by removing important caveats or disclosures can be disastrous for maintaining public trust.

cence-in-trust,” for instance, holds that beneficence is the highest duty of physicians and that doing good for patients requires maintaining patients’ trust.²² Tom Beauchamp and James Childress consider trust as part of respect for autonomy, as building a relationship of mutual trust between physicians and patients is necessary to maximize the benefits of respect for autonomy. Indeed, Beauchamp and Childress list trustworthiness as one of their five focal virtues for physicians.²³ More recently, Beauchamp and Childress link both trust and transparency to informed consent, arguing that transparency is needed for informed consent and that informed consent helps to build and maintain trust.²⁴ Robert Veatch’s seven principles include veracity,²⁵ which is also covered in *The Belmont Report*,²⁶ while William Ross’s six “prima facie duties” include not lying²⁷ and Bernard Gert, Charles Culver, and Danner Clouser’s ten rules include “Do not deceive.”²⁸ While these bioethical theorists diverge at many points, all attach some importance to the notion that medical practice should involve being trustworthy and telling the truth.²⁹

Merely telling the truth, though, is not enough—public health experts must commit to always telling the whole truth. Providing overly optimistic projections of the level of community immunity required to achieve herd immunity has the potential to lose the public’s trust. Similarly, some public health experts’ evasiveness about defining gain-of-function research can be seen as counter to transparency. Anything less than full transparency risks having the public lose trust in public health authorities. Further, public health experts have seemed at times to present preliminary evidence as settled science, removing the modalities themselves.³⁰ Making strong, unqualified assertions that must later be retracted, such as claims about the absolute certainty of zoonotic origins or the ineffectiveness (or effectiveness) of masks, risks losing public trust in public health experts.

In a 2021 essay, Kristina Orfali compares the response to the pandemic in the United States and Europe, asserting that the U.S. response has been more transparent about how medical triage is performed than officials in many European nations have been, but concludes that there is a need for further transparency across all national contexts.³¹ Similarly, in a 2020 special theme issue of this journal on

Covid-19, Samuel Gorovitz insists that there is a need for further transparency about the factors influencing the distribution of ventilators and that this transparency is critical for maintaining public trust.³² Georgina Morley and colleagues assert that transparency about limited medical resources is necessary and emphasize the trusted role that nurses play in public health.³³ Based on these assertions, while it is important to be transparent about the limits under which patients can be treated with ventilators and other interventions, it is also critical that public health authorities be transparent about limitations in knowledge about an emerging pandemic.

The lack of trust in public health authorities may have contributed to the high death toll of the pandemic—including the lives lost in the United States as well as the over 6.5 million deaths globally. This dire outcome in turn discourages public trust in the health care system, resulting in a vicious cycle of loss of trust and loss of lives. Clearly, there is much work to be done to rebuild public trust in public health authorities and the health care system.

Rebuilding Public Trust Using Transparent Debate Rather Than Censorship

Throughout the Covid-19 pandemic, the primary response to perspectives outside of the current scientific mainstream—whether they were conspiracy theories about microchips being implanted in the vaccine, claims of certainty about the laboratory leak, or assertions that later echoed retracted statements in March of 2020 about the general public not needing masks—has been to ignore or even censor these viewpoints. Social media platforms took to labeling posts as misinformation, removing them, or even deplatforming those who posted information outside of the mainstream. The problem with deplatforming a conspiracy theorist is that this feeds into their narrative that their views are suppressed because of their truths; effectively, their social media profiles become martyrs for their cause. Instead, we need to rebuild a healthier public sphere, where differences in perspective are tolerated and even embraced, and debunked conspiracy theories are further disproven through evidence rather than suppressed.

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