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The Vaccine

Settling somewhat into the new realities of a sweeping pandemic, vaccines offer a glimmer of hope for a safe arrival on a road lined by death, unemployment, emerging chronic conditions, and isolation. We collectively hold our breath and wait eagerly for the solution that would mean an endpoint to the epidemic. There is cause for optimism: vaccines have eliminated a high number of deadly or debilitating infectious diseases from our everyday lives.

The names “Operation Warp Speed” of the United States government, or “Sputnik-V” of the new Russian vaccine reflect this confidence. They harken back to Cold War imagery of the Space Race, drawing a clear line between major technological and scientific feats achieved in a compressed time. They represent the usually long and arduous process of vaccine development as a heroic effort that will quickly lead to a much-anticipated result: a substance in a vial that will provide protection against the virus, and reintroduce normalcy.¹

But there is peril in such representations, beyond raising expectations that scientific work may not fulfill and pushing safety concerns to the background. This imagery provides a simple endpoint that, in itself, is meaningless. Vaccines cannot be understood without considering their materiality, nor can they be understood solely as material objects. Despite the narrative laid out before us through images of rocket launches and moonshots, achieving a vaccine that

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1. For “Operation Warp Speed,” see U.S. Department of Health and Human Services, Fact Sheet: Explaining Operation Warp Speed, <https://www.hhs.gov/coronavirus/explaining-operation-warp-speed/index.html>. For “Sputnik V,” see <https://sputnikvaccine.com/> (accessed 28 Aug 2020).

is proven to be safe and efficient in the laboratory and in controlled trials is but one point in the extended temporalities and materialities of vaccination, which in turn intersect with multiple layers of trust.

The problems arise when our representations make a leap that we cannot replicate in the real world: the settings of the laboratory or controlled field-trial can never match the complexity of reality. Therefore, the existence of a vaccine—of a substance in a vial that has passed required tests—does not automatically mean unhindered use of it. Inequalities in access to vaccines are framed by privileges and vulnerabilities in any given society: geographical distances and, in many cases, cold-chain maintenance; the financial capabilities of states to produce or acquire vaccines; the healthcare systems in which vaccines are administered; and global structures of economy and infrastructure that enable or disable the flow of information and medicine alike.²

The shift from lab to field is followed by shifts from one cultural and political context to another, further impacting how vaccines work. A clear example of the complexities of these shifts is the local failure of one of the major success stories in epidemic prevention: the Salk vaccine. The much-celebrated polio vaccine did not deliver the promised results in Hungary in the 1950s, shocking society with a major outbreak after two years of continuous mass vaccination. This failure revealed the importance of medical infrastructures (in this case, insufficient and low-quality syringes and needles), confusion over various administration methods and dosage, and a mismatch of expectations of organizational efficiency in an authoritarian regime.³

Materialities and infrastructure aside, vaccines are technologies of trust. First, they usually contain a version of (or a part of) the very pathogen they are designed to protect against, administered to healthy people. As such, they carry within themselves a perceived (and at times very real) risk of illness where none is yet present. Vaccines are also immensely complicated technologies, which makes understanding how they work—and why they are safe—extremely

2. See, for instance, Mary Augusta Brazelton, *Mass Vaccination: Citizen's Bodies and State Power in Modern China* (Ithaca, NY: Cornell University Press, 2019); Sanjoy Bhattacharya, "International Health and the Limits of Its Global Influence: Bhutan and the Worldwide Smallpox Eradication Programme," *Medical History* 57, no. 4 (2013): 461–86; Keith Wailoo, Julie Livingston, Steven Epstein, and Robert Aronowitz, eds., *Three Shots at Prevention: The HPV Vaccine and the Politics of Medicine's Simple Solutions* (Baltimore: Johns Hopkins University Press, 2010).

3. Dóra Vargha, "Local Failure in a Global Success," in *Polio Across the Iron Curtain: Hungary's Cold War with an Epidemic*, Global Health Histories (Cambridge: Cambridge University Press, 2018), 113–46.

difficult without many years of training in the biomedical sciences. Trust is supposed to fill this expertise gap: trust in the scientific establishment, its processes, the abstract idea of science itself, and the administering authorities—including local, state, and global health systems as well as the pharmaceutical industry. This trust is not separate from the working of the vaccine: if trust goes missing, individual decisions about vaccination are affected, which in turn hamper its efficacy. A cycle of disease and distrust can be hard to stop once it has started.

And trust can fray at any point. The diphtheria epidemic wave that swept through the former Soviet republics in the early 1990s was a clear consequence of trust broken down between the state and citizens from the late 1980s onward, paired with a breakdown of infrastructure, even as the Soviet Union had been successful at keeping the disease at bay for decades through vaccination.⁴ The impact of Andrew Wakefield's discredited study on the MMR vaccine was devastating to vaccine uptake in the UK, with serious public health consequences, revealing cracks in trust between the general population and the scientific establishment.⁵

Vaccines, then, while often discussed as the ultimate vertical public health intervention, targeting specific diseases in a top-down manner, should not be seen merely as quick technological fixes. Inseparable from vaccination, they are technologies whose boundaries extend beyond the vial, incorporating other material and non-material factors, expertise needed for administration, infrastructure in place to produce and deliver the vaccine to the population, and social and political realities.

4. Artur Galazka and Sieghart Dittmann, "Implications of the Diphtheria Epidemic in the Former Soviet Union for Immunization Programs," *The Journal of Infectious Diseases* 181, Supplement S1 (Feb 2000): S244–48.

5. Andrea Stöckl and Anna Smajdor, "The MMR debate in the United Kingdom," in *The Politics of Vaccination*, ed. Christine Holmberg, Stuart Blume, and Paul Greenough (Manchester, UK: Manchester University Press, 2017), 239–59.