

Books & arts



Protesters demand an end to lockdowns in California in May 2020.

DAVID MCNEW/GETTY

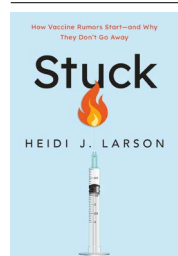
Vaccines in the infodemic

Heidi Larson's latest book charts the challenges to public confidence in immunizations. **By Joan Donovan**

At rallies this year to demand the end of lockdowns in the United States, placards reading “Facts over Fear” and “I need a haircut” jostled with the alarmingly ubiquitous “Vaccines cause injury and death”. It was a manifestation of one of the increasingly pressing challenges of the COVID-19 pandemic: digitally enabled protest, mobilized around misinformation. How should public-health leaders respond?

That is the question tackled by *Stuck*, written before the pandemic, when vaccines seemed to be more fought than sought in wealthy Western nations. In it, anthropologist Heidi Larson, director of the Vaccine Confidence

Project at the London School of Hygiene and Tropical Medicine, surveys the factors – social, psychological, political, historical and cultural – that influence attitudes to vaccines, mainly in high-income countries.



Stuck: How Vaccine Rumors Start — and Why They Don't Go Away
Heidi J. Larson
Oxford Univ. Press (2020)

Larson argues that in privileged neoliberal contexts, people see health care as a service rather than a right, and consider all treatment a consumer choice. That's a problem for immunizations, which are a common good. Every unvaccinated child is not just themselves at risk; they pose a risk to any baby not yet vaccinated, for instance. Growing individualism, coupled with an understandable need to be heard and taken seriously, makes a fertile ground for distrust of vaccines. Vaccine hesitancy was once a parenting issue, discussed in the doctor's surgery. It has now been seized on by activists, highly engaged on social media.

Larson warns that to preserve the

societal benefits of vaccination, it is essential to respond to the new public mood. “Today, we are in the paradoxical situation of having highly effective vaccines, but doubting publics,” she says. It’s not enough to tell people how well vaccines work against diseases that, in some lucky parts of the world, can seem theoretical – something that happened long ago, or far away. Instead, researchers and public-health professionals must look at the vaccine experience: the whole process of having children, discussing vaccines with family and social circles and choosing whether or not to immunize your child or, later in life, receive vaccinations yourself.

Rumours and misinformation

Larson studies rumours about vaccines, drawing on historical examples in various regions. These range from demonstrations against smallpox immunization in the nineteenth century to polio-vaccination boycotts in Nigeria in the twenty-first, showcasing a social world of fear, doubt and risk assessment that can influence behaviour. Larson writes: “Digital media has certainly contributed to the social amplification of risk, but there is no single culprit in this wave of dissent.”

My research supports her position, showing how fast health misinformation can change people’s behaviour. In the context of COVID-19, a huge demand for the malaria drug hydroxychloroquine followed US President Donald Trump’s unfounded claims that it could treat infection with the coronavirus. The demand for a COVID-19 vaccine will be vast, yet some will still refuse it, risking those who cannot be vaccinated because of other health issues.

Larson explains that our bodies respond to information about vaccines in ways that often have nothing to do with the properties of the medicine itself. Psychogenic reactions can include fainting, spasms and laboured breathing. They vary from case to case, but once such a reaction is publicized, it can materialize in new places. For example, after videos showing girls convulsing – allegedly after receiving a vaccine against the human papillomavirus (HPV) – were shared on social media, a small town in Colombia saw a wave of hospitalizations supposedly linked to the immunization. An investigation concluded that the physical symptoms were attributable not to the vaccine, but to fear and anxiety. When the Colombian president announced as much, enraged townspeople became more suspicious of the HPV vaccine, not less.

Emotional contagion, too, can sway attitudes. People share rumours of purported

‘vaccine damage’ out of worry or anger at charges of profiteering or political control of populations. This last concern has, for example, bedevilled the global campaign to eliminate polio; it is part of the US discourse, too.

Digital wildfire

No book on the modern history of vaccines can ignore the appalling public-health impact of the fraudulent claim that the MMR (measles, mumps and rubella) vaccine causes autism. Larson shows how the rise of Andrew Wakefield, the physician struck off for his now debunked 1998 study on this link, was tied to the development of new tools for information-seeking. She points to an under-studied facet of contemporary health movements: how growing Internet use made it possible for people to share experiences across vast distances. The Wakefield claim lent itself to viral replication. It was, Larson writes, “a simple, repeatable, confirmation of a brewing anxiety”. It became a meme that spread like “digital wildfire”, leading to resurgences of three dangerous diseases.

To defeat the misinformation hydra, Larson calls on scientists to make engagement authentic – public input should begin with the setting of the research agenda and continue through open dialogue as new concerns emerge. All too often, she points out, scientific communication is reduced to marketing and sloganeering, rather than listening and integrating

public debate. Vaccine hesitancy is a problem of dignity as much as of the abundance of falsehoods: individuals want to have their choices respected, amid growing distrust in authority.

Larson concludes that for vaccine uptake to increase, the public must be inspired to protect one another. She calls immunization “one of the biggest worldwide experiments in collectivism and cooperation in modern times”. Especially in the time of COVID-19, her research helps us to understand that facts are only one piece of this puzzle. No longer can social-media companies avoid the part their technology plays in manufacturing a level of dissent inimical to the public good.

It is apparent from Larson’s book and my own research that to counter vaccine hesitancy, a broad coalition of medical professionals, journalists, civil-society organizations and technologists must develop a plan for challenging misinformation. If there is no research into to how bad information rises to the top of search engines and circulates online, and no strategy to halt that contagion, vaccines will continue to divide society rather than unify it against a common threat – just when we need them most.

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Equity: a mathematician shares her solution

If research thrives on collaboration, a book asks, why do we reward individualism? **By Jory C. Lerback**

Much has been written about the female premiers of Germany, Finland, New Zealand and Taiwan, and their remarkable success at dealing with COVID-19. But, as many pundits have noted, to focus on their gender is to miss much more important issues: the personal characteristics that define how these leaders operate, and the social climate that rewards communitarian behaviour.

These issues – relational abilities and enabling

contexts – are central to mathematician Eugenia Cheng’s constructive argument in $x+y$. Whether one plus one is two, she shows, depends on how you define your variables and their relationship. One violinist and one pianist (Cheng plays the piano) might make two musicians, cacophony or sweet music, depending on how they interact. Considering such scenarios is the beauty of category theory, Cheng’s branch of pure mathematics.

She applies category theory to the