Introduction

An Anthropology of Global Immunization

Rebecca Irons, Sahra Gibbon, Joanna Cook and Aaron Parkhurst

Introduction

Immunization is one of the most successful public health interventions of all time (WHO 2023), and yet, achievement of global coverage is mired in countless complex and dynamic issues that thwart vaccine development, rollout, and acceptance (Frenkel and Nielsen 2003). These range from safety concerns (Conklin et al. 2021), to misinformation (Ratzan 2008; see Nightingale, this volume), mistrust and scepticism (Wilson et al. 2018), inequitable access (Hinman and MacKinlay 2015; see Irons, this volume), religious forbiddance and/or interference (Giubilini et al. 2021; see Kasstan-Dabush, this volume), government buy-in (see Castro et al., this volume; Lakoff, this volume; Levine and Manderson, this volume) and ability to find trial participants (Strauss et al. 2001), to name but a very few of the extensive challenges to successful vaccine development and rollout. In spite of these, the range of diseases that vaccines can protect against is truly impressive. According to the World Health Organization (2024), a staggering twenty-five global-burden diseases are now vaccine-preventable, with vaccines in active development against a further sixteen diseases as of 2024. Vaccines have eradicated both smallpox and rinderpest (Greenwood 2014), and there are hopes that immunization may eventually be able to stop the HIV pandemic (Chhatbar et al. 2011; see Levine and Manderson, this volume). Yet, the quoting of impressive biomedical facts does little to properly elucidate the marked complexity of immunization across the immense diversity of human cultural contexts.

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As argued by Gamlin et al. (2021) in regard to the COVID-19 response, not all societies are responsive to biomedical solutions to public health concerns to the same extent, with the global South in particular showing more resistance than the North. When it comes to vaccines, a World Bank report suggests that hesitancy is highest in low-middle income countries (Dayton et al. 2022). Further, inequitable delivery remains a problem in the global South, bolstered by conflict, lack of infrastructure, and crisis. For example, vaccine-preventable wild poliovirus has reemerged in Nigeria due to guerilla insurgency contributing towards hesitancy and supply-chain failure (Nasir et al. 2016); vaccine-preventable diseases measles and diphtheria have remerged in Venezuela due to state collapse and the inability to provide even basic health services (Paniz-Mondolfi et al. 2019); and vaccine-preventable measles has reemerged in Syria due to war and internal displacement (Raslan 2017). As can be seen, immunization is far from a simple case of getting needles into arms, and intersects differentially with the social, political, economic, and cultural landscape of societies across the globe.

Anthropologists are extremely well placed to disentangle this complex picture because of their ability to recognize that 'social, psychological and institutional factors influence all aspects of care' in public health (Stellmach et al. 2018: 1). Critical medical anthropology in particular seeks to understand the structural determinants that form part of the political economy of health (Gamlin et al. 2021), thereby fleshing out our approach to vaccines beyond the biomedical. This collection queries and challenges the global response to immunization across time, place, and ailment, with the authors' work united through anthropological perspective and insight. Together the chapters seek to unpack the myriad contemporary and historical contexts in which vaccines have been implicated, showcasing a diverse range of experiences that are nevertheless linked through notions of citizenship, politics, governance, and hesitance.

The foundations for this collection come from the seminar series 'Vaccines in View', held online from April to June 2021 and organized by a team of anthropologists from UCL Medical Anthropology who had been leading a prominent anthropological response towards the pandemic as it unfolded from 2020 onwards (Irons and Gibbon 2022). The seminars came at a time of heightened global anxiety over the ongoing pandemic, and as such, contributing academics at the time largely trained their gaze on the up-and-coming COVID-19 vaccines and the developing rollout across the world. Even outside the seminar context this focus on the COVID-19 response in any vaccine discussion is logical, given the 'revolutionary speed of both the vaccine development and the diffusion process' (Glassman, Kenny and Yang 2022) that the world

witnessed from late 2020–2021. With the timeline from identification of SARS-CoV-2 to developing and testing a vaccine lasting less than 12 months, the response was the fastest in all history (Cohen 2020). Before this, the fastest that a vaccine had ever been developed was the mumps vaccine in the 1960s, which took four years.

As the first country in the world to launch a national vaccine programme in response to COVID-19 (Mounier-Jack et al. 2023), Britain was a fitting [virtual] site from which to discuss the global response to pandemic vaccination, and the politics of vaccination in general. Indeed, Britain plays a key role in the development of vaccines as we know them today, credited with creating the world's first ever inoculation when in 1796 the English physician Edward Jenner expanded upon earlier findings about cowpox to create the smallpox vaccine for humans. As a result, the word 'vaccine' is coined from the Latin word for cow, '*vacca*' (Didgeon 1963).

However, all things considered, we recognize the need to consider not only the global context, but also the vast availability of vaccines for different diseases. As such, this collection departs from the original sole focus on COVID-19 to explore other important vaccines efforts from HPV to HIV, with ethnographies spanning Latin America (Colombia, Brazil), North America (United States), Europe (Ireland, Denmark), Africa (Tanzania, Sierra Leone, South Africa), and Asia (Israel). These diverse works are united through their anthropological lens on questions of citizenship, nationalism, vaccine politics, and vaccine governance, as well as conspiracy, hesitance, and misinformation. Together, the collection comprises a robust anthropological response to the most pressing contemporary issues in global immunization today, including scholarship from both the global North and South.

Citizenship, Nationalisms and Vaccine Politics

In Britain during the COVID-19 pandemic, state-mandated lockdowns were punctuated by a weekly 'clap our heroes'. Once a week, people across the country stood in their doorways banging pots and pans in support for key workers. For the editors of this volume, as for many others, this experience was simultaneously an overwhelming opportunity for even a sliver of collective effervescence at a time of profound social isolation and an unsettlingly hollow gesture of support for underpaid and under-resourced key workers who had, until the beginning of the pandemic, been undervalued. 'Clap our heroes' was framed as a show of national unity, a weekly moment of national solidarity, that was

enacted by a responsibilized citizenry who watched daily governmental briefings, observed social distancing, and complied with state-mandated lockdowns.

During the pandemic, appeals to nationalist rhetoric provided the impetus for effective mobilization of populations within national borders. For example, Seeberg and Lehrmann (this volume) describe how in Denmark, a country with one of the highest vaccination coverages in the world, being vaccinated became a Danish value, an act of 'true Danish community spirit'. This example reflects a naturalized imaginary of the nation through a normative framework of the 'imagined community' (Anderson 2006). National vaccine programmes rested on appeals to civic-mindedness, responsibility for the vulnerable, and representations of community, thereby creating an imagined 'we' based on shared norms and values. Such imaginings of the relationship between the global, the nation and the local rested on assumptions about normative ideas of community, inclusion, and responsibility, often in a moral register. Society was to stabilize through the efforts of individuals working together. That is, the vaccine promised a solution to the global pandemic at a national level through the orchestration of 'good' citizens. Around the world, vaccines offered the promise of a return to 'normal' life and national stability through sufficient numbers of vaccinated citizens. Vaccine uptake rested on performances of citizenship, nationalist rhetoric, and the contribution of citizens to the body politic. As a political project, the vaccine programme was imagined as shaping the immunity of whole populations (Greenough, Blume and Holmberg 2017: 1). The hope invested in national vaccine programmes reflects the relationship between power of the state and the socio-material power of the vaccines themselves but through the rhetoric of imagined (national) communities (Anderson 2006).

The nationalist register of vaccine responses to the global pandemic necessarily delineated boundaries of exclusion by implication; those that did not share the values of the community were omitted both rhetorically and structurally through such logics (see Kasstan-Dabush, this volume). In demarcating the boundaries of the community in nationalist and immunized terms, the unvaccinated 'other' was represented in social and public discourse as personally and socially risky. If good citizens vaccinated for the common good, those who remained unvaccinated threatened the telos of societal coherence towards which vaccination programmes were imagined to be advancing. Despite the fact that access to vaccines was unequal for different populations within a given national boundary (see Kasstan-Dabush, this volume), and vaccines are rarely taken up unquestionably (Leach and Fairhead 2008), non-vaccination was viewed as undermining the immunity of the social body and therefore

the stability of the body politic (Kasstan 2021a), leading many to see themselves as marginalized by public health policies that constructed a 'we' in these terms (Kasstan 2021b).

Vaccine programmes provided a link between the social body, the body politic and the individual bodies of 'responsibilized' citizens (Scheper-Hughes and Lock 1987). Clarke and Barnett (2022) show that 'good citizenship' in the COVID-19 pandemic extended beyond mere compliance to governmental mandates for correct behaviour. Rather, the good citizen was one who assessed risks and made informed decisions based on careful assessment of the information available. As Rebecca Irons (this volume) demonstrates, 'good citizenship' extends beyond a mere concern with compliance. Rather, good citizenship implied reflective and informed decision making, echoing the role of reflexivity in resilience thinking as a basis of policy discussion more broadly (Chandler 2014). If for Stefan Ecks (2005), 'pharmaceutical citizenship' highlighted the ways in which structurally vulnerable individuals are compelled to accept state-mandated medication as a condition of citizenship, vaccination programmes during the pandemic highlighted two further dimensions of citizenship: the practical reasoning that was assumed to inform compliance (Clark and Barnett 2022) and the positionality that enabled people to perform such 'good citizenship', including access to knowledge and community (Irons, this volume).

The pandemic and the turbo-boosted vaccine programmes that it spurred reveal simultaneously global and local processes. On the one hand, COVID-19 inspired the largest vaccination programme in the history of the world in response to a global pandemic. On the other, the ways in which this was developed, implemented, and responded to were fundamentally situated in the political and social dynamics of nationalism and normative understandings of citizenship. As Robert Hahn and Marica Inhorn write, public health 'is a very political field of action' (Hahn and Inhorn 2009: 4–5). Vaccines exemplify the ways in which biotechnical solutions to public health challenges are necessarily constituted by and constitutive of wider state and public health imaginings of the populations that they serve and the normative values with which they are invested. The chapters in this volume illustrate that vaccination programmes extend far beyond questions of compliance, the 'going with the herd' of herd immunity. Instead, they draw in and interact with questions of agency, choice, deliberation, positionality, and normative assumptions about civic responsibility and relationships to others, both close by and in the 'imagined community'. Fine-grained anthropological analysis of vaccine programmes interrogates the ways in which they are developed to address the complex health challenges experienced by populations, and

the relationship between technological affordances and infrastructural limits. But it also provides insight into the values by which vaccines are informed and normative assumptions about the society and citizenship with which they are invested. Vaccination programmes are necessarily located in wider politics of statecraft, representations of the nation and expectations of a 'good' (compliant and informed) citizenry. The chapters in this volume provide anthropological insight into the (often taken for granted) normative assumptions of public health, revealing how vaccine programmes and responses to them take shape in situated ways.

Vaccine Governance

The UK 's COVID-19 Inquiry has cast a sharp light on the role of governments and their political responsibility in management and outcomes of the pandemic. Interim findings and related reports reference widespread failures, and the actions of the UK government as being both 'inadequate' and 'grossly negligent' (Dyer 2021). At the same time, the then prime minister Boris Johnson and the Conservative Government had consistently pointed to the rapid vaccine rollout in the UK as a government success story. Such contradictions not only characterize the issue of vaccine governance in the UK but also relate public health concerns wider global contexts in which COVID-19 vaccines have been developed. While widely hailed as remarkable both for the speed and scale by which they were produced, the distribution of and access to these vaccines has been characterized by striking and glaring global inequities by which vaccine nationalism has easily segued into reproducing and sustaining what Bajaj et al. have called forms of vaccine apartheid (2022). While, as Gamlin et al. note (2021), questions of structural as opposed to social determinants of health have been less visible, certain elements within global health discourse about the issue of inequitable access to vaccines has starkly underlined issues of social justice during the pandemic. The failure of the World Trade Organization to fully agree to waive intellectual property rights for COVID-19 vaccine patents and the inability of the global philanthrocapitalist-led COVAX initiative to procure and deliver sufficient doses to less wealthy countries in the early stages of COVID-19 vaccine and development provide just some illustrations of theses injustices. This has been a particularly troubling and tragic scenario in contexts such as India, Brazil and South Africa which, despite being key centres for vaccine research, production and testing, were far from being first in line for or recipients of sufficient doses of the vaccine when it first became available.

These injustices are powerfully explored by Susan Levine and Lenore Manderson (this volume) who examine the role of South African researchers and clinical trial populations as part of the international collaborative development of COVID-19 vaccines. They show how solidarity and cooperation gave way instead to forms of 'necropolitics' (Mbembe 2006) that placed differential value on some bodies more than others, reproducing and sustaining 'neocolonial forms of access and distribution' leading to fatal delays in access to vaccines in places such as South Africa, that themselves fed public hesitancy and resistance to vaccination. As these authors point out, the long durée of longstanding colonial modes of extraction relating to earlier clinical trial research and specific histories of HIV/AIDS science are central to understanding the political economy of COVID-19 and vaccine development.

The wider historical landscapes of vaccination campaigns, governance and public health have also impacted the contradictory politics at stake in COVID-19 vaccination in Brazil, as examined by Castro et al. (this volume). Here, a strong culture of vaccination, historically viewed as a public good and national success story, was challenged by the growth of neoliberal values, the erosion of collective rights and the relativization of scientific expertise. The context was ripe for the political manoeuvring of the populist right-wing government led by Jair Bolsonaro who used vaccination as a focus for contention and polarization. Here, rather than vaccine denial or an attack on science per se, a political strategy of emphasizing vaccines as 'experimental' reproduced sufficient uncertainty and ambiguity. As Castro et al. show, this fed anti-vaccination controversies with tragic consequences for death rates among vulnerable populations.

While the contribution from Castro et al. makes clear the role of political figureheads and how their powerful yet also carefully chosen ambiguous rhetoric can impact how vaccination is perceived by wider publics, it is also important to consider how wider regulatory infrastructures and practices shape outcomes and how these too can become terrains of politicization. Turning to the US context, Andrew Lakoff casts a critical eye on the wider machinery of governance and COVID-19 vaccination and how the potential of public trust/mistrust in the process of regulation became a resource for sustaining structures of governance. Here it was precisely because then President Trump staked his political future on the success of COVID-19 vaccine production, alongside fears of political interferences on vaccine authorization leveraged through a regulatory exception such as the 'Emergency Use Authorization' mandate in the US, that the spectre of vaccine hesitancy became a resource. Here, as Lakoff shows, this was a means to preserve regulatory autonomy in the

licensing of COVID-19 vaccines, central to the infrastructures of vaccine governance at this crucial moment in the political history of the US.

In their review of the global context of vaccine manufacturing, Jensen et al. (2023) highlight the need to attend to wider 'biomedical infrastructure' and not only consider questions of unjust distribution and access to vaccines. This means examining dynamics surrounding vaccine development and production and the ways that these are both 'more-than-national' and 'less-than-global'. In a similar way, while considering vaccine governance in specific national contexts and how national histories of public health, science and research shape these mechanisms and management of pandemic health interventions, the chapters outlined in our collection also highlight the dense entanglement between global and local dynamics and how questions of infrastructure take shape in dialogue with the ongoing transnational legacies of colonialism, apartheid and extractivism. Hope for different forms of vaccine governance lies, as Jensen et al. point out, in the innovation that can begin to address and incorporate local contingencies that shape the material substance and forms of these biomedical infrastructures (2023).

Conspiracy, Hesitance and (Mis)Information

For many people, in the context of national 'lockdowns', accompanying complex economic precarities, stressful social dynamics and isolation, and growing concerns about the pandemic's short- and long-term effects on physical and mental well-being, vaccines offered hope in a syringe. Their public health rollout was marked by sentiments of responsible citizenship and metaphors of triumph in a war for immunization. Public health campaigns rely on the 'facts' of the vaccine: public dissemination of immunological principles, public safety records, demography and epidemiology, and endless statistics. However, public engagement with COVID-19 vaccination development, rollouts, and legal frameworks proved deeply complex. The properties and affordances of the vaccines as material goods – their materiality – was defined by velocity and ambiguity. Medical anthropology as a discipline has a long history of exploring the productive capacity of this ambiguity across the gamut of social enterprises and systems. Whyte et al. (2002), for example, have shown how medicines are always social and political, and their distribution and consumption in any social system deeply informs and is informed by cultural processes. The very ambiguity within global medicine means it is particularly open to ethical, political and structural meaning, what Patryna and Kleinman partly define as a 'pharmaceutical nexus' (2006).

COVID-19 vaccines proved no exception to this. Their rapid development and rollout were in some regards the most ambitious international medical project ever undertaken. However, the assumed 'truths' of the vaccine proved extremely vulnerable. To borrow from Haraway (1991): 'The power of biomedicine and biotechnology is constantly re-produced, or it would cease. This power is not a thing fixed and permanent, embedded in plastic and ready for section for microscopic observation by the historian or critic. [It is] more vulnerable, more dynamic, more elusive, and more powerful than that' (204). Public health facts combined with the promise of (economic and social) 'return' was the marketing power of the rollout, but as anthropologist Heidi Larson (2020) has shown throughout her extensive work on vaccines, their authority is contingent upon a great many things beyond 'facts', and political reliance on 'facts' is rarely enough to engage with vaccine hesitancy. Lack of trust in vaccines is often tied to lack of trust in other social institutions, and is informed by instability in times of radical uncertainty, and the perceived inability of established power and authority to address well-being in ways that are meaningful to a particular person. Extensive reviews of the COVID-19 vaccine have shown that it is 'trust' that defines vaccine acceptance in almost any context (Adhikari 2022).

Vaccines and their 'facts' are thus also subject to cultural shadows and historical legacies in which they are unwittingly embroiled. They are also shaped by the anxieties and concerns of people in conflicting ethical positions of responsible citizenship. These individual and communal concerns are, as Qureshi, Dowrick and Rai (2023) suggest on the relationship between COVID-19 vaccine hesitancy and reproductive citizenship on women in the UK, 'socially contoured by race/ethnicity, gender and life course stage, and position within families'. As this volume demonstrates, people's relationships to the 'facts' of vaccines, and their resistance to these facts, are tied to the ambitions of nation states (Seeberg and Lehrmann, this volume), deeply rooted inequalities and the historically uneven global flows of money, medicines, and drug trials (Levine and Manderson, this volume), religious autonomy and internal power struggles (Kasstan-Dabush, this volume), and personal and governmental political agendas (Lees and Enria, this volume), among a great many other factors. Doubt and decision making within the context of COVID-19, as Kasstan writes, is also a legacy of short- and long-term histories of different communities, many of them marginalized, public health encounters (2021, 2022), suggesting that activists within epidemiology must take these legacies into account. 'Facts are facts are facts', writes Latour, 'Yes, but they are also a lot of other things in addition' (2007: 19). The facts of vaccines thus require multiple angles

of engagement in order to inform a much wider possibility of intervention towards vaccine hesitancy.

Distrust in social institutions also drove COVID-19 vaccine hesitancy. Public engagement in vaccine rollout programmes was thus further complicated by misinformation and belief in conspiracies. Health campaigns needed to spend significant energy debunking the spread of misinformation. In Britain, the BBC was regularly employed to debunk the spread of conspiracy theory during the vaccine rollout, refuting to the public widespread claims including: that vaccines are designed to alter a person's DNA, that vaccines are implanting microchips into people, that participants in COVID-19 vaccine trials are regularly dying and that their deaths are kept hidden, that governments are aware that many people will die from the vaccine but are rolling out delivery in the name of common good, and others. Many international digital media companies began using AI technology to police the spread of misinformation through automatic disclaimers labelled on posts and videos, yet still provided the primary medium to spread misinformation in the first place. As Gruzd and Mai (2020) demonstrate in their analysis of the hashtag '#filmyourhospital', it only takes a single tweet to set powerful social media feedback loops in motion, with serious consequences for public health messaging.

Because of the deeply conflicting dual nature of social media as both cause and solution to COVID-19 vaccine misinformation, anthropologists are quick to warn that emphasis on social media companies, while providing concrete targets for interventions against misinformation, might not 'have both the democratic legitimacy and the institutional competence to arbitrate the scientific merits and likely real-world consequences of speech acts within the digital public sphere' (Pertwee, Simas and Larson 2022). The authors suggested that emphasis on developing increasingly complex technological solutions to combat and remove misinformation highlights the persistent failings of public health initiatives to recognize that vaccine hesitancy is not primarily an informational problem, and always comes back to wider issues of trust (ibid.). In calling for an 'Anthropology of Misinformation', Polleri borrows from the complexities of misinformation spread about the COVID-19 vaccine to suggest frameworks for moving past the dichotomy of truth and falsity, and instead understand the spread of misinformation 'as signals that reveal a range of narratives and experiences within specific issues' (2022: 20). Understanding misinformation requires the social scientist to research the context of its production, the dynamics of trust between recipients of knowledge and their 'other', and the mechanics of the networks of dissemination (ibid.).

It is in this context of historical legacies, cultural shadows, trust and distrust, political and religious navigations, digital networks, conspiracy theories, hope and hype, and the ambiguous materiality of drugs that the narratives in 'Vaccines in View' were placed. 'Facts' about the efficacy of the vaccine in South Africa must be situated within the uncomfortable truths of historic and ongoing HIV drug trials and a lack of reciprocity between the pharmaceutical industry and the global South (Levine and Manderson, this volume). What migrants 'know' of the COVID-19 vaccine in Colombia is framed by what they have already experienced with regard to HIV therapies and prior experiences of public health care and contextualized by sexuality and gender (Irons, this volume). The hugely successful vaccine uptake in Denmark shows that trust in the 'facts' of the drug are tied to trust in the Danish state, and what it means to be Danish, complexifying the identity of the minority group of people with concerns about the rollout (Seeberg and Lehrmann, this volume); or conversely in Brazil, increasing lack of trust in vaccines highlights the breakdown of social and collective rights, rather than a deep engagement with the drugs themselves (Castro et al., this volume). The chapters in this volume address the position of hesitancy and misinformation in the contexts and complex networks in which they operate, providing, following Polleri's call, frameworks and lessons for public health platforms to better address hesitancy beyond the dichotomy of truth and falsehood.

Structure of the Book

As has been seen, vaccines are not administered in a vacuum, and are influenced by, and influence, notions of citizenship, nationalism, and politics at national and international levels. To address this, Ben Kasstan-Dabush's chapter opens the collection with his exploration of claims of public health exemplarity in Israel, in which models of responsiveness were presented as being worthy of imitation or comparison – but were based on a situated or selective vantage. Jumping off from his position of what he terms a participant(-observer) in Israel's COVID-19 vaccination programme, Kasstan-Dabush seeks to respond to the questions: What can juxtaposing public/national health priorities with a global health challenge reveal about the concept of 'exemplarity'? How are public health 'examples' situated within a cultural politics of statecraft? He does so by critiquing COVID-19 vaccination vis-à-vis projects of statecraft that are premised on protecting populations through the discourse of (bio)security, suggesting that instead hope lies in taking exemplarity as the product of a process that is built on past failings, in making a commitment to learning

from the present, and being future-facing, which constitutes the basis for development and continued improvement. This discussion is followed by the case of nationalisms in another high-income country, Denmark, with Jens Seeberg and Malthe Lehrmann's discussion of vaccine priorities. The authors argue that the willingness of countries to invest in their own vaccines may be understood as a symptom of nationalistic ideologies that have spread across the globe and now constitute a separate cultural pandemic, thereby underscoring the need for nuanced approaches to analysis and interpretation when exploring immunizations. A rather more marginalized context follows with Rebecca Irons' exploration of 'good citizenship' and the COVID-19 vaccine for Venezuelan migrants living with HIV in Bogotá, Colombia. Through long-term ethnography, she argues that although 'pharmaceutical citizenship' suggests that those in structurally vulnerable positions must accept state provided/mandated medication as a condition of citizenship, in the case of COVID-19 vaccines for HIV positive migrants, this overlooks their own positionality and approach towards medication acceptance. By exploring the lived experience of three migrants in different positions of marginality (a cis-gendered man, a cis-gendered woman, a homosexual man), Irons underscores the importance of considering the intersectional factors influencing migrant experiences, even when it comes to addressing one particular group (here, those with HIV), stating that lived realities may vary considerably and should be taken into account.

In the next chapter, Andrew Lakoff discusses vaccine governance. He addresses the question of 'public trust' in regulatory science through an examination of the role of experts and government officials in the authorization of a COVID-19 vaccine in the United States. He suggests that while trust in the safety of technical objects such as vaccines is often seen as depending upon the autonomy of regulatory agencies and the objectivity of experts, here the converse was the case: experts and regulatory officials used the construct of public trust – or rather, mistrust – as a means to preserve their autonomy. Susan Levine and Lenore Manderson then steer the discussion away from a targeted focus on COVID-19 by asking what social forces underlay the collaboration and co-ordination that allowed the speed of COVID-19 vaccine research, in contrast to the slow progression of work for an effective HIV vaccine. In responding to this question through the ethnographic case of South Africa, the authors illustrate how structures of inequality from colonialism and apartheid continue to shape lives in the present. Rosana Castro, Marko Monteiro, and Alberto Urbinatti then delve into the official discredit of COVID-19 vaccines in Brazil through an analysis of the production of uncertainty as a political and health governance strategy to respond to the virus during

the Bolsonaro administration (2019–2022). The authors argue that rather than an outright denial of science, the Bolsonaro government successfully helped to produce uncertainty through discursive and policy ambiguity, which in turn helped to increase distrust in science and scientific advice in the country.

In the final section the collection turns to issues of conspiracy, hesitance, and (mis)information, with the ethnographic case studies of Ireland, Tanzania, and Sierra Leone presenting contextual diversity on the topic. Drawing on over a decade of ethnographic research in Tanzania and Sierra Leone, Luisa Enria and Shelley Lees explore how people themselves articulate (mis)trust in novel vaccines, showing how memories may be explicitly remembered or embodied, and emerge through anxious narratives that reveal the significance of long-term and short-term histories of colonial extraction and intercommunal tension, prompting scepticism. They suggest that if we pay attention to these articulations of (mis)trust, we may glimpse the significant ambiguity and caution with which people navigate the uncertain terrains of health emergencies. Finally, Dan Nightingale closes the collection with his theoretically rich discussion on vaccine (mis)information practices in Dublin, Ireland. He explores the social dimensions of vaccine resistance and its entanglement with the wider 'problem of misinformation'. Ultimately, Nightingale investigates information's social agency and persuasive power, unpacking how this contributes towards people's reaction to, and acceptance of, immunization.

Together these chapters develop a global, theoretically diverse compilation on the challenges of vaccinating the world, united by the implicit hope that governments, communities, and experts seek to understand each other's perspectives and work towards empathetic collaboration for the future eradication of vaccine-preventable diseases.

Rebecca Irons is a Wellcome Trust senior research fellow in humanities and social sciences at University College London. Her research interests include health in the blue anthropocene, sexual and reproductive health (particularly HIV), and creative methodologies in Latin America and the UK.

Sahra Gibbon is Professor of Medical Anthropology at UCL.

Joanna Cook is Professor of Anthropology at UCL. She is the author of *Meditation in Modern Buddhism: Renunciation and Change in Thai Monastic Life* (Cambridge University Press, 2010) and *Making a Mindful Nation: Mental Health and Governance in the 21st Century* (Princeton University

Press, 2023). She is the co-editor of *An Anthropology of Intellectual Exchange* (Berghahn Books, 2023), *Mindfulness and Culture* (Anthropology Today, 2022), *Unsettling Anthropologies of Care* (Anthropology and Humanism, 2020), *The State We're In: Reflecting on Democracy's Troubles* (Berghan Books, 2016), *Detachment: Essays on the Limits of Relational Thinking* (Manchester University Press, 2015) and *Southeast Asian Perspectives on Power* (Routledge, 2012).

Aaron Parkhurst is Associate Professor of Biosocial and Medical Anthropology at UCL. His current projects include an ethnography of the human body onboard the International Space Station and the complex networks of life-science research conducted on the ISS. He works in the intersection of health, well-being and culture, with a foci on chronic illness, bioethics, the intersection of technology and the human body, and outer-space studies. He is editor of the *Journal of Anthropology and Medicine*.

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