

# Introduction

## Pandemics, Multidisciplinarity, and Global Ethics

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Pandemics have quickly become one of the most daunting subjects of the twenty-first century. Part of the challenge in understanding a pandemic relates to its widespread nature, which is at the heart of its definition. In epidemiological terms, a ‘pandemic’ is defined as ‘[a]n epidemic occurring over a very wide area, crossing international boundaries, and usually affecting a large number of people’ (Porta 2016). The widespread nature has certainly characterized previous pandemics in human history, such as the ‘Spanish flu’ in 1918, HIV/AIDS, and the A(H1N1) influenza in 2009. More recently, the COVID-19 outbreak has provided a prime example of how pandemics do not know any boundaries and have implications on all spheres of activity.

In addition to crossing international boundaries, it is also clear that pandemics cross boundaries between academic disciplines. To name a few, pandemics provoke a broad range of consequences in economic, ethical, geographic, legal, medical, pharmaceutical, political, and sociological terms. Moreover, the disparate impacts of pandemics on persons with disabilities, those dependent on childcare, racialized and cast minorities, Indigenous people and communities, people in poverty, and other marginalized people reveal structural injustices and the complex social political economies that sustain them.

In the introduction to this edited volume, we want to emphasize the importance of studying pandemics through a multidisciplinary dialogue. We believe that approaching the causes and consequences of pandemics on our contemporary world by relying on a single academic discipline offers a limited, narrow perspective. Moreover, reaching beyond the limits of a single discipline paves the way to an understanding of pandemics as opportunities to identify solutions that are based on principles of justice and equality. Taken as a whole, these two aspects—a multidisciplinary approach and the prospect of identifying equitable solutions—provide a common basis for the study of pandemics that animates this entire volume. We hope that this work will pave the way for multi-perspective transdisciplinary work

to demonstrate the role of epistemic oppression in shaping the consequences of pandemics, as well as in rendering the role of structural injustice invisible and those very consequences also invisible.

### **A Multidisciplinary Approach to Pandemics**

The study of pandemics is not new. Pandemics and global health have been one of the paramount research themes in several disciplines, with each discipline focusing on a particular aspect of the issue. In political science, scholars have mainly investigated the 'securitization' of pandemics by the international community, state efforts to control their borders, and the role of surveillance in addressing pandemics, as well as the strengths and limitations of institutions of global governance (e.g. Davies 2008, 2010; de Bengy Puyvallé and Kittelsen 2019; Elbe 2010; Greitens 2020; Huang 2014; Kamradt-Scott and McInnes 2012; Kenwick and Simmons 2020; Lipsy 2020). Geographers have been equally active in highlighting the influence of spatial and temporal dynamics of pandemics on human geography and demography (e.g. McLafferty 2010; Welford 2018), while scholars of urban planning have underscored the relationship between urban density, housing, inequality, and pandemics (e.g. Keil and Ali 2007; Matthew and McDonald 2006). Public policy scholars address the differential impacts of pandemics on structurally disadvantaged groups (Raifman and Raifman 2020) and the problems of lack of sufficient data, for example, on persons with disabilities (Reed et al. 2020) and Indigenous people (Goha et al. 2021). Economists have studied the impacts of pandemics on monetary and fiscal policy, the unemployment rate, international trade, and the differential impacts of these (e.g. Koegh-Brown et al. 2010; Lee and McKibbin 2004). Scholars in international law have focused on the obligations of states during times of pandemic, with a particular consideration of the International Health Regulations adopted by the World Health Organization (WHO) (e.g. Fidler 1996, 2003; Halpern 2020; Heath 2020). Historians (e.g. Echenberg 2011), sociologists (e.g. Dingwall et al. 2013), pharmacists (e.g. Ford et al. 2006), and ethicists (e.g. Smith and Upshur 2019) have also shed light on particular issues. Of course, additional work from other disciplines that have contributed to the current understanding of pandemics could be added to this list.

Interestingly, one can also identify efforts to examine pandemics by integrating more than one discipline. For example, some authors have combined economics and history to analyse previous pandemics (Clay et al. 2018). Building on history and political science, some have studied how democracies and autocracies have dealt with pandemics for the past thousand years (Stasavage 2020). Others have applied international relations theory to developments in international law with a view to analysing emerging infectious diseases in the context of the globalization

of public health (Fidler 1997). Still others have explicitly sought to connect the discipline of public health with international relations' expertise on diplomacy to argue that localized, regionalized health diplomacy (rather than global diplomacy) is likely to be less effective (Fazal 2020). In order to address the use of anti-viral drugs during pandemics, some authors have linked the disciplines of pharmacology, epidemiology, and health economics (Kamal et al. 2017). Pandemics have also been the subject of research in academic fields that are not defined by a traditional discipline, such as global studies (e.g. Jacobsen 2018) or gender studies (e.g. Abrahmsen 1997). While these examples are noteworthy, the overwhelming majority of work addressing the causes and consequences of pandemics are hosted within a specific academic discipline.

We might expect that interdisciplinary studies such as Indigenous studies, disability studies, gender studies, race and ethnic studies, public health, and law are well positioned to ask probing questions about the complexities of pandemics, their disparate impacts, and what these reveal about persistent structural injustices. However, the responsibility for wrestling with these questions does not rest with them alone. Yet, they provide some guidance as to the kinds of insights disciplinary scholars can offer if they develop a multidisciplinary perspective.

Given the complexities of pandemics and their impacts, there is a need to establish a dialogue across disciplines that have traditionally examined pandemics independently. It is in this regard that the present volume explicitly adopts a multidisciplinary approach, which means relying on knowledge from multiple disciplines to obtain a broader understanding of a topic (Alvargonzález 2011: 388; Long 2011: 38; Miller 2010; Thompson Klein 2017: 24). It results from ascertaining that a specific phenomenon does not neatly align with the distinctions found in academic disciplines. Limiting the analysis to the concepts, theories, and methods of a single discipline inevitably leaves gaps and offers a narrow understanding of the topic. In order to provide a comprehensive analysis, a multidisciplinary approach calls for the addition of disciplines, as well as a certain form of coordination between them.

It is also worth noting that the ambition of a multidisciplinary approach has some inherent limitations. In contrast to interdisciplinarity or transdisciplinarity, the aim of multidisciplinary is not to combine several disciplines with a view to providing an integrated analysis (Long 2011: 40; Miller 2010; Thompson Klein 2017: 24). Rather, a multidisciplinary approach considers that a plurality of academic disciplines is relevant and that each discipline can coexist in parallel. While an interdisciplinary approach would seek to identify an integrative framework to complete the analysis, a multidisciplinary approach considers that each discipline can apply its own concepts, theories, and methods with a view to understanding a topic or solving a problem. The absence of integration that characterizes multidisciplinary is particularly well captured in a typology provided by Thompson Klein (2017: 24): 'Juxtaposition fosters wider scope of knowledge, information,

and methods. Yet, disciplines remain separate, retain their original identity, and are not questioned.'

The distinction between a multidisciplinary approach and an interdisciplinary approach can nevertheless be blurred in practice. While conceptually clear, the extent to which the 'juxtaposition' or the 'integration' of more than one discipline materializes in academic research is often difficult to fully grasp. When one seeks to adopt a multidisciplinary approach, completely avoiding the interaction among disciplines within a single work is almost impossible. Even when merely juxtaposing disciplines and maintaining their original identity, a certain form of dialogue inevitably emerges. Scholars of any discipline would be hard pressed to demonstrate that their discipline has developed in total isolation from other disciplines. This book looks for, highlights, induces, and encourages the in-between space among disciplines.

Most importantly, while the absence of integration between disciplines could be perceived as a flaw, it must be stressed that a multidisciplinary approach is relevant in its own right. By combining more than one discipline, a multidisciplinary approach plays a valuable role in expanding knowledge needed to improve our understanding (Thompson Klein 2017: 24). Even without the integration that characterizes the interdisciplinary approach, the relevance of multidisciplinaryity is premised on the analytical power that results from adding multiple specialist perspectives (Long 2011: 39). One could even suggest that a multidisciplinary approach contributes to enhancing the stature of participating disciplines, given that it does not threaten their own identities (Miller 2010). Without seeking to challenge the weaknesses of each discipline, a multidisciplinary approach thus builds on their strengths to provide a broader understanding of the phenomenon at hand. A nice balance is achieved between realities, ideas, and the ways in which knowledge production is academically structured.

A multidisciplinary approach is thus a flexible means to account for several factors that must be considered in order to provide a comprehensive understanding of a phenomenon without seeking to reach an integrated paradigm that results from the combination of various disciplines. While multidisciplinaryity is necessary to reach such a comprehensive understanding, a certain level of coordination is needed to avoid a form of eclecticism that would counter the benefits of the approach. To a certain extent, a cautious balance must be constantly sought.

Given that pandemics, by their very nature, are widespread and bear implications for a broad range of activities, we believe that studying their causes and consequences is best served by a multidisciplinary approach. As emphasized by Jacobsen in the context of global studies (2018: 658), '[t]he complex pathways leading to the occurrence of pandemics and the complicated responses to them cannot be understood when only one disciplinary or cultural lens is applied'. While each academic discipline can undoubtedly bring a meaningful contribution to

our understanding of pandemics, juxtaposing contributions from various disciplines within a single book ensures a more comprehensive analysis of the topic at hand.

More specifically, this volume invites readers from different fields to reflect on their conceptualizations of pandemics and to consider how a multidisciplinary dialogue can stimulate and enrich our understanding of pandemics in our contemporary world. In contrast to an interdisciplinary approach, the aim is not to offer a unique paradigm upon which to conduct research on pandemics. Rather, the main objective is to explore the growing diversity of definitions, approaches, theories, causes, and consequences of pandemics. Our goal is to generate a multidisciplinary dialogue about the ontological, epistemological, paradigmatic, and normative aspects of studying pandemics.

To achieve this end, this book brings together in a single volume essays by political scientists, environmental scholars, legal scholars, clinical pharmacists, economists, scholars of urban planning, scholars in health and medicine schools, and researchers in business and management. Each author was asked to assess and analyse the central causes and consequences pertaining to the study of pandemics in their respective field of research. The authors were also asked to write for a non-specialist audience and to be mindful of how their own contribution fits within attempts to explain pandemics by relying on other disciplines. As a result of the multidisciplinary dialogue that underlies the contributions provided in this text, we believe the concrete impact they have on our understanding of pandemics is greater than the sum of the parts.

## Global Ethics and Pandemics

The COVID-19 pandemic presents us with two sets of ethical imperatives. The first ethical imperative is to address preparedness, mortality, vulnerabilities, and the injustices associated with or revealed by these as they relate to the health crisis. The second is to learn from the COVID-19 pandemic the lessons that we need in order to prevent and be prepared for future pandemics. In this sense, ironically given the human tragedy of this crisis, COVID-19 poses an opportunity. COVID-19 is merely a starter pandemic. It is not as contagious as other diseases (such as measles) and not as lethal as some (such as Ebola), and it can be addressed with minor interventions—mask wearing, testing, and contact tracing. Yet, the failings of large populations to be able or willing to participate in these relatively minor interventions meant that as of September 2021, 4.5 million people had died from the disease and a more contagious variant had spread through unvaccinated populations and vaccinated populations alike. On the one hand, the complexities of pandemic preparedness, mortality, vulnerabilities, and injustice reveal that multidisciplinary analysis is necessary for revealing and addressing the threats to global

justice posed by the pandemic. On the other hand, the injustices that the pandemic reveals have been latent within local and global political, economic, social, and health systems, thus posing fresh empirical questions best explored by drawing on multidisciplinary analysis.

## Preparedness

Global preparedness is measured by the Global Health Security (GHS) Index in terms of anticipated ability to prevent, detect, and respond to a pandemic, the sufficiency and robustness of the health sector, the political and scientific norms for addressing pandemics, and the risks and vulnerabilities related to all of these (GHS Index 2019a).<sup>1</sup>

Measures of global pandemic preparedness may have been operationalizing or weighting some variables incorrectly, tracking the wrong variables, and omitting others. For example, prior to COVID-19, the United States ranked first in terms of prevention, detection, health, and norms (GHS Index 2019b). Brazil also ranked high on prevention, detection, and response (GHS Index 2019c). Both of these countries were not the country of origin of SARS-CoV-2, but they were among those leading in a number of cases of COVID-19 in 2020. By contrast, Mongolia was ranked in the bottom half of all countries on all measures except detection (GHS Index 2019d). Yet, because of strengths in detection and other variables not included in the GHS Index, as of this writing, it has had few cases, no deaths, and most importantly no internal transmission, even though their largest city is as population dense as the epicentre of the initial Italian pandemic (Samarajiva 2020). The timeline of the Mongolian response and its relative success suggests that having a response plan and the capacity to develop a response plan may be an underweighted variable in the GHS Index.

Further, the GHS Index may not be accounting sufficiently for how one measured factor affects other measured factors or how other factors not in the measure (such as dependency within the structure of the economy or interdependencies globally) affect those currently measured (such as the ability to respond). For example, India's economy has a high reliance on migratory labour, such that when the government shut down the economy to mitigate the spread of the virus, they set in motion the mobility of low-income labourers, often to destinations with relatively lower levels of health-care system capacity. Further, the GHS Index does not

<sup>1</sup> 'The 140 GHS Index questions are organized across six categories: 1. Prevention: Prevention of the emergence or release of pathogens; 2. Detection and Reporting: Early detection and reporting for epidemics of potential international concern; 3. Rapid Response: Rapid response to and mitigation of the spread of an epidemic; 4. Health System: Sufficient and robust health system to treat the sick and protect health workers; 5. Compliance with international norms: Commitments to improving national capacity, financing plans to address gaps, and adhering to global norms; 6. Risk Environment: Overall risk environment and country vulnerability to biological threats' (GHS Index 2019a).

account for the ways in which weakness in one aspect of pandemic preparedness cannot be compensated for by strength in another.

Moreover, there seems to have been insufficient attention to the ways that decisions in one country might affect those in another, not only in terms of prevention and detection, but also in terms of norms and managing risk. The WHO has the role of facilitating transnational communication about pandemics, yet it does not have the authority to influence national practices which are the ground game of pandemic detection, response, and health.

While not as lethal or infectious as other diseases, the ability of COVID-19 to be transmitted by asymptomatic infected people not only made detection, response, and health services relatively more important, but also raised the importance of resources to support relatively low-technology health norms (mask wearing and social distancing) for all aspects of preparedness. Thus, in addition to the havoc that COVID-19 has wrought, it has also alerted us to the range of considerations across political, scientific, medical, health, economic, and social factors and the ways that these influence each other in our national and global capacities to address pandemics.

### Mortality and Exposure

Because COVID-19 is not water borne, prevention is relatively straightforward and inexpensive: behaviour (social distancing), mask wearing, testing, and tracing. (Once developed, vaccination was important, but executing large-scale global vaccination plans was neither straightforward nor inexpensive.) Yet, despite these being universally available modes of prevention, co-morbidities and variation in implementation of these within and across countries have contributed to spread and differential impacts. Moreover, for considerations of justice and inequity, these differential impacts are not random. They follow discriminatory patterns already existing in society. Gender, sexuality, disability, identity, race, ethnicity (including Indigenous people), caste, capacity, even geography (urban versus rural) and source of livelihood (caregiving) are all bases of discrimination in some contexts. When they intersect, the role of discrimination or oppression in the causal chain can become invisible. Further, these are also structural features of the political economy of most nations that resulted in some people being more likely to be exposed to the pandemic or to its impacts on their lives and livelihoods.

Of course, calculating the effect of SARS-CoV-2 on death rates is difficult due to the ambiguity around co-morbidities (Aron and Muellbauer 2020; WHO 2020). The impact on morbidity more generally is difficult to assess because of the decrease in other mortality rates (such as from transportation accidents because

there are fewer people using all modes of transportation during restrictions and as a consequence of behaviour changes) and the increases in other mortalities as people defer health screenings and check-ups. However, lack of data is not evidence that there is no problem to study; it is evidence that even our structures of data collection are inadequate for understanding the impacts of the pandemic (Goha et al. 2021; Reed et al. 2020; Raifman and Raifman 2020).

Mortality due to COVID-19 varies across countries, as well as among groups within countries often by conditions of privilege. For example, economic inequality and gaps in the public health care system mean that in Peru and Bolivia, families struggle to purchase on the black-market oxygen for their sick family members, creating disparities of survival based on privilege. Moreover, considering the long-term health consequences of the disease, we anticipate high concentrations of morbidity due to COVID-19 as a pre-existing condition will be in those populations which were more vulnerable to COVID-19. Thus, there is a triple effect of vulnerability: to the disease, to co-morbidities with the disease, and to the co-morbidities created by the disease.

The ethics of these differences are complicated because while the disease does not discriminate, discriminatory background conditions such as in exposure to environmental toxins, employment patterns, and pre-existing health insecurity create patterns of exposure to the disease, as well as increased likelihood of fatality from the disease, that echo these pre-existing conditions and further expose the injustices within these conditions.

We will pick up this question in the discussion of vulnerabilities. To anticipate, there is no simple story about the demographic effects on COVID-19 mortality. In 'Necropower as a Body Project', Shatema Threadcraft (2020) argues that while biological race did not exist, we have created it. The intersection of race, gender, age, and socio-economic status make us biologically more vulnerable to SARS-CoV-2. Further, the intersection of race, gender, age, and socio-economic status make us more vulnerable to a range of political, economic, social, and health disadvantages and these unjust weaknesses in our systems further contribute to the relative differences in mortality and other health consequences. Therefore, we need a better understanding of the political, economic, social, and health disadvantages that are the background conditions of the world in which SARS-CoV-2 has so successfully thrived.

## Vulnerabilities

The preceding discussion suggests that there are two considerations of vulnerabilities brought on by the pandemic: (1) the background discriminations and oppressions that make some people more vulnerable to COVID-19; and (2) the

direct and indirect ways that through the social, economic, and political responses to the pandemic and getting the disease individually cause or exacerbate additional harms.

The socio-economic, political, and health background conditions vary by country, but generally follow patterns of discrimination in each country. These include: gender, sexuality, identity, race, ethnicity, caste, capacity, and even geography and source of livelihood. For understanding the impacts of these on vulnerability to COVID-19, we group these as geography (density exposure, access to health care, access to testing, and exposure to environmental toxins), employment, exploited categories (low-wage labour, gender, race, ethnicity, caste), marginalized categories (gender, sexuality, identity, race, ethnicity, caste), and the intersectional effects of these.

Some urban settings have had more access to health care and testing for SARS-CoV-2 than others. Likewise, most rural settings lack adequate health care for treatment and access to testing. These follow other conditions of poverty and affect white, African American, and Indigenous communities.

People who live in concentrated settings such as slums, low-income housing, and high-rise apartments that rely on elevators are more vulnerable to catching SARS-CoV-2. For example, during the first year of the pandemic, the most fatal zip code in New York (11239) included a subsidized housing project. Concentrated settings are not exclusively low-income settings, but they often are. Concentrated settings are not exclusively urban settings; some rural settings require people to live in concentrated ways due to the environment, geography, or availability of water, for example.

Background conditions of exposure to environmental toxins is another way that geography affects vulnerability to COVID-19. Exposure to toxins, particularly those that cause lung damage, may have left those exposed more vulnerable to mortality were they to contract the disease. Low-income, minority, marginalized, and Indigenous populations are more likely to live and work near these toxins.

Vulnerable people have to take vulnerable jobs. In most settings, the background conditions of socio-economic inequality are such that women, minorities, and marginalized groups are disproportionately employed in these vulnerable jobs.

Likewise, there are socio-economic reasons for exposure to SARS-CoV-2. Certain jobs, such as home-care work, health-care work, high-contact jobs as in some parts of the food supply chain, or any of these if they require (as most jobs do for low-wage, urban workers) public transportation in high concentration all make employees relatively more vulnerable to COVID-19. Many of these jobs, such as health care and transportation, are low-wage work deemed 'essential' and thus employees were not given the option of staying home and protecting themselves or their family members during the pandemic without risking their jobs. Other low-wage workers and informal workers such as garbage pickers and care

workers continued to work though without minimal personal protective equipment. Certain industries are more vulnerable than others, certain workers are more vulnerable than others, and certain modes of employment (independent, small business, leveraged business, midsize, and large-size industry) also vary in the vulnerability of their workers.

Thus, in most settings these factors intersect. Zip code 11239 in New York has the highest percentage of people over 65, is 49.45% African American, has an unemployment rate of 14.6%, and is 61.1% female. Each of these factors individually is associated with higher vulnerability to COVID-19, but when they intersect—black and Latina women are five times as likely to contract COVID-19 as white women—the ramifications are lethal. While we see correlations between age and mortality, poverty and mortality, and race and mortality, when we look within the data to see intersections, the data tell us both that intersectional forces exacerbate the impacts on some people *and* that those same intersectional forces may obscure that differential in vulnerability. Thus, we need intersectional and multidisciplinary research in order to survive COVID-19, anticipate its created and exacerbated inequalities, and prepare for and ameliorate the impact of the next pandemic.

The vulnerabilities of COVID-19 extend further than surviving the health consequences of COVID-19. These include political, economic, and social vulnerabilities. Which factors are salient and which intersectional forms will vary by context, but a quick consideration of some concrete examples illustrates the range of necessary considerations and the import of multidisciplinary approaches to perceiving and understanding the impacts of COVID-19 on global and local justice. Notice that there are gendered and raced patterns in who is deemed an essential worker and thus not able to stay home from their job (or in the United States eligible to receive the unemployment benefit in the US stimulus packages). As with the health disparities, COVID-19 and the pandemic response have revealed chronic inequalities in vulnerabilities that existed prior to the pandemic and exacerbated these.

With variability by context, loss of employment is highly correlated with loss of access to health care (or the ability to pay for it), increased stress, decrease in nutrition, and decrease in basic health (often correlated with these other changes).

The primary mode of prevention of spread, which has been closing places of business or limiting capacities, has caused loss or suspension of low-wage service work such as taxi driving, hotel cleaning, food service, home-care work, and informal sector work more generally. These sectors not only are generally the most low-paying in an economy, but also employ the most vulnerable within populations.

In addition to environmental and economic vulnerabilities, there are also social vulnerabilities. Reporting of domestic violence against women is up. Reporting

on violence against children is down because abuse of children is often identified by mandatory reporters (the teachers, doctors, and caregivers that children are seeing less of during the pandemic) (Mlambo-Ngcuka 2020). Likewise, lockdowns affected people differently and created opportunity for rights violations of others, such as through trafficking. The pandemic may create new entrants into the trafficking business and greater demand for trafficked persons (Collective 2020). Violence against Dalits is going uninterrogated by authorities in India (Gupta 2020). Likewise and additionally, the effects of the pandemic and pandemic response on people with mental illness or mental disabilities, people with certain physical disabilities, people with addictions, people in crowded housing or without housing, sexual and gender minorities, immigrant communities, seasonal migrants outside of their communities, and other vulnerable sub-populations within communities are less visible, but no less important.

Finally, health-care workers treating patients of COVID-19 and journalists covering the crises have suffered the emotional trauma of attending to and witnessing so much suffering and loss of life day after day.

### Injustice and Pandemics

In sum, the injustices associated with the pandemic come from pre-existing political, economic, social, and health injustices. These are systemic in the sense that they persist in their differential impacts across a context, consistently rendering the most vulnerable relatively more vulnerable to COVID-19 and its health and economic consequences. Further, the politically and socially vulnerable are made more so by the pandemic. Multidisciplinary inquiry and intersectional analysis better enable us to identify and plan for addressing the global and local injustices of pandemics because they have the capacity to reveal the intersectional and interactive dynamics of underlying vulnerabilities across types of vulnerability, as well as how each and together these are laid bare and exacerbated by the disease and responses to it. Our methods and indices of pandemic preparedness need to keep these in mind. We need to measure them correctly, weight them significantly, and incorporate these into our analyses.

### Organization of This Volume

This edited volume provides a comparative analysis of the ways in which pandemics are theorized and studied across several disciplines. It has three objectives: (1) to explore the growing diversity of theories and paradigms developed to study pandemics; (2) to initiate a multidisciplinary dialogue about the ontological, epistemological, paradigmatic, and normative aspects of studying pandemics across

disciplines; and (3) to highlight the potential of pandemics to move us towards solutions based on equality and justice.

The relationship between COVID-19 and previous pandemics is a crucial one. While the COVID-19 outbreak has shed light on the need for a multidisciplinary dialogue, the edited volume does more than discuss a timely topic. It addresses the timeless (but periodic) topic of pandemics and allows us to make sense of COVID-19 in our era and into the future. It is in this context that Kathryn H. Jacobsen provides an epidemiological perspective on historic and emerging pandemics in Chapter 1. She highlights that epidemiology generates knowledge on adverse health conditions with a view to preventing new health problems. While the COVID-19 pandemic can be considered as a ‘once-in-a-lifetime’ event, she underscores that the response to it has drawn from previous pandemics (including cholera, SARS, influenza, HIV/AIDS and non-communicable diseases). Taken as a whole, these events have shown how a multidisciplinary field of ‘pandemiology’ could be a more robust and effective way to plan for and respond to pandemics.

Absorbed by the various policies and strategies deployed by governments around the world, we tend to forget that viruses are dynamic, constantly adapting, and ever evolving. To capture that dynamic, Dominic Johnson makes the case in Chapter 2 for taking an evolutionary approach to pandemics. He underscores the added value of an evolutionary perspective in making sense of the ‘behaviour’ of viruses, including virus strategies and mutations. Johnson also traces with unquestionable clarity what an evolutionary approach brings to our understanding of how we humans, the host, react and adapt. By exploring the cognitive challenges of the modern world (Johnson 2020; Johnson and Tierney 2019) and the cultural evolution through which humans interact, Johnson argues that several policies currently adopted might be playing into the hands of the virus. The path to success seems to be about adaptability and swiftness.

While pandemics affect every state and society, some of the consequences need to be politically and contextually analysed. In Chapter 3, Jack Goldstone asks an important yet rarely discussed question about the consequences of pandemics: can pandemics bring about political revolutions or not? Building on his previous well-recognized works on revolution (Goldstone 2001, 2014), Goldstone identifies two paths by which pandemics create pressures for political change: demographic and economic. In the current situation, and with the current knowledge about COVID-19, Goldstone contends that the disease is not severe enough to alter the trajectories of populations in any states. Yet his main argument is that it is important to distinguish among political regimes when analysing the economic impacts. Mass mobilization aimed at overthrowing the existing regime (i.e. a revolution) is only likely in authoritarian regimes, whereas a major political party realignment is only likely in democracies.

If the relationship between pandemics and revolutions is not as conclusive as some might have expected, what about the relationship between pandemics and

terrorism, particularly bioterrorism? In Chapter 4, Matthieu Guitton reflects on the possibility that pandemics and bioterrorist events can become synergistic. Focusing on the ontogeny of fear in the digital age, he underscores the role played by the spread of misinformation in the perception of fear, the creation of stigmatized groups, and the possibility of biological threats (Guitton 2019). One of Guitton's arguments is that the convergence of technologies (between pandemics and bioterrorism) can lead to two types of division. The first division refers to the distinction between those who 'follow' the rules and recommendations of health authorities and those who do not trust the government. The second division relates to the creation of stigmatized groups based on socio-economic status, ethnicity, and other vectors.

In Chapter 5, Christopher Bickerton looks at the relationship between regional integration processes and pandemics. It traces several national experiences, focusing on health and economic-related measures. Bickerton shows that government responses have varied considerably—from France's restriction on internal movement, to Sweden's attempt at herd immunity, to the UK's mixed policies. Building on his previous works on European integration (Bickerton 2012; Bickerton et al. 2015), his main argument is that while the pandemic underscored the high level of financial interdependence of national economies within the European Union, it also exposed a deficit in transnational solidarity. While solidarity has been at the centre of national responses, it has largely been absent from health-related policy coordination at the European Union level.

In Chapter 6, Jean-Frédéric Morin, Sikina Jinnah, and Amandine Orsini tackle an often-invoked comparison since March 2020 of comparing pandemics and environmental crises. Drawing on previous works (Morin et al. 2020; Jinnah and Morin 2020), they offer an analysis of the underlying problem structure and the governance systems. On the first dimension, the authors describe the similarities shared by pandemics and environmental crises, including global interdependence, exponential dynamics, and disproportionate impacts. For instance, the consequences of both pandemics and environmental crises are non-linear—they increase over time. Yet the authors argue that pandemics and environmental crises present different governance systems. Among the major differences are the higher degree of centralization and the faster political response of the global health governance system. After offering some explanation for the variation, Morin and colleagues conclude with policy solutions that would improve the synergies between pandemics and environmental crises.

In Chapter 7, Michael Hooper looks at the relationship between pandemics and urban planning. Everyone is now familiar with the term 'social distancing', but many observers have pointed out that social distancing might be more difficult in some locations than in others. Hooper reviews these arguments about the role of urban density in spreading pandemics, while contrasting them with city planners' arguments that densification brings environmental, social, and economic

benefits (Hooper 2019). One of Hooper's key arguments is that the relationship between urban density and pandemics is not as straightforward as some would like us to believe. One needs to inject a good dose of complexity in the analysis via the role of hard infrastructures (roads, open space, etc.), soft infrastructures (cultural activities, health-care services), city political governance systems, disaster risk preparedness, and inequality.

Charles-Emmanuel Côté, Richard Ouellet, and Jean-Michel Marcoux explore, in Chapter 8, the consequences of the several restrictionist measures implemented by states for safety reasons. By analysing the provisions allowing states to justify the adoption of these measures in international economic law, they underscore a key tension: while an extensive interpretation of concepts may ease the justification of trade and investment restrictions, the reliance on exceptions may represent an obstacle in fighting the pandemic. The authors trace the significance of exceptions in international agreements, particularly the relationship between pandemics and exceptions under the General Agreement on Tariffs and Trade and World Trade Organization law. They also discuss the links between foreign investment and exceptions in times of pandemic, highlighting the main measures implemented to fight the COVID-19 pandemic that have had an effect on foreign investors. They conclude with a warning: even if relying on exceptions suggests a step forward, it may also represent two steps backward, as some of the exceptions have not been crafted to deal with pandemics, and nationally oriented measures may impede global efforts.

Pandemics have increased gender inequality and the vulnerability of women on various fronts. In Chapter 9, Julia Smith provides a comprehensive analysis of the gender gap exposed since the outbreak of COVID-19, as well as previous pandemics. Emphasizing that the gender dimensions of pandemics are both physical and socially constructed, she applies a gender-based analysis of the gendered dimensions of pandemics and addresses the responses provided by governments and global health institutions (Wenham et al. 2020). More specifically, she focuses on the direct and indirect health impacts of outbreaks, as well as the consequences of pandemics on employment and the economy. She also argues that responses to previous pandemics have largely failed to take into consideration these gendered effects, and that gender-based responses to the ongoing COVID-19 pandemic remain piecemeal, with some notable exceptions. Overall, Smith provides a clear demonstration that pandemics entail a gender equality crisis that reaches beyond the global health crisis that is typically addressed. Her consideration of these gendered dimensions implies both an approach that is genuinely multidisciplinary and the identification of opportunities to improve global justice.

In addition to exacerbating and amplifying pre-existing inequalities, pandemics can also profoundly disrupt various aspects of globalization. One of them is organized crime. As analysed by Robert Muggah in Chapter 10, the unprecedented measures that have been adopted during the COVID-19 pandemic have

caused a series of far-reaching and multifaceted effects on organized crime. The chapter thus provides an analysis of three areas where this specific pandemic has altered the opportunity structure of organized crime: (1) several shifts in criminal violence due to the imposition of lockdowns; (2) the migration of criminal actors to cyberspace; and (3) the diversification of operations with a view to rapidly responding to changes in supply and demand. Muggah also highlights how new strategies to deter organized crime have emerged as a response to these evolving changes resulting from the pandemic. In addition to strategies that have emerged under the auspices of some agencies of the United Nations and national governments, non-governmental organizations have also been particularly active in the fight against organized crime. While the COVID-19 pandemic has had an undeniable impact on organized crime, one must also expect a profound reconfiguration of enforcement efforts to counter them.

While the ambition of this book is resolutely multidisciplinary, Chapter 11 by Christophe Roux Dufort and Mary-Liéta Clément relies on an interdisciplinary approach. It provides an original understanding of crisis management as a tragedy by explicitly relying on philosophy and literature. Considering that tragedy offers new avenues to address decision-makers' behaviour in times of crisis, the authors specifically apply this analytical framework to decisions made during pandemics. More specifically, they highlight five components of tragedy that are identified in classic literature (confiscation of alternatives, duplication of reality, sacrifice, self-fulfilling decisions, and retrospective failure) and explain how these components relate to crisis management in times of pandemic. Building on this tragic reading of crisis management, Roux Dufort and Clément propose a four-stage model of the evolution and development of crises.

In Chapter 12, Sara Davies revisits the failure of international health cooperation when dealing with pandemics, particularly COVID-19. She traces the evolution of international health governance and health security going back over two decades. Davies describes the various commissions and regulatory bodies created over time, along with some of the key recommendations these institutions issued (Davies 2010). While the dominant narrative about international health governance underscores its failure and its considerable lack of cooperation, she puts forward a different narrative. Davies argues that, despite the fact that we do observe many blockades to bilateral states' health cooperation, global health governance not only continued to function, but also has in fact grown. She observes a profound transformation: global health governance during the current pandemic shifted from the traditional two-level, state-orientated system of international cooperation towards a significantly more dynamic, multilevel system of global cooperation, which includes cooperation in the domains of surveillance, human rights, and sciences.

In parallel to efforts deployed to find a vaccine during pandemics, a colossal amount of resources and work is also put into identifying promising treatments.

A comprehensive understanding of pandemics thus calls for a consideration of challenges that pharmacists must face in times characterized by a high level of uncertainty. In Chapter 13, Luc Bergeron and Martin Darveau focus on three specific aspects of the practice of pharmacy that can be significantly challenged by a pandemic. First, relying on previously developed therapeutic treatments to treat patients infected by a new disease implies some risks. The sentiment of urgency brought about by the evolving situation and the positions taken by various public figures rapidly put pharmacists at odds with their science-based training. Second, with the outbreak of a new disease, various factors can seriously affect the predictability of drug supplies to hospitals. It is in this context that a carefully crafted action plan must be implemented. Third, considering that pharmacists are not immune to developing the new disease, pandemics impose additional challenges on pharmaceutical care. When considered as a whole, these challenges offer an opportunity to review current practices in pharmacy.

In Chapter 14, Markus Herrmann and Maripier Isabelle tackle the economic determinants on which public policy decisions are made to safeguard population health, while paying special attention to the issue of income and employment losses incurred on the labour market. Their main argument is that governments should account for the social benefits in preserving the public good of population health and the costs of measures aimed at containing the pandemics. Herrmann and Isabelle discuss the key challenge associated with such an equilibrium: while policymakers do not have complete knowledge of all the variables, particularly that restrictive measures may have unevenly distributed costs across individuals and families, they nonetheless need to include these uncertainties when making a decision. By focusing on the labour market, the authors are able to underscore that vulnerable groups tend to be disproportionately hit by the virus both in terms of health inequalities and disproportionate economic impacts.

In Chapter 15, Geneviève Parent analyses the relationship between pandemics and food security. Building on the literature on food systems, she starts by describing the various food systems currently in place to show that since the mid-1990s we have witnessed the rise of an intensive and financialized agro-industrial food system of mass production. Parent then moves on to introduce the idea of food system resilience, which is characterized by three capacities: adaptive, absorptive, and transformative. These capacities encapsulate how and to what extent individuals, communities, and societies react to shocks. Parent's main argument is that the United Nations' Food Systems Summit, to be held in 2021, is the ideal opportunity to move beyond the dominant narrative of opposing global food systems with territorialized food systems in order to think about resilient and sustainable food systems.

Finally, in Chapter 16, Andrea Bjorklund focuses on the question of force majeure, a doctrine found in most municipal laws, which excuses or arrests contractual obligations because of an external event or follow-on effects that are

beyond the control of the parties involved and which prevent them from fulfilling their obligations (Bjorklund 2008). Force majeure is not only invoked in domestic law; states can and have used force majeure in the context of public international law. Bjorklund explores the applicability of this use of force majeure, and, if applicable, the consequences of such in relationship to pandemics. She discusses criteria for the application of force majeure in domestic and public international law to argue that force majeure provides limited redress for parties seeking to avoid their contracts.

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