

Applying critical realism to the COVID-19 pandemic to improve management of future public health crises

1 | SCIENCE, POLITICS AND SPACES IN-BETWEEN: SOCIAL SCIENCES AND PUBLIC HEALTH IN THE COVID-19 PANDEMIC

The COVID-19 pandemic provides a clear exemplar of how politics and science are interwoven fundamentally affecting the way we live.¹ The interweaving of science, politics and economics also illustrates the extent to which this pandemic has a syndemic nature, that is, the aggregated effects of communicable and non-communicable diseases when interacting synergistically with sociocultural and political settings.^{2,3}

The 2019 novel coronavirus placed a diverse range of health scientists under the political and media spotlight. In some countries public health expert opinions were largely ignored by decision-makers (e.g., in Brazil, the United States under the Trump presidency and, to a lesser extent, England during the first and second epidemiological waves⁴⁻⁶). In others, experts came under the political spotlight because they were asked to provide immediate answers, and this was evident in many European Union countries.⁷ Virologists, pulmonologists, immunologists, specialists in public health and epidemiology have been expected to assist decision-makers with clear, univocal and consistent guidelines to understand the current situation and how to move forward.

However, even with such disparities in uptake of public health expertise, there is little acknowledgement that expectations of unequivocal answers are beyond the scope of scientific knowledge, and rather, what is needed is greater attention to the dialogue between politics and science.⁸ In some cases, this has occurred—particularly, where there has been debate about the health impacts of the pandemic versus the economic impacts of lockdown restrictions.

Such differences in response to the pandemic have highlighted that political decision-making and scientific reasoning have different logics due to their differing field specific aims. Politics aims to decide and guide how human activities can work together for the good of the community, country or region, and is subject to ideological views about what 'good' entails⁹ while science aims to find logical and rational explanations for how things work.¹⁰ Science builds on constant doubt, provisional truth, and is subject to rebuttal. Thus, discord and contradiction are inherently part of scientific interpretation, even though there is a public expectation that science will produce certainty in knowledge.¹¹ Also, the pace of science is usually very different to the pace of politics, even though in the face of COVID-19, science was remarkably fast and collaborative (as witnessed in the rapid developments of vaccines).

The COVID-19 pandemic also showed that although there are multiple debates in health sciences, there remains a prominence of a philosophical stance that oversimplifies guidance to decision-making. This stance is underpinned by the dominance of positivistic assumptions about evidence, research, and translational research. Inherent in such an approach is privileging of phenomenism (i.e., only the measurable facts count), deductivism (i.e., theory-driven hypotheses regardless of social, cultural and economic diversity), and neutrality (i.e., science as autonomous of social and cultural norms).¹² Thus, while the health sciences increasingly promote interdisciplinarity, the interpretation of scientific knowledge in the public sphere privileges a particular epistemological approach.

While there remains an emphasis on privileging a positivist approach to solving health problems, the social and cultural dimensions of health are subordinated. Overcoming this requires promotion of the relationship between

social sciences and public health or what Mykhalovskiy¹³ called 'critical social science with public health'. Accordingly, critical social science with public health is 'an invitation for critical social scientists to name, enter into, and negotiate productive tensions with public health' (p. 10).¹³

Our argument here is to call attention to the extent to which the lack of a critical epistemological reasoning in public health practice to address the COVID-19 has favoured the reproduction of positivistic traits in health policy, reinforcing Mykhalovskiy and colleagues' argument that the use of philosophical stances typical of social sciences are vital to build the space in-between public health and social sciences if we are to better address public health interventions.

2 | SCIENTIFIC POSITIVISM AND THE POLITICAL MANAGEMENT OF COVID-19

It might be said that the privileging of scientific positivism in the political management of COVID-19 can be evident in different ways. One is the lack of recognition of the consequences of pursuing differing mitigation measures. Two different aims are evident among the countries implementing mitigation measures: one is the 'zero contagion' (or elimination of the virus); the other is 'managing as few contagions as possible' (or suppression of the virus). There is little acknowledgement of the input of science into determining which of the two aims is or should be pursued in a given country, and why, and indeed in some cases, the aims of policy measures alternated between the different outcomes sought.

The lack of this reflection points to a second consequence of scientific positivism, and that is the lack of transparent assessment of the right balance between mitigation measures and their side effects in other dimensions of life (e.g., worsening of social inequalities, education provision, provision of non-COVID-19 health care and mental health). Frequently, data on social conditions of living, educational impacts, other communicable and non-communicable diseases including mental health lack or are not fully considered compared to epidemiological data on the SARS-CoV-2. It appears that the advice of health scientists to policymakers has struggled to articulate a syndemic understanding of this pandemic, perhaps because differing disciplinary approaches prioritize different understandings.

Third, positivism influenced how public health authorities in the Western responded to the first signs of this outbreak. Clearly, it was not possible to foresee how this virus would disrupt entire societies. This was a new virus and the initial reports by the Chinese authorities were unclear as to the severity of the disease. Nevertheless, as highlighted in a previous editorial¹⁴ the concern by the Chinese authorities (e.g. the construction of new hospitals in few weeks and imposition of lockdowns) contrasted with inconsistent policies, notably in the EU, regarding border management (including implementation of testing regimes, mandatory quarantine, passengers' tracking systems) and the set of non-pharmacological measures (e.g. school closures, public gathering and private gathering restrictions, limitations in public transports). And this has been the case in the first and subsequent waves in most European countries from mid-2020.

As has been the case with other diseases (e.g., SARS in 2002, Ebola in 2014, and cholera in 2010 and 2016) political leaders only provided more consistent and considered responses when the problem affected their own people, indicating a lack of consciousness about the systemic implications of health-related issues and the prevalence of 'unfair geographies'.¹⁵ Thus, while a threat remains restricted to peripheral regions of global economics and politics, the collective awareness of the problem remains limited.

Positivism also inflected risk communication. The tone and communication strategy by public health authorities to change individual behaviours mostly ignored diverse populations (e.g., ethnic minorities, immigrants, socioeconomic vulnerable groups, elderly, young people, etc.).¹⁶ Similar to previous outbreaks, there has been an oversimplification about how different social groups receive institutional messages and apply them in daily practices. There remains a dominance of messaging for white, middle-class citizens rather than a focus on diverse populations and their communication needs.¹⁷

3 | APPLYING CRITICAL REALISM IN PUBLIC HEALTH CRISES

Critical realism is a philosophical standpoint that can enable understanding of the nature of a syndemic and thus support policymaking during crises. Its standpoint is the need to distinguish between 'reality' and 'cognition' in the sense that the former is a consequence of the second. Stated differently, critical realism views the object of science as not the reality itself but the way the reality is interpreted according to theories, concepts and methodologies. Critical realists accept that reality tends to be infinitely complex, that such complexity can only be perceived in part, and therefore that it is necessary to acknowledge inclusion and exclusion criteria used in analysis of issues. One implication is that critical realism enables awareness of the dimensions often left out of the scope of analyses. Another implication is that scientific fields are not necessarily privileged. Critical realism urges critical reflection about scientific choices, and their social and political implications, with science and scientists embedded within, not separated from, society. It requires scientists to think in terms of not only the quality of research and peer-to-peer dialogue, but also intended and unintended consequences beyond enclosed scientific walls.¹⁸

Applied to COVID-19 a critical realist approach could advance knowledge in multiple ways. It would ground zoonoses in broader dynamics of the globalized world beyond poor sanitary conditions and surveillance of local livestock markets. More and more, public health emergencies are an inherent part of economics, politics, and cultural influences. Accordingly, the fight against COVID-19 can only succeed if a systematic reading of the problem understands asymmetric relationships of power between different regions of the world. The idea of 'unfair geographies' helps to understand that a global public health emergency only is perceived as such once it threatens the political and economic epicentres of decision-making. It also emphasizes that constraints and opportunities are unevenly distributed around the globe. A critical realist approach acknowledges that the difficult trade-off between the worsening of social inequalities and health protection is inherent in decision-making in the context of new infectious diseases. Low precision of pharmacological and non-pharmacological measures to tackle the spread of the infection are explainable due to the time science needs to give meaning and handle complex phenomena. In the absence of clear guidance and novelty in threats experienced, fundamental principles in public health should be used to guide decision-making.

These principles include the need to act toward restricting the liberty of an individual or group to prevent greater harm to others (the harm principle); the use of state's authority and power over individual freedoms in exceptional circumstances, ensuring that education, facilitation, and discussion precede interdiction, regulation, or incarceration, and that more coercive methods are employed only when less coercive methods have failed (the least restrictive or coercive means principle); that individuals and communities have to be assisted to discharge their duties with the relief of the burdens imposed by compliance with mitigation measures (the reciprocity principle); to make decision-making as clear and accountable as possible to ensure the understanding, cooperation and trust of scientific communities and public opinion. It means that all legitimate stakeholders must have similar input into deliberations, avoid coercion or domination by specific interest groups in decision-making (the transparency principle); to take anticipatory preventive actions in the face of uncertain scientific evidence (the precaution principle); ensure the protection of those already facing vulnerable situations (the equity principle); and ensure that scientific data is made available, which might require the strengthening of funding for fundamental and practice-oriented research, to evaluate interventions and policy-making, and include broad scientific communities beyond health sciences. Behavioural and social sciences are needed to help to explain the spread of diseases, their effects on practices and representations, and to understand how people behave in exceptional circumstances (the robust scientific evidence principle).¹⁹

Critical realism also draws our attention to the need to adopt a broad understanding of inequalities beyond the lack of resources (e.g., educational, financial, etc.). Inequalities embrace aspects related to vital (i.e., threats and opportunities to biological life) and existential (i.e., threats and opportunities to ethnic, gender, political, and religious discrimination) dimensions of human living.²⁰ Given the cumulative nature of the attributes of inequalities, health-related-inequalities simultaneously are causes and consequences of poor living conditions, forced migrations, and political, sexual, and religion-driven persecutions. Finally, we must draw attention to the way individual behaviours are interpreted. In the current pandemic it was suddenly expected that individuals would be willing to adopt prescribed

behaviours for self-protection and of their beloved ones. However, we also know that people do not behave uniformly in the face of health risks. And this is true for both communicable and non-communicable diseases. If this were the case, HIV and other sexually transmitted diseases would already been eradicated, as well as many diseases associated with lifestyle (obviously, the tone is provocative). The solution lies in understanding agentic conceptions of individuals (i.e., being both subjected to, and influencers of, institutions); along with the influences of social structures, to explain the diversity of social behaviours.

The concepts of agency and reflexivity are two concepts that need consideration in this regard. Briefly, agency views individual engagement in institutions as an embedded process that links past, present and future events.²¹ It means that persons are able to identify and pursue their own interests based on experiences and expectations and that this ability is interwoven with specific contexts and circumstances. Reflexivity is the property by which agents (persons) relate themselves with contexts and circumstances (structures). It has regard to the logics (rationality, intentions, and motivations) sustaining the course of individual actions through the way in which persons deliberate in relation to objective circumstances.²²

In practical terms, the study of individual actions requires acknowledgement that: (1) persons are exposed to different degrees and types of vulnerabilities, so that structural and environmental constraints and opportunities vary; (2) persons interpret differently policies and technical advice (e.g., non-pharmacological protective measures); (3) such specific interpretations result as individuals link past experiences with current situations and future expectations. It means analysis of individual reasons, motivations and experiences, and placing individuals in their specific world of constraints and opportunities. It also means acknowledging that similar actions can result from personal logics ('wanting/not wanting' to act in a certain way) as well as of structural properties ('being able/unable' to act in a certain way).

Recalling Mykhalovskiy's et al.¹⁸ argument, the building of the space in-between social sciences and public health is necessary to better address complex socio-epidemiologic phenomena. But also persistent tensions are likely to continue to undermine it. In short, the COVID-19 pandemic is a clear example of the work still ahead to understand political interventions in public health not as a matter specific to the scientific domain of public health, but as an interwoven space with social sciences. Further challenging other scientific domains to reflect differently is also part of the role of social scientists, and more than ever epistemology cannot be left outside of this challenge to improve public health interventions.

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DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

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