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Social scientific knowledge in times of crisis: What climate change can learn from coronavirus (and vice versa)

1 | INTRODUCTION

Crisis, by its very nature, requires decisive intervention. However, important questions can be obscured by the very immediacy of the crisis condition. What is the nature of the crisis? How it is defined (and by whom)? And, subsequently, what forms of knowledge are deemed legitimate and authoritative for informing interventions? As we see in the current pandemic, there is a desire for immediate answers and solutions during periods of uncertainty. Policymakers and publics grasp for techno-scientific solutions, as though the technical nature of the crisis is self-evident. What is often obscured by this impulse is the contingent, conjunctural and, ultimately, social nature of these crises. The danger here is that by focusing on immediate technical goals, unanticipated secondary effects are produced. These either exacerbate the existing crisis or else produce subsequent crises. Equally, these technical goals can conceal the varied, and often unjust, distribution of risk exposure and resources and capacities for mitigation present within and between societies. These socio-political factors all have important functions in determining the effectiveness of interventions. As with climate change, the unfolding response to the COVID-19 pandemic underscores the importance of broadening the knowledge base beyond technical considerations. Only by including social scientific knowledge is it possible to understand the social nature of the crises we face. Only then is it possible to develop effective, just and legitimate responses.

2 | PLURALISING KNOWLEDGE IN UNCERTAIN TIMES

The current global COVID-19 pandemic brings into sharp focus the problems of risk, uncertainty, knowledge and cultural values in times of crisis. Those of us studying climate change are well familiar with these problems. The challenge here is not only how to govern a scientifically, technically or medically defined risk. It is to ask what is obscured by defining that risk in such technical terms. It is also to understand how different governing strategies are interpreted and acted upon by other actors, individuals and organizations. Crises are inherently unstable periods, but periods in which decisive action is required. In the rush to ameliorate the symptoms, the contingent, conjunctural, and social nature of the crises are easily obscured. If so, then there is a substantial danger that short-term measures beget even greater longer-term problems. If potential secondary effects are not fully considered and anticipated, there is a risk that reactive—as well as preventive—measures will result in severe unintended consequences. Only by broadening the knowledge base beyond the technical in a transparent and plural manner can the social nature of the crisis be grasped. Only then can the nature of the normative choices be revealed. The questions to be asked, therefore, are “a crisis of what?” and “a crisis for whom?”

Social scientific knowledge is crucial for understanding and mitigating crises. Social sciences can reveal secondary social and psychological effects of collective responses (including failures to respond), perceptions of risk and vulnerability, and how individuals and institutions cope with ignorance and uncertainty. The COVID-19 pandemic highlights what many researchers have long been arguing in relation to climate change (e.g., Hulme, 2011; Castree et al., 2014): how interrelated, interdependent and, ultimately, how “social” we are as a species, how the problems we face are multiscale and transboundary—crossing several spheres of expertise and knowledge production—and how the knowledge we call upon must reflect this reality (Löwbrand et al., 2015). It may be argued that while the crisis is still unfolding, it is too soon to make an informed scholarly intervention. Conversely, we argue that because decisions with far-reaching consequences are being made now, it is precisely the *right* time to call for a greater plurality of knowledge. This entails bringing in broader sources of knowledge to the decision-making process, promoting more transparent decision-making processes and dismantling unhelpful “hierarchies of knowledge”. In these “hierarchies,” certain forms

of knowledge (e.g., certain disciplines within natural sciences) are seen as inherently superior, rather than as complementary. Such a diversification of knowledge would benefit both the effectiveness of decisions made, as well as the legitimacy of those decisions among publics.

There is widespread misunderstanding on the part of publics, propagated by dominant political (and scientific) discourses, that scientific and technical knowledge can provide clear and unequivocal answers to policy problems. This obscures the reality that political decision-making is rooted in careful consideration of a variety of options and trade-offs—in Jasanoff's terms, "science will not come on a white horse with a solution".¹ These discourses are already prominent in normal periods, but become even more so in times of crisis when uncertainty, the risk of policy failure and associated blame are at stake. By obscuring the "messy" nature of knowledge production and its relation to policy-making, the danger is that the expertise on which policies are based will become delegitimized whenever those policies are seen to fail. This is not a call to abandon or dilute expertise. Rather it is a call to *strengthen* the public standing of expertise through pluralizing it.

3 | CLIMATE CHANGE AND COVID-19

The most recent report from the Intergovernmental Panel on Climate Change (IPCC) claims that rising global temperature changes the likelihood and distribution of local, regional and global disease outbreaks. This is due to a number of factors, including the expanding geographical range of some disease vectors (IPCC, 2018:180) and the changing seasonality and transmission intensity of some infectious diseases (Semenza & Menne, 2009). Medical, public health and epidemiological knowledge needs to be complemented with rigorous and varied social scientific knowledge on the fundamental social causes behind mobilities and movements of populations and products that act as vectors of disease. Social science has the analytical capacity to show why the risks associated with these movements are harder to govern, the multilevel and transboundary nature of the risks, and the strengths and weaknesses of global institutions of governance that deal with risk. National and local responses to pandemic disease similarly vary widely.² So do the vulnerabilities of populations and their faculties for resilience, adaptation and mitigation of risk. Social scientific knowledge adds to our understanding of these differences. It also grants decision-makers, as well as publics, critical capacity to evaluate the trade-offs, whether political, economic or social, that responses will entail. Numbers should not be allowed to substitute for or obscure political judgment.

The COVID-19 pandemic has shone light on a scientific discipline that, in an age of improving sanitation and public health systems, we rarely see entering the public sphere, at least in the global north: epidemiology. In particular, epidemiological mapping and statistical modeling have ameliorated an unknown and unpredictable situation for governments across the world (Rhodes, Lancaster, & Rosengarten, 2020). Governments always have to weigh up different forms of knowledge and expertise, from scientific and technical knowledge to policy and political considerations. In normal times, this is stage-managed to show a consolidated and consistent position. But in periods of crisis—when information is more uncertain, susceptible to rapid change and when more attention is given to decision-making processes—it becomes increasingly difficult to ensure the effectiveness of government interventions. This was witnessed recently in the cases of both the UK³ and Sweden,⁴ where the respective governments' positions and advice have been subjected to increased scrutiny and criticism.

Climate change too has seen mathematical modeling take a prime position in the search for authoritative knowledge in the context of deep uncertainty (Wynne, 2010). In the epistemic battle fought in the early days of the IPCC's scientific assessments, it was mathematical models of the climate system that won out over more experimental or observational methods of generating relevant knowledge (Coen, 2018). It has been argued that such models provided the objectivity and authority that policymakers craved in order to legitimize decisions (Oppenheimer et al., 2019). Such mathematical models of reality—whether of the climate system or a pandemic—are always partial. Not all physical processes are known or simulated. And many of the social systems which condition their predictions are either excluded or else the assumptions upon which human behavior is simulated remain hidden from view. Apart from offering inevitably uncertain predictions, mathematical models also obscure the social nature of the climate risk being faced (Wynne, 2010). This has also been the case in the initial stages of COVID-19 in which uncertain or incomplete data, habitual thinking and the desire to conform to political sensibilities has led to diverging estimates of the risk the virus posed (Qi, Du, Liu, Zhao, & Dong, 2020).

Parallels between the framing of scales for COVID-19 and climate change have already been drawn. The claim of Dr Michael McBride, the chief medical officer of Northern Ireland, that "viruses don't recognise borders"⁵ echoes a

similar refrain about air pollution and greenhouse gases from those who wish to emphasize the global character of climate change. The spread of the pandemic, and the spatially differentiated responses, emphasizes the importance of local and contextual knowledge. This goes beyond comparative analysis of health systems—although this is of great importance. It embraces questions of state power, organizational uncertainty and trust in institutions in order to better understand the relative effectiveness of specific interventions in different circumstances. Central to these questions is an appreciation of varying cultural and political values and how they interact with scientific or medical knowledge.

Equally, pleas to “listen to the experts” have emerged in response to the avalanche of misinformation regarding both the COVID-19 pandemic and climate change. But which experts and what advice? When does valid dissent become obstructionist denial? (Nemeth, 2018). Social science helps illuminate the problems inherent to knowledge legitimacy, epistemic authority and competing truth claims. As with climate change, the impact of COVID-19 is likely to be as far-reaching in its secondary consequences as in its primary ones. With stock markets falling, transport links suspended, unemployment reaching record levels⁶ and the prospect of global recession looming, the economic and social ramifications appear to be as salient as the medical ones. The pandemic serves to highlight the interrelated nature of environmental, health, social and economic issues. There are multiple dimensions to the risk being faced; trade-offs are inevitable. The pandemic also focuses attention on the variable power available to different states, regions, groups and individuals to adapt and mitigate crises. A pertinent example is the different levels of social and economic capital available to people that are self-isolating. Social scientific knowledge deepens our understanding of how perceptions of risk, fear and trust impact on crisis mitigation. It also illuminates the importance of structural factors, social positioning and cultural belongings—such as wealth, race and gender—in developing responses at the individual and institutional level, and how this provides different opportunities for and constraints on action.

Crises exacerbate existing vulnerabilities and inequalities, both among populations and between states (Rhodes et al., 2012). The COVID-19 pandemic has already highlighted an uneven distribution of social and institutional support networks. Social scientific knowledge will prove invaluable in understanding the long-term consequences of quarantine, social distancing and isolation on the mental and physical well-being of populations and vulnerable groups. This has proven to be the case in scholarship on previous epidemics, such as HIV/AIDS (Emlet, 2006). In the current pandemic we can already see that socio-economic class poses different levels of risk, both in terms of contracting the virus in the first place and then the subsequent prognosis for the infected.⁷ The search for a technical fix to reduce the numbers infected—typically through various forms of social distancing and quarantine—is rarely sensitive to the (in)capacity of many people to adhere to such requirements, dependent as they are on leaving their house to work.

4 | CRISIS, KNOWLEDGE AND DECISION-MAKING

One of the most important lessons to be learned from COVID-19 is a fuller appreciation of how framings such as “crisis” and “emergency” mobilize, legitimate and yet also constrain certain forms of action. Both carry with them medical connotations. The origin of the word “crisis” can be traced back to classical Greek, κρίσις, meaning a moment of decisive intervention, in the medical sense a choice between life and death (Koselleck, 2006). The COVID-19 pandemic has seen unprecedented state intervention in society and the economy, from locking down and quarantining entire populations, tenacious surveillance of the individual, banning free assembly and travel, and placing a moratorium on debt repayments.

On the one hand, this undermines arguments that have been made in relation to climate change that such decisive interventions are either impractical or impossible. On the other hand, it will be necessary for social scientists to analyze and understand the differing political, social and cultural conditions that made these types of intervention possible, not to mention whether the corporate and state-led incursions into our private lives are necessary or desirable. How did different population groups accede to or resist such impositions? What was the long-term political fall-out of the suspension of normal decision-making mechanisms? How was political accountability either maintained or eroded during the crisis? These questions will play out differently in different political cultures under different types of governance regimes. This again highlights why one-size-fits-all technical solutions are inappropriate and why a more plural knowledge paradigm, inclusive of social-scientific knowledge, is necessary.

An important distinction to make between COVID-19 and climate change concerns temporality. The impact of the pandemic appears clear and immediate, while the impact of climate change is diffuse, variable and uncertain. The underlying drivers of climate change are much more deeply rooted in global economic, technological, cultural and political structures than are those for COVID-19. Deploying a crisis/emergency frame can help to attract attention,

concentrate resources and provide public legitimacy for action. But it can also serve to obscure the hidden and inertial causes of climate change (Asayama, Bellamy, Geden, Pearce, & Hulme, 2019). The scientific expertise deployed in response to the pandemic seeks to return us to the *status quo ante*, whereas climate knowledge recognizes the inherent unsustainability of the underlying conditions, suggesting that things can never be the same again.

Crises highlight how important knowledge is to politicians and policymakers. But they also bring into focus some of the underlying tensions in this relationship between science and policy. Technical and scientific knowledge is always partial, uncertain and often contradictory—as we see particularly well in the case of mathematical modeling. That is not to say that such knowledge is not valuable. It is rather to say that to effectively deal with crises, multiple forms of knowledge and expertise are required and political judgment is then necessary to sort, select and present it to publics. Resolving a crisis is never about just getting the numbers right. Not for climate—it is not just about net-zero - and nor for COVID-19—it's not just about minimizing some arbitrary mortality statistic. It is about providing effective and ultimately trustworthy transformative change that is grounded on the broadest base of knowledge and to which normative judgments are applied.

The effectiveness and legitimacy of interventions in a crisis is reliant on well-informed, transparent but subjective processes of decision-making. It is not sufficient to present the interpretation of knowledge as automatic or to restrict the expertise that presents, interprets and discusses relevant knowledge. Decision-makers must be attuned to the insights that social sciences can reveal about the reasons for different individual and collective human behaviors in the face of a threat—their beliefs, values, cultures, norms, expectations and trust. It is vital for the public to retain its trust in the expertise which informs decisions, but also to understand the normative judgments which then guide future policy. This is true for dealing with COVID-19 and it is true for dealing with climate change.

CONFLICT OF INTEREST

The authors have declared no conflicts of interest for this article.

AUTHOR CONTRIBUTIONS

Adam Standring: initiator of the idea for this Commentary, intellectual lead and corresponding author; **Rolf Lidskog:** contribution to drafting; **James White:** contribution to drafting; **Mike Hulme:** contribution to drafting and final editing.

Mike Hulme¹ 

Rolf Lidskog²

James M. White²

Adam Standring² 

¹*Department of Geography, University of Cambridge, Cambridge, UK*

²*Environmental Sociology Section, HumUS, Örebro University, Örebro, Sweden*

Correspondence

Adam Standring, Environmental Sociology Section, HumUS, Örebro University, 702 81 Örebro, Sweden.

Email: adam.standring@oru.se

ORCID

Mike Hulme  <https://orcid.org/0000-0002-1273-7662>

Adam Standring  <https://orcid.org/0000-0003-3477-6811>

ENDNOTES

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