

Clark University

Clark Digital Commons

International Development, Community, and
Environment

Faculty Works by Department and/or School

1-1-2020

The Virocene Epoch: the Vulnerability Nexus of Viruses, Capitalism and Racism

Jude Fernando

Clark University, jfernando@clarku.edu

Follow this and additional works at: https://commons.clarku.edu/faculty_idce



Part of the [Sociology Commons](#)

Repository Citation

Fernando, Jude, "The Virocene Epoch: the Vulnerability Nexus of Viruses, Capitalism and Racism" (2020). *International Development, Community, and Environment*. 145.

https://commons.clarku.edu/faculty_idce/145

This Article is brought to you for free and open access by the Faculty Works by Department and/or School at Clark Digital Commons. It has been accepted for inclusion in International Development, Community, and Environment by an authorized administrator of Clark Digital Commons. For more information, please contact larobinson@clarku.edu, cstebbins@clarku.edu.

The Virocene Epoch: the vulnerability nexus of viruses, capitalism and racism

Jude L. Fernando¹

Clark University, USA

Abstract

COVID-19 has ushered in a new planetary epoch—the Virocene. In doing so, it has laid bare the limits of humanity's power over nature, exposing the vulnerability of 'normal' ways of living and their moral and pragmatic bankruptcy in coping with those vulnerabilities. 'Normal' is powerless against the virus and has not worked for a majority of the world's human and non-human population. Whatever new normal humanity fashions depends on the socio-ecological change set in motion by mutations between human and non-human species. The outcomes of society's responses to the pandemic depend on how human agency, as an embodiment of social, ecological, and metaphysical relations, transforms the relations now shaped by capitalism and racism—the two mutually reinforcing processes at the root of the Virocene's social and ecological vulnerabilities. A deeper understanding of vulnerabilities is necessary to avoid recreating a 'new normal' that normalizes the current oppressive and vulnerable social order, while inhibiting our ability to transform the world. At the same time, the sweeping possibilities of alternative ways of organizing humanity's mutual wellbeing and nature lie at our fingertips. The emancipatory political consciousness, rationalities, and strategies inherent in such intuitively sensible and counter-hegemonic approaches, first and foremost, are matters of justice, embodied in the power that shapes human-nature metabolism. The Virocene is thus a battleground for social and ecological justice. To be effective partners in these struggles for justice, political ecology needs a universal perspective of social and ecological justice that functions both as a form of critical inquiry—that is, as a way to understand how social and ecological inequalities and justices arise and function—and as a form of critical praxis—that is, as a way to reclaim and transform capitalism and racism's power in valuing and organizing social and ecological wellbeing.

Key Words: Virocene; political economy of health; capitalism; racism, vulnerability, pandemic

Résumé

COVID-19 a inauguré une nouvelle époque planétaire: le Virocène. Ce faisant, elle a mis à nu les limites du pouvoir de l'humanité sur la nature, exposant la vulnérabilité des modes de vie «normaux» et leur faillite morale et pragmatique face à ces vulnérabilités. «Normal» est impuissant contre le virus et n'a pas fonctionné pour la majorité de la population humaine et non humaine du monde. Quelle que soit la nouvelle mode d'humanité normale, elle dépend du changement socio-écologique déclenché par les mutations entre les espèces humaines et non humaines. Les résultats des réponses de la société à la pandémie dépendent de la façon dont l'action humaine, en tant qu'incarnation des relations sociales, écologiques et métaphysiques, transforme les relations désormais façonnées par le capitalisme et le racisme - les deux processus se renforçant mutuellement à l'origine des vulnérabilités du Virocène. Une compréhension plus approfondie des vulnérabilités est nécessaire pour éviter de recréer une «nouvelle norme» qui normalise l'ordre social oppressif et vulnérable actuel, tout en inhibant notre capacité à transformer le monde. Dans le même temps, les possibilités étendues de modes alternatifs d'organisation du bien-être mutuel et de la nature de l'humanité sont à portée de main. La conscience politique émancipatrice, les rationalités et les stratégies inhérentes à de telles approches intuitivement sensibles et contre-hégémoniques sont, avant tout, des questions de justice, incarnées dans le pouvoir qui façonne le

¹ Dr. Jude L. Fernando, Associate Professor of International Development and Social Change, Department of International Development, Community, and Environment, Clark University, Worcester, MA 01610-1477, USA. Email: [jfernando "at" clarku.edu](mailto:jfernando@clarku.edu). Acknowledgements: Thankyou to Dr. Padini Nirmal, Gene Lyman, and Ian Barnes for their valuable comments, to two referees for a close reading and critical suggestions, and the *JPE* editors for extensive editing. This is the first of two articles.

métabolisme de la nature humaine. Le Virocène est ainsi un champ de bataille pour la justice sociale et écologique. Pour être des partenaires efficaces dans ces luttes pour la justice, l'écologie politique a besoin d'une perspective universelle de justice sociale et écologique qui fonctionne à la fois comme une forme d'enquête critique – c'est-à-dire comme un moyen de comprendre comment les inégalités et les juges sociaux et écologiques se produisent et fonctionnent – et comme une forme de pratique critique, c'est-à-dire comme un moyen de récupérer et de transformer le capitalisme et le pouvoir du racisme dans la valorisation et l'organisation du bien-être social et écologique.

Mots clés: virocène; économie politique de la santé; capitalisme; racisme, vulnérabilité, pandémie

Resumen

COVID-19 ha dado paso a una nueva época planetaria: el Viroceno. Al hacerlo, ha puesto al descubierto los límites del poder de la humanidad sobre la naturaleza, exponiendo la vulnerabilidad de las formas de vida "normales" y su bancarrota moral y pragmática para hacer frente a esas vulnerabilidades. 'Normal' no tiene poder contra el virus y no ha funcionado para la mayoría de la población humana y no humana del mundo. Cualesquiera que sean las nuevas modas normales de la humanidad, depende del cambio socioecológico que las mutaciones entre especies humanas y no humanas ponen en marcha. Los resultados de las respuestas de la sociedad a la pandemia dependen de cómo la agencia humana, como una encarnación de las relaciones sociales, ecológicas y metafísicas, transforme las relaciones ahora moldeadas por el capitalismo y el racismo, los dos procesos que se refuerzan mutuamente y están en la raíz de la vulnerabilidad social y ecológico del Virocene. Una comprensión más profunda de las vulnerabilidades es necesaria para evitar recrear una 'nueva normalidad' que normaliza el orden social actual opresivo y vulnerable, al tiempo que inhibe nuestra capacidad de transformar el mundo. Al mismo tiempo, las amplias posibilidades de formas alternativas de organizar el bienestar mutuo y la naturaleza de la humanidad están al alcance de la mano. La conciencia política emancipadora, las racionalidades y las estrategias inherentes a tales enfoques intuitivamente sensibles y contrahegemónicos, en primer lugar, son cuestiones de justicia, encarnadas en el poder que da forma al metabolismo de la naturaleza humana. El Virocene es, por lo tanto, un campo de batalla para la justicia social y ecológica. Para ser socios efectivos en estas luchas por la justicia, la ecología política necesita una perspectiva universal de justicia social y ecológica que funcione como una forma de investigación crítica, es decir, como una forma de entender cómo surgen y funcionan las desigualdades y los jueces sociales y ecológicos, y como una forma de praxis crítica, es decir, como una forma de recuperar y transformar el poder del capitalismo y del racismo para valorar y organizar el bienestar social y ecológico.

Palabras claves: economía política de la salud; capitalismo; racismo, vulnerabilidad, pandemia

1. Introduction

The old is dying and the new cannot be born. In this interregnum there arises a great diversity of morbid symptoms. — Antonio Gramsci.

The moral arc of the universe is long, but it bends toward justice. — Martin Luther King, Jr.

The 2020 COVID-19 pandemic has moved humanity into what I term the "Virocene" epoch, following the era known as the Anthropocene. The prefix "viro" refers to "virus"—a sub-microscopic family of infectious agents that multiply and grow using the living cells of their hosts, causing disease in humans, animals, and plants. The suffix "cene" derives from the Greek *kainos*, meaning "new" or "recent", signifying a historically unique moment of interaction between humans and eco-systems.² The novelty of this epoch lies in the intensity

² My thinking underlying the 'Virocene' draws from the concepts of the Holocene, Pleistocene, Anthropocene, Plantationocene, Gynocene, Chthulucene, and Capitalocene, as explained below—epochs that vary in terms of scale, rate/speed, synchronicity, and complexity. They also differ in terms of how they diagnose the reasons for the ecological crises and the responses they advocate for (See Davis *et al.* 2019; Haraway 2015; Moore 2015, 2016a, 2017a, 2017b,

of virogenic activity as an embodied force of nature, and in how this confronts and questions the capabilities and resilience of current political and economic models. Importantly, the Virocene exposes and underscores the need for purposive changes in humanity's ontological, moral, and pragmatic thought, as well as its current modes of living.

The rapid global spread of COVID-19 has registered as an existential threat in human consciousness by further compacting a world already spatially and temporally compressed by capitalism, and by advances in travel and by communication technologies. Yet, paradoxically, it has also yielded prolonged human isolation in quarantined spaces, separated both from other humans and from nature. Increasing—sometimes involuntary—proximity between human and non-human habitats is responsible both for the growing frequency of zoonotic diseases and the need for the affected to distance themselves from other humans and nature. The spatial and temporal compression brought about by the acceleration of commerce and communication is set against increasing isolation and distance between human communities as well as between humanity and nature. The contest between these two processes, according to David Harvey, "[is] part and parcel of social change whether it is superimposed from without (as in imperial domination) or generated from within (as in the conflicts between environmentalists and standard economic decision making)" (Harvey 1990: 417).

Moreover, the difficulties, costs, and vulnerabilities emerging from this Virocene paradox are borne disproportionately by socially, ecologically and racially marginalized communities. In short: the COVID-19 pandemic exacerbates existing global inequalities, discord, and tension, while highlighting their systemic nature. In coping with the pandemic, a minority of the world's population—comprising wealthy, well-connected, or otherwise privileged groups—has been able to use its elevated socioeconomic status to occupy (relatively) environmentally safe locales. Additionally, this minority is well-positioned both to build resilience, and to take advantage of any economic and political opportunities presented by the Virocene (as some have already demonstrated). The majority of the world's population, however, has been left out of and denied the benefits of pandemic recovery stimuli. Those often dispossessed and politically disenfranchised, continue to experience economic, racial and ecological oppression, lacking opportunities to become resilient against the clinical and social vulnerabilities generated by the COVID-19 pandemic. An emerging global consensus also points to the interconnectedness between the looming existential threat of climate change and COVID-19. As climate change undermines environmental determinants of health, and places additional stress on health systems, it negatively impacts responses to COVID-19 (UN 2020a). While international responses to the pandemic vary, states across the world do not show signs of deviating from a neoliberal economic growth paradigm, despite its colossal moral and pragmatic failure to effectively cope with the vulnerabilities of COVID-19 (Lapavitsas 2020; McCloskey 2020), and conscious efforts to dismantle racism. At the same time, the pandemic has reinvigorated the global interests in resistance against, and the alternative ways of decoupling, human and non-human wellbeing from the determinants of capitalism and racism. There is much uncertainty about the future world order.

Hence, while I do not want to neatly and unproblematically situate the Virocene epoch into standard narratives of ecological and social change, because the current moment of the pandemic is full of uncertainties, and knowledge about it is still unfolding, the interconnectedness between several global trends relating to epidemics (such as climate change), and the accompanying social and economic immiseration justify naming the Virocene as a *distinct epoch that demands fundamentally rethinking the relationship between humanity and nature at the global level*.

Critical reflections on the vulnerabilities enhanced by COVID-19, organized by those concerned with economic and racial justice, are highlighting and energizing more socially and ecologically sustainable ways of safeguarding the wellbeing of human and non-human species.³ In fact, some nation states are taking measures that conflict with neoliberal interests to meet the challenges of COVID-19—as human experiences

2017c). The Virocene calls for critical reflection on other epochs' relation to social and ecological justice in light of present challenges.

³ Some examples of these alternatives include movements for food security, food justice and food sovereignty (Alkon 2014), producer and worker cooperatives, mutual aid societies, local exchange trading systems and degrowth and solidarity economics.

of the pandemic are directly connected to the contradictions of racism and capitalism. The Virocene also invokes three forms of fear. **One** is the fear of sickness and loss of life shared by all social classes. **Second**, is held primarily by the economically and racially privileged: fear of resistance against capitalism taking an aggressive turn in response to its social and ecological failures, brought to the fore by the pandemic. **Third**, marginalized social groups themselves have either internalized the same worldview as the privileged or are unwilling to take the risks and uncertainties necessary to embrace the idea of an alternative world order.

In this context, well-founded doubts about, and challenges to, the sustainability and replicability of alternative ways of responding to vulnerabilities during and beyond the pandemic raise questions about the moral basis of human agency and rights, the nexus between justice and power, and the power to translate imagined alternatives into reality while working against the hegemonic power of neoliberal governmentality (Balasubramanian 2015; Bauhardt 2014; Büchs and Koch 2019; Dogan 2010; Fletcher 2020; Malette 2009; Seki 2009; Youde 2009). Hence, the challenge for justice-minded scholarship involves reassessing hegemonic and counter-hegemonic ways of organizing life-worlds in light of the certainty of uncertainty in our human capacity to cope with the clinical and systemic vulnerabilities of the Virocene era—which is proving to be a battleground for both power and justice.

In this article, (the first of two parts), I turn to Political Ecology (PE), since it is especially equipped to engage with the tensions between reproducing a world that has failed to respond to the vulnerabilities of the Virocene, and the promise of a socially just and ecologically sustainable order. It also offers necessary insights into how unjust political ecologies impinge upon human and non-human species alike. In doing so, PE is particularly useful as it is simultaneously concerned with how hegemonic environmental orthodoxies and inequalities, as well as the institutions they embody, impinge on the organization of nature–society relations. These, in turn, shape policies that maintain hegemony—over people and the environment—at multiple levels and scales in the world order (Adger *et al.* 2003; Batterbury 2001; Bryant 1992; Cash *et al.* 2006; Fairhead and Leach 1995; Forsyth 2003; Peet and Watts, 1993; Rocheleau, *et al.* 1996; Stott and Sullivan 2000). PE's emphasis on how power relations produce particular social, economic and cultural interactions with non-human species—for example in its examination of global livestock production—provide a basis for considering environmental justice from the perspective of human and non-human species, and yield valuable insights into understanding and controlling zoonotic spread of various diseases (Emel and Wolch 1998; Notzke 2013). Additionally, PE examines the role of neoliberal government policy—as captured by Mbembé and Meintjes' (2003) concept of 'necropolitics.' Neoliberalism is, for example, operationalized through wildlife conservation practices, highlighting the importance of viewing human-nonhuman relations from a non-anthropocentric point of view (Hobson 2007; McIntyre and Nast 2011; Sundberg 2014). Moreover, PE is a field searching for emancipatory pathways towards socially and ecologically just, equitable, and sustainable coproduction of nature–society relations (Adger 2000; Berkes and Ross 2013; Marshall and Marshall 2007; Nelson *et al.* 2007; Walker 2005).

But PE also contains weaknesses.⁴ In particular, limitations in PE's theories of the justice–power nexus (discussed in Bryant 1998; Moore 1998; Svarstad *et al.* 2018; Wisner 2015) have hamstrung its emancipatory aspiration to reorganize social and ecological vulnerabilities in the Virocene era. A fruitful discussion of power is impossible without a theory of justice. However, PE is neither explicit about, nor firmly grounded in the moral cultures that shape human and ecological rights and justice, thus failing to conceptualize the "moral ontological" and "moral epistemological" frames to understand and transform multispecies relations.⁵ Hence, it may be vulnerable to co-option by the very forces it seeks to transform. From a perspective of emancipatory politics, reflecting upon the vulnerabilities of the Virocene era provides an opportunity to build synergies between ideas of the Capitalocene, political economy and political ecology, provided they are built upon robust perspectives of the moral basis of the rights-justice-power nexus that governs the organization of multispecies relations.

⁴ In addition, PE's inadequate theorization of the power-justice nexus also limits its capacity to explain human behavior, including why people continue to do what they know to be wrong. For example, consider the vast gap between knowledge about climate change and an overall lack of corrective actions and their failure to produce just outcomes.

⁵ For a discussion on moral ontology and moral epistemology see Sinnott-Armstrong (1996: 4-8).

At this juncture, my project seeks to enhance the analytical and emancipatory potential of PE from the perspective of social and ecological justice. I present my ideas in two independent and interconnected articles. This **first** article, after charting the novelty of the Virocene epoch compared with the other epochs explaining planetary ecosystem changes (See Table 1), provides a detailed account of the epoch's human and non-human vulnerabilities. I focus on how the clinical vulnerabilities manifested in the COVID-19 pandemic result from the tensions between capitalism's and racism's power over scientific knowledge and the knowledge-producers' struggles to reclaim that power to produce evidence-based policies. Then, I locate the root causes of human and non-human vulnerabilities in the areas of health, food, employment, governance, and human-animal relations and how capitalism and racism interact in the organization of human-nature relations. I make the case that the abnormality of COVID-19 in fact arises from what we perceive as the normal way of life. I also briefly discuss example of efforts to create a 'new normal' by organizing nature-society relations centered on social and ecological justice. Prior to drawing conclusions, I highlight the racism hidden in generalized claims about the impacts of the Virocene. In the concluding section, I connect the social and ecological vulnerabilities of the Virocene era with the internal dynamics of capitalism and racism. My **second** article articulates a natural rights-based universal theory of multispecies justice, which is necessary to dismantle racism's and capitalism's power, and seeks to create human-nature relations centered on social and ecological wellbeing (Fernando 2020).

2. Novelty and boundaries of the Virocene Epoch

The Virocene, I argue, is both the current moment and a distinct epoch in the lineage of other epochs: Eocene, Holocene, Anthropocene, Capitalocene, and Chthulucene (Table 1). The Virocene is a historic moment in which interoperation between human and non-human actors becomes existentially threatening on a planetary scale. Consequently, there has arisen a sense of urgency to question, challenge, rethink, reimagine and act on our current ways of being in, and with, the world. For emancipatory scholars, the Virocene opens a moment for praxis towards social and ecological justice, which must accommodate the contingency, uncertainty and fragility imposed by ongoing viral epidemics and pandemics.

What then, is the evidence for the Virocene epoch, and when can we say it started? These questions are critical for those who study the broader trajectories of environmental change through the lens of pandemics and the social and economic vulnerabilities they create. Debates over the boundaries of geological and sociological meta-planetary periods are ongoing (Lewis 2012; Nordhaus *et al.* 2012; Rockström *et al.* 2009). For example, critics of the 'Anthropocene' have pointed out the impossibility of demarcating the time frame during which human activity significantly reshaped non-human environments. Taken as a whole, the emergence of human species as a geophysical force marks the boundary between the Holocene and Anthropocene eras, but such a universal boundary fails to consider that "because the ecological impacts of human activity have been and remain diachronous, significant environmental signatures evident in one part of the world (e.g., Western Europe) may not be replicated elsewhere until the last few years or next few decades" (Castree 2016: 4). As a result, it is difficult to speak of a singular, asocial, concept of nature to justify various management, conservation, remediation, preservation, or restoration measures (p. 11). Additionally, it is possible that "future environmental markers reflective of present-day human activities will prove to be more compelling indicators of the Anthropocene's onset" (p. 5). And, finally, period markers can create confusion in disciplines other than those which first assigned them. Nonetheless, in spite of ambiguity and uncertainty concerning the boundaries of periodization, boundaries do matter: we experience, make sense of, and act upon social and environmental phenomena based on specific spatial and temporal scales. Boundaries shape how regimes of knowledge, subjectivities, and power inform human-nature relationships.

The popularity of a particular term (in this case for a temporal epoch) depends on the confluence of several factors: the scope, magnitude, and public appeal of the phenomena described by the given period; the status and popularity of the person or persons describing the period; and the receptiveness of dominant social institutions. For example: Paul Crutzen and Eugene Stoermer (1995), who are credited for marking the boundary of the Anthropocene, were joint Nobel Prize winning chemists, and Jan Zalasiewicz, who helped popularize the term, is a geologist (Zalasiewicz *et al.* 2014). Their attempt to chart the scale of catastrophic

human impacts on the environment assumed human agency to be universally autonomous and monolithic in its interaction with nature. This assumption disregarded human agency as an embodiment of interactions between diverse local and contingent systems, structures and power relationships. Jason Moore (2017b) argues in the collection *Road to ruin? Making sense of the Anthropocene*, that the notion of "anthropogenic, implicates an actor who doesn't exist. There is no Anthropos, no humanity as a unified actor. So, if not anthropogenic, what [is] it?" (p. 179). The unitary concept 'Anthropocene' cannot answer this question. Hence, it is an epoch without a subject, and the nature of the subject it alludes to does not explain the catastrophic environment changes of the epoch.

Eocene: Climate activity is dominant and human activity is insignificant. A wide variety of climatic conditions exist across the globe without human disturbance.
Holocene: The end of the last major glacial epoch, or "Ice Age", ushers in the age of flourishing human activity. Marked by rapid population growth, technological revolutions, the rise and fall of civilizations, migration, and transition toward urban living. Human activity does not dramatically change the world and is subject to climatic cycles (Fairbridge 1968).
Plantationocene: Plantations as planetary effects of human activity. Human–nature relations are organized and disciplined through the labor practices of profit-driven plantations and extractive industries, creating enduring social hierarchies, oppression, and environmental degradation entangled with the legacies of colonialism and capitalism and the ideologies of exclusion and oppression (Haraway 2015; Tsing 2015).
Anthropocene: Humans displace the Holocene as a geological age, starting with industrialization, and human activity exerts a profound influence on the environment. Earth is set on a different trajectory that undermines its immense potential, leaving behind a biosphere depleted as never before (Crutzen and Stoermer 2000; Biermann <i>et al.</i> 2016; Castree 2016).
Capitalocene: Unlike the Anthropocene and the Holocene, the Capitalocene is geohistory rather than geological history. 'Modernity is a capitalist world-ecology. Capitalist civilization is a co-produced world ecology of capital, power, and nature': "Capitalism is, rather, best understood as a world-ecology of capital, power, and re/production in the web of life." (Moore 2015:11). It aspires to bring planetary justice by "forging links between decarbonization, democratization, decommodification" to dismantle, analytically and practically, the tyranny of Man and Nature (Moore 2017d: 54).
Chthulucene: Chthulu is a monstrous chthonic subterranean figure responsible for the intractable chaos, destruction, and suffering evident in the Plantationocene, Capitalocene, and Anthropocene. To survive on their troubled planet, humans must "stay with the trouble", reconfiguring their relations with the Earth and its human and nonhuman inhabitants through responsible kin relationships (Haraway 2016).
Gynocene: Anthropogenic geological violence is coextensive with patriarchy. Emancipatory organization of the economy and modes of governance are driven by gender-equalized and feminist practices (Pirici and Voinea 2015).
Virocene: Virogenic activity as a socially embodied force of nature colonizes, overpowers, and catastrophically affects humans and ecosystems, setting historically unprecedented and virtually inviolable limits on anthropogenic activities organized primarily by capitalism and racism and opening opportunities for change. Survival requires that social and ecological justice simultaneously drive not only resistance against capitalism and racism but also the creativity, imagination, and political power to organize a social and ecological wellbeing-centered world order. Emancipation from the Virocene epoch requires radical articulations of an ethical paradigm of multispecies rights, justice, and power (Fernando 2020).

Table 1: Epochs. Source: own elaboration, from references given.⁶

⁶ The dominant forces leading change during each one these periods (e.g. climate, human, plantation, chthuchulu, capital, and viruses) embody struggle against hegemonic ways of organizing nature-society relations, and hence, planetary periodization must also be understood as sites of struggle. For related critical analyses from the perspective of economic and racial justice, see Davis *et. al* (2019); Pulido (2018) and Moore (2016a: 7, 2016b).

For Tim Luke (2017), policies inspired by the concept of an Anthropocene epoch "appear to be developing a moral rhetoric of, and operational plans for, managing the Anthropocene to create specific outcomes for those who are the managers as well as the managed" (p. 80). However, "the fact that human beings do not, in fact, have this measure of technical control is ignored by advocates of Anthropocene politics to advance their policy agendas" (*ibid.*: p. 81). The notion of an *Anthropos*, or 'humanity', as a global, unified 'geological force', "employed in the concept of 'the Anthropocene'", Frank Biermann *et al.* (2016) argue, "[masks] the diversity and differences in the actual conditions and impacts of humankind, and does not do justice to the diversity of local and regional contexts" (p. 349). Universalization of human character with respect to human agency and its experience, "gravitate towards western ontologies and epistemologies of living in the Anthropocene" (Simangan 2020: 218).

The Anthropocene's mistaken understanding of human agency is consistent with the notion of *Homo Economicus* as a rational and autonomous actor. The hegemonic status of this model of agency is influenced by neoliberal policy regimes that effectively function as incubators of racism and socioeconomic stratification (Peck and Tickell 2002). Similarly, the Chthulucene narrative for the survival of humanity on a troubled planet—to reconceptualize its relationship with the Earth and its nonhuman inhabitants as responsible kin relationships (Haraway 2015), does not directly address or destabilize neoliberalism and its racist manifestations. A unique characteristic of the Virocene, then, is that it highlights the roles of capitalism and racism in producing human–nature relations that exacerbate human and nonhuman vulnerabilities to viral activity (which originate in nature). Although the Capitalocene highlights, unpacks, and problematizes human agency in the Anthropocene, the Capitalocene's conceptualization of human agency is weak, as it cannot explain why humans behave as they do. Why do humans often do what they do not want to do? From whence comes the wide gap between their knowledge and their actions, and what are the moral bases for shaping human actions to overcome the crisis of world ecology?

The Virocene epoch is also unique in several important respects. **First**, climate, human agency, capital, gender, and (metaphorically, Cthulhu) environmental and social degradation are the driving forces in the Holocene, Anthropocene, Capitalocene, Gynocene, and Chthulucene eras, respectively. In the Virocene epoch, capitalism is inextricably linked with racialized appropriation of society and nature, contributing to the videogenic activities and the multifaceted human and non-human vulnerabilities they cause. Uncertain and complex mutations of the Corona viruses, stand in the way of providing clarity as to their epidemiology and pathogenesis (Rothan and Byrareddy 2020). The Coronaviruses are the largest, enveloped, single-stranded positive-sense RNA viruses, and the origins, nature, and life cycles of viruses, the main drivers of the Virocene epoch are much harder to detect, predict, and manage using current human, social and political rationalities (Andersen *et al.* 2020). They are a force external to the human body, over which humans have even less control than they do over, for example, the so-called invisible hand allegedly controlling capitalist markets. The autonomous power of COVID-type viruses as a natural force is further exemplified by their rapid spread and mutating genome, both of which are outpacing humanity's capacity to develop preventive measures such as vaccines and curative treatments.⁷ Hence the mutation and spread of COVID-19 make uncertainty about its future appearances and disruptions a permanent consideration in how society organizes its and nonhuman species' futures (Ge, Wang and Yuan *et al.* 2020; Chen *et al.* 2020).

Pandemics worse than COVID-19 have occurred throughout recorded history (Smith *et al.* 2014). In the Sixth century, the Justinian plague (AD 541–750) killed an estimated 35 million (approximately half the population of Europe) and permanently weakened the remnants of the Roman Empire (Barry 2005). As a result, other civilizations began reconquering formerly Byzantine holdings in the Middle East, Northern Africa, and parts of Asia. Kyle Harper's (2017) grand narrative describes the role of climate change and infectious diseases in the collapse of the Roman Empire as a story of nature's triumph over human ambition (p. 226). To paraphrase

⁷ Viruses are not infectious organisms *per se*. Rather, they are microscopic packages of genetic instructions, bundled in a protein shell, that require an organism to serve as a host so that they can replicate and complete their "life cycle" (Harvard Health 2020). In the process, the virus copies itself and spreads to other cells in the organism, causing disease. A host organism, once infected, become a virus factory. In the process, viral RNA may mutate, leading to divergent strains of the same virus (Rutgers University 2020). Viral mutation is a natural phenomenon that has played a role in many prior pandemics.

Edward Gibbon's (2001) view of reactions to the Justinian's plague in *The decline and fall of the Roman Empire*, the plague created opportunities for some even as it unrelentingly ended Roman power in the Mediterranean, bringing nothing short of the end of the world for others (pp. 340-341). Critical reasons for the collapse of empire, however, originated before the pandemic and they were an integral part of the evolution of the empire. They emerged from the economic and political weaknesses resulting from the same reasons that made it an expansive empire (e.g. the monetization of the economy, price-driven grain shortages, and militarized territorial control) (Harper 2016; Kessler and Temin 2005; McNeill 1976; Postan 2016: 41-56; Vaccia 2016).

Later pandemics continued to destabilize and reshape Mediterranean and European society (Bayer 1986; Cohn 2017). They exhibited locally wide-ranging, yet overall somewhat similar historical patterns. The bubonic plague pandemic—the infamous Black Death of the 14th century, produced contractions in the agricultural economy that weakened both European states and the Mamluk Sultanate (Dols 1977). Commoners, empowered by new shortages of labor, sought new rights and privileges, while the established noble classes of Europe in turn introduced new laws to maintain the existing social order (Herlihy 1997). Many of the immediate and most disruptive effects manifested as violence against urban dwellers, migrants, and so-called outsiders (Dols 1977). In Italy, the "Black Death of 1347–1351 unleashed mass violence on Catalans in Sicily, clerics and beggars in Narbonne, and . . . pogroms against Jews" (Cohn 2017: 8). Campbell (2016) writes that "nature as much as society needs to be acknowledged as a protagonist of historical change" while warning that "[to] privilege endogenous human processes over ostensibly exogenous environmental events is . . . to create a false dichotomy, since there is nothing in this model that is not endogenous" (p. 22).

More recent pandemics have produced similar economic, social, and racial impacts and reactionary social contractions (Bollyky 2019; Cohn 2012; Wade 2020). HIV has caused tens of millions of deaths in poor countries worldwide, and a capitalist and increasingly racialized nation-centric world order has used this pandemic, along with subsequent viral epidemics such as SARS and Zika Fever, to consolidate its hegemony over society and nature (Bell 2020; Chase-Dunn and Roberts 2012). Current responses to the COVID-19 pandemic are, likewise, far from exceptional.

Pandemics also have a long history of causing extraordinary political, demographic, and psychological effects on society and nature (Barry 2005; Snodgrass 2017), fundamentally shifting the trajectories of social and political relationships. A year after Columbus built his first town on the island of Hispaniola (Dominican Republic/Haiti), the indigenous population dropped from at "least 60,000 and possibly as many as 8 million" to less than 500. The Arawak/Taíno people lacked immunity to pathogens carried by the Spanish and fell "victim to terrible plagues of smallpox, influenza, and other viruses" (Pringle 2015). In the 15th–17th centuries, smallpox killed approximately 20 million people, nearly 90 percent of the indigenous American population. This contributed to European colonization by creating the illusion that much of the American continent was *Terra Nullius*, or empty land and "white man's country" (Bush 2016: 150). The Spanish flu of 1918 took an estimated 50 million to 100 million lives around the globe, including 675,000 in the United States. Coming as it did toward the end of World War I, the disease spread mostly by people coming into contact with soldiers. Jeremy Brown's *Influenza: the 100-year hunt to cure the deadliest disease in history* (2019), shows how the world economy plunged into a deep recession beginning in January 1920, with the influenza labeled as a "war disease" (Francis Jr. 1947: 10).

Mindful of these things, in 1941 the U.S. military established the Armed Forces Epidemiological Board, researching influenza vaccines as World War II raged overseas (Hoyt 2006, in Kamradt-Scott 2020: 532). In 1946, the World Health Organization (WHO) was established to research and mitigate viruses. The collective experience of the subsequent 1957 and 1968 pandemics conclusively showed that influenza vaccines were effective at reducing human morbidity and mortality. As a result, a number of governments in high-income countries (HICs)—where the majority of vaccine manufacturers were located, focused their efforts, over the next few decades, on ensuring greater vaccine yield over faster time frames (Kamradt-Scott 2020: 539). Increased recognition of the utility of antiviral medications as a second line of defense added to the influenza pharmaceutical "arsenal" (Glezen 1996 in Kamradt-Scott 2020: 536; Mendel and Sidwell 1998). Public-sector involvement in pandemics continued until the end of the Cold War, with health considered a public good—an important part of the social contract between the state and society (Kamradt-Scott 2020: 541). The bipolar division of the world further necessitated public intervention to contain communism's push toward egalitarian

policies amid global competition between the United States and USSR for territorial control, at a time when the egalitarian ideology of the socialist bloc saw health as a basic human right that the state should address according to need, rather than ability to pay.

In many parts of the world egalitarian health care systems have collapsed or are struggling to survive, and since end of the Cold War the frequency of pandemic occurrences continues to increase. Since 1967 scientists have identified forty strains of coronavirus. Regardless of whether a vaccine is devised, the virus will mutate. Indeed, according to Andrew Rambaut, a molecular evolutionary biologist at the University of Edinburgh, "over the length of its 30,000-base-pair genome, SARS-CoV-2 accumulates an average of about one to two mutations per month" (Nafie 2020: 10). The pace and geographical spread of COVID-19 is far more rapid and global, and uneven across nations, when compared with other recent pandemics, due to vulnerabilities created as a result of "space–time compression" under capitalist modernity (Harvey: 1989) – with movement of commodities and people occurring at high volumes and increasing speeds. What was initially believed to be a virus infecting the elderly now affects all demographic groups. It can spread by multiple means, with international experts warning that the coronavirus can float and be transmitted via air droplets. Furthermore, asymptomatic persons can transmit it, so that isolation seems to be the only option available for avoiding contracting the disease.

Viruses, the defining agents of the Virocene epoch, are an embodied force, so that their representations and the vulnerabilities they create for humans and nonhumans are constituted by the same forces (values, knowledge, rationalities, and power) that transform the relations between humans and nature—yet those forces have an extremely limited capacity to predict the variety of forms that the virus can take, let alone its behaviors or the disruptions it may cause to human and nonhuman species. Viral activity has now evolved as a self-imposing framework in contestation with current and future systems of social ordering of "world ecology", to use Jason Moore's phrase (Moore 2015).

Secondly, COVID-19 has revealed the link between social and ecological vulnerabilities to pandemics and the global economy, through ever-increasing economic exchanges and interdependencies between nations seeking economic growth (McKibbin and Sidorenko 2006; Peláez and Peláez 2008; World Bank 2020). According to the U.S. Census Bureau (2020), China is the United States' third-largest trading partner (p. 1). Total U.S. exports of agricultural products to China totaled US\$9.3 billion in 2018 (Minnesota DoA 2019), making it the fourth-largest agricultural export market; in the same year, U.S. total imports of agricultural products from China totaled US\$4.9 billion, making it the largest supplier of agricultural imports. U.S. exports of services to China totaled an estimated US\$58.9 billion in 2018, 2.2 percent (US\$1.3 billion) more than 2017 and 272 percent more than 2008 levels. U.S. imports of services from China were an estimated US\$18.4 billion in 2018, 5.5% (US\$963 million) more than 2017 and 68.3 percent more than 2008 levels (Oustr 2018).

The global demand for meat has also grown, bringing a quadrupling of meat production over the past 50 years (FAO 2020). Intensive export-oriented agriculture, particularly meat production, causes negative environmental effects, such as increased emission of greenhouse gases, and exhausts agricultural land and freshwater resources (Alexander *et al.* 2016). The economic policies of the U.S. and China are deeply connected with the economic growth trajectories of developing countries (Freund *et al.* 2020; Kose *et al.* 2020), specifically, the extraction of natural resources from these countries and their trade deficits that enable both countries to compete in the global economy. This connection, in turn, has implications for the spike in viruses, as well as their global spread and their social and economic impacts, which "transcend national frontiers" (Poore and Nemecek 2018; United Nations 2019a).

The United States and China have recorded higher numbers of COVID-19 infections and deaths than many other nations, being the two largest high growth and interdependent economies in the world and the biggest contributors to climate change. As of July 14, 2020, the total number of global infections was 12.8 million persons, including 3.2 million in the United States and 86,000, or probably more, in China (Our World in Data 2020: 1; <https://covid19.who.int/>; Richie *et al.* 2020). Trade wars, technology disputes, and nationalist rhetoric driven by economic growth priorities, are creating a new Cold War environment "that undermines global action for fighting global change" (Loh and Gottlieb 2019: 6; Hodgson 2020).

Third, the globalization of neoliberal policies that have emerged in response to the disciplinary needs of capital, continue to subjugate social and ecological well-being to market rationality, notably through reductions in social policies, including health care expenditures (such as for medical care and public health services) and the privatization of health services imposed by many governments (Harvey 2007; Lobao *et al.* 2018; Prevtali 2016; Viens 2020). Conversely, governments are being called on to respond to the pandemic as well as to bring economic recovery. Government capabilities are severely constrained by neoliberalism's growing vulnerability, amid internal crises arising from constraints on its continuity of accumulation and the challenges involved in consolidating popular legitimacy caused by inequality and the social and ecological crises that accumulation generates (Clark 2012; Harvey 1989; Wolfson 2003). Under neoliberalism's continuing pressure to replace social welfare rationality with market rationality as the guardian of human and ecological well-being, the COVID-19 pandemic has brought calls for coordinated state intervention to stimulate the economy and mitigate the crisis, recognizing some preventative actions came too late (IMF 2020; Tufekci 2020). Several nation-states have resorted to wellbeing-focused interventions, unprecedented in the neoliberal era, with which to meet the pandemic challenge. The Virocene epoch has made the state a focus for resistance and change (Horgan 2020), promoting the concern that "however deep the economic carnage and regardless of its source, those who seek to drive this country towards socialism will exploit it for all it's worth." (Henry 2020: 1) and a common thread among the political left is to "pounce upon every inequity for maximum political impact" (p. 9).

Fourth, the global spread of viral diseases also parallels the global effects of climate change in that it is being driven by aggressive neoliberal growth policies. Climate change negatively affects responses to COVID-19, which undermines environmental determinants of health, and places additional stress on health systems (United Nations 2020a). The global spread of viruses also parallels the global effects of climate change, being driven by aggressive neoliberal growth policies. Growth drives the destruction of forests and brings people into closer contact with animals than ever before through intensive farming, the local and global trading of livestock and livestock products with cruelty to animals, as well as through cohabitation of human and non-human species in marketplaces. Neoliberal economic policies have disproportionately affected populations already distressed by climate change (Jordan 2019; Luber and Knowlton *et al.* 2014), including through the "re-emergence of pathogens that have been familiar for a long time, but now threaten new, immunologically vulnerable populations" (WHO 2018b: 18). For example, a study in April 2016 found that the habitat of *Aedes aegypti* – a mosquito that spreads viruses causing dengue fever, chikungunya, Zika fever, Mayaro, and yellow fever, could increase up to 13 percent when the rate of greenhouse emissions reaches 8.5 RCP, which under the high greenhouse gas emission scenario, would be reached sometime between 2061 and 2080.⁸ In this scenario, up to 460 million additional people could be exposed to these diseases (Monaghan *et al.* 2018). The United Nations' *World economic situation and prospects* (WESP) report of 2019 warns that steady economic growth in 2019–2020 "at the global level . . . is excessively dependent on carbon-intensive fossil fuels" (United Nations 2019b: 1). The growth in gross domestic product and carbon dioxide emissions also remain closely linked. Between 1990 and 2015, as the global level of production doubled, anthropogenic GHG emissions increased by 45 percent (*ibid.*).

Global efforts to mitigate climate change will likely face setbacks as nations spur economic growth through stimulus packages that do not prioritize climate change (Adger *et al.* 2003). Against this backdrop, we imagine the Virocene as a planetary epoch in the same way that Dipesh Chakrabarty (2009: 222) described the universality of climate change:

Climate change poses for us a question of a human collectivity pointing to a figure of the universal that escapes our capacity to experience the world. It is more like a universal that arises from a shared sense of a catastrophe. It calls for a global approach to politics without the myth of a global identity, for, unlike a Hegelian universal, it cannot subsume particularities. We may provisionally call it a "negative universal history".

⁸ A representative concentration pathway (RCP) is a greenhouse gas concentration (not emissions) trajectory (Moss *et al.* 2008: 132).

We must think about how the Virocene, as an epoch, shapes the way we organize our lifestyles; how its universality is grafted onto other universals such as racism, capitalism, and climate change; and how this universality affects the hegemony of capitalism as it operates within the nation state and globally. We must also explore counterhegemonic models of organization that can transform both the political relationships between humans and the relationship of humankind to nature.

Fifth, the Virocene's vulnerabilities felt by marginalized groups across the globe reveal an intersection between neoliberalism and structural racism, which are mutually constituted by and frame each other (Chowkwanyun and Reed 2020; Cooper *et al.* 1981; Kiple and Kiple 1980; McDonald 2020). The neoliberal narrative is based on the belief that the market is a self-regulating and socially, politically, and economically neutral agency shaping the freedom, dignity, and well-being of humans and nonhumans (Kurien 2015). The reproduction and survival of the narrative is inextricably linked to racism. "In effect, neoliberalism has rendered an enormous and growing racial inequality culturally palatable by effectively relegating racism to historical legacies and translating contemporary social problems into individual choices and personality traits" (Mascarenhas 2016: 3). The vulnerabilities associated with COVID-19 that disproportionately impinge upon racially marginalized groups, underscores the importance of critically evaluating the *lived in* "contradictions at the core of neoliberal capitalism" (Comaroff and Comaroff 2000: 298), as well as how powerfully neoliberalism recomposes experience in the present with effects on public life, relationships, and identities (Giroux 2008) and the need to engage with the culture of neoliberalism if we are to resist its ideology. Meanwhile, the rise of antiracist protests around the world show signs of creating solidarities among counterhegemonic political movements.

Sixth, we are now seeing a rejuvenation of counterhegemonic debates on the ideological and pragmatic limits, and the social and ecological vulnerabilities arising from growth-centered economic policies. These debates, which have been ongoing since the Club of Rome met in the 1970s, have included advocates of degrowth, solidarity, and social economics; climate change activists; and proponents of cooperative, community and mutual aid systems (Kallis 2018). Even growth-driven financial markets are ready to accept the realities of pandemics: "[When] normalcy returns, banks and capital markets firms will likely have learned a few lessons. These may include how to best retain operational resilience when confronted with future pandemics, and possibly how to design new operating models such as alternate work arrangements" (Barret *et al.* 2020: 9). At the same time, attempts to decouple social and ecological wellbeing from the capitalist growth economy are not finding expression in protests against racism and climate change. Emerging movements that pursue climate justice and racial justice as inseparable. Nonetheless, emerging trends in monetary and fiscal policies and the current governmental rush to "reopen the economy" to quickly recover economic growth and establish the popular legitimacy of the government, provides little hope for fundamental ideological and policy changes away from neoliberalism. The international response to the pandemic has varied, but states the world over show few signs of deviating from a neoliberal economic growth paradigm, despite its colossal moral and pragmatic failure to effectively cope with the vulnerabilities of COVID-19 (Lapavistas 2020; McCloskey 2020).

Finally, viruses embody the processes that shape natural and social worlds and the interactions between them. In the Virocene era, they have become a permanent planetary force, disrupting the well-being of human and nonhuman species and imposing historically unprecedented power over the battles between the human species seeking to defend, resist, and pursue alternatives to capitalism's and racism's dominance over moralities, rationalities, and power in organizing society-nature relations. Although I recognize that the intersectionality of race, sexuality, gender, physicality, class, and territoriality are important determinants of vulnerabilities in the Virocene era, I do not want to undermine the uniqueness of anti-racism as an epistemological and political practice for restoring human dignity in responding to the Virocene's vulnerabilities. The contributors to a recent anthology on Rod Bush, a prominent African American scholar-activist, concur that there is an inextricable link between racism and capitalism, but the link does not explain the reasons for the persistence of racism that stands in the way of creating a more just, democratic, and egalitarian world (Bush *et al.* 2019). Thus, I consider the focus on anti-racism to be a critical requisite and ethical imperative in forging solidarity and opening pathways for emancipatory politics against all other forms of exclusion and domination upon which capitalism

and its growth model rests (Crenshaw 1989; Davis *et al.* 2019; Grillo and Wildman 1991; Hill Collins 2019; Smith 2000; West 1993).

The analysis of the Virocene's vulnerabilities in relation to capitalism and racism in the following section highlights the need for an alternative way of organizing human–nature relations, which is fundamentally an issue of a multispecies rights-justice-power nexus.

3. Social and ecological vulnerabilities of the Virocene epoch

If we conceptualize the reasons for vulnerability⁹ during emergencies, we can see that their ideological framing and representations, as well as their social and ecological consequences and functions do not radically differ from the reasons that shape vulnerability during non-emergencies (Blaikie *et al.* 1994; Salama *et al.* 2004). Human and ecological vulnerability during the Virocene epoch is largely determined by how humans organize their individual and collective identities and the relationships between them. Insecurities arising from a lack of means to satisfy basic needs—food, water, sanitation, mental health, mobility and the desire to belong to an inclusive and just society—are experienced differently by different people. Nonetheless, they all are to various degrees, rooted in a capitalist ideology and racist systems of governance that predate the COVID-19 pandemic.

In the Virocene epoch, capitalism is the primary organizer of human-nature relations (Moore 2016a, 2017b). The epoch also embodies crises generated by capitalism and racism, shaping its vulnerabilities, power, and politics. Now, however, the Capitalocene is encircled by the Virocene into the indefinite future, contingent upon how both epochs are experienced in different societies and how their respective social, political, economic, and ecological relations have defined their position within global political economy, revealing the uneven geographical development of capitalism. Viral activity hinders capitalism's and racism's central roles in shaping "humanity [as] a species-environment relation" (Moore 2005: 11), as well as societies' alternative responses to disruptions. It forces capitalists to reimagine their own future, as well for as those anti-capitalist elements interested in planetary justice, to imagine how they "might dismantle, analytically and practically, the tyranny of man and nature" (Moore 2017b: 34). As Arundhati Roy notes,

[...unlike] the flow of capital, this virus seeks proliferation, not profit, and has, therefore, inadvertently, to some extent, reversed the direction of the flow. It has mocked immigration controls, biometrics, digital surveillance and every other kind of data analytics, and struck hardest—thus far—in the richest, most powerful nations of the world, bringing the engine of capitalism to a juddering halt. Temporarily perhaps, but at least long enough for us to examine its parts, make an assessment and decide whether we want to help fix it, or look for a better engine. (Roy 2020: 5)

The pandemic has exposed the vulnerabilities of the social, economic and military structures that currently maintain oppressive, unjust and exploitative systems (capitalism, sexism, religious oppression, militarism, racism, racist nationalism, etc.). Although, the pandemic's threat to capitalism may be temporary, it is moving at a staggering pace through nations and population groups, with the potential to destabilize human aspirations to shape the world order.

Donna Haraway (2015) noted that in the Cthulucene epoch, humans "must collect up the trash of the Anthropocene, the extremism of the Capitalocene, and chipping and shredding and layering like a mad gardener, make a much hotter compost pile for still possible pasts, presents, and futures" (p. 3). Likewise, in the Virocene, the autonomy and power of virogenic activity over humans requires that human responses to social and ecological catastrophes be "thinking-with" and "becoming-with" the reality of virogenic activity, while cultivating a praxis with new kin-relations and "response-ability" for survival (p. 34).

⁹ Vulnerability = risk+ exposure + resilience (Blaikie *et al.* 1994).

The Virocene period has seen the social and ecological effects of virological activities become an autonomous and unpredictable force playing a major role in human and ecological well-being. The natural 'autonomy' that COVID-19 commands causes abrupt, unpredictable, and irreversible changes in the web of social and ecological life that are not easily comprehended or mitigated using current intellectual and technological capabilities.

The occurrence of "virogenic" social and ecological change during the Virocene does not mean that humanity caused the pandemic; rather, it permits distinctions between the changes caused solely by virogenic activity and changes that have happened due to human involvement and social systems. Human agency is implicated in a fear-driven consolidation of the neoliberal and racist world order in far more socially and ecologically debilitating ways after a pandemic. Juliana Fadil-Luchkiw (2018: 1) captures the spirit of the Virocene epoch when she characterizes humanity's impact on the world as a "parasitological infestation of the Earth—including, but not limited to, climate change, overpopulation, pollution, extractive capitalism, environmental devastation, and mass extinction." Human agency can also, however, invigorate egalitarian ideas and movements, inclusive and just ways of organizing human and ecological relations to build resilience against current and future emergencies.

The COVID-19 pandemic has allowed humanity no time to find a cure with which to prevent fatalities and mitigate damage; it is impossible to predict what will happen once a cure is found, leaving the fear that SARS-CoV-2 or another fatal virus will someday surprise the world again. When it reappears, it will likely be resistant to the treatments used for the preceding variant. Both denialism—the idea that we are immune to illness—and triumphalism—the idea that dominant systems will overcome illness—are now shattered. The powerful and powerless alike are becoming accustomed to the idea that the virus will likely invade their lives and communities voraciously. As the virus encircles the globe and shifts its epicentre from one place to another, humanity must reconsider the idea of normalcy during the Virocene in relation to the consequences of the current disease and the imminent threat of its return in more debilitating forms. We are forced to accept that staying alive in a world encompassed by the Virocene is far more prudent than projecting optimism about defeating it.

While a vaccine may successfully inoculate victims against the virus, it cannot protect them from capitalism, racism, and climate change.¹⁰ As Vijay Prasad (2020: 1) notes,

We won't go back to normal because normal was the problem. Now, amid the novel coronavirus, it seems impossible to imagine a return to the old world, the world that left us so helpless before the arrival of these deadly microscopic particles. Waves of anxiety prevail; death continues to stalk us. If there is a future, we say to each other, it cannot mimic the past.

Scientific and social origins of viruses

The tensions, gaps, and negotiations among scientific explanations of the SARS-CoV-2 virus and their political representations are indicative of the neoliberal political economy's struggle to consolidate its dominance during and beyond the pandemic. The manufactured disjuncture between scientific understandings of epidemiology, and the clinical characteristics and methods of treating COVID-19 on the one hand, and certain social understandings of the virus shaped by social and political determinants that predate the pandemic, on the other, have serious consequences for cross-fertilization between scientific and social knowledges, understanding of human–nature relations, and the discriminatory community-level impacts of the pandemic.

¹⁰ For the purpose of brevity, in this article I define racism broadly, as form of oppression, domination, inequality and unjust exclusion found in deeply intersectional ideologies and hierarchies of race, gender, sexuality, and territoriality. I also hold that capitalism and ethnonationalism as broader processes shaping the contemporary world order are inherently racist, and they reproduce and legitimize themselves by appropriating any type of racism they can exploit. The origins of oppressive ideologies are not all the same and dismantling one will not dismantle the other, even though they are deeply inter-connected, as demonstrated in literature on intersectionality (Crenshaw 1989; Davis 1983; Smit 2000).

Despite advances in our understanding of viral origins and evolutionary history through epidemiological studies that examine the relationships between viruses and their hosts, there is still much to understand. We do not know enough about the molecular mechanisms of viral entry and replication, modes of viral transmission, length of viral infection in relation to population density, living conditions, climate cycles, and viral stability.

To this date, no clear explanation for the origins of viruses exists. Viruses may have arisen from mobile genetic elements that gain the ability to move between cells. They may be descendants of previously living organisms that adapted a parasitic replication strategy, perhaps viruses existed before and led to the evolution of cellular life. (Wessner 2010: 32-37)

Most studies express reluctance to precisely date the origins of viruses, but indicate that they might date back millions or even billions of years. Part of the difficulty in dating viruses, according to Ed Rybicki, a virologist at the University of Cape Town in South Africa, is that viruses "don't leave fossils and because of the tricks they use to make copies of themselves within the cells they've invaded" (2018: 4). They sometimes can stitch their own genes into those of the cells they infect, so that "[understanding] their ancestry requires untangling it from the history of their hosts and other organisms" (p. 5).

To buttress the notion of the potentially natural origins of viruses, Rybicki points to theories that viruses could have existed in insects millions of years ago and at some point of their evolution began infecting other species and/or "emerged either from a type of degenerate cell that had lost the ability to replicate on its own or from genes that had escaped their cellular confines" (2018: 2). The challenge with studying the origins of viruses is also compounded by the difficulties of distinguishing "a specific mode of evolutionary change, such as the explosive radiation of lineages leading to different viral families" (*ibid*). Thus, the origin of viruses continues to be debated especially with respect to "RNA viruses, for which evolutionary history [is] especially difficult to resolve" (Holmes 2020: 2).

Better scientific knowledge about coronaviruses dates back to the 1960s, with subsequent studies having found an enormous variety of animal coronaviruses—with five new forms being discovered since 2003 alone. SARS-CoV-2, a new strain of coronavirus that belongs to the Nidovirales order, replicates using a nested set of RNA; epidemiologists are still studying its transmission, symptoms, and severity. The WHO has classified it as the source of the pandemic because of its rapid spread over a wide geographic area and its effects on an exceptionally high proportion of the population in the absence of promising measures for mitigation and cure (Anthony *et al.* 2017).

Despite facing severe global political scrutiny, on December 31 2019, Chinese authorities alerted the WHO of an outbreak of a novel strain of coronavirus causing severe illness. Several novel COVID-19-infected pneumonia (NCIP) cases were recorded in the Wuhan region of China, and spread rapidly across the country, and thereafter even more rapidly across the world, especially affecting Italy. The U.S. is now (in July 2020) considered likely to have seen far more infections and potential deaths than Italy and China (<https://covid19.who.int>). Human-to-human spread in Wuhan led to the virus's detection but it is not a certain indicator of the virus's geographical origin. A sampling of coronavirus cases since 1965 has indicated the presence of the virus on most continents (*ibid*). At the root of the popular idea that the virus originated where it was first detected, in a location where humans have more regular contact with bats and pangolins, are possible reasons for such proximity, including a globalist, interconnected growth-oriented capitalist economy that cannot be reduced to the policies and politics of a specific place or country.

On January 10th, 2020, China publicly released the genome sequencing of the COVID-19 virus (Holmes 2020).¹¹ Yet, many continue to believe that the Chinese government failed to share information about its COVID-19 outbreak in a timely manner (O'Donnell and Associates 2020). Such misinformation is, in part, a consequence of neoliberal doctrine, which asserts that the legitimacy of the state rests on the performance of

¹¹ Collaborative scientific research on corona viruses has been going on all over the world since the 1960s, and researchers have been sharing information publicly.

the economy, which led to several nations not sharing or ignoring scientific warnings about SARS-CoV-2 or dismissing them as trivial. Other governments including the U.S. also ignored both scientific advice and the lessons of previous pandemics. Despite repeated calls by Democrats for urgent pandemic readiness, President Donald Trump reduced federal financial allocations and staff at the Centers for Disease Control (CDC) by three quarters in 2018 (Baptiste and Washington 2020). Trump also abolished the White House Office on Pandemic Preparedness, the National Security Council Pandemic Unit, and ignored an Obama-era 69-page National Security Council playbook, which included hundreds of tactics and policy decisions to "prevent, slow, or mitigate the spread of an emerging infectious disease threat" (Diamond and Toosi 2020). While the authoritarian Chinese state was largely successful in enforcing mitigation and treatment plans and materially helping many other countries to do the same, several democracies continue to struggle against capitalist market forces that impede their ability to coordinate resources to fight the pandemic. These difficulties stem from the commodification of health care and, to a great extent, the practice of scientific research itself.

Until the early 1970s, capitalism expanded by dispossessing people of their land and their productive labor (also known as 'accumulation by dispossession', Harvey 1996). Although scientific knowledge grew in parallel to growth in capitalist productivity, its development was not directly bounded by capitalist accumulation, maintaining a far higher degree of autonomy than seen at present (Freudenthal and McLaughlin 2009). Public-interest and public-sector institutions often dominated the production and dissemination of scientific knowledge. As limits on 'accumulation by dispossession' emerged, scientific knowledge assumed a greater role in capital's quest to increase profits by replacing labor with technology (Kleinman and Vallas 2011; Slaughter and Rhoades 2009). Global capital's search for new areas of investment after the end of the Cold War viewed state-backed production of scientific knowledge as a constraint on expansion and increased pressure on countries to privatize it, by orienting its production, dissemination and application to attract private-sector investments (Aspragathos 2013; Huws 2012; Olssen and Peters 2005). During this period, scientific knowledge began to emerge as fertile ground for capital accumulation (Edgerton 2006) and those countries that held an edge in technological development achieved faster economic growth. Science itself became rapidly commodified as market rationality dictated the production, dissemination, and use of scientific knowledge (Lave *et al.* 2010; Mirowski 2011; Moore *et al.* 2011). This, in turn, imposed constraints on the autonomy of scientific knowledge production and its ability to serve public interest (Huws 2012; Vohland *et al.* 2019). Within a short time, the knowledge economy, spurred by science, reached its limits in resolving the crisis of low-profitability and unemployment, for the production of scientific knowledge itself became vulnerable to the vicissitudes of the market economy and subject to the speculative behavior of financial markets (Brenner 2002).¹²

Scientific inquiry as a field of critical inquiry, however, did not entirely lose its autonomy in producing knowledge – or its public purpose. The knowledge economy created an interdependent world that threatened to disrupt the neoliberal narrative – one in which production and dissemination of knowledge could bypass constraints on capital and state power and in which knowledge flows were increasingly fluid, spreading around the world more quickly than commodity flows. As Bob Jessop has noted, "[k]nowledge is a collectively generated resource and, even where specific forms and types of intellectual property are produced in capitalist conditions for profit, this depends on a far wider intellectual commons" (Jessop 2002: 129). The survival of neoliberal regimes thus depends not only on production but also on the suppression of scientific knowledge that is detrimental to the neoliberal narrative.

Anti-science trends in politics have intensified, especially since the 1990s. At the root of antipathy toward scientific knowledge about the COVID-19 pandemic is the struggle of various political regimes to

¹² At the same time, several East Asian and developing countries emerged as hubs for labor-intensive and technology-intensive industries, with companies in Western countries outsourcing production to take advantage of lower costs and relaxed labor and environmental regulations (Amsden 1988; Haggard 1990; Santasombat 2019). Western investors overlooked the environment-related health impacts of their investments, despite increased outbreaks of epidemics and pandemics. The shortages of various products, including essential medical supplies, seen in many countries during the COVID-19 pandemic arose from disruptions to global supply chains originating in East Asian economies—"invented" by global capital's relentless search for easily exploitable labor and lax environmental enforcement.

maintain their competitive edge in the global economy. Neoliberal and ethnonationalist governments are averse to evidence-based knowledge, as well as to evidence that disputes the morality and ethics of the assumptions underlying their claims. Mirowski (2011) argues that neoliberal political ideology operates on the belief that "corporations can do no wrong", "competition always prevails", and "the state should be governmentalized through privatization of knowledge" for the benefit of the markets (p. 30). The discord between scientific and neoliberal political rationality is intensified when scientific rationality begins to expose the social and ecological limits of capitalism, and inspires anti-capitalist resistance. For example, the vast body of knowledge about the dangers of climate change presents significant threats to the expansion of capitalism.

Evidence shows that political hostility to scientific knowledge also exacerbates the vulnerability of racially marginalized communities to COVID-19. The economic and ecological costs of the subsuming of scientific knowledge by capitalism have reduced both their clinical immunity and their economic and social resilience. Angela Saini (2019) convincingly argues that the "problem of the color line still survives today in 21st-century science" (p. 26). Saini recalls Du Bois's belief that "the problem of the twentieth century is the problem of the color line—the relation of the darker to the lighter races of men in Asia and Africa, in America and the islands of the sea" (Du Bois 2014: 62), at a time "when the scientifically backed enterprise of eugenics—improving the genetic quality of white, European races by removing people deemed inferior—gained massive popularity" (Skibba 2019: 2).

The issues at stake here relate to power over, and power exercised through, scientific knowledge. The challenge of reclaiming the power of science to produce social and environmental wellbeing requires a foundational theory of justice from which to deliberate on the competing interests of power over scientific knowledge. In short, "epistemic justice" cannot be achieved by distributing the products of knowledge, (or, redistributive justice), or "technopolitical struggles" alone (Moore 2011). But rather, a theory of justice that can dismantle epistemic injustice and create alternatives that are "inclusive of locally situated counter-expertise", resolving the tensions between experts and non-experts through a "knowledge justice framework" that accommodates "justice for counter-expertise" (Baigorrotegui 2019).

Social distancing and quarantine – disparate impacts on women and vulnerable populations

In the absence of a promising treatment, social distancing and self-quarantine are the most promising ways to combat the SARS-CoV-2 virus. Both offer specific ways of organizing relationships between humans and physical spaces. Peoples' varied responses to these requirements, their ability to abide by them, and their diverse experiences in these spaces exemplify certain facets of the political economy of organization of spatial relations, resulting from enclosure of common spaces and the creation of diverse geographies of deprivation and dispossession across different scales (Sevilla-Buitrago 2013: 1). These factors shape risk perceptions with regard to the pandemic, as well as people's responses to social distancing measures, in ways that are unevenly distributed across space.

The role of identity politics and political rationalities in shaping risk perceptions are also evident in the racialized representations of those violating social distancing and quarantine requirements. For example, in India and Sri Lanka popular media representations highlight the religious identity of the Muslims and Christians who violate these requirements. Religious identities of politically privileged communities are not mentioned; instead, they are referred to as 'people', 'pilgrims', 'irresponsible people', or 'returnees' from abroad. The origins of these bigoted representations predate the COVID-19 pandemic, and as Amir Ali notes, "Islamophobia has been transposed onto the coronavirus issue" (in Perrigo 2020: 1). Likewise, "one of the key features of anti-Muslim sentiment in India for quite a long time has been the idea that Muslims themselves are a kind of infection in the body politic" (Arjun Appadurai, in Perrigo 2020: 3). This perspective highlights the affinity between long-standing bias and new anxieties surrounding COVID-19 (*ibid*). Amid the pandemic, Nalaka Gunawadene, a Sri Lankan media analyst says, "it is very disturbing and disheartening to see anti-Islamic sentiments and anti-Muslim hate speech raise their ugly head again..." (Qazi and Thasleem 2020: 24).

Similarly, in the U.S. and in Australia, there has been a spike in racism against Chinese people and their cultural practices, accusing them of being responsible for the spread of the SARS-CoV-2 virus.¹³

The spike in racism primarily evident in social media may be beyond the reach of the government; however, there is no concerted official effort to dispel such sentiments and punish those who stigmatize and physically harm minorities. The popular representations of the origins of viruses and the stigmatization of certain populations as its carriers in specific geographical locations (i.e. nation states and ethnic communities), ignore the fact that the divergent epidemiological realities of viruses in specific local spaces is often shaped by economic and environmental changes caused by extra-local forces imposed on those spaces.

While the current pandemic imposes extraordinary measures to enforce social distancing and quarantine, these measures present significant challenges to vulnerable communities in temporary housing such as slums, shantytowns, homeless shelters and migrant workers' camps; to those without access to shelter or private automobiles; and, to daily wage earners (Corburn *et al.* 2020). Workers in crowded labor-intensive industries (e.g., the textile and meat industries) are especially vulnerable to disease. Farm workers live in congested environments already distanced from the rest of the population, yet in order to restore food supply chains they are often compelled to work in crowded workplaces without access to appropriate safeguards from the virus (Willingham and Mathema 2020). While homeless shelters are already cramped, social investments to expand shelter facilities have fallen drastically, and the number of homeless people has continued to increase in developed countries such as the U.S. and UK (NAEH 2020; Ritchie 2019). In the UK alone, homelessness has increased more than 250% since 2010, which was the early days of government austerity programs (Ritchie 2019: 1). Gentrification and the increasing costs of housing in major cities that displace populations into congested areas, began well before COVID-19 as part of neoliberal urban housing development policies, commodification of land, and forceful land grabs. In the U.S., some 552,830 people were homeless on a single night in 2018 – which equals 17 out of every 10,000 people in the country (National Alliance 2020). Similarly, as the CEO of *Shelter* says, "It's unforgivable that 320,000 people in Britain have been swept up by the housing crisis and now have no place to call home" (Neate 2020: 2).

At the end of 2019, 79.5 million people worldwide were displaced due to persecution, conflict, violence, human rights violations or events seriously disturbing public order, change including 11.8 million people displaced within the borders of their own nations. Some 85 percent of them are hosted in developing countries. (UNHCR 2019: 1). According to the UNHCR, of the 196 countries affected by COVID-19 globally, 79 are refugee-hosting countries that have reported local transmission (UNHCR 2020b: 1). Refugee populations already live in substandard and overcrowded conditions, with limited access to safe water and sanitation, and often suffer from poor health and nutrition. These inequalities substantially increase their risk of infection. Measles, diarrheal diseases, acute respiratory infection, and malaria account for 60-80 percent of all reported causes of death among refugees (Wise and Barry *et al.* 2017). Refugee communities disproportionately bear the burden of pandemic control measures, including restrictions on movement and border closures, both of which restrict their access to resources. Displaced populations are "frequently neglected, stigmatized, and may face difficulties in accessing health services that are otherwise available to the general population" (UNHCR 2020b: 1). In this regard, climate refugees are more vulnerable because they are not covered by international law, despite the fact that "Climate-related causes are a growing driver of new internal displacement, surpassing those related to conflict and violence by more than 50%" (Grandi 2019: 46). Once infected, a displaced

¹³ The *Atlantic Monthly* notes that "[w]herever a pandemic goes, xenophobia is never far behind. Since the outbreak of the coronavirus, reports of racism toward East Asian communities have grown apace" (Serhan and McLaughlin 2020). Naming SARS-CoV-2 a 'Chinese virus' and an 'Asian virus', has led to stigmatization, denial of access to services, verbal and physical attacks on Asian-appearing people, rekindling anti-Asian racism that predates the pandemic. During the 1853 yellow fever epidemic in the United States, European immigrants—and more recently, during the Ebola and HIV epidemics, Africans—were scapegoated as being carriers and subject to more intense racism. This in turn mitigated their access to health care, deepening their vulnerability to disease and deprivation. To prevent the spread of the virus, some nations have discriminatively imposed quarantine measures on other nations based on unexplained scientific evidence. For instance, banning all European travelers but not Chinese travelers to Sri Lanka in 2020, was a matter of geopolitical and personal political relations between countries.

population runs the risk of being pushed farther from areas where it can access resources, and further constraining a populations' options for relocation and resettlement can adversely affect host communities (UNHCR 2020a, 2020b). Unlike in past epochs, the global nature of the Virocene will further increase restrictions on the mobility of humanitarian workers and access to international humanitarian aid flows, forcing humanitarians to rethink ways of working with displaced populations.

Yet, focusing on humanitarian assistance alone will not help increase displaced communities' resilience to the COVID-19 pandemic. Forced displacement is also associated with climate change and climate adaptation (Afolayan 1999; McMichael 2015; Ryan *et al.* 2019; Scheffran *et al.* 2011). Climate change exacerbates displacement's effects on infection rates, for "...with warming temperatures, animals that [are] known to transmit the viruses to humans are expected to move into new areas, bringing the disease with them" (Redding *et al.* 2019: 16). Climate change increases stress on species that are more susceptible to the spread of viruses, bringing them into closer contact with humans. A recent study found "that 33 viruses 28 of which had previously been unknown to scientists, had been entombed for 15,000 years in ice cores within a melting glacier in Tibet" (Zhong *et al.* 2020: 7; also see Hotaling *et al.* 2017). Climate change precipitated by rising temperatures, deforestation, and changing rainfall patterns increases the "effect on the burden of infectious diseases that are transmitted by insect vectors and through contaminated water" (Shuman 2010: 362).

Degraded habitats are breeding grounds for viruses, as viruses are more adaptable to those environments than are humans (Khan *et al.* 2019; Ogden 2018). Sixty percent of all infectious diseases, amounting to 75 percent of all *emerging* infectious diseases in humans, are zoonotic, and they are connected with forest losses, leading to closer contact between wildlife and human settlements and intensive agriculture and livestock industries. Climate change affects food systems. Animals create polluted environments and increase people's vulnerability to viruses; conversely, climate-change-related poverty and displacement make people less able to access health-care facilities (Fischer *et al.* 2013; Redding 2019; Shuman 2010). An estimated 1 billion people's first exposure to mosquito-transmitted viruses in the coming century will be linked to climate change-related migration processes, and contexts will shape migrant and host community health outcomes in a variety of ways (McMichael 2015). Nations that are concerned primarily with protecting their own communities from viral pandemics could restrict displaced persons' mobility and/or push them towards uninhabitable regions and areas that are vulnerable to human-induced climate change. Pressure on governments to increase economic growth to aid in recovery from the COVID-19 pandemic will further worsen climate change, especially when international aid for economic recovery is conditioned on national implementation of measures designed to spur growth.

Two-thirds of the world population live on less than US\$10 per day, and every tenth person lives on less than US\$1.90 per day, the majority of whom are in in congested environments. They are unable to maintain reserves of essential items and now face job loss, loss of remittances, rising prices, and channels of services available to them (Roser and Ortiz-Ospina 2019). Of the 164 million migrant workers worldwide, approximately 111.2 million live in developing countries (ILO 2018: 1). An increasing majority of the world's vulnerable population who live on daily or weekly wages are already or will soon also be food insecure. The epidemiological vulnerabilities of migrant communities in their workplaces and the collapse of global supply chains increase their chances of unemployment. Workers leaving worksites are either stuck in cramped housing, forced to use crowded means of transport, or, in some cases, walk hundreds of miles to return home. In India, tens of thousands of migrant workers walked home, often in close proximity to one another because trains were shut down (Chatterjee 2020; Carballo *et al.* 2018). In India, 74 million people—one sixth of the urban population, live in slums, and in some areas, slum dwellers have one toilet for 1,440 people. Residents, mostly women, congregate in a few places in large numbers to gather water that is often supplied for only a limited time. They are forced to walk through narrow roads and congested and open markets in large numbers, to purchase their daily supplies, and the situation is worsened when curfews restrict mobility. In one settlement "the lanes are so narrow that when we cross each other, we cannot do it without our shoulders rubbing against the other person" and "We all go outdoors to a common toilet and there are 20 families that live just near my small house" said a slum dweller (Sur and Mitra 2020: 7-8).

The socio-physical borders of these vulnerable communities were already impenetrable before the pandemic for reasons of unequal economic development, racism, and xenophobia. Losing everyday social

connections comes with psychological costs for everyone, yet vulnerable populations in congested places do not have the luxury of coping within (absent) private spaces in their homes or by accessing entertainment in ways the privileged can. In addition, while social distancing and quarantine are necessary to save lives, for many it also means being subjected to vulnerabilities that extend far beyond economic survival. A study done by Johns Hopkins University noted the high probability of an increase in "suicide, substance abuse, domestic violence, homelessness and food insecurity" (DeLuca *et al.* 2020). Climate change affects food systems. Animals create polluted environments and increase people's vulnerability to viruses; conversely, climate-change-related poverty and displacement make people less able to access health-care facilities (Fischer *et al.* 2013; Redding 2019; Shuman 2010). Nations that are concerned primarily with protecting their own communities from viral pandemics could restrict displaced persons' mobility and/or push them towards uninhabitable regions and areas that are vulnerable to human-induced climate change. Pressure on governments to increase economic growth to aid in recovery from the COVID-19 pandemic will further worsen climate change, especially when international aid for economic recovery is conditioned on national implementation of measures designed to spur such growth (Oldekop *et al.* 2020).

News reports from around the world also note increasing incidences of domestic abuse and violence, "more so now with abusers finding themselves frustrated and at home far more than normal" (DeLuca *et al.* 2020; Godin 2020). In the state of Oregon, "[perpetrators] are threatening to throw their victims out on the street, so they get sick" (Mahdawi 2020). A WHO study noted that during emergencies, gender-based violence tends to increase and go unreported. In these situations, "women's bodies too often become battlefields" (WHO 2018b), where women are more likely to absorb the frustrations and anxieties of the households. Both past and present studies show that women are far more adversely impacted by pandemics than men. For example, even after economic distress levelled at the micro-level, men's controlling behavior continued to increase towards their partners. School closures also affect girls' education and life opportunities (Roy, I. 2020). "As many girls dropped out of school, it also showed a rise in teenage-pregnancy rates. And predictably, domestic and sexual violence rose" (p. 10). Due "to mass school closures women will bear much of the responsibility for child and elderly care. The lockdown will only exacerbate the burden since women already do three times as much unpaid care work than men. In India it is 9.8 times more" (*ibid*). Shelters from domestic abuse are either crowded or do not accept clients due to fear of spreading the virus. Even if the pandemic ends, the scars of abuse will last for lifetimes.

Difficulties in adhering to demands for social distancing faced by vulnerable communities and the disproportionate impacts of distance on these communities are fundamentally rooted in the already extant distance-proximity dialectic that emerged from capitalism's and racism's control of living spaces, health care, social safety networks, food systems, and politics. Coping with the Virocene in socially distanced and quarantined spaces demands a "new normal way of living", with radically different ontologies, tools, and strategies to resist the further consolidation of capitalism's and racism's power over human and non-human lives. The Virocene epoch thus calls us to explore ways to replace anthropocentric views about human and non-human species relations from a multispecies perspective.

Health

Disparities in preparation for the COVID-19 pandemic, access to needed medical supplies and urgent health-care resources are visible along class, race, and gender lines. In many cases these disparities demonstrate the extent to which the governments and political ideologies prevalent in these countries prioritize human wellbeing versus market wellbeing. In many countries, COVID-19 has exhausted public health measures meant to prevent, detect, and treat pandemic illnesses. Globally, public investments in pandemic mitigation continue to drop, despite evidence "that a wide range of preventive approaches are cost-effective, including interventions that address the environmental and social determinants of health, build resilience and promote healthy behaviors, as well as vaccination and screening" (WHO 2014: ii). A major reason behind these cutbacks is the commodification (privatization) of health systems (Attard 2020). As private firms seek profits, they cut 'fat' from the system, including investment in areas such as disease prevention and mitigation. Moreover, privatization has led to a lack of coordination in health services, which is critical in times of crisis. Thus, the

real cost of cuts in preventative care are inevitably borne by the public and the state – privatizing profits while socializing risks. Consequently, hospitals around the world are experiencing shortages of key equipment needed to care for critically ill patients, including beds, testing equipment, ventilators, and personal protective equipment gloves, face shields, gowns, and hand sanitizer for frontline medical personnel (Ranney *et al.* 2020).

Apart from disruptions in supply chains, these shortages of protective materials derive from several factors. **First**, despite vast knowledge that virogenic activity is occurring with increasing frequency, private health systems and governments have not been stockpiling emergency medical supplies. Governments, under pressure to support private businesses have not encouraged or demanded that health institutions stockpile such materials. In addition, neoliberal governments, operating within an ideology of private sector 'efficiency' and fiscal austerity, have not stockpiled such goods and services either. **Second**, profitability depends on commodification, which essentially means creating artificial scarcity in the process of resource production, allocation, or distribution. Global pharmaceutical companies do not share information with each other out of fear of giving an edge to their competitors, slowing the speed of, and undermining their capacity to find a profitable product (Millar 2019). Acquiring patents and litigating for trade secrets, as part of the profit motive results in these companies restricting or blocking other firms or even countries from producing cheaper generic formulations (Boseley 2006; Cooper *et al.* 2001; t' Hoen 2002; O'Manique 2004). In a world structured by competitive capitalism, pooling of knowledge and resources to develop an effective treatment and vaccine for COVID-19 is impossible to imagine, especially when nation-states are beholden to corporations that are key players in economic growth, provide employment, and financially patronize politicians.

COVID-19's exposure of the unpredictable powers of nature is "nowhere more true than in the continuous evolution of new infectious threats to human health that emerge" (WHO 2018a: 14). At the same time, countries that are already in deep economic crisis are unlikely to access enough international aid. Jennifer Kates *et al.* (2020) cite "growing concern about its impact in low- and middle-income countries (LMICs), ... particularly those in sub-Saharan Africa, home to more than one billion people" (p. 1) and "it is highly likely that many other LMIC countries not identified as COVID-19 high priority will experience growing case-loads and require enhanced assistance" (p. 5). For some countries, prejudice and geopolitical biases can override the severity of the pandemic in determining their access to critical medical aid. Elizabeth Rosenberg of the *Center for a New American Security* think tank, pointed out that "while Iran is an epicentre of this virus outbreak and facing true economic catastrophe ... there will be no relief on sanctions" (in Mohammed *et al.* 2020: 10). After much delay, in the last week of March 2020, Britain, France, and Germany bypassed US sanctions to send medical aid to Iran to battle the virus (Rothwell 2020). Economic sanctions imposed by advanced industrialized countries on international trade flows in developing countries, for example US sanctions on Venezuela, are likely to worsen the economies of these countries as they struggle to cope with the pandemic.

Some developed economies have failed to respond to the COVID-19 pandemic themselves, despite enough warning, because the rate at which people are dying outpaces a market system that is unable to provide necessary assistance. Currently COVID-19 is spreading rapidly in developing countries. Yet there are no signs of an ideological shift toward restructuring the healthcare industry along non-capitalist lines. For example, the World Bank approved US\$1.9 billion in aid to assist 25 countries, and this could increase to US\$160 billion in the next few years. Despite using the language of 'global public good' in their pandemic preparedness literature, there is no indication of a shift in the Bank's neoliberal ideology towards aid and long-term recovery (World Bank 2017). As Stein and Sridhar (2017) point out, the purpose of aid transfers is to "create a market for pandemic risk" (p. 5), through an "insurance arrangement that does not simply pool donor money but creates a market for private sector investment" (p. 1). As they further note,

Yet, in putting particular emphasis on market-based solutions to health concerns, the [World Bank] risks creating a financial mechanism that is inefficient and opaque. This points to the wider tensions between the immediate pursuit of profit and the goal of providing healthcare to the world's poorest people. (p. 22)

The embrace of market-based solutions in the name of building 'economic resilience' also means channeling investments, mostly in the form of debt, into changing economic activities and modes of governance according to market rationality. The World Bank's folly is manifest in its contradictory positioning of health as a *public good* in the *market economy*, thus demonstrating how global health crises are rooted in the organization of healthcare systems under capitalism. Thus, the Bank's pandemic interventions are likely to impose more constraints on diverse health systems focused on human wellbeing rather than profit.

On a broader scale, the pandemic thus points to the rooting of current deficiencies across global healthcare networks in preventing, preparing, and responding to infectious diseases in neoliberal economic reforms. Investments in public health have largely focused on anchoring public health within a market-driven economy. For example, in 2003, the severe acute respiratory syndrome (SARS) virus dragged world economic output down by US\$50 billion. Given that China's global GDP share in 2019 was four times higher than in 2003, however, and with confirmed cases of COVID-19 being more than double the total for SARS cases in 2020, the coronavirus outbreak is estimated to cost the global economy up to US\$360 billion. This would have a domino effect on the economies of poor countries:

Should Chinese demand fall by 1% due to the coronavirus outbreak, low- and middle- income countries would lose \$4 billion worth of goods exports and \$0.6 billion of tourism receipts. If oil prices fall by 5% amidst lower global demand following the outbreak, sub-Saharan African countries would face a \$3 billion cut on its mineral fuel export revenues. (Raga 2020)

Epidemics such as Ebola and HIV have already pushed poorer countries into the dominant growth paradigm and led to the collapse of health-care systems as the latter were brought in line with the growth imperative of capitalism. Cuts in fiscal allocations for basic needs and social safety networks, as well as currency devaluation have increased GDP allocated for debt servicing. This, in turn, has reduced the real incomes of the poor. Growth-inducing policies also speed up the extraction of natural resources in poor nations to boost growth in developed countries, worsening global climate change.

While economic growth continues to be pivotal in measuring levels of economic development, wide national differences in terms of resilience and effective responses to the SARS-CoV-2 virus do not necessarily correspond to rates of economic growth. Countries that succeed in mobilizing resources and providing care based on need, give priority to and have the political will to ensure access to healthcare as an entitlement. The importance of political values in mobilizing health resources are exemplified in the cases of Cuba and Sri Lanka. For example,

Cuba currently has about 37,000 medical workers in 67 countries, most in longstanding missions. In the city of Crema in the hard-hit Lombardy region of northern Italy, 52 Cuban doctors and nurses set up a field hospital with 32 beds equipped with oxygen and three ICU beds. (Associated Press 2020)

Sri Lanka mobilized its public health services and military all at government expense, far quicker and more efficiently than the US, even though its knowledge, human resources and financial capacities are far more limited. Within a short period of time, the Sri Lankan government set up quarantine centers for self-isolation for COVID-19 and mobilized the public health system to provide care for the affected people rather than sending them home. The state enforced the wearing masks, restricting public gatherings, closed borders between districts and made sure the private and public institutions provide sanitization and temperature checking facilities free of charge (Kohona 2020). This is in contrast to countries such as the US where the biomedical industrial complex, rather than the state, is enormously powerful in controlling the supply of physical and financial resources to ensure immediate care (Gaffney 2020). The complex derives its power from politically influential segments of the population advocating for access to health care based on ability to pay as opposed to need. In addition, the politicized ideological divide in the US between those in support and

opposed to the state enforcing preventive measures against COVID-19 is a critical determinant of its failure to contain the pandemic.

The reasons that pandemics exhaust resource capacities in the developing *and* developed countries to meet the health care needs is systemic, but are also matters of morality and political will. The global biomedical industrial complex constrains the freedom countries to develop inexpensive medical supplies by allocating more finances to the private sector than to the state, enforcing austerity measures to curtail public health systems and providing incentives for private sector investments in the health care system (Baru and Mohan 2018; Mackintosh and Koivusalo 2005; Sparke 2019). Growth of health-care systems in the neoliberal world is predicated on manufactured scarcities intended to maximize profits for private health-care corporations (Cassell *et al.* 2017). Neoliberal forces allow public health systems to exist, so long as they do not interrupt the commodification of health care and other complementary systems (Goodell 2020). Neoliberalism's hold over the healthcare system in any country depends on personal and government values: whether universal health care is seen as an entitlement for all human beings, or if access to health is based on individuals' ability to pay. Both perceptions ultimately shape the country's political realities. Shamasunder *et al.* (2020: 1083) noted that,

the COVID-19 pandemic demonstrates the critical need to reimagine and repair the broken systems of global health. Specifically, the pandemic demonstrates the hollowness of the global health rhetoric of equity, the weaknesses of a health security-driven global health agenda, and the negative health impacts of power differentials not only globally, but also regionally and locally.

Reimagining of the global health system fundamentally a matter of values of human and non-human wellbeing that shape the power of the capitalism and racism over the system.

Food

Food insecurity during the COVID-19 pandemic is not primarily caused by viral activity, but rather by the pre-existing capitalist ethics that govern supply chain systems, and the pursuit of economic growth predicated on these chains. According to the Food and Agriculture Organization (FAO), the COVID-19 pandemic will worsen global food insecurity for an additional 820 million people, more than the Global Financial Crisis (GFC) of 2008 (United Nations 2020b). Countries are unprepared to meet food needs during pandemics, especially because capitalist systems fail to see food as part of complex social and ecological systems (Hall 2015).

The political crisis that could emerge from a food crisis during and in the aftermath of the pandemic is thus rooted in the capitalist framing of the food system (Allen and Guthman 2006). Activities related to food production, storage, distribution, processing, packaging, retailing, and marketing assume profit maximization. Market rationality determines production choices, pricing, and product accessibility. Agriculture in and of itself is not a priority unless it directly adds to economic growth, preferably via export markets – a fundamental factor in the contemporary political ecology of food (Hall 2015). Environmentally destructive intensive farming practices, and the increasing cost of agricultural production hamper food security by blocking better forms of land use. As profits are controlled by agribusinesses, farmers become less innovative in agricultural production, even for their own subsistence.

The FAO reports that an estimated 1.3 billion tons of food is wasted globally each year, equalizing one third of all food produced for human consumption (FAO 2011). The FAO, however, is not explicit about how this waste is an essential part of commodification of food systems which create scarcities in the marketplace, in turn are integral to maximizing commercial profits and adding to economic growth as measured by Gross National Product. Food shortages thus are indicative of institutional failure, arising not out of limits on production imposed by the COVID-19 pandemic, but by the profit-oriented organization of food systems. For example, food growers and producers in the US are letting food rot and dumping crops as they face massive surpluses of highly perishable food (Cagle 2020). Thus, the root of the food waste problem "lies in the

hegemonic agri-food system and the unequal power relationships between the actors in the agri-food chain" (Gascón 2018: 587).

Most food growers also sell their produce through highly commercialized food chains, where each unit in the chain seeks to maximize profit. According to the National Sustainable Agriculture Coalition's report, the total loss to the industry is US\$1.32 billion (Cagle 2020). Now that the pandemic has interrupted the supply/production/sales chain, farmers have no storage facilities or means to get produce to the consumers. Local retail shops, food banks and non-profits do not have the physical and financial capacity to access and absorb food surpluses (*ibid*).

Even countries such as Sri Lanka, endowed with vast agricultural resources, are fast losing the capacity to guarantee food security to their citizens (WFP 2017), as their food systems have been rapidly transformed from addressing people's wellbeing to maximizing profits. Prior to 1977, Sri Lanka had a complex network of production and distribution cooperatives, storage facilities, and transport facilities. However, (after introduction of neoliberal policies in 1977) the supply of agricultural inputs under the government system has virtually collapsed, and the inputs are no longer controlled locally, but by transnational agribusiness companies. The post 1977 economic policies intensified the impact of climate change on food security as the rationale behind the agriculture changed from 'feeding the population' to maximizing economic growth.¹⁴ The capacity of the Sri Lankan government to efficiently coordinate food access during an emergency when people's mobility is severely restricted, has now been undermined. This is a global reality, and food systems thus structured by capitalism continue to fail to provide needed nourishment to the most vulnerable.

The intersection between food and COVID-19 is rooted in the way food systems are structured, valued, and positioned in the global 'ecopolitical economy' and how it intersects and manifests in different cultures of production and consumption of food. Neoliberal economic policies do not support alternative food systems, unless they at least complement pro-growth food systems, regardless of their implications for social and ecological wellbeing (Slocum 2007). The capitalist food system's vulnerabilities exemplify the existing hierarchies of resource access and power upon which the reproduction of the political economy of food production under capitalism rests, rather than a lack of options for people to organize their food systems based on human and non-human wellbeing. As Holt-Giménez (2017: 172) writes:

This hegemonic food discourse not only reflects the dominant ideology of the corporate food regime, it avoids addressing how the capitalist food system is inextricably based on the oppression and exploitation of women, people of colour, and workers. Worse, this dominant food narrative lulls us into the magical belief that somehow, we can change the food system without changing the capitalist system in which it is historically embedded. This is the political fetishization of food.

Moreover, difficulties mobilizing power to create deracialized and decommodified and culturally appropriate food regimes are issues of politics and culture (Appadurai 1981). Food systems affect climate change and the ability of capitalism to reproduce itself by incorporating diverse food regimes, including those organized by non-capitalist and non-racist rationalities (Holt-Giménez 2017; Plahe *et al.* 2013; Wald and Hill 2016). Food sovereignty movements attempt to shift the focus away from food security to food sovereignty: "we are arguing for a different approach to mainstream capitalism focusing in particular on the spatial and temporal aspects that underlie its role in perpetuating marginalization and inequality" (Wald and Hill 2016: 233).

In recent times, promising movements for organizing food systems centered on multispecies justice have emerged, seeking to address a broad array of economic, racial and environmental justice issues, including ethical relationships of human and non-human animals, the politics of food production and consumption, and even larger questions of alienation, authenticity, and mindfulness (Belkhir and Charlemaine 2016; Holmes and Peterson 2017; Joassart-Marcelli and Bosco 2014; McConnell 2017; Noll 2017; Schanbacher 2017). These

¹⁴ For analysis of link between climate change and food security see Esham *et al.* (2018); Zubair (2012).

movements face the challenges of being localized and being unable to replicate on a scale powerful enough to transform commodified and racialized food systems, which mostly benefit privileged social groups. By being complicit with normalizing political rationalities and forms of power, rather than creating alternatives to, or dismantling the neoliberal food system, these alternatives often function as modes of neoliberal governmentality (Balasubramanian 2015; Guthman 2008; Seki 2009; Youde 2009).

Employment

COVID-19 demonstrates how the disastrous consequences of human wellbeing predicated on wage labor remains alienated from the wealth it creates. At the same time, the profits of large corporations, especially in computer-related industries continued to soar. For example, in 2020 Jeff Bezos of Amazon made an extra US\$6.8 billion on top of the US\$118 billion he had already made, Mark Zuckerberg of Facebook made an extra US\$6.2 billion, and Warren Buffet and Elon Musk's wealth grew US\$5 billion and US\$4.2 billion, respectively, despite the fact that the world's richest people lost US\$36 billion in the fourth week of February (Vega 2020).

In the United States, the COVID-19 pandemic has caused 47 million job losses, and the country's unemployment rate is likely to reach 32 percent, its highest since the Great Depression (Cox 2020; Gopinath 2020). Nearly 200 million full-time workers are expected to lose their jobs in mid to late 2020, and "More than four out of five people (81 percent) in the global workforce of 3.3 billion are currently affected by full or partial workplace closures" (ILO 2020). The pandemic has underscored the failure of capitalism to secure the wellbeing of wage-dependent labor: workers must depend on the state and community aid for survival, and expect no relief from capitalists who now compete with labor for the limited resources offered by the more affluent states for economic support during COVID-19. In the United States, the COVID-19 pandemic occurred during a time of rapid deterioration in social safety networks and widespread labor agitation to increase the minimum wage, despite the overall increase in employment. Now social safety nets in the United States are stretched beyond capacity, and there are miles-long lines at food banks (Gordon and Bruch 2020).

COVID-19 has also exacerbated pre-existing divisions in the labor market. About two-third of job losses in the United States have happened in locales and industries that are high intensity contact places (Torry 2020: 6). Workers in these areas are typically low-skilled and low-paid and thus cannot afford to stay at home and work: "Low wages correlate with closer personal interactions at work, and they are more vulnerable to contagious diseases, except for health care workers who are equally vulnerable yet earn relatively higher wages." Industries where the majority work remotely have suffered fewer job losses; and in fact, added jobs in March 2020. Workers in these sectors are high skilled and better paid. "Work-from-home and telework are now seen as a privilege activity and for a privileged class" (*ibid*).

Stable employment and living wages were already under threat prior to the pandemic due to profit-maximizing policies removing constraints on capital (Albarracín and Naron 2000; Burrows 2013; Crouch 2012; Kotz 2002). In many cases, temporary and contractual employment without benefits has replaced permanent and well-compensated jobs, while price levels, debt, and debt servicing rates are increasing, and real income has dropped or stagnated. The issue at stake here is the relationship between wellbeing predicated on the economy's profit maximization imperative, and the limits (i.e. decline in purchasing power) it enforces on profitability arising from an inability to end overproduction. The idea of wage labor is not natural or inevitable but a product of the way capitalism (via normalized ideologies of consumerism) appropriates human power and nature for profit, rather than sustaining human and ecological wellbeing.

The pandemic has thus exposed the Janus-faced realities of the capitalist system's impact on wage labor. On the one hand, the decline in human wellbeing is a direct product of the mediation of wages, and the legal system of capitalism which dispossesses humans from direct access to, and alternative means of, satisfying their needs (by extracting from nature). Capitalism, and its elites, expand(s) and overcomes a crisis by finding novel ways of exploiting and disciplining labor (Marx 1976: 376-377; Richards 2016). The pandemic occurred at the time when organized labor was at a low point, and Western economies faced systemic crises of underconsumption, personal debt, employment insecurity and institutional suppression of the labor movement (*The Economist* 2020; Meyerson 2020). On the other hand, climate change restricts the expansion of capitalism, even as less privileged workers toil in environmentally unsafe areas, further depriving them of access to nature.

Policies based on mainstream economic narratives that propose to diagnose, measure, and prevent the current economic system from failing, show remarkable continuity with those used during previous epidemics and general economic crises. The diagnosis goes as follows: due to profit-maximizing consumption, the economy cannot be resilient because the pandemic has disrupted the production and distribution chains. The rate and space at which people are losing jobs and purchasing power threatens peoples' basic levels of survival. Fiscal and monetary stimuli focus on tax cuts to consumers and producers, bailout packages for businesses (Judge 2020), lower interest rates and different loan repayment options, as well as transfer payments to keep production, employment, and purchasing power afloat, and prevent asset crashes.

Until the fear of the pandemic ends, the current economic policies to contain it will not help economic recovery, as these policies are only designed to be effective against cyclical economic downturns (Saiz 2020). Restrictions on mobility, including the imposition of self-isolation, and disruption of supply chains will slow any restarting of production and consumer spending. Consumers are more concerned about limiting consumption to essentials, including debt payments, than about increasing their spending. In short, the market-based economic system is failing catastrophically, as current economic policies were not designed to meet the needs of emergency situations that fracture production and supply chains and quarantine their constituents.

The Virocene epoch has highlighted the importance of delinking human wellbeing from the capitalist wage market, with decommmodification of the means of survival as the only reliable means of addressing vulnerabilities during and beyond pandemics. For this to happen, alternatives to growth-centered ways of securing human and ecological wellbeing are urgently needed, given that economic policies in response to COVID-19 do not show signs of fundamental changes in macroeconomic realities. As Mulvaney (2019) writes: "...given how growth depends on natural resources, and control over natural resources figures in geopolitical contests, the pursuit of growth will necessitate the continuation of militarized capitalism, with all of the tortured and unequal socio-ecological relations that tends to reproduce." Degrowth, solidarity and social economics, which emerged as responses to social inequities, exclusions, and the unsustainability of neoliberalism, aspire to create a voluntary transition toward a just, participatory, cooperative, decentralized, inclusive, and ecologically sustainable society (Andreucci and Engel-DiMauro 2019). These are likely to gain more traction in the wake of COVID-19's revelations of the moral and pragmatic failures of neoliberalism (Bauhardt 2014; Chiengkul 2018; D'Alisa *et al.* 2015; Diego 2019; Lavielle 2010). A fundamental challenge to these alternative modes of economic thinking involves creating the social, cultural, and political conditions necessary for transition and addressing the varied implications of such a transition for different countries and communities (Buchanan 2019; Büchs and Koch 2019; Dogan 2010; Lang 2017; Mulvaney 2019; Schwartzman 2012). Despite these challenges, these new modes of organizing economic relations, political rationalities, and solidarities are sites of emancipatory political consciousness that "...struggle between being palliative and transformative" (Raffaelli 2016).

Racism

S.K. Cohn's (2017) study of racism and pandemics since the Black Death to the HIV crisis, notes that "Instead, both in the popular imagination and the scholarly literature, violent hatred and even *pogroms* are held to have been pandemics' normal course, supposedly engrained in timeless mental structures – to use René Baehrel's words, '*certaines structures mentales, certaines constantes psychologiques*'" (Cohn 2017: 4). In the wake of COVID-19, racism manifested in states' and societies' pandemic responses, masks how neoliberalism and the hierarchically structured power of the state function in the current world order. Indeed, the argument that the effects of the SARS-CoV-2 virus are universal and do not discriminate along the lines of race, class and gender is itself racist, as it masks how societal responses to the pandemic do not equally benefit all groups. For example, the Navajo Nation in the United States of 170,000 people, had more coronavirus cases *per capita* than any state in America in mid 2020. The Navajo or Diné nation is the largest Native American reservation in the United States. Forced by the federal government onto reserved land, the Nation is plagued by poverty despite its low population density. Reservations are also known food deserts, lacking basic infrastructure, and often experiencing acute shortages of hospitals and medical supplies. Already grievously affected by colonial

federal policies, transportation to hospitals has virtually stopped during the pandemic and additional federal services are slow to reach the reservations (Capatides 2020).

Similarly, African Americans who comprise 13 percent of the US population, make up 28 percent of current COVID-19 cases.¹⁵ This is directly related to the years of segregation that pushed African American communities into neighborhoods with precarious environmental conditions, continually worsened by structures of environmental racism. African Americans are 75 percent more likely to live in places bordering a polluting facility like a factory or refinery compared to other Americans and are exposed to air that is 38 percent more polluted in comparison to white Americans (Fleischman and Franklin 2017: 7). Oil and chemical companies take advantage of poor communities that have low levels of political power, that result in negative health impacts on these community and poverty that lessens their accessibility to health care (p. 6). A report by the National Alliance to End Homelessness (2020) also found that homeless African Americans are more vulnerable to COVID-19 as "they make up 40 percent of the U.S. homeless population..." (p. 1). That number has increased in recent years, even as the rate of homelessness for other ethnicities has gone down (p. 6). In addition, workplace racism has also contributed to the overrepresentation of African Americans in labor-intensive and low-paid jobs.

The disproportional impacts of COVID-19 on people of color (POC) are hence effects of racist social policies that began decades ago, that "led people of color to be more exposed and less protected from the virus and has burdened them with chronic diseases" (Wallis 2020: 2). Many POC continue to suffer disparities in health care and economic prospects as they live in segregated neighborhoods, work in pandemic frontlines for low wages— also in nursing homes jails, prisons and homeless shelters, with very limited access to personal protective equipment (p. 7). In 2018, the poverty rate for the US population was 11.8 percent, with variations along racial lines (*ibid*). The report by the National Alliance to End Homelessness (2020) noted that African Americans have the highest poverty rate at 20.8 percent, and non-Hispanic whites the lowest at 8.1 percent. "The poverty rate for Blacks and Hispanics is more than double that of non-Hispanic Whites"¹⁶ and "One in three Native Americans are living in poverty, with a median income of \$23,000 a year" (Muhammad *et al.* 2019: 6). According to the Asian American Federation, the number of Asian Americans living in poverty grew by 44 percent between 2000 and 2016 (in Hassan and Carlson 2018).

Even though *national* poverty and unemployment rates are at historic lows, "income inequality has reached the highest level since the Census Bureau started tracking it more than five decades ago", reported the *Washington Post* in late 2019 (Telford 2019). Inequality is disproportionately higher among poor people of colour, for example, "across America, black people remain disproportionately poor. More than 20% live in poverty, twice the rate of whites" (*The Economist* 2019). Moreover, even as the economy booms, the number of Americans without health insurance is rising (Associated Press 2019). These inequalities are the product of the same processes that led to higher levels of economic growth and employment from 2017 until the COVID-19 pandemic halted much economic activity.

Universal generalizations around COVID-19 divert public attention from the positive correlation between coronavirus-related hate crimes, xenophobia and racism against minorities, all of which have spiked dramatically (Human Rights Watch 2020). Anti-Muslim racism during the pandemic has spiked in political regimes in South Asia, aided by state-sanctioned Islamophobia and ethnoreligious nationalism, as previously described. Islamophobia justifies violence against Muslims by depicting them as responsible for economically displacing previously privileged communities, a claim that has become a defining factor in political parties' quest for state power. In the United States, white racism against Asians started in the 19th century, when Chinese laborers were brought into the United States to work on railways and mines; the spread of diseases during this period was associated with Asian racial identity (Li 1998).

The revival of racial myths during the pandemic, especially through anti-Chinese rhetoric (Hvistendahl 2020), must be understood within the context of how the historical development of capitalism has forged the current links between China and the United States (Hart-Landsberg 2010). Claims made about U.S.-China relations framed by taking the nation state as the unit of analysis completely overlook the global realignment

¹⁵ <https://www.vox.com/coronavirus-covid19/2020/4/18/21226225/coronavirus-black-cdc-infection>

¹⁶ <http://federalsafetynet.com/us-poverty-statistics.html>

of capital-labor relations that occurred during the historical development of capitalism, taking advantage of China's labor and authoritarian governance policies, which have benefited the U.S. capitalist class and made an abundance of products available to U.S. consumers. Recession, inequality, and debt increase demand for lower-priced goods, and Beijing, determined to keep its export machine humming, is finding a way to deliver. "Delivering," in this context, means that the Chinese government is doing whatever is necessary to ensure the "ability of Chinese [based] manufacturers to quickly slash prices by reducing wages and other costs in production zones that often rely on migrant workers" (Barboza 2009; Hart-Landsberg 2020: 64). The Pandemic has disrupted the flows of goods and services from China and deprived it of markets.

The narratives of economic nationalism emerging from such contexts provide legitimacy to efforts aimed at removing environmental regulations, introducing austerity measures to attract investments to purportedly spur growth, and forcefully suppressing dissent against economic growth-related injustices and environmental degradation. These trends are likely to produce several outcomes. **First**, resistance to racism and climate change takes a back seat when the majority of the population accepts neoliberal growth as normal and the alternatives to it are viewed as ineffective and weak. More importantly, the racism that functions as the legitimizing ideology of state power provides it with the flexibility (even popular legitimacy) to use whatever means necessary, including extensively involving the military. For example, as is the case in Sri Lanka where the military has been tasked with creating a "disciplined and virtuous" society for the pursuit of growth, prosperity, and security (Colombo Telegraph 2020: 1). **Secondly**, the spike in racist nationalism and militarism in the wake of the state's failure to serve the general interests of society, particularly when the state is constrained by debt repayments and low levels of economic growth, paradoxically serves as a robust source of state legitimacy. **Thirdly**, the state's simultaneous strengthening of social welfare policies, including public health systems, and pursuing of rigorous neoliberal policies disregards the economic and ecological outcomes of both. **Finally**, sustainable platforms incorporating dissent against climate change and capitalism are evolving into political movements for change, arising from global demands for racial justice.

Governance

There is no clear relationship between the nature of political regimes, the levels of economic development they generate, and their pandemic response strategies and their effectiveness. Yet, those economic and political pandemic responses that are driven by neoliberalism and racist nationalism could have debilitating impacts on democratic freedoms, society and nature. For one, the COVID-19 pandemic is likely to increase the pressure on nation states to further liberalize financial markets, especially those with cash strapped economies depending on financial assistance. Contrary to the expectations of neoliberal orthodoxy, however, the actions that many states have taken during the pandemic—nationalization of hospitals, direct supply of resources to people, releasing prisoners, and increasing worker compensation, were unimaginable just months ago, in 2019. While the survival of these practices in different states beyond the 2020 emergency is doubtful, the state currently bears a major burden of managing the health and economic crises of the pandemic. While the private sector is unwilling to invest without the promise of profit, or without being subsidized and safeguarded by neoliberal states, these states are fiscally decapitated and ideologically constrained from operating outside the boundaries of neoliberalism. The economic crisis in countries where state legitimacy relies on ethno-religious nationalism, nepotism and the military could produce disastrous social and ecological consequences.

The emergence of autocratic economic nationalism in countries such as the U.S. has also meant an expanded public role for nation states who compete to increase economic growth within their own economies through new policies. For example, the U.S. (under Trump) has imposed tariffs to limit imports, and encouraged citizens to buy local products, contravening their demands to the rest of the world to follow free-trade policies. Amidst the pandemic, the Environmental Protection Agency (EPA), "issued a sweeping suspension of its enforcement of environmental laws...telling companies they would not need to meet environmental standards during the coronavirus outbreak" (Beitsch 2020: 1). Such pro-growth neoliberal policies are likely to have disastrous economic and environmental consequences. They might also widen economic disparities within and between nations, making them vulnerable to "zoonotic and vector-borne

diseases – two disease groups that are of particular concern because they are climate sensitive, and comprise the majority of emerging or re-emerging infectious diseases." (Estrada *et al.* 2016: 10). How countries adjust social policies to manage the implications for economic growth arising from the intersection between climate risks and financial market risks will shape policies targeted at coping with the Virocene's vulnerabilities. As "domestic policies are essential...to fending off financial crises", (IMF 2020: 21), developing countries will face greater difficulties in coping with the financial crisis that would result in "growing fiscal and current account deficits and a shift toward riskier debt" (p. 16).

The failure of the United States to respond effectively to COVID-19 could also reset debates about the viability of democratic forms of governance during the current emergency and beyond (Benedikt *et al.* 2020; Vlaicu 2020). The political regimes that may potentially emerge in place of democratic modes could have far more debilitating impacts on developing countries than the developed world. There are several instances of governments in developing countries publicly comparing the successes of authoritarian pandemic responses (e.g. military control of logistics and information in pandemic operations) with the failures of Western democracies (Ben-Ghiat 2020; Diaz and Mountz 2020; Perera 2020). The resulting public sentiments are then mobilized to justify an electoral mandate to enhance the powers of the state, a difficult move were it not for the pandemic. This is particularly dangerous for countries that frame the pandemic in terms of national security, breathing new life into militias and racialized political forces, and further empowering corrupt plutocrats and politicians known for human rights violations and abuses of power. It is naïve and dangerous to assume that military involvement, which may be necessary to combat the pandemic, is completely independent of a wider process of militarization. This is particularly true of countries where military rationales dominate governance modalities and where national security is viewed as critical to neoliberal economic development (Perera 2020). History is full of examples of national security apparatus developed for emergencies being applied to safeguard ethnonationalist interests, distracting public attention from social and environmental problems caused by neoliberal economic policies, and suppressing the emergence of dissent opposing such injustices.

The post-pandemic era will be far more devastating for vulnerable groups, unless these political trends are overpowered by creative thinking and by social and political movements premised on ecological wellbeing and justice.¹⁷ In the midst of the uncertainty of economic recovery, the decisions regarding aid to pandemic stricken poor countries are subject to the parochial domestic economic, political and geopolitical interests of the donor countries (Oldekop *et al.* 2020). Ostensibly to curtail human trafficking, in 2018 the Trump administration started to place restrictions on "\$700 million allocated for important U.S.-funded aid programs around the developing world, including money that could have helped alleviate the new Ebola outbreak in Central Africa" (Gramer 2019; Sarukhan 2016). Policies asserted by authoritarian or want-to-be authoritarian leaders no longer even require an underlying logic, beyond perceived personal prestige. For example, President Trump on March 17, 2020 justified his action of withholding funding from the WHO on the basis of his displeasure with their lack of control over the Chinese government's pandemic response (Berglund 2020). An earlier tweet from Trump, on January 24 "praised and thanked China on behalf of American people for its efforts and transparency in fighting the Coronavirus" (Yeung 2020). Trump's policy shift on China happened in a context of media charges levied against him for delaying and sabotaging the United States' response to the pandemic, especially by dismantling and/or reducing the capabilities of the Center for Disease Control and other agencies put in place to manage pandemic outbreaks by previous governments (Diamond 2020; Garrett 2020; McGraw and Cook 2020; UN News 2020).

As governments move away from containing the spread of the pandemic to mitigating the resulting economic fallout, systems of governance will likely prioritize recovering economic growth, compromising social equality and climate change mitigation in the process. Governments have the opportunity to extend their unprecedented control over their citizens in response to the coronavirus to build the power to 'discipline' society

¹⁷ Anti-austerity protests are already underway. Tracing the rise and fall of 'expansionary austerity', Mark Blyth (2015) "argues austerity policies worsened during the Great Depression and created the conditions for the rise of Adolf Hitler and the Japanese militarists" (p. 57). Also see McKee *et al.* (2012) and Blickle (2020). There is also recognition that financial markets and big businesses are part of the problem not the solution, echoing John Maynard Keynes notion that "the boom, not the slump, is the time for austerity at the Treasury" (Keynes: 1937: 388; see also Horagan 2020; Quiggin 2020: 18).

for economic recovery and restoring the government's popular legitimacy. COVID-19 has not fundamentally changed the basic features of neoliberal governance, and in fact made them seem, conservatively, even more necessary for economic recovery. The end of the pandemic would also mean a revival of dissent against neoliberal governance, as the extraordinary redistributive policies undertaken by normally conservative, pro-market regimes are likely to end. Funds may be redirected to competitive growth sectors. Countries risk a breakdown of democratic governance, a rise in racist nationalism, and the militarization of their societies, and the coercive apparatuses developed during the pandemic will be extended to silence critics. Post-pandemic crises may mean expanded surveillance, and entrenched power in the name of 'crisis management.' The increased presence of the military in civilian affairs will have serious consequences for women. "Militarized masculinity", a product of nurturing masculinities infused with myths about male leadership and efficiency and systems of obedience, discipline, and punishment during military training, make their way into society and provide a framework for or shape gender relations in private and public domains (Enloe 2014; Whitworth 2004; Williams 1994), disproportionately impacting racially and economically marginalized women. These dark realities are vulnerable to becoming permanent fixtures of society, unless they are checked by new emancipatory political rationalities, strategies, politics, and power for multispecies justice and backed by global solidarity movements (Fernando 2020).

Human-animal relations

COVID-19 calls us to treat vulnerabilities, and planetary, animal and human health as deeply interconnected. Viral interactions with humans evolve as the relationship between humans and nature evolves. In the case of zoonotic or potentially zoonotic viruses such as SARS-CoV-2 it is important to raise questions about human and non-human proximity, and how political economy organizes human-nature relations. For example, Alex de Waal notes that "the Ebola epidemic was ultimately the product of disruptions to West Africa's ecology caused by the expansion of commercial agriculture into forest zones" (De Waal 2007: 13; also see Mansfield 2008). The evolution of the world's food regimes—their respective ontologies, production, distribution, consumption, cultures, and politics, are important determinants of the zoonotic transmission of viruses and immunity deficiencies that disproportionately impact marginalized social groups (Galt 2017: PAHO/WHO, n.d.).

Industrial livestock farms supply more than "90 percent of meat globally — and around 99 percent of America's meat, animals are tightly packed together and live under harsh and unsanitary conditions" (Samuel 2020). These industrial livestock farms hosting millions of domesticated animals grew in tandem with the growth of commercial agriculture, the land use patterns of which negatively impacted climate change and food security. As evolutionary biologist Rob Wallace notes, "[factory] farms are the best way to select for the most dangerous pathogens possible" (Samuel 2020: 16). Capitalist agribusiness also use large amount of land to produce animal feed, decreasing the availability of, and increasing the price of, food for humans in marginalized communities, thus also decreasing their immunity to viruses.

Meat factory workers also have proven to be particularly vulnerable to COVID-19 (Dyal *et al.* 2020) and are under pressure to resume work without sanitary improvements in their workplaces (Secard 2020). Pandemic pressures expedited the slaughter of animals in large numbers to meet demand, and the disruption of supply chains also forced farmers to cull at least two million animals across the U.S. (Kevany 2020; Scott-Reid 2020).¹⁸ Human and non-human vulnerability to COVID-19 are deeply connected, but rendered unequal by the profit driven organization of relations between human labor and animals in production chains. The "wet markets" where COVID was first detected are hosts for "all kinds of natural commodities, from exotic wild animals like snakes to domesticated livestock like hogs" (Huber 2020: 3), but these wet markets are created by globally interdependent economic growth policies related political cultures (McMullen 2015). According to Quammen (2020: 14), "We cut the trees; we kill the animals or cage them and send them to markets. We disrupt

¹⁸ A US webinar and website hosted by The National Pork Board, 'COVID-19: Animal welfare tools for pork producers' lists among resources on emergency planning, links to 'euthanizing' animals, by methods including gunshot, electrocution, carbon dioxide and manual blunt force trauma and 'ventilation shutdown.' <https://library.pork.org/media/?mediaId=7BD2613C-7E2A-452A-9D9C5CC76F7AF2E9>

ecosystems, and we shake viruses loose from their natural hosts. When that happens, they need a new host. Often, we are it."

The root causes of human and animal health-care crises during the pandemic (and beyond) therefore do not originate in 'nature' but from the values and power of the political economy which organizes the relations between humans and animals (Benton 1993; Nibert 2013; Massé 2016; Mullen 2015). Since the privatization of the commons, "global expansion of capitalism, together with its requisite increase in structures of power and domination, are responsible for the intensification of similar injustices for non-human animals" (Painter 2016: 126) including the mass euthanasia of animals during pandemics. Alternatives to the growth paradigm call for a nature-based approach to human and non-human wellbeing based on an understanding that human survival, and indeed nature's survival, are both operationally and ideologically linked, and quests for transformation and justice inclusive of humans and non-humans should also occur in tandem (Emel and Nirmal 2020 forthcoming; Hribal 2003). The campaigns for non-anthropocentric multispecies justice could easily be coopted by the cultural politics of ethnonationalist neoliberal political regimes, to incentivize violence against vulnerable minorities. For example, we find a relationship between the demands for "cow vigilante" groups and racism and violence against Muslims in South Asia (Jain 2019; Human Rights Watch 2019).

4. Conclusions

Achieving clinical immunity from the SARS-CoV-2 virus will not address the underlying forces of capitalism and racism that are responsible for social and ecological vulnerabilities in the Virocene. If these forces remain unchecked, the world order in the Virocene era might become more racialized, nepotistic, unequal, unjust, autocratic, and militarized to an extent not previously seen. Likewise, the very forces responsible for the vulnerabilities and insecurities of the Virocene epoch might emerge victorious, rendering society even more vulnerable to further pandemics. There is also a real danger that the COVID-19 pandemic will be exploited to allocate and consolidate resources under the dominant neoliberal economic growth model, tinged in some states with authoritarianism, as a pathway to economic recovery – resulting in a highly militarized and racialized world order (Transparency International 2020).

The Virocene epoch foregrounds the urgency of moving forward with counter-hegemonic ways of responding to social and natural vulnerabilities. COVID-19 has exposed the moral and pragmatic failures of capitalism and racism as ways of organizing human-nature relations. Moving forward with counter-hegemonic modalities of response requires us to problematize and de-normalize society's complicity with capitalism and racism as the 'normal' way of organizing human-nature relations and work. We need to begin a critical reflection on the subjectivities, regimes of truth, relationships, and power structures necessary to realize the possibility of a new world order, by reflecting how the vulnerabilities of the current world order came into being and are sustained. The vulnerabilities—shortages, inequalities, and sociological hardships, insecurities, and anxieties—of the Virocene epoch result from the ways in which capitalism and racism organize relations between nature and society.

The terms through which capitalism organizes relations between humans and nature are best captured through Marx's understanding of the 'appropriation of nature' as a universal phenomenon of social metabolism:

In the social production of their life, [people] enter definite relations that are indispensable and independent of their will, relations of production which correspond to a definite stage of development of their material productive forces. The sum total of these relations of production constitutes the economic structure of society, the real foundation, on which rises a legal and political superstructure, and to which correspond definite forms of social consciousness.... From forms of development of the forces of production these relations turn into their fetters. Then comes the period of social revolution. With the change of the economic foundation the entire immense superstructure is more or less rapidly transformed. In considering such transformations the distinction should always be made between the material transformation of the economic conditions of production, which can be determined with the precision of natural science, and the legal, political, religious, aesthetic, or philosophic – in short, ideological – forms in which men

become conscious of this conflict and fight it out. Just as our opinion of an individual is not based on what he thinks of himself, so can we not judge such a period of transformation by its own consciousness; on the contrary, this consciousness must rather be explained from the contradictions of material life, from the existing conflict between the social forces of production and the relations of production (Marx 1859: 43-44).

Historically, the social and ecological vulnerabilities arising from metabolic processes led to various forms of consciousness that reinforced the capitalist orders and opened possibilities for alternatives (e.g., socialist, and social welfare economies). These alternative orders failed to replicate and sustain globally against the ideological and militant forces of capitalism, making capitalism the longest surviving order, showing remarkable ability to recover from multiple crises (Foster 1999). The Virocene moment illustrates the unique reality that capitalism has become helpless in coping with the challenges of climate change, and hardly much better in constraining pandemics. Nonetheless, humans are themselves showing signs of becoming a formidable force against capitalism by organizing globally around shared norms of social and ecological justice.

The Virocene epoch also points to the capitalist system as being fundamentally responsible for producing human and non-human vulnerabilities. It also reveals how capitalism's own rationalities, tools, and power pose challenges to its survival. The disruptions caused by the Virocene and its social and environmental consequences have not completely de-normalized the economic, cultural, economic and political orthodoxies on which capitalism's power rests, through consensual and coercive means. Denormalization faces the challenge of the continuing political and cultural dominance of capitalist rationality. At the same time, the Virocene has not ruptured the widespread belief that human-nature relations mediated by wage labor and capital is the most efficient means of achieving human and ecological wellbeing. In addition to the deprivations of labor created by wage-labor relations, capitalism also creates a metabolic rift between humans and nature (Foster 1999), further constraining flexibility in organizing the relations between them in ways other than those aligned with the capitalist worldview – which would free humans and nature to be co-creators of mutually sustainable survival. Marx noted:

Large landed property reduces the agricultural population to an ever decreasing minimum and confronts it with an ever growing industrial population crammed together in large towns; in this way it produces conditions that provoke an irreparable rift in the interdependent process of the social metabolism, a metabolism prescribed by the natural laws of life itself. As a result, the vitality of the soil is squandered, and this prodigality is carried by commerce far beyond the borders of a particular state (Marx 1999(1894): 588).

The vulnerabilities of the Virocene epoch have highlighted the need for radical changes in capitalism's and racism's hold over governance and persistence of this metabolism, both locally and globally. These are unlikely to happen, as long as the views of the oppressed are no different than those of the oppressor, the former ending up reproducing the same world order either out of fear of taking risks to create change, or from fear of not knowing alternative world orders, or because they view the oppressor's world as 'normal' (Freire 1970). The dissent against the failures of capitalism projected on the state during the Virocene has acquired some flexibility (seen for example in Black Lives Matter protests). How state policies will evolve in the Virocene remains uncertain, as those movements with the political power to produce change are more geared toward changing the "form of the state", rather than its "capitalist nature." Hence, they enable the state to cope with challenges to its legitimacy arising from crises of capitalism and racist nationalism.¹⁹ As evident in the history of capitalism, the role of the state will continue to be the primary determinant of how dissent against capitalism and racism, evident in current protest movements, will metamorphose into emancipatory politics reflecting society's desire to create a new normal way of living.²⁰

¹⁹ For a discussion on the dialectical change in the "form" and "nature" of the state in response to accumulation and legitimacy crisis of capitalism see Clark (1991).

²⁰ For a collection of articles on the production of state power in variety of context, see Steinmetz (1999).

The Virocene epoch thus presents us with the challenge of creating a new social order without falling into the anthropocentric tropes of "nihilistic protest and fascistic accommodations" (Harvey 2018) now proliferating in the name of sustainability, conservation, solidarity, and the "the web portal 'Ecosystem Marketplace' [that] offers information updates and investment and price trend data on carbon, water and biodiversity markets" as green alternatives to capitalism (Fairhead *et al.* 2012: 238; see also Castree 2010; Robbins and Luginbuhl 2005). The new subjectivities, regimes of truth, and power embodied in green capitalism demonstrate its enormous capacity to appropriate the language and practices of its potential antagonists to reproduce its social and political power and legitimacy, serving interests beyond those of capitalism itself in expanding accumulation. I do not dismiss the idea that these alternatives embody dissent against and hope amid capitalism. My contention, rather, is that these *alternatives are vulnerable to cooption by hegemonic powers because they are not grounded in a theory of social and ecological justice that is radically different from that of their antagonists.*

We have seen society's yearning for justice, which is often heightened during emergencies, subverted over and over again, especially when framed in terms of rights, obligations, responsibility, equal opportunity, distribution of wealth, opportunities, and privileges within a society, as well as the creation of a society that works for everyone and for the environment. We can learn from the Haitian revolution (1791-1804) that "pushed the universalism of natural rights to its ultimate fulfilment in actualizing human freedom by overthrowing slavery" (Fick 2007: 395), and we must recognize that "the substantive meanings of such abstract concepts as emancipation, liberty, equality, citizenship, or even independence, were by no means self-evident", then or today (p. 396). Their meanings are constructed, made self-evident and normalized in particular contexts.

After their 13-year struggle against incredible odds, the Haitian revolutionaries sought to forge their own future by tailoring their rights, aspirations, and strategies to suit the needs and divergent concerns of the rival factions (Fick 2007: 396). Like the revolutionaries of Santo Domingo (Saint Domingue as it was then known), we must historicize the specific content of how moral norms naturalize ideas of freedom, justice, and equality and turn them into lived-in realities, that "justified their overthrow of the governing structures oppressing them" (*ibid.*: 395). To do so, we must upend the ways in which rights are conceived under capitalism and redefine the meaning of freedom. We must turn abstract concepts of natural rights that were used to legitimize oppression into human and ecological rights, then position those rights as universal rights that form a moral basis for attempts to overthrow a system of oppression that considers human beings and nature as property. Dissent and emancipatory politics must evolve from the sites of oppression, in the same way as,

...[t]he French and American revolutions had initially set forth declarations of natural and inalienable rights and defined these by the standard of universal human equality, but the slaves of the Haitian revolution – the unimaginable event – actually fulfilled the ultimate meaning of natural rights by overthrowing slavery in their struggle for self-emancipation and then national self-determination. (Fick 2007: 414)

The emancipation of Haiti was based on universal norms about equality and liberty for all, "not in the western metaphorical sense of political oppression or subservience, but as a system grounded in the individual ownership of other human beings as a form of property" (*ibid.*: 395).

The power of these emancipatory struggles is deeply linked with justice, which itself is linked with the moral bases of rights. In political ecology, discussions of the power–justice nexus occupy a central place amid efforts to foster an understanding of the complex ways that power is produced and the "critical role of non-human elements in co-constitution of society – technology – nature" (Ahlborg and Nightingale 2018: 381; also see Castree and Braun 2001; Rocheleau *et al.* 1996). Political ecologists have argued that "combining power perspectives is one of political ecology's strengths, which should be nurtured through a continuous examination of a broad spectrum of social science theories on power" (Svarstad *et al.* 2018: 350). Discussions of power in political ecology focus on how power is implicated in resource choices and governance, the relations between human agency and constitutive power, and the ways in which conflict over access to environmental resources has been linked to the political and economic legacies of the colonial era (Bryant 1998). The emancipatory

potential of political ecology in the Virocene era is nonetheless constrained because its theories of power are not firmly grounded in a robust theory of justice built on the moral bases of social and ecological rights. Moreover, following O'Keefe (forthcoming), political ecology's theories of justice could better emphasize how the universalist worldview of capitalism is localized and how it appropriates, configures, and disciplines subjectivities and power relations in localities to function according to the imperatives of capital. The limitations of PE's theories of justice have weakened the field's emancipatory potential and its ability to address the challenges of the neoliberal state and in ecological crises.

The Virocene is an epoch of well-founded pessimism about humanity's survival. Despair, evil, and helplessness, rather than hope, goodness, and redemption now dominate the consciousness of both the powerful and the powerless. Yet, paradoxically, periods of isolation and fear also create opportunities for critical reflection on human and societal vulnerability. No virus can completely overcome humanity's potential or nullify its inborn capacity for self-preservation. Will there be a sober reflection of the certain but unpredictable causes and timing of death, and the limits of human powers to comprehend and act upon the forces of nature? Will the "human power now overwhelmed by the power of nature" bring "nature and power into a sustainable balance?" (Radkau 2013: 329). Will the current economic crisis give new life to radical thinking about the highly romanticized and fetishized attachment to individual freedoms and capitalism, and how people view the role of the state? Will thinking transform the way we want to live, our relations with each other, and the environment? Will critical reflection lead to rediscovering ourselves and our agency in the world as communal/relational beings? How will political choices about ethics and values and critiques of our leaders' performance affect social and ecological well-being? Will it lead to demilitarization and the dismantling of racism and cultivate an inclusive, equitable and just sense of belonging to a nation and connection with each other?

Our answers to these questions must be powered by creative thinking and by social and political movements premised on ecological wellbeing and justice. Promising counter-hegemonic ideas, practices and politics that problematize what is considered normal, seeking to create new ways of living, which radically restructure the political economy of human-nature relations abound across the world. But their success at becoming 'mainstream' depends on the extent to which they let rights-centered perspective(s) of justice drive their intellectual and policy efforts to reclaim power over neoliberal and racialized regimes and to mobilize society around their alternative ways of organizing human-nature relations. Rather than taking for granted that justice and power are coextensive, the challenge for political ecology is to focus on a moral basis of rights as the connection between justice and power. As T.D. Campbell (1974) notes, "formal justice is insufficient to establish general equivalence between justice and rights" (p. 449).

The efforts of political ecologists to understand and create alternative pathways for freedom from growth-driven nature-society relations must therefore be pursued within a social and ecological justice framework. While the appropriation of nature by capitalism and racism is the primary impediment to coping with the Virocene's social and ecological vulnerabilities, the emancipatory struggles needed to address them are issues of justice rather than ecology. Likewise, the confrontation and transformation of capitalism and racism's valuation of humans and nature are also firstly a matter of justice. By investing more efforts toward theorizing the rights-justice-power nexus to cope with the Virocene's vulnerabilities, political ecology could enhance its contribution to emancipatory movements seeking to defeat the "morbid symptoms" emerging in the midst of the historically unprecedented possibilities for revolutionary change that the Virocene offers, such that these symptoms would not become harbingers of a possible catastrophic future. What I seek to present in my second article (Fernando 2020) is a theory of social and ecological justice that functions as a form of critical inquiry. I will seek to understand how social and ecological inequalities and justice arise and function—and as a form of critical praxis—that is, as a means of both challenging and eventually overturning capitalism and racism, and creating alternatives.

References

- Adger, W.N. 2000. Social and ecological resilience: are they related? *Progress in Human Geography* 24: 347–364.
- Adger, W.N. 2003. Social capital, collective action, and adaptation to climate change. *Economic Geography* 79(4): 387-404.
- Adger, W.N., K. Brown, J. Fairbrass, A. Jordan, J. Paavola, R. Rosendo and G. Seyfang. 2003. Governance for sustainability: towards a "thick" analysis of environmental decision-making. *Environment and Planning A* 35: 1095-1110.
- Afolayan, A. and I. Adelekan. 1999. The role of climatic variations on migration and human health in Africa. *The Environmentalist* 18: 213–218.
- Ahlborg, H. and A.J. Nightingale. 2018. [Theorizing power in political ecology: the where of power in resource governance projects](#). *Journal of Political Ecology* 25: 381-401.
- Albarracín, J. and S. Naron. 2000. Neoliberal employment policies: the case of Spain. *International Journal of Political Economy* 30(2): 56-81.
- Alexander, P., C. Brown, A. Arneith, J. Finnigan and M.D.A. Rounsevell. 2016. Human appropriation of land for food: the role of diet. *Global Environmental Change* 41: 88-98.
- Alkon, A.H. 2014. [Food justice and the challenge to neoliberalism](#). *Gastronomica* 14(2): 27-40.
- Allen, P. and J. Guthman. 2006. From "old school" to "farm-to-school": neoliberalization from the ground up. *Agriculture and Human Values* 23(4): 401–415.
- Amsden, A.H. 1988. *Asia's next giant: South Korea and late industrialization*. Oxford: Oxford University Press.
- Andersen, K.G., A. Rambaut, W.I. Lipkin, E.C. Holmes and R.F. Garry. 2020. [The proximal origin of SARS-CoV-2](#). *Nature Medicine* 26: 450–452.
- Andreucci, D. and S. Engel- DiMauro. 2019. Capitalism, socialism, and the challenge of degrowth: introduction to the symposium. *Capitalism Nature Socialism* 30(2): 176-188.
- Anthony, S.J., C.K. Johnson, D.J. Greig, S. Kramer, X. Che, H. Wells, A.L. Hicks, D.O. Joly, N.D. Wolfe, P. Daszak, W. Karesh, W.I. Lipkin, S. Morse. PREDICT Consortium, J. Mazet and T. Goldstein. 2017. [Global patterns in coronavirus diversity](#). *Virus Evolution* 3(1): vex012.
- Appadurai, A. 1981. Gastro-politics in Hindu South Asia. *American Ethnologist* 8(3): 494-511.
- Aronowsky, L. 2016. [Misanthropocene: review of Donna Haraway, staying with the trouble: making kin in the Chthulucene](#). *Endeavour* 41(2): 38.
- Aspragathos, N. 2013. Commons-based science and research and the privatization of its fruits: the robotics paradigm. *Journal of Innovation Economics and Management* 12(2): 175-197.
- Associated Press. 2019. Number of Americans without health insurance rises for 1st time in a decade. *Associated Press* 11 September. <https://www.nbcnews.com/politics/politics-news/number-americans-without-health-insurance-rises-1st-time-decade-n1052016>
- Associated Press. 2020. Cuban docs fighting coronavirus around world, defying US. *Associated Press* April 4. <https://apnews.com/98cfd5c4a62a40eba648723e452f3e>
- Attard, J. 2020. Pandemics, profiteering and big pharma: how capitalism plagues public health. *Marxist.com* 24 March 2020. <https://www.marxist.com/pandemics-profiteering-and-big-pharma-how-capitalism-plagues-public-health.htm>
- Baigorrotegui, G. 2019. Making justice for counter-expertise and doing counter-expertise for justice. *Science as Culture* 28(3): 375-382.
- Balasubramanian, J. 2015. Sustainable food and privilege: why green is always white (and male and upper-class). In Andersen, M. and P. Hill Collins. *Race, class, and gender: an anthology*. Boston: Cengage Learning.
- Baptiste, N. and J. Washington. 2020. [Trump isn't waging a war on poverty. He's waging a war on poor people](#). *Mother Jones* 14 Feb.

- Barboza, D. 2009. In recession, China solidifies its lead in global trade. *New York Times* October 13. <https://www.nytimes.com/2009/10/14/business/global/14chinatrade.html>
- Barret, S. *et al.* 2020. COVID-19 potential implications for the banking and capital markets sector. Deloitte. 16 March. <https://www2.deloitte.com/us/en/insights/economy/covid-19/banking-and-capital-markets-impact-covid-19.html>
- Barry, J. 2005. *The great influenza: the story of the deadliest pandemic in history*. New York: Viking Books.
- Baru, R.V. and M. Mohan. 2018. [Globalisation and neoliberalism as structural drivers of health inequities](#). *Health Research Policy Systems* 16: 91.
- Batterbury, S.P.J. 2001. [Landscapes of diversity: a local political ecology of livelihood diversification in South-Western Niger](#). *Ecumene* 8 (4): 437–464.
- Bauhardt, C. 2014. Solutions to the crisis? The Green New Deal, degrowth, and the solidarity economy: alternatives to the capitalist growth economy from an ecofeminist economics perspective. *Ecological Economics* 102: 60-68.
- Bayer R., D.M. Fox and D.P. Willis (eds.). 1986. [AIDS: the public context of an epidemic](#). *Milbank Quarterly* 64(suppl. 1): 7-182.
- Bell, J. 2020. Between private and public: AIDS, health care capitalism, and the politics of respectability in 1980s America. *Journal of American Studies* 54(1): 159-183.
- Beitsch, R. 2020. EPA suspends enforcement of environmental laws amid coronavirus. *The Hill* <https://thehill.com/policy/energy-environment/489753-epa-suspends-enforcement-of-environmental-laws-amid-coronavirus>
- Belkhir, J.A. and C. Charlemaine 2016. Introduction: environmental injustice, identity, culture, sexuality, education, crime, and literature issues. *Race, Gender and Class Journal* 23(3-4): 3-5. <https://www.jstor.org/stable/26529205?seq=1>
- Ben-Ghiat, R. 2020. COVID-19 tempts would-be authoritarians. *Foreign Affairs* May 5. <https://www.foreignaffairs.com/articles/world/2020-05-05/covid-19-tempts-would-be-authoritarians>
- Berglund, N. 2020. Brundtland blasts Trump's WHO attack. *News in English*, Norway. April 15 <https://www.newsinenglish.no/2020/04/15/brundtland-blasts-trumps-who-attack/>
- Berkes, F. and H. Ross. 2013. Community resilience: toward an integrated approach. *Society and Natural Resources* 26(1): 5-20.
- Benton, T. 1993. *Natural relations: ecology: animal rights and social justice*. London: Verso.
- Biermann, F. X. Bai, N. Bondre, W. Broadgate, A. Chen, C. Tung, O.P. Dube, J.W. Erisman, M. Glaser, S. van der Hel, M.C. Lemos, S. Seitzinger and K.C. Seto. 2016. Down to earth: contextualizing the Anthropocene. *Global Environmental Change* 39: 341-350.
- Blaikie, P.M., T. Cannon, I. Davis and B. Wisner. 1994. *At risk - natural hazards, people's vulnerability, and disasters*. London: Routledge.
- Blickle, K. 2020. [Pandemics change cities: municipal spending and voter extremism in Germany, 1918-1933](#). *Federal Reserve Bank of New York Staff Reports* no. 921. New York: Federal Reserve Bank of New York.
- Blyth, M. 2015. *Austerity: the history of a dangerous idea*. Oxford: Oxford University Press.
- Bollyky, T.J. 2019. *Plagues and the paradox of progress: why the world is getting healthier in worrisome ways*. Cambridge: MIT Press.
- Boseley, R.S. 2006. Rich countries 'blocking cheap drugs for developing world. *The Guardian* 14 Nov. <https://www.theguardian.com/society/2006/nov/14/internationalaidanddevelopment.medicineandhealth>
- Brenner, R. 2002. *The force of finance: triumph of the capital markets*. New York: Texere.
- Brown, J. 2019. *Influenza: the 100-year quest to cure the deadliest disease in history*. Melbourne: Text Publishing.

- Bryant, R. 1992. Political ecology: an emerging research agenda in third-world studies. *Political Geography* 11(1): 12–36.
- Bryant, R. 1998. [Power, knowledge and political ecology in the third world: a review](#). *Progress in Physical Geography* 22(1): 79-94.
- Buchanan, C. 2019. [Dealing with undeniable differences in Thessaloniki's solidarity economy of food](#). *Sustainability* 11(8): 2426.
- Büchs, M. and M. Koch. 2019. [Challenges for the degrowth transition: the debate about wellbeing](#). *Futures* 105: 155-165.
- Burrows, S. 2013. [Precarious work, neoliberalism and young people's experiences of employment in the Illawarra region](#). *The Economic and Labour Relations Review* 24(3): 380-396.
- Bush, B. 2016. *Imperialism and postcolonialism*. London: Routledge.
- Bush, M.L. R. Brewer, R. Newby and D. Douglas (eds.). 2019. *Rod Bush: lessons from a radical black scholar on liberation, love, and justice*. Belmont, MA: Ahead.
- Cagle, S. 2020. A disastrous situation': mountains of food wasted as coronavirus scrambles supply chain. *The Guardian* 9 April. <https://www.theguardian.com/world/2020/apr/09/us-coronavirus-outbreak-agriculture-food-supply-waste>
- Campbell, B. 2016. *The great transition: climate, disease and society in the late-Medieval world*. Cambridge: Cambridge University Press.
- Campbell, T.D. 1974. Rights without justice. *Mind* LXXXIII(331): 445–448.
- Comaroff, J. and J.L. Comaroff. 2000. Millennial capitalism: first thoughts on a second coming. *Public Culture* 12(2): 291–343.
- Capatides, C. 2020. Doctors Without Borders dispatches team to the Navajo Nation. CBS 11 May. <https://www.cbsnews.com/news/doctors-without-borders-navajo-nation-coronavirus>
- Carballo M., C. Smith and K. Petterson. 2018. [Climate change and displacement: health challenges](#). *Forced Migration Review* 32.
- Cash, D.W., W.N. Adger, F. Berkes, P. Garden, L. Lebel, P. Olsson, L. Pritchard and O. Young. 2006. [Scale and cross-scale dynamics: governance and information in a multilevel world](#). *Ecology and Society* 11(2): art 8.
- Cassell, C.H., Z. Bambery, R. Kakoli, M.I. Meltzer, Z. Ahmed, R.L. Payne and R.E. Bunnell. 2017. [Relevance of global health security to the US export economy](#). *Health Security* 15(6): 563-568.
- Castree, N. 2010. Neoliberalism and the biophysical environment 2: theorising the neoliberalisation of nature. *Geography Compass* 4(12): 1734–1746.
- Castree, N. 2016. The Anthropocene concept: definition and origin. In D. Richardson, N. Castree, M.F. Goodchild, A. Kobayashi, W. Liu and R.A. Marston (eds.). *The international encyclopedia of geography*. Oxford: Wiley-Blackwell.
- Castree, N. and B. Braun (eds.). 2001. *Social nature: theory, practice, and politics*. Oxford: Blackwell.
- Chakrabarty, D. 2009. The climate of history: four theses. *Critical Inquiry* 35: 197–222.
- Chase-Dunn, C. and, A. Roberts. 2012. The structural crisis of global capitalism and the prospects for world revolution in the 21st century. *International Review of Modern Sociology* 38(2): 259-285.
- Chatterjee, P. 2020. The pandemic exposes India's apathy towards migrant workers. *The Atlantic* April. <https://www.theatlantic.com/ideas/archive/2020/04/the-pandemic-exposes-indias-two-worlds/609838>
- Chen, Y., Q. Liu and D. Guo. 2020. [Emerging coronaviruses: genome structure, replication, and pathogenesis](#). *Journal of Medical Virology* 92(4): 418–423.
- Chiengkul, P. 2018. The degrowth movement: alternative economic practices and relevance to developing countries. *Alternatives* 43(2): 81–95.
- Chowkwanyun, M. and A.L. Read. 2020. [Racial health disparities and Covid-19](#). *New England Journal of Medicine* May 6, 2020.
- Clark, S. (ed). 1991. *The state debate*. London: Macmillan.

- Colombo Telegraph. 2020. PTF on building a secure country, disciplined, virtuous and lawful society: complaints lodged with HRCSL. *Colombo Telegraph* July 3. <https://www.colombotelegraph.com/index.php/ptf-on-building-a-secure-country-disciplined-virtuous-lawful-society-complaints-lodged-with-hrcsl/>
- Cohn Jr., S. 2017. Plague violence and abandonment from the Black Death to the early modern period. *Annales de démographie historique* 134(2): 39-61.
- Cohn, S.K. 2012. Pandemics: waves of disease, waves of hate from the Plague of Athens to A.I.D.S. *Historical Journal* 85(230): 535–555.
- Cooper H., R. Zimmerman and L. McGinley. 2001. Patents pending: AIDS epidemic traps drug firms in a vise: treatments vs. profits. *Wall Street Journal* 2 March. <https://www.wsj.com/articles/SB983487988418159849>
- Cooper, R., M. Steinhauer, W. Miller, R. David and A. Schatzkin. 1981. Racism, society, and disease: an exploration of the social and biological mechanisms of differential mortality. *International Journal of Health Services* 11(3): 389-414.
- Corburn, J., V.D. Lahov, B. Mberu *et al.* 2020. [Slum health: arresting COVID-19 and improving well-being in urban informal settlements](#). *Journal of Urban Health* 97: 348–357.
- Cox, J. 2020. Coronavirus job losses could total 47 million, unemployment rate may hit 32%, Fed estimates. *Washington Post* 16 April. <https://www.washingtonpost.com/business/2020/04/16/unemployment-claims-coronavirus>
- Crenshaw, K. 1989. [Demarginalizing the intersection of race and sex: a black feminist critique of antidiscrimination doctrine, feminist theory, and antiracist politics](#). *University of Chicago Legal Forum* 1989(1): 139–167.
- Crouch, C. 2012. Sustainability, neoliberalism, and the moral quality of capitalism. *Business and Professional Ethics Journal* 31(2): 363-374.
- Crutzen, P.J. and E.F. Stoermer. 2000. [The 'Anthropocene'](#). *Global Change Newsletter* 41: 17-18.
- D'Alisa, G., Demaria, F. and G. Kallis. 2015. *Degrowth: a vocabulary for a new era*. New York: Routledge.
- Davis, A.Y. 1983. *Women, race and class*. New York: Vintage Books.
- Davis, J.A., A. Moulton, L. van Sant and B. Williams. 2019. Anthropocene, Capitalocene, ... Plantationocene? A Manifesto for ecological justice in an age of global crises. *Geography Compass* 13(5): e12438.
- DeLuca, S., N. Papageorge and M. Kalish. 2020. *The unequal cost of social distancing*. Johns Hopkins University. <https://coronavirus.jhu.edu/from-our-experts/the-unequal-cost-of-social-distancing>
- de Waal, A. 2007. Introduction. In A. Schiffrin and G. Lugalmi (eds.). *African muckraking*. Gauteng, South Africa: Jacana Media.
- Diamond, D. 2020. Short-term thinking plagues Trump's coronavirus response. *Politico* 2 February. <https://www.politico.com/news/2020/02/26/trumps-coronavirus-credibility-voters-investors-117743>
- Diamond, D. and N. Toosi. 2020. Trump team failed to follow NSC's pandemic playbook. *Politico* 25 March. <https://www.politico.com/news/2020/03/25/trump-coronavirus-national-security-council-149285>
- Diaz, I. and A. Mountz. 2020. Intensifying fissures: geopolitics, nationalism, militarism, and the US response to the Novel Coronavirus. *Geopolitics*. <https://doi.org/10.1080/14650045.2020.1789804>
- Dogan, M.G. 2010. [When neoliberalism confronts the moral economy of workers: the final spring of Turkish labor unions](#). *European Journal of Turkish Studies* 11.
- Dols, M. 1977. *The Black Death in the Middle East*. Princeton, NJ: Princeton University Press.
- Du Bois, W.E.B. 2014. *The problem of the color line at the turn of the Twentieth Century: the essential early essays*. New York: Fordham University Press.
- Dyal J.W., M.P. Grant and K. Broadwater *et al.* 2020. COVID-19 among workers in meat and poultry processing—19 States, April 2020. *CDC Morbidity and Mortality Weekly Report*. 69(18): 557–561. [COVID-19 among workers in meat and poultry processing facilities — 19 states, April 2020](#).
- Edgerton, D. 2006. *Warfare state: Britain, 1920–1970*. Cambridge: Cambridge University Press.

- Emel, J. and J. Wolch (eds.). 1998. *Animal geographies: place, politics and identity in the nature-culture borderlands*. London: Verso.
- Enloe C. 2014. Understanding militarization, and the linkages with globalization: using a feminist curiosity. In WPP (ed.). *Gender and militarism: analyzing the links to strategize for peace*. The Hague: Women Peacemakers Program (WPP). Pp. 7-9.
- Esham, M., B. Jacobs and H.S.R. Rosairo and B.B. Siddighi. 2018. Climate change and food security: a Sri Lankan perspective. *Environment Development and Sustainability* 20: 1017–1036.
- Estrada, R, C. Griffith, C. Prim and J. Sinn. 2016. [Pandemics in a changing climate – evolving risk and the global response](#). Johns Hopkins University School of Advanced International Studies (SAIS).
- Fadil-Luchkiw, J. 2018. Toward relational monsters. *Confluence* 8 November. <https://confluence.gallatin.nyu.edu/sections/criticism/toward-relational-monsters>
- Fairbridge, R.W. 1968. Holocene, postglacial or recent epoch. In *Encyclopedia of earth sciences: geomorphology*. Berlin, Heidelberg: Springer.
- Fairhead, J. and M. Leach. 1995. False forest history, complicit social analysis: rethinking some West African environmental narratives. *World Development* 23(6): 1023–1035.
- Fairhead, J, M. Leach and I. Scoones. 2012. [Green grabbing: a new appropriation of nature?](#) *Journal of Peasant Studies* 39(2): 237–261.
- FAO. 2011. Food loss and food waste. Rome: Food and Agriculture Organization. <http://www.fao.org/food-loss-and-food-waste/en>
- Fernando, J.L. 2020. [From the Virocene to the Lovecene epoch: multispecies justice as critical praxis for Virocene disruptions and vulnerabilities](#). *Journal of Political Ecology* 27: 685-731.
- Fick, C. 2007. The Haitian Revolution and the limits of freedom: defining citizenship in the revolutionary era *Social History* 32(4): 394-414.
- Fischer, D., S.M. Thomas, J.E. Suk, B. Sudre, A. Hess, N. Tjaden, C. Beierkuhnlein and J.C. Semenza. 2013. [Climate change effects on Chikungunya transmission in Europe: geospatial analysis of vector's climatic suitability and virus' temperature requirements](#). *International Journal of Health Geography* 12: 51.
- Fleischman, L. and M. Franklin. 2017. Fumes across the fence-line, NAA'S ECJ program in action! NAACP Study. <http://www.naacp.org/climate-justice-resources/fumes-across-fence-line/>
- Fletcher, R. 2020. [Diverse ecologies: mapping complexity in environmental governance](#). *Environment and Planning E: Nature and Space* 3(2): 481–502.
- Foster, J.B. 1999. Marx's theory of Metabolic Rift: classical foundations for environmental sociology. *The American Journal of Sociology* 105(2): 366-405.
- Forsyth, T.J. 2003. *Critical political ecology*. London: Routledge.
- Francis, T. Jr. 1947. A consideration of vaccination against influenza. *Milbank Memorial Fund Quarterly* 25(1): 5–20.
- Freund, C, M. Maliszewska, A. Mattoo and M. Ruta. 2020. When elephants make peace: the impact of the China-U.S. trade agreement on developing countries. *World Bank Policy Research Working Paper* No. 9173.
- Freire, P. 1970. *Pedagogy of the oppressed*. New York: Continuum.
- Freudenthal, G. and P. McLaughlin (eds.). 2009. *The social and economic roots of the Scientific Revolution*. Netherlands: Springer.
- Gaffney, A. 2020. America's extreme neoliberal healthcare system is putting the country at risk. *The Guardian* 21 March. <https://www.theguardian.com/commentisfree/2020/mar/21/medicare-for-all-coronavirus-covid-19-single-payer>
- Galt, R.E. 2017. *Food systems in an unequal world: pesticides, vegetables, and agrarian capitalism in Costa Rica*. Tucson, AZ: University of Arizona Press.

- Garrett, L. 2020. Trump has sabotaged America's coronavirus response. *Foreign Policy* 31 January. <https://foreignpolicy.com/2020/01/31/coronavirus-china-trump-united-states-public-health-emergency-response>
- Gascón, J. 2018. [Food waste: a political ecology approach](#). *Journal of Political Ecology*. 25: 587-601.
- Ge, H., X. Wang, X. Yuan, G. Xiao, C. Wang, T. Deng, Q. Yuan and X. Xiao. 2020. [The epidemiology and clinical information about COVID-19](#). *European Journal of Clinical Microbiology and Infectious Diseases* 39(6): 1011–1019.
- Gibbon, E. 2001(1776-1789). *The decline and fall of the Roman Empire* (abridged edition). London: Penguin Classics.
- Glezen, W.P. 1996. Emerging infections: pandemic Influenza. *Epidemiologic Reviews* 18(1): 64–76.
- Godin, M. 2020. As cities around the world go on lockdown, victims of domestic violence look for a way out. *Time* 18 March. <https://time.com/5803887/coronavirus-domestic-violence-victims/>
- Goodell J.W. 2020. [COVID-19 and finance: agendas for future research](#). *Finance Research Letters* 35: 101512.
- Gopinath, G. 2020. The Great Lockdown: worst economic downturn since the Great Depression. IMF Blog, June 16. <https://blogs.imf.org/2020/06/16/the-great-lockdown-through-a-global-lens/>
- Gordon, C. and S.K. Bruch. 2020. COVID-19 is exposing the United States' ragged, shameful safety net. *Jacobin* April 21. <https://www.jacobinmag.com/2020/04/covid-19-social-safety-net-united-states>
- Gramer, R. 2019. U.S. stopped vital foreign aid programs in the name of counter-trafficking. *Foreign Policy* 26 June. <https://tinyurl.com/y4uavf6p>
- Grandi, F. 2019. Opening statement at the 70th session of the Executive Committee of the High Commissioner's Programme. UNHCR <https://www.unhcr.org/admin/hcspeeches/5d9b0ad44/opening-statement-70th-session-executive-committee-high-commissioners-programme.html>
- Grillo, T. and S. Wildman. 1991. [Obscuring the importance of race: the implication of making comparisons between racism and sexism \(or other -isms\)](#). *Duke Law Journal* 1991: 397-412.
- Giroux, H.A. 2008. *Against the terror of neoliberalism: politics beyond the age of greed*. Boulder CO.: Paradigm Press.
- Guthman, J. 2008. Neoliberalism and the making of food politics in California. *Geoforum* 39(3): 1171-1183.
- Haggard, S. 1990. *Pathways from the periphery: the politics of growth in the newly industrializing countries*. Cornell University Press.
- Hall, D. 2015. The political ecology of the international agri-food system. In Perrault, T., G. Bridge and J. McCarthy (eds.). *The Routledge handbook of political ecology*. London: Routledge. Pp. 406-417.
- Haraway, D. 2015. [Anthropocene, Capitalocene, Plantationocene, Chthulucene: making kin](#). *Environmental Humanities* 6: 159–165.
- Haraway, D. J. 2016. *Staying with the trouble: making kin in the Chthulucene*. Durham, NC: Duke University Press
- Harper, K. 2016. People, plagues, and prices in the Roman World: the evidence from Egypt. *The Journal of Economic History* 76(3): 803-839.
- Harper, K. 2017. *The fate of Rome: climate, disease and the end of an empire*. Princeton: Princeton University Press.
- Hart-Landsberg, M. 2010. The U.S. economy and china: capitalism, class, and crisis. *Monthly Review* 1 February. <https://monthlyreview.org/2010/02/01/the-u-s-economy-and-china-capitalism-class-and-crisis/>
- Harvard Health. 2020. As coronavirus spreads, many questions and some answers. Coronavirus Resource Center, Harvard Medical School. <https://www.health.harvard.edu/diseases-and-conditions/coronavirus-resource-center>
- Harvey, D. 1989. *The condition of postmodernity: an enquiry into the origins of social change*. Oxford: Blackwell.

- Harvey, D. 1990. Between space and time: reflections on the geographical imagination. *Annals of the Association of American Geographers* 80(3): 418-434.
- Harvey, D. 1996. *Justice, nature and the geography of difference*. Oxford: Blackwell.
- Harvey, D. 2007. *A brief history of neoliberalism*. Oxford: Oxford University Press.
- Harvey, D. 2018. [Universal alienation and the real subsumption of daily life under capital: a response to Hardt and Negri](#). *Triple-C* 16(2).
- Hassan, A. and A. Carlson. 2018. How 'crazy rich' Asians have led to the largest income gap in the U.S. *New York Times* 17 August. <https://www.nytimes.com/interactive/2018/08/17/us/asian-income-inequality.html>
- Henry, Jr. E.W. 2020. Will coronavirus launch the second wave of socialism? *The Hill* 26 March. <https://thehill.com/opinion/campaign/489612-will-coronavirus-launch-the-second-wave-of-socialism>
- Herlihy, D. 1997. *The Black Death and the transformation of the West*. Cambridge: Harvard University Press.
- Hill Collins, P. 2019. *Intersectionality as critical social theory*. Durham, N.C: Duke University Press.
- Hobson, K. 2007. Political animals? On animals as subjects in an enlarged political geography. *Political Geography* 26(3): 250–267.
- Holmes E.A. and C. Peterson. 2017. Race, religion, and justice: from privilege to solidarity in the mid-South food movement. In I. Werkheiser and Z. Piso (eds.). *Food justice in US and global contexts: bringing theory and practice together*. Cham: Springer.
- Holmes, E.C. 2020. What does virus evolution tell us about virus origins? *Virology* 85(11): 5247–5251.
- Holt-Giménez E. 2017. *A foodie's guide to capitalism: understanding the political economy of what we eat*. New York: Monthly Review Press.
- Horagan, J. 2020. Will COVID-19 make us more socialist? Pundits hope the pandemic will lead to more humane government policies but fear darker outcomes. *Scientific American* 20 April. <https://blogs.scientificamerican.com/cross-check/will-covid-19-make-us-more-socialist/>
- Hotaling S., E. Hood and T.L. Hamilton. 2017. [Microbial ecology of mountain glacier ecosystems: biodiversity, ecological connections and implications of a warming climate](#). *Environmental Microbiology* 19: 2935–2948.
- Hodgson, C. 2020. WHO's chief scientist offers bleak assessment of challenges ahead. *Financial Times* 13 May. <https://www.ft.com/content/69c75de6-9c6b-4bca-b110-2a55296b0875>
- Hoyt, K. 2006. Vaccine innovation: lessons from World War II. *Journal of Public Health Policy* 27(1): 38–57.
- Hribal, J. 2003. 'Animals are part of the working class': a challenge to labor history. *Labor History* 44(4): 435–453.
- Huber, M. 2020. COVID-19 shows why we must socialize the food system. *Jacobin* 17 April. <https://jacobinmag.com/2020/04/covid-food-system-coronavirus-agriculture-farming>
- Human Rights Watch. 2019. Violent cow protection in India, vigilante groups attack minorities. *Human Rights Watch* 19 February. <https://www.hrw.org/report/2019/02/18/violent-cow-protection-india/vigilante-groups-attack-minorities>
- Human Rights Watch. 2020. Covid-19 fueling anti-Asian racism and xenophobia worldwide: national action plans needed to counter intolerance. *Human Rights Watch* 12 May. <https://www.hrw.org/news/2020/05/12/covid-19-fueling-anti-asia.n-racism-and-xenophobia-worldwide>
- Huws, U. 2012. Crisis as capitalist opportunity: new accumulation through public service commodification. *Socialist Register* 48.
- Hvistendahl, M. 2020. As Trump and Biden trade anti-China ads, hate crimes against Asian Americans spike. *The Intercept* May 11. <https://theintercept.com/2020/05/11/china-trump-biden-asian-american-hate-crimes/>

- ILO. 2018. New ILO figures show 164 million people are migrant workers. December 5. Geneva: International Labour Organization. https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_652106/lang-en/index.htm
- ILO. 2020. COVID-19 causes devastating losses in working hours and employment. April 7. Geneva: International Labour Organization. https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_740893/lang-en/index.htm
- IMF. 2020. Policy responses to COVID-19. Washington DC: International Monetary Fund. <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>
- Jain, K. 2019. Cow vigilantes and the rise of Hindu nationalism. *Kennedy School Review*. May 3. <https://ksr.hkspublications.org/2019/05/03/cow-vigilantes-and-the-rise-of-hindu-nationalism/>
- Jessop, B. 2002. *The future of the capitalist state*. Cambridge: Polity Press.
- Joassart-Marcelli, P. and F.J. Bosco. 2014. [Alternative food projects, localization and neoliberal urban development: farmers' markets in Southern California](#). *Métropoles* 15.
- Jordan, R. 2019. How does climate change affect disease? *Stanford Earth*. <https://earth.stanford.edu/news/how-does-climate-change-affect-disease#gs.46nv5g>
- Judge, K. 2020. The truth about the COVID-19 bailouts. *Forbes Magazine* April 15. <https://www.forbes.com/sites/kathrynjudge/2020/04/15/the-covid-19-bailouts/-292d30453b77>
- Kallis, G. 2018. *Degrowth*. Newcastle: Agenda Publishing.
- Kamradt-Scott, A. 2020. The politics of pandemic influenza preparedness. In C. McInnes, K. Lee and J. Youde (eds.). *The Oxford Handbook of Global Health Politics*. Oxford: Oxford University Press.
- Kates, J., K. Moss and S. Oum. 2020. Preparing for COVID-19 in low- and middle-income countries: leveraging U.S. global health assets. Kaiser Family Foundation, April 24. <https://www.kff.org/coronavirus-covid-19/issue-brief/preparing-for-covid-19-in-low-and-middle-income-countries-leveraging-u-s-global-health-assets/>
- Kessler, D. and P. Temin. 2005. [Money and prices in the early Roman Empire](#). *Working Paper* 05-11. Cambridge, MA: Department of Economics, MIT.
- Kevany, S. 2020. Millions of farm animals culled as US food supply chain chokes up. *The Guardian* 29 April. <https://www.theguardian.com/environment/2020/apr/29/millions-of-farm-animals-culled-as-us-food-supply-chain-chokes-up-coronavirus>
- Keynes, J.M. 1937. *Collected writings*. London: Macmillan.
- Khan, M.D., H.H. Thi Vu, Q.T. Lai and T.J. Ahn. 2019. [Aggravation of human diseases and climate change nexus](#). *International Journal of Environmental Research and Public Health* 16(15): 2799.
- Kleinman, D.L. and S.P. Vallas. 2011. Science, capitalism, and the rise of the "knowledge worker": the changing structure of knowledge production in the United States. *Theory and Society* 30: 451–492.
- Kohona, P. 2020. Sri Lanka has been successful in countering COVID-19: the small Indian Ocean island deserves recognition. *InDepthNews*. 6 May. <https://www.indepthnews.net/index.php/opinion/3518-sri-lanka-has-been-successful-in-countering-covid-19>
- Kose, M.A., P. Nagle, F. Ohnsorge and N. Sugawara. 2020. [Global waves of debt. Past debt rises can teach developing economies to cope with COVID-19 financing shocks](#). *Finance and Development* 57 (2): 40-43.
- Kotz, D. 2002. Globalization and neoliberalism. *Rethinking Marxism* 12(2): 64-79.
- Kurien, C.T. 2015. [The market economy: theory, ideology and reality](#). *Real World Economics Review* 20(1): 75-91.
- Lang, M. 2017. Degrowth: unsuited for the Global South? *Alternautas* 4(1), July. <http://www.alternautas.net/blog/2017/7/17/degrowth-unsuited-for-the-global-south>
- Lapavistas, C. 2020. COVID-19 crisis has exposed absurdities of neoliberalism. That doesn't mean it'll destroy it *URPE* 2 April. <https://urpe.org/2020/04/02/covid-19-crisis-has-exposed-absurdities-of-neoliberalism-that-doesnt-mean-itll-destroy-it/>

- Lave, R., P. Mirowski and S. Randalls. 2010. STS and neoliberal science. *Social Studies of Science* 40(5): 659-675.
- Laville, J.-L. 2010. [The solidarity economy: an international movement](#). *RCCS Annual Review* 2.
- Lewis, S. 2012. We must set planetary boundaries widely. *Nature* 485: 417.
- Li, P. 1998. *The Chinese in Canada*. Oxford: Oxford University Press.
- Lobao, L., M. Gray, K. Cox and M. Kitson. 2018. [The shrinking state? Understanding the assault on the public sector](#). *Cambridge Journal of Regions, Economy and Society* 11(3): 389–408.
- Loh, C. and R. Gottlieb. 2019. The U.S. and China need to put aside their rivalry and focus on the common enemy: climate change. *Time*. October 28. <https://time.com/5711951/us-china-climate-change-environment/>
- Luber, G., K. Knowlton *et al.* 2014. Human health. In *National Climate Assessment: climate change impacts in the United States*. Washington DC: U.S. Global Change Research Program <https://nca2014.globalchange.gov/report/sectors/human-health>
- Luke, T.W. 2017. Reconstructing social theory and the Anthropocene. *European Journal of Social Theory* 20(1): 80–94.
- Mackintosh M. and M. Koivusalo (eds.). 2005. *Commercialisation of health care: global and local dynamics and policy responses*. London: Palgrave.
- Mahdawi, A. 2020. For some people, social distancing means being trapped indoors with an abuser. *The Guardian*. 21 March. <https://www.theguardian.com/commentisfree/2020/mar/21/coronavirus-domestic-violence-week-in-patriarchy>
- Malette, S. 2009. Foucault for the next century: eco–governmentality. In Brinkley S. and J. Capetillo (eds.). *A Foucault for the 21st century: governmentality, biopolitics and discipline in the new millennium*. Newcastle: Cambridge Scholars Publishing. Pp. 221-239.
- Mansfield, B. 2008. Health as a nature-society question. *Environment and Planning A* 40: 1015-1019.
- Marshall, N.A. and P.A. Marshall. 2007. [Conceptualizing and operationalizing social resilience within commercial fisheries in northern Australia](#). *Ecology and Society* 12(1): 1.
- Marx, K. 1859. A contribution to the critique of political economy. In L.S. Feuer (ed., 1959). *Marx and Engels: basic writings on politics and philosophy*. Garden City, NY: Anchor. Pp. 43-44.
- Marx, K. 1976(1867). *Capital - a critique of political economy Volume 1* (B. Fowkes, Trans.). London: Penguin.
- Marx, K. 1999(1894). *Capital Volume 3* (Online version). Marxists.org <https://www.marxists.org/archive/marx/works/download/pdf/Capital-Volume-III.pdf>
- Mascarenhas, M.J. 2016. Where the waters divide: neoliberal racism, white privilege, and environmental injustice. *Race, Gender and Class*, 23(304): 6-25.
- Massé F. 2016. [The political ecology of human-wildlife conflict: producing wilderness, insecurity, and displacement in the Limpopo National Park](#). *Conservation and Society* 14(2): 100-111.
- Mbembé, J.-A. and L. Meintjes. 2003. [Necropolitics](#). *Public Culture* 15(1): 11-40.
- McCloskey, S. 2020. [COVID-19 has exposed neoliberal-driven 'development': how can development education respond?](#) *Policy and Practice: Development Education Review* 30.
- McConnell J. 2017. An ecophenomenological approach to hunting, animal studies, and food justice. In I. Werkheiser and Z. Piso (eds.). *Food justice in US and global contexts: bringing theory and practice together*. Cham: Springer. Pp. 299-312.
- McDonald, S.N. 2020. In 1918 and 2020, race colors America's response to epidemics. *The Undefeated* April 1. <https://theundefeated.com/features/in-1918-and-2020-race-colors-americas-response-to-epidemics/>
- McGraw, M. and N. Cook. 2020. Trump's coronavirus conflict: science vs. politics. *Politico* 21 March. <https://www.politico.com/news/2020/03/21/short-term-thinking-trump-coronavirus-response-140883>

- McIntyre, M. and H.J. Nast. 2011. Bio(necro)polis: Marx, surplus populations, and the spatial dialectics of reproduction and 'race.' *Antipode* 43(5): 1465-1488.
- McKee, M., M. Karanikolos, P. Belcher and D. Stuckler. 2012. [Austerity: a failed experiment on the people of Europe](#). *Clinical Medicine* 12(4): 346-350.
- McKibbin W. and A. Sidorenko. 2006. [Global macroeconomic consequences of pandemic influenza](#). Canberra: Centre for Applied Economic Analysis, Crawford School of Public Policy, Australian National University.
- McMichael, C. 2015. [Climate change-related migration and infectious disease](#). *Virulence* 6(6): 548-553.
- McMullen, S. 2015. Is capitalism to blame? Animal lives in the marketplace. *Journal of Animal Ethics* 5(2): 126-134.
- McNeill, W.H. 1976. *Plagues and peoples*. New York: Anchor.
- Mendel, D.B. and R.W. Sidwell. 1998. Influenza virus resistance to neuraminidase inhibitors. *Drug Resistance Updates* 1(3): 184-189.
- Meyerson, H. 2020. The future of labor in post-pandemic America. *The American Prospect*. <https://prospect.org/labor/the-future-of-labor-in-post-pandemic-america/>
- Millar, A. 2019. Why is Pharma so bad at sharing clinical trial data? *Pharma* <https://pharma.nridigital.com/pharma/oct19/why-is-pharma-so-bad-at-sharing-clinical-trial-data>
- Minnesota Department of Agriculture. 2019. China top market for US ag products. <https://www.mda.state.mn.us/sites/default/files/inline-files/profilechina.pdf>
- Mirowski, P. 2011. *Science-Mart: privatizing American science*. Cambridge: Harvard University Press.
- Mohammed, A., D. Psalidakis and P. Hafezi. 2020. U.S. to Iran: Coronavirus won't save you from sanctions. *Reuters* 20 March. <https://www.reuters.com/article/us-health-coronavirus-iran-usa/us-to-iran-coronavirus-wont-save-you-from-sanctions-idUSKBN21712L>
- Monaghan, A.J., K.M. Sampson, D.F. Steinhoff, K.C. Ernst, K.L. Ebi, B. Jones and M.H. Hayden. 2018. [The potential impacts of 21st century climatic and population changes on human exposure to the virus vector mosquito *Aedes aegypti*](#). *Climatic Change* 146: 487-500.
- Moore, D. 1998. Subaltern struggles and the politics of place: remapping resistance in Zimbabwe's Eastern Highlands. *Cultural Anthropology* 13(3): 344-381.
- Moore, J.W. 2015. *Capitalism in the Web of Life: ecology and the accumulation of capital*. London: Verso.
- Moore, J.W. (ed.). 2016a. *Anthropocene or Capitalocene? Nature, history, and the crisis of capitalism*. California: PM Press.
- Moore J.W. 2016b. Name the System! Anthropocene and the Capitalocene alternative. October 9. <https://jasonwmoore.wordpress.com/2016/10/09/name-the-system-anthropocenes-the-capitalocene-alternative/>
- Moore, J.W. 2017a. [World accumulation and planetary life, or, why capitalism will not survive until the 'last tree is cut'](#). *Progressive Review* 24(3): 175-202.
- Moore, J.W. 2017b. World accumulation and Planetary life, or, why capitalism will not survive until the 'last tree is cut'. Working paper. IPPR Political Economy Research Center, Goldsmiths, University of London. http://www.perc.org.uk/project_posts/world-accumulation-planetary-life-capitalism-will-not-survive-last-tree-cut/
- Moore, J.W. 2017c. [The Capitalocene, Part I: on the nature and origins of our ecological crisis](#). *The Journal of Peasant Studies* 44(3): 594-630.
- Moore, J.W. 2017d. [The Capitalocene and planetary justice](#). *Maize* 6: 49-54.
- Moore, K., D.L. Kleinman, D. Hess and S. Frickel. 2011. Science and neoliberal globalization: a political sociological approach. *Theory and Society* 40: 505-532.
- Moss, R., M. Babiker, S. Brinkman, E. Calvo, T. Carter, J. Edmonds, I. Elgizouli, S. Emori, L. Erda, K. Hibbard, R. Jones, M. Kainuma, J. Kelleher, J.F. Lamarque, M. Manning, B. Matthews, J. Meehl, L. Meyer, J. Mitchell, N. Nakicenovic, B. O'Neill, R. Pichs, K. Riahi, S. Rose, P. Runci, R. Stouffer, D.

- van Vuuren, J. Weyant, T. Wilbanks, J.P. van Ypersele and M. Zurek. 2008. *Towards new scenarios for analysis of emissions, climate change, impacts, and response strategies*. Geneva: Intergovernmental Panel on Climate Change.
- Muhammad, D.A., R. Tec and K. Ramirez. 2019. Racial wealth snapshot: American Indians/ Native Americans. *National Community Reinvestment Coalition* November 18. <https://ncrc.org/racial-wealth-snapshot-american-indians-native-americans/>
- Mulvaney, D. 2019. A review of *Degrowth* by Giorgos Kallis. *Uneven Earth* October 3. <http://unevenearth.org/2019/10/degrowth-should-be-a-core-part-of-the-just-transition/>
- Nafie, M. 2020. Coronavirus mutates into 40 strains. How this changes the pandemic outlook. *Al Arabiya* 27 March. <https://english.alarabiya.net/en/features/2020/03/27/Coronavirus-mutates-into-40-strains-How-this-changes-the-pandemic-outlook-Exp>
- National Alliance. 2020. *State of homelessness, 2020*. Washington DC: National Alliance to End Homelessness.
- NAEH. 2020. *Racial inequalities in homelessness, by the numbers*. Washington DC: National Alliance to End Homelessness.
- Neate, P. 2020. 320,000 people in Britain are now homeless, as numbers keep rising. *Shelter* https://england.shelter.org.uk/media/press_releases/articles/320,000_people_in_britain_arenow_homeless,_as_numbers_keep_rising
- Nelson, D.R., W.N. Adger and K. Brown. 2007. *Adaptation to environmental change: contributions of a resilience framework*. *Annual Review of Environmental Resources* 32: 395-419.
- Nibert, D. 2013. *Animal oppression and human violence: domesecration, capitalism, and global conflict*. New York: Columbia University Press.
- Nordhaus, T., M. Shellenberger and L. Blomqvist. 2012. *The planetary boundaries hypothesis: a review of the evidence*. Oakland: Breakthrough Institute.
- Notzke, C. 2013. An exploration into political ecology and nonhuman agency: the case of the wild horse in western Canada. *Canadian Geographer/Géographe Canadienne* 57(4): 389-412.
- O'Donnell and Associates. 2020. Corona Big Book main messages. <https://static.politico.com/80/54/2f3219384e01833b0a0ddf95181c/corona-virus-big-book-4.17.20.pdf>
- O'Keefe, P. forthcoming. Political ecology: a refuge for timid radicals. Unpublished manuscript.
- O'Manique, C. 2004. *Neo-liberalism and AIDS crisis in Sub-Saharan Africa: globalization's pandemic*. London: Palgrave Macmillan.
- Ogden, L.V. 2018. *Climate change, pathogens, and people: the challenges of monitoring a moving target*. *BioScience* 68(10): 733–739.
- Oldekop, J.A., R. Horner, D. Hulme, R. Adhikari, B. Agarwal, M. Alford, O. Bakewell, N. Banks, S. Barrientos, T. Bastia, A.J. Bebbington, U. Das, R. Dimova, R. Duncombe, C. Enns, D. Fielding, C. Foster, T. Foster, T. Frederiksen, P. Gao, T. Gillespie, R. Heeks, S. Hickey, M. Hess, N. Jepson, A. Karamchedu, U. Kothari, A. Krishnan, T. Lavers, A. Mamman, D. Mitlin, N. Monazam Tabrizi, T.R. Müller, K. Nadvi, G. Pasquali, R. Pritchard, K. Pruce, C. Rees, J. Renken, A. Savoia, S. Schindler, A. Surmeier, G. Tampubolon, M. Tyce, V. Unnikrishnan and Y.-F. Zhang. 2020. *COVID-19 and the case for global development*. *World Development* 134: 1-4.
- Olszen, M. and M.A. Peters. 2005. Neoliberalism, higher education and the knowledge economy: from the free market to knowledge capitalism. *Journal of Education Policy* 20(3): 500-520.
- Our World in Data. 2020. Corona virus confirmed cases. <https://ourworldindata.org/coronavirus>
- Oustr. 2018. U.S.-China trade facts. Washington DC: Office of the United States Trade Representative. <https://ustr.gov/countries-regions/china-mongolia-taiwan/peoples-republic-china>
- Painter, C. 2016. Non-human animals within contemporary capitalism: a Marxist account of non-human animal liberation. *Capital and Class* 40(2): 327–345.

- PAHO/WHO. n.d. Food security and livelihoods. Tool 7. Pan American Health Organization/World Health Organization.
https://www.paho.org/disasters/index.php?option=com_docman&view=download&category_slug=tools&alias=533-pandinflu-leadershipduring-tool-7&Itemid=1179&lang=en
- Peck, J. and A. Tickell. 2002. Neoliberalizing space. *Antipode* 34(3): 380-404.
- Peet, R. and M.J. Watts. 1993. Introduction: development theory and environment in an age of market triumphalism. *Economic Geography* 69(3): 227–253.
- Peláez C.M. and C.A. Peláez. 2008. Vulnerabilities of the global economy. In C.M. Peláez and C.A. Peláez (eds.). *Globalization and the state: volume II*. London: Palgrave Macmillan. Pp. 180-210.
- Perera, S. 2020. When the pandemic is a portal to militarization. *RESURJ (Sri Lanka)*. June 1.
<http://resurj.org/post/when-pandemic-portal-militarization?fbclid=IwAR2Y5NNgUfW-M3GV8BomPGjytvaRxE2Po1-pAGw9ZP9bvWEBUzB0kNFgPC0>
- Perrigo, B. 2020. It was already dangerous to be Muslim in India. Then came the Coronavirus. *Time* April 3.
<https://time.com/5815264/coronavirus-india-islamophobia-coronajihad/>
- Pirici, A. and R. Voinea. 2015. Manifesto for the Gynecene—sketch for a new geological era.
<http://ro.tranzit.org/file/MANIFESTO-for-the-Gynecene.pdf>
- Previtali, F.S., C.C. Fagiani and C. Lucena. 2016. [The welfare state decline and the rise of neoliberalism since the 1980s: some approaches between Latin America's core and peripheral countries](#). *Zapruder World* 3
- Plahe, J., S. Hawkes, S. and S. Ponnampereuma. 2013. The corporate food regime and food sovereignty in the Pacific Islands. *The Contemporary Pacific* 25(2): 309-338.
- Poore, J. and T. Nemecek. 2018. Reducing food's environmental impacts through producers and consumers. *Science* 360(6392): 987–992.
- Postan, M. 2008. *The Cambridge economic history of Europe: from the decline of the Roman Empire*. Cambridge: Cambridge University Press.
- Prasad, V. 2020. [We won't go back to normal, because normal was the problem](#). *MR Online* 27 March.
- Pringle, H. 2015. How Europeans brought sickness to the New World. BBC. June
<https://www.bbc.com/future/article/20200325-covid-19-the-history-of-pandemics>
- Pulido, L. 2018. Racism and the Anthropocene. In G. Mitman, M. Armiero and R. Emmett (eds.). *Future remains: a cabinet of curiosities for the Anthropocene*. Chicago: University of Chicago Press, Pp. 116–128.
- Quammen, D. 2020. We made the Coronavirus epidemic: it may have started with a bat in a cave, but human activity set it loose. *New York Times* January 28.
<https://www.nytimes.com/2020/01/28/opinion/coronavirus-china.html?smtyp=cur&smid=tw-nytopinion>
- Quiggin, J. 2020. Economic austerity is no way to deal with the COVID-19 pandemic. *Independent Australia*
<https://independentaustralia.net/politics/politics-display/economic-austerity-is-no-way-to-deal-with-the-covid-19-pandemic.13956>
- Qazi, S. and A. Tasleem. 2020. Anguish as Sri Lanka forces Muslims to cremate COVID-19 victims. *Al Jazeera* 4 April.
<https://www.aljazeera.com/news/2020/04/anguish-sri-lanka-forces-muslims-cremate-covid-19-victims-200403053706048.html>
- Radkau J. 2013. Nature and power: an intimate and ambiguous connection. *Social Science History* 37(3): 325-345.
- Raffaelli, P. 2016. Social and solidarity economy in a neoliberal context: transformative or palliative? The case of an Argentinean worker cooperative. *Journal of Entrepreneurial and Organizational Diversity* 5(1): 33-53.
- Raga, S. 2020. Economic vulnerabilities to the coronavirus: top countries at risk.. London: Overseas Development Institute. February 5. <https://www.odi.org/blogs/16639-economic-vulnerabilities-coronavirus-top-countries-risk>

- Ranney, M.L., V. Griffith and A.K. Jha. 2020. [Critical supply shortages: the need for ventilators and Personal Protective Equipment during the Covid-19 pandemic](#). *New England Journal of Medicine* 382: e41.
- Redding, D., P.M. Atkinson, A.A. Cunningham, G. Lo Iacono, L.M. Moses, J.L.N. Wood and K.E. Jones. 2019. [Impacts of environmental and socio-economic factors on emergence and epidemic potential of Ebola in Africa](#). *Nature Communications* 10: 4531.
- Richards, J. 2016. *The road to ruin: the global elites' secret plan for the next financial crisis*. London: Penguin.
- Richie, H., E. Ortiz-Ospina, D. Beltekian, E. Mathieu, J. Hassel, B. McDonald, C. Giattino and M. Roser. 2020. Coronavirus Pandemic (COVID-19): Coronavirus country profiles. *Our World in Data*. <https://ourworldindata.org/coronavirus>
- Ritchie H. 2019. Number of rough sleepers in England has increased more than 250% since 2010. *Our World in Data*. <https://ourworldindata.org/homelessness-rise-england>
- Robbins, P. and A. Luginbuhl. 2005. The last enclosure. *Capitalism, Nature, Socialism* 16(1): 45–61.
- Rocheleau, D.E., B. Thomas-Slayter and E. Wangari (eds.) 1996. *Feminist political ecology: global issues and local experiences*. New York: Routledge.
- Rockström, J., W. Steffen, K. Noone, Å. Persson, F.S. Chapin, III, E. Lambin, T.M. Lenton, M. Scheffer, C. Folke, H. Schellnhuber, B. Nykvist, C.A. De Wit, T. Hughes, S. van der Leeuw, H. Rodhe, S. Sörlin, P.K. Snyder, R. Costanza, U. Svedin, M. Falkenmark, L. Karlberg, R.W. Corell, V.J. Fabry, J. Hansen, B. Walker, D. Liverman, K. Richardson, P. Crutzen and J. Foley. 2009. [Planetary boundaries: exploring the safe operating space for humanity](#). *Ecology and Society* 14(2): 1–24.
- Roser, M. and E. Ortiz-Ospina. 2012. Global extreme poverty. *Our World in Data*. <https://ourworldindata.org/extreme-poverty>
- Rothan, H.A. and S. N. Byrareddy. 2020. [The epidemiology and pathogenesis of coronavirus disease \(COVID-19\) outbreak](#). *Journal of Autoimmunity* 109: 102433.
- Rothwell, J. 2020. Britain, France and Germany bypass US sanctions to provide Iran with medical aid. *The Telegraph* 31 March. <https://www.telegraph.co.uk/news/2020/03/31/britain-france-germany-bypass-us-sanctions-provide-iran-medical>
- Roy, A. 2020. The pandemic is a portal. *The Financial Times* April 3. <https://www.ft.com/content/10d8f5e8-74eb-11ea-95fe-fcd274e920ca>
- Roy, I. 2020. From abuse to jobs, the crisis will burden women more than men. *Wire* 13 April. <https://thewire.in/women/covid-19-domestive-abuse>
- Rutgers University. 2020. How RNA viruses copy themselves: hijack cellular enzyme to create viral replication factories on cell membranes. *ScienceDaily*. 30 May 2010. www.sciencedaily.com/releases/2010/05/100528210736.htm
- Ryan S.J., C.J. Carlson, E.A. Mordecai and L.R. Johnson. 2019. [Global expansion and redistribution of Aedes-borne virus transmission risk with climate change](#). *PLoS Neglected Tropical Diseases* 13(3): e0007213.
- Rybicki, E. 2018. Where did viruses come from? *Scientific American* 28 March. <https://www.scientificamerican.com/article/experts-where-did-viruses-come-fr/>
- Saini, A. 2019. *Superior: the return of race science*. Boston, MA: Beacon Press.
- Saiz, I. 2020. Time for a rights-based global economic stimulus to tackle COVID-19. *Center for Economic and Social Rights*. March 27. <https://www.cesr.org/time-rights-based-global-economic-stimulus-tackle-covid-19>
- Salama P, P. Spiegel, L. Talley, R. Waldman. 2004. Lessons learned from complex emergencies over past decade. *Lancet* 364 (9447): 1801–8113.
- Samuel, S. 2020. If you actually want to create global pandemics, then build factory farms. *Vox* 22 April. <https://www.vox.com/future-perfect/2020/4/22/21228158/coronavirus-pandemic-risk-factory-farming-meat>
- Santasombat, Y. (ed.). 2019. *The sociology of Chinese capitalism in Southeast Asia: challenges and prospects*. London: Palgrave Macmillan.

- Sarukhan, A. 2016. Global health lessons from an epidemic. *ISGlobal* (Barcelona). 17 March. <https://www.isglobal.org/en/ebola>
- Schanbacher W.D. 2017. Introduction to food justice in a global context. In I. Werkheiser and Z. Piso (eds.). *Food justice in US and global contexts: bringing theory and practice together*. Cham: Springer. Cham, Switzerland: Springer.
- Scheffran J., E. Marmer and P. Sow. 2011. Migration as a contribution to resilience and innovation in climate adaptation: social networks and co-development in Northwest Africa. *Applied Geography* 33(1): 119-27.
- Schwartzman, D. 2012. A critique of degrowth and its politics. *Capitalism Nature Socialism* 23(1): 119-125.
- Scott-Reid, J. 2020. Farmed animals culled en masse as COVID-19 outbreaks halt meat and dairy production. *Sentient Media* 29 April. <https://sentientmedia.org/farmed-animals-culled-en-masse-as-covid-19-outbreaks-halt-meat-and-dairy-production>
- Secard, R. 2020. CDC: Over 4,000 meat workers have contracted COVID-19. *Industry Week* 1 May. <https://www.industryweek.com/covid19/article/21130321/cdc-over-4000-meatpacking-workers-have-contracted-covid19>
- Seki, K. 2009. Green neoliberalism, ecogovernmentality, and emergent community: a case of coastal resource management in Palawan, the Philippines. *Philippine Studies* 57(4): 543-578.
- Serhan, Y. and T. McLaughlin. 2020. The other problematic outbreak. *The Atlantic* 13 March. <https://www.theatlantic.com/international/archive/2020/03/coronavirus-covid19-xenophobia-racism/607816/>
- Shamasunder, S., S. Holmes, T. Goronga, H. Carrasco, E. Katz, R. Frankfurter and S. Keshavjee. 2020. [COVID-19 reveals weak health systems by design: why we must re-make global health in this historic moment](#). *Global Public Health* 15(7): 1083-1089.
- Shuman, E.K. 2010. Global climate change and infectious diseases. *New England Journal of Medicine* 362:1061-1063.
- Simangan, D.D. 2020. Where is the Anthropocene? IR in a new geological epoch. *International Affairs* 96(1): 211-224.
- Sinnott-Armstrong, W. 1996. Moral skepticism and justification. In W. Sinnott-Armstrong and M. Timmons (eds.). *Moral knowledge?* Oxford: Oxford University Press. Pp. 4-5.
- Skibba, R. 2019 The disturbing resilience of scientific racism. *Smithsonian Magazine* 20 May. <https://www.smithsonianmag.com/science-nature/disturbing-resilience-scientific-racism-180972243>
- Slaughter, S. and G. Rhoades. 2009. *Academic capitalism and the new economy: markets, state, and higher education*. Baltimore: John Hopkins University Press.
- Slocum, R. 2007. Whiteness, space and alternative food practice. *Geoforum* 38(3): 520-533.
- Smith, B. (ed.). 2000. *Home girls: a black feminist anthology*. New Brunswick: Rutgers University Press.
- Smith, K.F., M. Goldberg, S. Rosenthal, L. Carlson, J. Chen, C. Chen and S. Ramachandran. 2014. [Global rise in human infectious disease outbreaks](#). *Journal of the Royal Society Interface* 11(101): 20140950.
- Snodgrass, M.E. 2017. *World epidemics: a cultural chronology of disease from prehistory to the era of Zika*. 2nd Edition. Jefferson, NC: McFarland and Company.
- Sparke, M. 2019. Neoliberal regime change and the remaking of global health: from rollback disinvestment to rollout reinvestment and reterritorialization. *Review of International Political Economy* 27(1): 48-74.
- Stein, F. and D. Sridhar. 2017. [Health as a "global public good": creating a market for pandemic risk](#). *British Medical Journal* 358: j3397.
- Steinmetz, G. 1999. *State/culture: state formation after the cultural turn*. Ithaca Cornell University Press
- Stott, P.A. and S. Sullivan (eds.). 2000. *Political ecology: science, myth and power*. London: Arnold.
- Sundberg, J. 2014. [Decolonizing posthumanist geographies](#). *Cultural Geographies* 21(1): 33-47.

- Sur, P. and E. Mitra. 2020. Social distancing is a privilege of the middle class. For India's slum dwellers, it will be impossible. *CNN* March 30. <https://www.cnn.com/2020/03/30/india/india-coronavirus-social-distancing-intl-hnk/index.html>
- Svarstad, H., T. Benjaminsen and R. Overå. 2018. *Power theories in political ecology*. *Journal of Political Ecology* 25: 350-363.
- Telford, T. 2019. Income inequality in America is the highest it's been since Census Bureau started tracking it, data shows. *Washington Post* September 6. <https://www.washingtonpost.com/business/2019/09/26/income-inequality-america-highest-its-been-since-census-started-tracking-it-data-show/>
- t' Hoen, E. 2002. *TRIPS, pharmaceutical patents and access to essential medicines: Seattle, Doha and beyond*. *Chicago Journal of International Law* 3(1): 27-46.
- The Economist. 2019. *Poverty in America continues to affect people of color most*. *The Economist* Special Report.
- The Economist. 2020. Could the pandemic give America's labour movement a boost? *The Economist* 9 May. <https://www.economist.com/finance-and-economics/2020/05/09/could-the-pandemic-give-americas-labour-movement-a-boost>
- Torry, H. 2020. Coronavirus pandemic deepens labor divide between online and off line workers. *Wall Street Journal* 3 April. <https://www.wsj.com/articles/coronavirus-pandemic-deepens-labor-divide-between-online-offline-workers-11585924306>
- Transparency International. 2020. Will the legacy of COVID-19 include increased authoritarianism? Transparency International. <https://www.transparency.org/en/news/will-the-legacy-of-covid-19-include-increased-authoritarianism>
- Tsing, A.L. 2015. *The mushroom at the end of the world: on the possibility of life in capitalist ruins*. Princeton: Princeton University Press.
- Tufekci, Z. 2020. It wasn't just Trump who got it wrong. *The Atlantic* March. <https://www.theatlantic.com/technology/archive/2020/03/what-really-doomed-americas-coronavirus-response/608596>
- UNHCR. 2019. *Global trends in forced displacement*. Geneva: UNHCR. <https://www.unhcr.org/globaltrends2019>
- UNHCR. 2020a. Coronavirus outbreak. Geneva: UNHCR. <https://www.unhcr.org/en-us/coronavirus-covid-19.html>
- UNHCR. 2020b. *Coronavirus emergency appeal: UNHCR's preparedness and response plan* (revised) (30 March 2020). Geneva: UNHCR.
- United Nations. 2019a. *The future is now: science for achieving sustainable development*. GSD report 2019. New York: United Nations. https://sustainabledevelopment.un.org/content/documents/24797GSDR_report_2019.pdf
- United Nations. 2019b. World economic situation and prospects. Monthly Briefing. New York: United Nations. https://www.un.org/development/desa/dpad/wpcontent/uploads/sites/45/publication/wesp_mb123.pdf
- United Nations. 2020a. *COVID 19: Reaffirming state-people governance relationships*. *UN/DESA Policy Brief* #75. New York: UN Department of Economic and Social Affairs.
- United Nations. 2020b. *Policy brief: the impact of covid-19 on food security and nutrition*. New York: United Nations.
- UN News. 2020. Now is 'not the time' to reduce funding for the World Health Organization in COVID-19 fight, urges Guterres. 14 April. <https://news.un.org/en/story/2020/04/1061762>
- U.S. Census Bureau. 2020. International Trade Data. <https://www.census.gov/foreign-trade/reference/products/catalog/orderform.html>

- Vega, N. 2020. February Coronavirus fears cost the world's 5 richest people \$36 billion this week. *New York Post* 28 February. <https://nypost.com/2020/02/28/coronavirus-fears-cost-the-worlds-5-richest-people-36-billion-this-week>
- Vergès, F. 2017. Racial Capitalocene. In G.T. Johnson and A. Lubin (eds.). *Futures of Black Radicalism*. London: Verso. Pp. 72–82.
- Vescia, M. 2016. *The rise and fall of the Byzantine Empire*. New York: Rosen Publishing.
- Viens, A.M. 2019. [Neo-liberalism, austerity and the political determinants of health](#). *Health Care Analysis* 27: 147–152.
- Vlaicu, R. Covid-19: threats and opportunities for democracy. *Ideas Matter* April 24. <https://blogs.iadb.org/ideas-matter/en/covid-19-threats-and-opportunities-for-democracy/>
- Vohland, K., Weißflug, M. and L. Pettibone. 2019. [Citizen science and the neoliberal transformation of science – an ambivalent relationship](#). *Citizen Science: Theory and Practice* 4(1): 25.
- Wade, L. 2020. From Black Death to fatal flu, past pandemics show why people on the margins suffer most. *Science*. May 14. <https://www.sciencemag.org/news/2020/05/black-death-fatal-flu-past-pandemics-show-why-people-margins-suffer-most>
- Wald, N. and D.P. Hill. 2016. 'Rescaling' alternative food systems: from food security to food sovereignty. *Agriculture and Human Values* 33: 203–213.
- Wallis, C. 2020. Why racism, not race, is a risk factor for dying of COVID-19. *Scientific American* June 12. <https://www.scientificamerican.com/article/why-racism-not-race-is-a-risk-factor-for-dying-of-covid-19/>
- Walker, P. 2005. Political ecology: where is the ecology? *Progress in Human Geography* 29(1): 73-82.
- Wessner, D. 2010. [The origins of viruses](#). *Nature Education* 3(9): 37.
- West, C. 1993. *Race matters*. Boston: Beacon Press.
- WFP. 2017. [National strategic review of food security and nutrition: towards zero hunger](#). Colombo, Sri Lanka: World Food Programme.
- Whitworth, S. (ed.). 2004. *Men, militarism, and UN peacekeeping: a gendered analysis*. Boulder, CO: Lynne Rienner.
- Williams, C.L. 1994. Militarized masculinity. *Qualitative Sociology* 17: 415–422.
- Willingham, Z. and S. Mathema. 2020. Protecting farmworkers from coronavirus and securing the food supply. Center for American Progress. April 23. <https://www.americanprogress.org/issues/economy/reports/2020/04/23/483488/protecting-farmworkers-coronavirus-securing-food-supply/>
- Wise, P.H. and M. Barry. 2017. Civil war and the global threat of pandemics. *Daedalus* 146(4): 71-84.
- Wisner, B. 2015. Speaking truth to power: a personal account of activist political ecology. In Perrault, T., G. Bridge and J. McCarthy (eds.). *The Routledge handbook of political ecology*. London: Routledge. Pp. 53-63.
- WHO. 2014. [The case for investing in public health: the strengthening public health services and capacity](#). Geneva: World Health Organisation.
- WHO. 2018a. [Managing epidemics: key facts about major deadly diseases](#). Geneva: World Health Organisation.
- WHO. 2018b. Violence against women. 23 November. Geneva: World Health Organisation. <https://www.who.int/news-room/feature-stories/detail/violence-against-women>.
- WHO. 2020. Report of the WHO-China Joint Mission on Coronavirus Disease (COVID-19). Geneva: World Health Organisation. <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>
- Wolfson, M. 2003. Neoliberalism and the social structure of accumulation. *Review of Radical Political Economics* 35(3): 255-262.

- World Bank. 2017. Pandemic Emergency Financing Facility—global pandemic response through a financial intermediary fund. Washington DC: World Bank. <http://documents.worldbank.org/curated/en/2016/05/26238695/pandemic-emergency-financing-facility-global-pandemic-response-through-financial-intermediary-fund>
- World Bank. 2020. *Global economic prospects*. Washington DC: The World Bank.
- Yeung, J. 2020. The US is halting funding to the WHO. What does this actually mean? *CNN*. April 15. <https://www.cnn.com/2020/04/15/world/trump-who-funding-explainer-intl-hnk/index.html>
- Youde, J. 2009. Ethical consumerism or reified neoliberalism? Product (RED) and private funding for public goods. *New Political Science* 31(2): 201-220.
- Zalasiewicz, J., R. Kryza and M. Williams. 2014. The mineral signature of the Anthropocene. In C.N. Waters, J. Zalasiewicz, M. Williams, M. A. Ellis and A. Snelling (eds.). *A Stratigraphical Basis for the Anthropocene*. London: Geological Society, pp. 109–117.
- Zhong, Z.-P., N.E. Solonenko, Y-F. Li, M.C. Gazitúa, S. Roux, M.E. Davis, J.L. Van Etten, E. Mosley-Thompson, V.I. Rich, M.B. Sullivan and L.G. Thompson. 2020. [Glacier ice archives fifteen-thousand-year-old viruses](https://doi.org/10.1101/2020.04.15.200714). *bioRxiv* preprint
- Zubair, L. 2002. El Nino-Southern oscillation influences on rice production in Sri Lanka. *International Journal of Climatology* 22(2): 249–260. <https://rmets.onlinelibrary.wiley.com/doi/abs/10.1002/joc.714>