Coronavirus, capitalism and a 'thousand tiny dis/advantages': a more-than-human analysis

Abstract

This paper establishes a relational, post-anthropocentric and materialist approach to the Covid-19 coronavirus pandemic. Analysis of the 'pandemic assemblage' reveals that the virus has subverted the social and economic relations of capitalism, enabling its global spread. This also establishes a materialist framework for exploring socioeconomic disparities in Covid-19 incidence and death rates, via a more-than-human and monist analysis of capitalist production and markets. Disparities derive from the 'thousand tiny dis/advantages' produced by people's daily interactions with human and non-human matter, making sense of the unequal occupational patterning of coronavirus incidence. This more-than-human approach supplies a critical alternative to the mainstream public health and scientific perspectives on the pandemic, with important implications for current and future policy to counter future microbiological outbreaks.

Introduction

Public health, clinical and behavioural science analyses of the Covid-19 pandemic produced by the coronavirus Sars-Cov-2 have – perhaps unsurprisingly – retained an anthropocentric perspective in their efforts to document both the rapid global spread of the virus (Chakraborty and Maity, 2020; Rothan and Byrareddy, 2020: 1) and the divergences/inequalities in infection and death rates in terms of age, gender, occupational class, ethnicity and body-mass index (Office for National Statistics, 2020a, 2020b; Public Health England, 2020a, 2020b).

However, a number of scholars have offered perspectives on the Covid-19 pandemic that extend beyond this anthropocentric focus, applying variously relational, posthumanist and new materialist perspectives (Braidotti, 2020; Fullagar and Pavlidis, 2021; Hayles, 2020; Klingberg, 2020; Searle and Turnbull, 2020; Vannini, 2020). In addition, recent work has applied new materialist perspectives to the political economy of health and socioeconomic position, replacing essentialist and aggregative models of 'class' with an understanding of the 'tiny dis/advantages' (Author, 2021a, 2021b, 2021c) that are generated during daily

interactions with both human and non-human matter. This paper develops these more-than-human approaches to offer a (micro)political economic analysis of how a 'pandemic-assemblage' has subverted the intended functions of the global capitalist economy within which humans are inextricably caught up. From such a perspective, coronavirus must be understood not as a discrete entity, but rather as assembled with a far wider skein of physical, social, political and economic materialities, including but not limited to human bodies (Klingberg, 2020: 367).

This post-anthropocentric and relational ontology of coronavirus contrasts with the individualistic focus of epidemiology, behavioural sciences and policy-makers upon intrinsic *attributes* of both human and viral bodies; instead shifting attention to the *capacities* produced when they interact with other human and non-human matter (NHM). The units of analysis in this relational perspective are not individual humans (or individual viral particles) but rather assemblages of human and non-human materialities that occur during interactions, for instance at work, during leisure pursuits and domestically (Authors, 2017: 17; DeLanda, 2016: 1-2; Fullagar and Pavlidis, 2021: 156). What humans can do emerge from these moment-by-moment interactions, but it also follows that what a viral particle can do (typically infect a human cell and thereby reproduce) also depends upon the contexts within which different materialities assemble when virus encounters host.

The aim of such a post-anthropocentric approach is not, however, to postulate some kind of underlying mechanism driving the pandemic, but to answer the question that Buchanan (2021: 22) suggests is at the heart of Deleuze and Guattari's (1988: 22) conception of the assemblage: '(g)iven a specific situation, what kind of assemblage would be required to produce it?' This methodology reveals a more-than-human pandemic-assemblage that explains both the rapid and ubiquitous spread of Sars-Cov-2 infection *and* that the specific intersectional and unequal patterning of incidence and severity of Covid-19 is not simply another example of the widespread association between socioeconomic position and health (Marmot and Bell, 2012; S5-S6).

Following a summary of the theoretical positions to be applied, I develop this relational perspective on the pandemic-as-assemblage, and how it subverts the social relations of

capitalism. Then, by re-working Marx's analysis of the social relations of capitalism from a more-than-human, new materialist perspective, I develop a relational model that addresses both the spread of the virus and how the production of tiny dis/advantages in everyday human interactions with other matter (including viral particles) produced the observed socioeconomic disparities in Covid incidence and death rates. The paper concludes by considering the practical and policy implications of this analysis for this and subsequent epidemics and pandemics.

A more-than-human and (new) materialist framework

Posthumanist and new materialist ontologies acknowledge that (post)humans are not separate from, but an intrinsic part of the material world, and that all matter – animate and inanimate – has vital, self-organising capacities (Bennett, 2010; Braidotti, 2013: 49. Haraway, 1997: 270). These approaches range from actor-network theory to posthuman feminism (Author, 2017: 14), but have in common a focus on relationality and the more-than-human production of natural and social worlds (Barad, 1996; Braidotti, 2013: 95). This ontology has been applied to a variety of topics within the social sciences, including gender (Grosz, 1993) and race (Saldanha, 2006; Thomas, 2014), and more recently socioeconomic position (Author, 2021a). Relational, post-anthropocentric and monist analyses of health and illness (Andrews and Duff, 2019: 124) have explored health and ill-health assemblages (Author, 2011, 2021b; Duff, 2014) and more-than-human affective atmospheres that derive from the affects between bodies, non-human matter, places and spaces (Anderson, 2009: 80; Bell *et al.,* 2018: 128; Lupton, 2017). Topics including addiction (Hellman, 2021), smoking (Dennis, 2018); pregnancy (Yoshikawa, 2016) and the human microbiome (Lucas, 2018) reveal the emergent micropolitics of interactions between disparate human and non-human materialities (Lupton, 2019: 2008).

In this paper, this posthumanist ontology is operationalised via four core concepts in Deleuze's (1988: 125-126) 'ethology': affect, assemblage, capacity and monism. By focusing scholarly attention on matter, ethology shifts from an anthropocentric perspective to address the more-than-human aspects of the social and physical world, exploring how – alongside human bodies – things other than humans (for instance, a tool, a technology or a building) can be social 'agents', making things happen. A 'capacity to *affect* and be affected'

(Deleuze and Guattari, 1988: 127-128) is a feature of all matter: human and non-human, animate and inanimate (Bennett, 2010: 5). The 'affect-economy' (Clough, 2004: 12) within an assemblage is the sole determinant of what a body or other thing can do within a particular context (Deleuze, 1988: 124).

This focus on affects also establishes an ontological shift from essentialism to relationality. New materialists regard the material world and its contents not as fixed, stable entities, but as relational and uneven, and always parts of *assemblages* (Bennett, 2005: 445; Delanda, 2006: 3; Deleuze and Guattari, 1988: 88), alongside other similarly contingent and ephemeral bodies, things and ideas (Deleuze, 1988: 123). Assemblages emerge in unpredictable ways around actions and events (Deleuze and Guattari 1988: 88), drawn together by their constituents' capacities to affect or be affected (Deleuze, 1988: 124).

A relational focus upon assemblages underpins a key move within ethology, with methodological implications: from asking what a body (or a virus, or whatever) *is*, to asking instead, what can it *do*? What are its *capacities*? (Deleuze, 1988: 124). This ontology acknowledges that a body's (or a virus's) capacities are always defined by the contexts within which it assembles at any point in space and time, and cannot be known in advance (Deleuze and Guattari, 1988: 257). Assemblages may constrain a body's actions, thoughts or desires – a 'territorialisation' (Deleuze and Guattari, 1988: 88) or *specification* (Author: 2017: 18) of what it can do. Alternatively, the affects in a different assemblage may 'de-territorialise' (Deleuze and Guattari (1988: 89) or *generalise* (Author: 2017: 18) its capacities, opening up new possibilities or 'lines of flight' (Deleuze and Guattari, 1988: 89, 504-505). The relevance of this micropolitics of assemblages for the capacities of Sars-Cov-2 are noted in the next section.

Finally, the new materialisms are *monist*, rejecting any notion of a foundational or transcendent power or mechanism operating beyond or beneath the surface of everyday activities and interactions (Authors, 2018; Deleuze and Guattari, 1988: 328). In place of a duality of agency and 'structures' there are simply 'events' – an endless cascade of material interactions that together produce both the natural and social world. This 'flattened' ontology runs counter to a social theory tradition that has regarded social stratifications as structural

features of contemporary capitalist/neoliberal societies (Scambler, 2007: 298). Later in the paper I establish a monist understanding of capitalism, in which power and resistance are emergent, and continuously generated by the everyday interactions of human and non-human matter (Author, 2018; Braidotti, 2011: 137; Grosz, 1993).

The following section shifts from the anthropocentric focus conventionally found in discussions of the pandemic, to apply this more-than-human, ethological perspective.

Pandemic as assemblage: a more-than-human perspective

If we accept current scientific opinion that Sars-Cov-2 probably mutated from a coronavirus infecting the cave-dwelling horseshoe bat *Rhinolophus affinis* (Boni et al, 2020; Zhou et al, 2020: 271), we can begin to populate an assemblage, listing its constituent elements (in no particular order), as follows:

coronavirus; bat; other bats; cave

Following Deleuze and Guattari's (1988: 257) analysis of the affects in a tick/host assemblage, this coronavirus/bat enzootic-assemblage may be analysed in terms of three viral affects: a capacity to remain viable in aerosols and droplets and on hard and soft surfaces (Rothan and Byrareddy, 2020); a capacity for a protein spike on its surface to inject RNA into a host cell; and the capacity of this RNA to high-jack the host cell's genetic mechanisms to replicate copies of the virus (Fehr and Perlman, 2015). Other affects in this assemblage are associated with the hosts. Bats are highly social animals: they hunt insects in packs; roost in close proximity; and have close contact during reproduction, parenting, grooming, jostling for position and other activities (Species 2000 & ITIS Catalogue of Life, 2019). This assemblage and its affects together establish the basis for enzootic coronavirus infection in *Rhinolophus affinis.*

At some point, a chance mutation – possibly as a consequence of coronavirus/bat assemblage de-stabilisation by human habitat encroachment (Bhattacharya et al., 2020: 222) – supplied

one of these bat coronavirus particles with an additional/alternative affective capacity: to attach to and infect human cells (Boni et al., 2020). A similar epidemic-assemblage incorporating a human host is considerably more complex, as it must take account of the multiple affects in the more-than-human assemblage that produces the contemporary human social world. Human hosts interact with each other in almost every aspect of their daily lives, and the success of a capitalist economy is partly due to the de-territorialised, free movement of bodies and materials in production processes and marketplaces that capitalism establishes (Deleuze and Guattari, 1988: 453). Oiling the wheels of this capitalist enterprise, hosts pack into cities and conurbations, but also travel far and wide for business and pleasure, nationally and internationally (Fuchs, 2020: 378; Klingberg, 2020: 367).

The complexity of this more-than-human capitalist assemblage is almost beyond adequate representation, but as a heuristic device, I focus on one simple but relevant encounter, in which a consumer purchases goods from a supermarket. This might be represented as (in no particular order):

supermarket building and infrastructure; shopper; foodstuffs; transport; check-out operator; check-out equipment; other shoppers; other staff; store management; delivery vehicles and crew; producers and production equipment; land or other production premises; market economy; supermarket shareholders

Affects creating this assemblage include those enabling the various movements of foodstuffs from farm or factory (possibly far distant) to wholesaler to supermarket to shelves to shopping basket to shopper's home; financial affects including the labour needed to fund the purchase, remuneration of producers and intermediaries, and distribution of surplus to pay staff and shareholders; promotion of supermarket and food products; the education and training required for all those working in the supermarket and food supply chain. These workers use private or public transport, and they all consume in multiple settings. Supermarket buyers travel nationally and internationally to meet producers, doing deals to undercut their competitors.

Enter Sars-Cov-2. When coronavirus infects a cell, its affects subvert the latter's genetic mechanism, forcing it to produce new versions of itself rather than the cell's usual proteins and nucleic acids (Fehr and Perlman, 2015). But since it first affected/infected a human cell, it gained access to the vastly more complex human assemblage just described. Effectively, coronavirus became part of the global capitalist assemblage: a dramatic de-territorialisation and line of flight (Deleuze and Guattari, 1988: 89) from its previously-limited habitat within isolated bat-caves. Just as its affects had subverted bat grooming or position-jostling to enable its transmission, the virus subverted this capitalist assemblage into a *pandemic-assemblage* that possesses the capacity to disseminate the virus's spread globally. Now, in place of trade and profit, this assemblage produced contagion as international trade and the human infrastructure of hauliers, intercity trains and air travel became part of the Covid-19 pandemic-assemblage. Mass public transit systems became mass viral infection systems (Musselwhite 2020). Meeting places where humans aggregate for food and drink, entertainment or other social activities, and those workplaces where humans are in close proximity became breeding grounds for the virus to spread via shared air and shared hard surfaces (Dyal *et al*; van Doremalen *et al*, 2020).

This analysis explains how global capitalism supplied the affects that enabled the rapid global spread of the Sars-Cov-2 particle; the next section applies this analysis to address the socioeconomic disparities in prevalence, severity and death.

Health disparities and capitalism: a more-than-human approach

The Covid-19 pandemic displays stark disparities in prevalence and death rates on a range of social stratifications. Most notably, age-adjusted death rates of those living in the most deprived areas are more than twice those of those in the least deprived areas (Blundell et al., 2020: 19-20; Public Health England, 2020b: 32), while black Britons' death rates from Covid-19 are almost three times those of white men (Office for National Statistics, 2020a; Public Health England, 2020b: 39-40). Prevalence of Sars-Cov-2 infection is roughly equal between men and women, though twice as many men subsequently develop serious illness or die (Ahmed and Dumanski, 2020: 981-982; Public Health England, 2020b: 15).

Intersectionality between these social stratifications explains some of these inequalities. For example, high proportions of BAME citizens work in sectors with high infection risks such as health and social care, public transport and elementary occupations such as cleaners and security officers (Hawkins, 2020: 819), while three-quarters of health and social care staff are women (Office for National Statistics, 2020b). Excess deaths among BAME communities reflect higher rates of chronic disease and social deprivation (Bambra *et al.,* 2020: 3), with systemic racism generating a range of health conditions affecting Covid severity (Gravlee. 2020). Fullagar and Pavlidis (2020: 154; 2021: 154) have noted how job precarity, pressures on household budgets, gender-based and domestic violence, racial abuse, anxiety and depression have differentially impacted women during the pandemic.

The previous analysis of the pandemic-assemblage supplies a way to explore these disparities from a more-than-human perspective, challenging the simplistic individualistic focus on behaviour underpinning the risk-reduction strategies promoted by governments and their public health advisors (Klingberg, 2020: 366). While focusing specifically on the socioeconomic gradient in Covid-19 prevalence and death rates, the analysis will also address intersectionality with race and gender.

Socioeconomic gradients in health have been noted for many years, with associations found between health status and a range of measures of socioeconomic position such as income, employment type, housing quality and relative deprivation (Bambra *et al*, 2020; Marmot, 2005; Marmot and Bell, 2012; Scambler, 2012). Sociological explanations of these disparities have included availability, access and uptake of health and welfare services; health behaviours; stress; and differential health knowledge (Scambler, 2012; 133-136), although evidence for the direct material impact of absolute and relative deprivation and poverty is widely acknowledged (Coburn, 2004: 42; Townsend and Davidson, 1982). Meanwhile, a critical materialist thread has sought to explain the interaction between capitalism's social relations and ill-health. These relations have become more polarised as globalisation and neo-liberalisation of markets reduced working class control of the labour process, undermined welfare systems, and increased wealth inequalities within and between national economies: all of which contribute to disparities between rich and poor (Coburn, 2004; Scambler, 2012: 143).

This latter perspective resonates with the more-than-human analysis of the pandemic-assemblage outlined earlier: for 'social relations' of global, neoliberal capitalism, read 'affect-economy'. If Sars-Cov-2 has high-jacked capitalism's affect-economy, then how it affects different human bodies might be expected to reflect the inequalities observed in neoliberal societies (Coburn, 2004: 45; Standing, 2014). However, before accepting this conclusion, work is required to translate the critical materialist analysis of capitalism and health inequalities to a relational, monist and post-anthropocentric ontology.

First, rather than treating a body, virus or a commodity as an essential entity with defined attributes, we need to acknowledge their context-specific capacities (Delanda (2016: 2). This shift establishes a basis for a relational ontology of social advantage. In place of understanding individuals as possessing a stable and fixed socioeconomic position, bodies gain context-specific, emergent *capacities* when they interact with a wide range of other humans and NHM. Changes to this assemblage will lead to alterations in capacities, opening up or closing down possibilities for action. These opportunities or constrains may translate into specific physical, psychological or social advantages and disadvantages (henceforth 'dis/advantages').

Second, the monism of new materialist ontology focuses on how everyday events, actions and interactions (rather than top-down social structures) produce and reproduce social divisions and inequalities (Edwards, 2010: 283; Latour, 2005: 130-131). Analysing an event (for example, a factory worker using a machine to process raw materials; an interaction between shopper and assistant at a supermarket till; or a cough that transmits Covid-19 particles to new hosts) entails applying the concepts of assemblage, affect and capacity outlined earlier to explore human/human and human/NHM interactions. Consequently, the study of capitalism entails analysis of the affect-economies of the everyday events that comprise its operation, and the capacities thus produced, including immediate and more concerted disadvantage.

Finally, analysis of capitalism must acknowledge the affective capacities of *all* matter in the events that produce social and natural worlds (Bennett, 2010: 108). Research (Author,

2021b, 2021c; Fernandes, 1977) has disclosed wide socioeconomic disparities in the quality of domestic and workplace interactions with NHM, ranging from spaces, furnishings, technology, food, transport and leisure facilities. From a new materialist perspective, NHM is not simply a passive backcloth to human social practices and politics, but itself possesses affects that can lead to the production of tiny everyday dis/advantages (Author, 2021a; 2021b).

With these three aspects of a more-than-human and new materialist ontology established, we may ask the ethological question: what does capitalism actually *do*? In Volume 1 of *Capital,* Marx (2011 [1906]: 185-186) offered his answer to this question: what capitalism does is to transform human labour-power (capacity to labour) into capital. To achieve this, there are two relational transactions. The first is a production transaction that exchanges wages for the labour required to transform raw materials into an added-value commodity (ibid: 186-187). The second transaction takes place in a market environment of some sort (ranging from a physical market to a commodity exchange), where this commodity is exchanged for the money/material resources that provides the capitalist with a return (surplus value or profit) on her/his investment (ibid: 168).

This relational analysis of capitalism translates easily into the monist perspective of new materialism. But rather than considering capitalism as a structural social relation (Scambler, 2007: 299), it can be analysed by exploring emblematic examples of these production and market affects in action: within concrete manifestations such as a factory and a market-place (DeLanda, 2006: 17-18). Further work is needed, however, to overcome the anthropocentric focus of *Capital:* for Marx, the NHM (including the means of production) in this affect-economy is inert and no more than the substrate for the 'human desires, intentions and actions' that generate surplus value (Braun and Whatmore, 2010: xxxiv-xxxv, n.13). But exploring the more-than-human assemblages of these settings can reveal how both bodies and NHM are affective within these event-assemblages.

A factory production assemblage can be summarised as an assemblage that comprises at least (and in no particular order):

worker; raw materials; means of production (buildings, tools, technology, knowledge); wages; other workers; managers; boss (owner or shareholders)

The affects in this assemblage produce the material means for workers to gain a wage and bosses to create added-value commodities, while this arrangement of matter establishes new capacities in raw materials as it is transformed into an added-value product. For instance, a 'blast furnace assemblage' establishes new capacities in iron ore (as cast iron or steel) as a material for construction, cutlery and weapon manufacture. Meanwhile, as noted earlier in this section, the work environment (treated by Marx simply as the 'means of production') may affect humans in multiple ways, producing physical, psychological and social dis/advantage (Author, 2021a; Fernandes, 1977).

At its simplest, a market-event may be summarised as an assemblage comprising at least (and in no particular order):

commodity; trader A; customer B; competitor traders; competitor customers; money/material resources; market environment

The affect-economy of a market assembles commodities for trade, traders and customers within a specific place and time. While the exchange of commodity and money between trader and customer enables the value added to the commodity to be realised, as Marx noted, from a more-than-human perspective, commodities gain new capacities in this process. For instance, if the steel produced in the previous assemblage has now been further processed into cutlery (again adding value to the raw material), its purchase by a customer transforms it from being a commodity to trade for profit into implements that may be used to cut, spear and scoop food. At the same time, the commodity affects competitor traders and customers in the immediate market environment, establishing a benchmark for the exchange value of similar products, and hence the underlying dynamic of a capitalist economy (Prey, 2012. 265).

These two more-than-human events capture core aspects of the arrangements of bodies and NHM in the phenomenon that has been called by sociologists, economists and others:

'capitalism' (Prey, 2012: 260). In practice, these assemblages will contain further relations and affects, including trade unions; accountants and book-keepers; domestic labour to sustain workers' labour power; the infrastructure of shopping centres and trading estates; financial institutions; credit cards; safety and employment laws; and regulatory frameworks governing production and consumption and fiscal policies.[2] However, the simplified affect economies set out here are sufficient to explore how these assemblages produce dis/advantage and hence potentially health disparities due to Sars-Cov-2 infection.

Capitalism and the production of tiny dis/advantages

This more-than-human analysis provides a basis from which to make sense of socioeconomic and ethnic disparities associated with the current Covid-19 pandemic. It reveals the significance of material interactions, not only between human bodies but also with NHM during two key events: production and market exchange. These everyday interactions establish relational and context-specific, emergent *capacities* in bodies: if repeated, routinised and habituated over time, these affects have the potential to establish sociomaterial advantage or disadvantage. Some impacts may be transitory, while others supply a 'drip-feed' over a month, a year or a lifetime, establishing enduring dis/advantage, and consequent social divisions and inequalities (including health inequalities). For example, a senior manager and a manual worker in a factory will earn differential wages, based on estimations of the added value of their contributions to production. Over time, this will produce financial disparities that produce relative consumer dis/advantage, while as noted earlier their daily interactions with working environments may also contribute a drip-feed of a 'thousand tiny dis/advantages' (Author, 2021a).[1]

How then might such dis/advantages affect health and well-being? New materialist theorists have argued that 'health' should be understood not as an attribute of a body, but as an engagement with the material world that establishes a body's performative capacities. Health is the 'actual measurable capacity to form new relations (Buchanan, 1997: 82) and a 'quantum of a body's power of acting' (Duff, 2014: 75): conclusions supported by this empirical data on 'health' and in/capacities. Recent mixed-method research (Author, 2021b) supports this perspective on the interactions between health status and bodily capacities, finding that those in good health reported notably and statistically significantly higher levels

of positive capacities and lower levels of negative capacities than poor-health respondents. Health or ill-health may enhance or diminish a body's capacities to engage with the social world, while conversely sociomaterial advantage or disadvantage may respectively establish or constrain physical and mental well-being. Rather than imputing a causal relationship between sociomaterial dis/advantage and health disparities, 'health' and 'dis/advantage' are part of the same phenomenon: the quotidian and unending production of positive and negative capacities as bodies interact with both human and NHM.

This perspective on how the myriad daily events of our lives produce and reproduce tiny dis/advantages in both socioeconomic position *and* health may be used to make sense of the disparities observed in Covid-19 prevalence. Analysis of coronavirus 'hot spots' such as abattoirs and 'sweat-shop' garment manufacture reveals much about how viral participation in the capitalist assemblage enables its transmission. So, for example meat processing plants in Australia, UK, US and elsewhere have been sources of localised community outbreaks of Covid-19 (Dyal *et al*, 2020). Middleton *et al* (2020) suggest that these plants are sources of widespread transmission because of the physical circumstances of meat processing. The cool, humid conditions in these plants retain live viruses for longer on hard surfaces; the work produces dense aerosols of animal debris that may transmit virus between staff; noisy working conditions require workers to speak loudly or shout; and crowded workplaces prevent adequate social distancing.

These studies articulate with the earlier analysis of a pandemic-assemblage comprising not only virus and host, but also non-human elements such as spaces, equipment and meat carcasses. That analysis also suggests how the affects in the contemporary capitalism assemblage affect transmission. A demand for cheap food and the global market in meat products have driven down margins, so that manufacturers depend upon low paid and precarious labour (often drawn disproportionately from women and people of colour) and poor working conditions. Hygiene facilities may be poor; while migrant workers in some plants have been housed in crowded and poor-quality accommodation (Dyal *et al*, 2020; Middleton *et al*, 2020:1). All these 'tiny disadvantages' increase the chances of Sars-Cov-2 infection. Other risky working environments such as food packaging, garment manufacture, consruction and public transport have also been implicated as Covid hot-spots, as well as

other factories and health and social care (Hawkins, 2020; Middleton *et al*, 2020:1; O'Connor, 2020). By contrast, many workers in non-manual and non-health professional jobs have safer and higher-standard working conditions, while many have been able to work from home during the pandemic.

Such an analysis could be used to assess every aspect of human daily activity in terms of the likelihood of Sars-Cov-2 infection. Risk reduction might then be achieved by analysing what individuals do in their daily lives, and interventions required to alter risky behaviours – in ways similar to campaigns to limit HIV incidence by reducing 'unsafe' sexual or other behaviour. However, this response merely recapitulates an individualistic approach, focusing on human agency and practices. Indeed, it is not dissimilar to the approach taken by public health specialists and scientists during this pandemic. Such an individualistic assessment risks stigmatising those in socially disadvantaged and some ethnic groups, who for reasons of economic necessity, are forced into 'un-safe' social practices.

By contrast, the critical and more-than-human analysis undertaken in this paper recognises the part played by the global capitalism-assemblage in the pandemic, and how Sars-Cov-2 is now inextricably caught up with the everyday social and economic activities of work, transport and travel, leisure, privatised domestic life, and consumption in a capitalist economy. While these affect-economies of capitalist production and consumption establish the demographic profile of Sars-Cov-2 infection, the broader disparities in relative material deprivation between different socioeconomic and ethnic communities in capitalist societies shape the consequent severity and rates of death from Covid-19. I consider the implications of this in the final section.

Discussion

The relational and more-than-human analysis of the Covid-19 pandemic developed here has revealed a novel and previously-unrecognised link between Sars-Cov-2 and capitalism. It has disclosed how the global capitalism assemblage has been high-jacked by the virus to establish a pandemic assemblage, while the affect-economy of contemporary global capitalism has shaped who the virus has infected. A more-than-human analysis thus explains both the

global spread of Sars-Cov-2 *and* the manifest inequalities in both prevalence and death rates that have ensued.

Such an assessment moves substantively beyond the individualistic and anthropocentric public health perspective that has dominated the scientific and practice-focused literature, the media, and politicians' pronouncements about coronavirus. Sars-Cov-2's piggy-backing on the affect-economy of capitalism sets this disease apart from other health conditions (from mental health to many cancers) which manifest inequalities in prevalence. The health inequalities that the pandemic-assemblage establishes are direct consequences of the affects that enable the cycle of production, trade and surplus value, as opposed to health inequalities produced by the unintended consequences of capitalism such as wider wealth differentials and the sequelae of poverty, poor housing, social deprivation and lack of social amenities (Coburn, 2004; Marmot, 2005). While the health inequalities that derive from the pandemic-assemblage are primarily socioeconomic, they also partially explain raced and gendered disparities in coronavirus incidence and death. As noted previously, both women and people of colour are over-represented in occupations that carry high risks of infection (Hawkins, 2020: 819; Office for National Statistics, 2020b).

This analysis suggests that humans have in large degree brought this pandemic upon ourselves, as the affects/social relations of a capitalist market economy became globally hegemonic over the past 200 years, massively increasing global trade, urbanisation and international travel (Venn, 2018). This conclusion is not optimistic, suggesting that without fundamental social, political and economic changes, global mass vaccination and continuing sporadic restrictions on social interaction may be required to manage the impacts on morbidity, mortality and economic disruption of future Sars-Cov-2 variants. Nor is this virus likely to be the last such agent to threaten human health and national economies: the next one could be more deadly still.

However, the link between the pandemic and capitalism made here suggests that the behavioural measures proposed by public health and virologists may be supplemented with a skein of radical socioeconomic actions. These amount to a long-term policy shift, to re-engineer the social and economic relations of the global economy away from its current

neoliberalising trajectory (Berry, 2014). While it is unrealistic to imagine the wholesale abandonment of global capitalism any time soon, there are measures to reduce the likelihood that the capitalist assemblage can be highjacked by an agent such as Sars-Cov-2. A move towards a steady state or no-growth model for the economy, and measures to re-distribute wealth within jurisdictions and between global North and South can modify and reverse trends in globalised trade, urbanisation and travel, and also pro-actively mitigate the inequalities endemic to the affects/social relations of neoliberal capitalism. More specific initiatives could include:

- Greater regulation of markets and workplaces locally and internationally to reduce risks to infections in hotspots such as live animal markets, meat and food processing plants and 'sweatshop' manufactories.
- Fiscal measures to encourage local production and consumption of consumer goods, reversing trends toward trade globalisation.
- Biosecurity measures to control regional, national and international trade and travel, including better tracking of international traders and business travellers.
- Increasing wages, reducing job precarity and improving health and safety and other working conditions in occupational sectors with higher levels of exposure to viral transmission, in which women and people of colour are over-represented.
- A shift towards a virtual work economy, reducing the need for urban development and commuter travel.
- Establishing resilient support networks for those suffering multiple disadvantage, whether from aging, chronic illness or a wide range of social disadvantage.

While too late to mitigate the mortality and morbidity of the current pandemic, these measures can reduce the capacity of Sars-Cov-2, influenza and future similar agents to co-opt the capitalist market-assemblage. Such measures will also reduce more general health inequalities, and complement policies to mitigate the existential threat to life on Earth posed by anthropogenic climate change (Author 2019, 2020).

Notes

1. This formulation references new materialist scholarship that has replaced 'gender' and 'race' with 'a thousand tiny sexes' (Grosz, 1993), 'tiny races' (Saldanha, 2006) and indeed 'tiny intersections' between these multiplicities (Dolphijn and van der Tuin, 2013).

2. The analysis in this paper is focused upon capitalism's core affect-economies: production and markets. However, capitalism is also caught up with further cultural and historical affects sustaining patriarchal, racist and colonial privilege (Fuchs, 2018; Grosfoguel, 2011). Further analysis may reveal how the pandemic-assemblage recapitulates these affects, adversely affecting the health and well-being of women, people of colour and those in the global South during the pandemic.

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