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THE SYMPOSIUM

QUESTION: "How can economic anthropologists contribute to our understanding of pandemic responses and recovery?"

What does pandemic response and recovery look like through the lens of anthropogenic violence and inequality?

Sabrina C. Agarwal

Department of Anthropology, University of California, Berkeley, Berkeley, CA 94704, USA
Corresponding author: Sabrina C. Agarwal; e-mail: agarwal@berkeley.edu

As the biosocial and economic impacts of the COVID-19 pandemic continue to be tallied, focus has turned toward pandemic response and recovery. With the majority of emerging infections linked to zoonotic origins, responses that aim for outcomes like better disease surveillance, health security, and prevention of future pandemics must begin with a critical examination of global food systems. Anthropologists offer a vital perspective on the history of inequality and violence in human health that is embedded in the anthropogenic transformation of ecosystems, including contemporary agribusiness, and they are, in turn, uniquely situated for response and activism.

The anthropogenic modification of food systems is central to the history of our species. Our earliest Paleolithic hominin ancestors in Africa,[1] and those who began to roam and expand outside of Africa, lived as nomadic/seminomadic hunter-gatherers (i.e., foragers). Then, some time around ten thousand years ago, humans began a significant transition in how they lived and procured food. Humans began to settle down and produce their own food through the domestication of plants and animals. This "Neolithic Revolution" created not only a change in diet but a new landscape for the evolution of pathogens and our exposure to infectious disease, creating conditions that were particularly favorable for zoonotic infections. Close living conditions with domesticated animals would have increased transmission from animal hosts to human hosts, permanent large settlements would have allowed pathogens to more easily propagate, and an increase in waste would have fostered conditions for parasitic and gastrointestinal infections (Cohen and Armelagos 1984; Harper and Armelagos 2010). We also know that the cultivation of stable crops led to a reduction in dietary diversity and a reliance on foods with poor nutrition that would have exacerbated host vulnerability of these early communities, increasing childhood mortality along with fertility (Cohen and Armelagos 1984; Cohen and Crane-Kramer 2007). As populations eventually aggregated into crowded urban centers, disease intensified and numerous epidemics/pandemics occurred, such as cholera, viral infections like smallpox, and vector-borne diseases like tuberculosis and the plague (Barrett et al. 1998; Cohen and Crane-Kramer 2007).

While advanced genomic tools have begun to offer a refinement of temporal and geographic histories of ancient pathogens (Spyrou et al. 2019), deep-time perspectives allow us to investigate the larger causative relationships

between demographics, socioeconomic factors, and disease. The (bio)archaeological and historical record demonstrates the role of inequality and violence in amplifying the impact of disease on marginalized populations. For example, the plague, or "Black Death," that struck Europe between 1346 and 1353 and killed as much as 50% of the population targeted the elderly and those who had already experienced physiological stress/malnutrition (DeWitte 2016; DeWitte and Wood 2008). Archaeological study of disease during European colonization of the Americas highlights that Indigenous depopulation was not driven primarily by the introduction of novel pathogens but by the following decades of colonial structures of poverty, famine, and slavery (Gamble et al. 2021; Green 2020). Similarly, historical study of the 1918 pandemic shows that it killed those with higher poverty levels and Black populations as compared to white (Økland and Mamelund 2019).

These historical data are critical in shaping how we respond to the inequalities of pandemics today. We have already seen ample data in the United States that COVID-19 disproportionately affects racial and ethnic minorities. For example, in the United States, the proportion of hospitalized patients with COVID-19 was highest for Hispanic or Latino patients (Romano 2021); in the peak of early waves of the COVID-19 pandemic in April 2020, Black people made up more than 80% of hospitalized patients in Georgia and almost all deaths in St. Louis (Wade 2020); and in May 2020, Native Americans made up 57% of the cases of COVID-19 in New Mexico (Gamble et al. 2021; Gutiérrez and Cameron 2021). These health disparities are related to inequity, racism, and violence that had been embedded well before the current pandemic. Response and recovery from this pandemic must consider not only the health crisis but the social crisis we are facing.

In recent years, social scientists have engaged with the Anthropocene as a historically contextualized period of incremental "slow violence" that is set within the structures of plant and animal domestication, European colonialism, slavery, and capitalism (Lowry 2018; Nixon 2011).[2] These perspectives emphasize that not all humans have played an equal role in the anthropogenic transformation of ecosystems, nor have all humans suffered equally from the negative outcomes. What makes nearly all contemporary (re)emerging infections different as compared to historic outbreaks is that they are largely rooted in global capitalism specifically related to our current food systems. An estimated 60% of all human infections and 75% of all emerging infectious diseases are of animal origin (i.e., zoonotic), very likely including COVID-19 (Slingenbergh et al. 2013).[3] Population increases and urbanization are coupled with an increased affluent demand for animal products (known as the "Livestock Revolution") that has driven profound cultural changes in how we produce our food and what we eat. The global emergence of zoonotic diseases has been accelerated by the anthropogenic changes in land use that are characterized by intensive livestock production, exhaustive agricultural practices, forest fragmentation/habitat destruction, and the large-scale trade of live animals and bushmeat, including live animal markets (or "wet markets") (Mishra, Mishra, and Arora 2021; Rohr et al. 2019).

Agribusiness factory farms play a central role in these ecosystem changes. Built to produce a larger yield of animal products, they create artificial, unique ecosystems that replace natural ecosystems and enable viruses to jump from previously isolated wild animals into the food system.[4] Our current system of production and distribution leaves billions of people starving and without sufficient nutrition. The farm animal production sector is the single largest anthropogenic user of land, with rearing and slaughtering of farm animals and feed grain production (HSI Report 2011). The animal agriculture sector is reported to be responsible for approximately 18%, or nearly one-fifth, of human-induced greenhouse gas (GHG) emissions (Steinfeld et al. 2006). Inequality is inherent to the system, with 20% of the world's population consuming 80% of its resources and continuing encroachment and deforestation by the agribusiness of the Global North into developing countries already besieged with poverty and morbidity (Rohr et al. 2019; Wallace et al. 2015).

Global initiatives like "One Health"[5] fall short in unpacking the local and social determinants that lead to zoonotic spillovers, with responses such as testing, tracing, biosurveillance at factories, culling, cures, and vaccination only serving to sustain the food systems or offer Band-Aid solutions to pandemic recovery. What does

a global response from an anthropological perspective look like? Social scientists are positioned to elucidate the broader socioeconomic contexts of contemporary pandemics. For example, anthropologists have provided insight into the ways zoonotic diseases are socially mediated across multispecies primates (Thurber et al. 2013) and the ways that pandemics expose health disparities and syndemic expressions that reflect structural violence in the past (Gamble et al. 2021; Gutiérrez and Cameron 2021) and the present (Singer and Rylko-Bauer 2021). The violence and inequality of contemporary food systems are evident not just globally but locally. In the United States, factory farms are situated in low-income communities of color, where they pollute the environment for its residents and employ local workers with the highest risk for physical and mental health issues in underpaid jobs (Lowry 2021). A Centers for Disease Control and Prevention disparity report found that 87% of COVID-19 cases at slaughterhouses occurred among racial minorities (Waltenburg 2020). This is reflective of the structural racism endemic to meatpacking plants but also of the colonial legacy where the marginalized are cast as expendable.

Anthropologists must continue to play a significant role in critical engagement and activism to expose and remove support for intensive industrial agriculture and to induce changes in behavior toward and demand for animal product consumption at the sociopolitical, community, and individual levels. An empathetic and ecocentric response to conserve and restore ecosystems will require the expertise of anthropologists to help local stakeholders and communities in resistance and in reengagement with ecologically sustainable ways of subsistence. As individuals, each of us can take action with a daily effort to boycott products from industrial agriculture. While the boycott of products from industrial agriculture has been primarily associated with animal welfare advocacy and/or individual lifestyle choice,[6] this call should be informed by the evidence of gross social inequality in our current food systems and the realization that health on a global scale is now in peril. While a boycott can only be conceived by middle-class consumers, it must aim to demand from the Global North sustainable food products not only for the affluent but for an interconnected whole planet. This will require less reliance on animal-sourced foods and much more than "Meatless Monday,"[7] and it should be fueled by the understanding that every factory-farmed meal eaten supports a system that is putting all of us at a devastatingly high risk of human-made disease.

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Notes

1 Roughly 2.5 million years ago to 10,000 years ago.

2 Denoting the geological epoch during which human activity has been the dominant influence on climate and the environment. The timing of the period remains debated; some date the period to start with the Great Acceleration or the Atomic Age. I define here Anthropocene not so much as a geological strata but as the period of human impact on ecosystems and biodiversity that started with the Neolithic (Agricultural) Revolution, with an accelerated impact in the most recent decades culminating in anthropogenic ecological change.

3 Zoonoses can be caused by a variety of pathogens, including bacteria, parasites, fungi, or viruses (with 80% of human viruses being zoonotic). Ancient bacterial zoonoses include brucellosis and mycobacterial diseases (including tuberculosis and leprosy), but note that today, about one-quarter of the world's population currently has a tuberculosis infection. The majority of contemporary pandemics are caused by viral zoonoses. The majority (around 80%) of zoonotic disease reservoirs are mammalian, followed by avian hosts (Morse et al. 2012), with birds, rodents, bats, and camels being natural reservoirs in a number of recent viral zoonoses (Recht, Schuenemann, and Sánchez-Villagra 2020). Well-known examples include HIV/AIDS, Zika, SARS-CoV, H5N1 bird flu, Nipah, and MERS-CoV (Recht, Schuenemann, and Sánchez-Villagra 2020; Rulli et al. 2021). Horseshoe bats, civets, and pangolins have been confirmed as possible intermediate hosts to coronaviruses, and genomic features of the virus suggest COVID-19 was transmitted through a natural process, while some speculation has remained that the virus may have escaped from a laboratory in Wuhan, China (Mishra et al. 2021).

4 The artificial ecosystems of intensive livestock farming utilize tight, confined rearing quarters that are artificial amplifiers for disease emergence (Jones et al. 2013).

5 The One Health program emphasizes the relationship between humans and animals as essential for ecosystem health and was designed as a global effort to have multiple sectors work together toward improved health outcomes (https://www.oie.int/en/what-we-do/global-initiatives/one-health/).

6 For more on livestock conditions that breed zoonoses, see Humane Society International (2020) and Foer (2009), and for an anthropological perspective on the eating of animals, see King (2017).

7 See https://www.mondaycampaigns.org/meatless-monday/about.

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