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Marco Armiero**

Reflections: Environmental History in the Era of COVID-19

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Mark D. Hersey and Stephen Brain

Editors' Introduction

In March 2020, as the scope and scale of the COVID-19 pandemic began to come into focus, we reached out to some of the leading lights in the field of environmental history—some senior, some junior, from every continent but Antarctica—and asked if they would be interested in committing to paper their thoughts about the meaning of the virus from their perspectives. Our hope was that the collected essays could provide some useful context for understanding a global historical phenomenon and also serve as a sort of time capsule, capturing what environmental historians thought was noteworthy at a moment when the natural world came crashing into the human world in a dramatic way. We were heartened by the response—despite the disruptions to daily life that most of us have experienced as the virus closed schools and universities, almost every invitee agreed. Although we have done so in private correspondence, we would like to thank them here for their generosity, their professionalism, and their diligence.

The result of their efforts is the following collection of diverse and thought-provoking essays. Our instructions to each contributor were spare: simply convey to our readers what seems important in understanding the pandemic and keep it short. The contributors have, accordingly, gone in a variety of directions; some have focused on geographical regions, some have focused thematically, and others have considered the epidemiology or microbiology of the COVID-19 virus. Some have drawn upon science, while others have drawn upon personal experience; some are dispassionate, while others excoriate elected leaders for failing to respond to the crisis adequately or society at large for tolerating problems that the pandemic has cast in sharp relief. Taken together, the essays provide a panoramic picture of a world coming to grips with contagion.

We have arranged the essays alphabetically, with one exception: the concluding essay is a piece by Marco Armiero, the president of the European Society for Environmental History and also a COVID-19 survivor. As his essay reveals, Marco had a much closer encounter with the virus than anyone wants. Marco's contribution, which is set in the context of those that precede it, underscores a central insight of environmental history: that the human and nonhuman worlds are inextricably linked and that we ignore this linkage at our peril.

Peter Alagona
All of Us, Animals

On the second Friday in March 2020, at around 4:30 p.m., as I scanned the news trying to make sense of a dizzying week—viral pandemic, roiling stock market, mass layoffs, online education, social distancing, a summer without baseball—it finally hit me: I am an animal. That this obvious, but uncomfortable, fact reached me half-way through my forty-seventh year, the past twenty-five of which I had spent studying wildlife, is humbling to admit. It had, of course, occurred to me previously—for example, on the day of my son’s birth, but this time was different. Never before had I felt so much a member of a biological species—bound to every one of the world’s other 7.8 billion *Homo sapiens* and connected to the myriad other species with which we share our genes, our habitats, and our parasites.

Yet even as I was being reminded of my brute nature, millions of other people around the world were turning their attention to different animal species. Indeed, one of the most striking features of the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) pandemic is the extent to which nonhuman animals have emerged as key figures and flashpoints in the drama of an all-too-human disease. Environmental historians often stress the deep connections between humans and other animals. This pandemic offers our field a rare opportunity to highlight these indelible connections while the world is listening. Here are just five suggestions of where to start.

ANIMALS AS VECTORS

The SARS-CoV-2 pandemic was first thought to have emerged at a wet market in Wuhan, China, where live animals of many kinds are packed into cruel and unsanitary conditions for sale as dubious medicines or exotic delicacies. As of this writing, new genomic research suggests that, although this virus likely evolved in bats, with a possible link to pangolins as reservoir hosts, it may have spilled over into humans earlier than previously believed and in a different location where people were disturbing or exploiting wildlife. Pundits often describe the SARS-CoV-2 virus as “natural,” but ecologists and epidemiologists have long warned that habitat loss, climate change, and wildlife trafficking—the world’s fourth largest smuggling industry, with annual revenue of up to \$23 billion—dramatically increase

people's exposure to dangerous pathogens. Seen in this way, the current pandemic is the first global-scale human disaster to result from the sixth mass extinction of life on Earth. Environmental historians can help explain this by highlighting past experiences showing that destroying nature is often incompatible with human health.¹

ANIMALS AS FOOD

The coronavirus that causes SARS-CoV-2 got its start in wildlife, but a devastating disease could just as easily have begun in an industrial food system. Reporting on the US food system during this pandemic has focused on worker infections in meatpacking plants; as of May 15, twelve of the twenty-five US coronavirus hotspots were associated with these facilities. Yet industrial systems that house large, high-density animal populations in close proximity to wildlife also create ideal conditions for contagious diseases to emerge. (Nipah virus and influenza A are recent examples of viral diseases that spilled over into humans under such conditions). On April 28, President Donald Trump, a devoted carnivore, declared meat-processing plants “critical and strategic” infrastructure under section 101(b) of the 1950 Defense Production Act.² Critics have countered that this crisis calls for an “end to meat,” or at least an end to our brittle and overconcentrated animal industrial complex, in favor of more local, flexible, and diverse food systems. Environmental historians can contribute to this debate by explaining, for the broadest possible public, both how this industrial complex developed—a task that may require us to reengage in a more sustained and substantive way with agricultural historians—and the profound trade-offs and risks that it now presents.³

ANIMALS AS NEIGHBORS

In late March, within days of local officials across the world issuing stay-at-home orders, images began surfacing, in the press and on social media, of wild animals wandering deserted cities. Flamingoes, deer, coyotes, pumas, wild boars, mountain goats, and hordes of frantic macaques roved through desolate neighborhoods that, just days earlier, had bustled with cars and pedestrians. Newsrooms on six continents declared that wild animals were “reclaiming” cities. In fact, wildlife populations had been growing in many of these places for at least half a century. Cities in Europe, North America, parts of Asia, and elsewhere have more wildlife, particularly large and charismatic animals, living in them today than at any time during the past 150 years. It just took a pandemic to make this more visible. Environmental historians are uniquely positioned to interpret the paradox at the heart of this phenomenon: why have many cities filled

up with wild creatures even as humans are decimating wildlife throughout most of the rest of the world?⁴

ANIMALS AS SYMBOLS

People who encounter urban wildlife invariably try to make sense of it. Clichés portraying wild animals in cities as diseased menaces, foreign invaders, criminal gangs, gritty hustlers, symbols of resilience, or wellsprings of hope say more about the people expressing them than they do about the creatures they claim to describe. At the peak of the pandemic, however, this meaning making reached new heights as life seemed to imitate art. Best-selling books like *The World without Us*, and Hollywood blockbusters like *12 Monkeys* (1995) and *I Am Legend* (2007), had primed people to believe that nature would waste little time replacing humans in a post-apocalyptic world.⁵ At once haunting and reassuring, images of wild animals roaming empty streets reminded viewers that, even in a moment of global crisis, nature is resilient. Life goes on. Yet they also preyed on our imaginations. Some widely circulated images, like the famous picture of dolphins frolicking in a crystal-clear Venice canal, turned out to be fakes. Environmental historians who study the cultural histories of animals can clarify these discussions by separating fact from fiction even as we caution that myths and realities shape one another, with profound consequences for all animals, human and nonhuman alike.⁶

ANIMALS AS COMPANIONS

During previous pandemics, officials hunted down and shot stray dogs and pigs in the streets. During the Great Recession of 2008–09, foreclosed homeowners dumped thousands of pets in local shelters. In the pandemic of 2020, by contrast, pet adoptions have spiked by 90 percent or more in many areas, with even greater increases in some big city shelters. In a society with smaller families and more adults living alone, stay-at-home orders and the suspension of most air travel have driven people who once balked at the obligations of pet ownership to adopt orphaned animals. Some advocates worry that these creatures may end up back in shelters once the pandemic subsides or if the economic crisis intensifies. Yet this unprecedented spike in adoptions shows how central companion animals have become in helping millions of people cope with what they experience as an increasingly lonely and stressful world. Environmental historians have much to say about the history of pets in America and elsewhere; perhaps in the future, we will have more to say about emotions, mental health, and the environment.⁷

So take it from me and save yourself some embarrassment. If anyone asks you why nonhuman animals have played such central roles in this human pandemic, tell them that the details are complicated, but the answer is simple. We are all connected because we are all animals. It took a virus for the world to remember this. But, of course, you knew it—really knew it—all along.

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Notes

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Jane Carruthers

Looking at Butterflies

The COVID-19 pandemic of 2020 is a sensational reminder that human history is often directed by environmental factors and life-forms and species other than our own. Viruses are an obvious case in point. These submicroscopic biological entities, described in 1990 by South African scientist Edward Rybicki as existing “at the edge of life,” can infect cells of all types and sizes in humans, other animals, and plants.¹ Many thousands of virus species are found everywhere on Earth and in every ecosystem. They are particularly dangerous because, even when well studied, as some viruses are, they can mutate and—quite quickly—have unknown or unforeseen consequences. Plant viruses affect our food supply and determine demographic expansions and declines. Human viruses, such as measles, have wiped out whole precolonial populations. When the “Spanish flu” epidemic erupted in 1918, very little was known about viruses. Only in the 1930s were scientists able to grow influenza and other viruses after they had been made visible in newly invented electron microscopes and, thus, available for extensive study thereafter.

South Africa was one of the countries hardest hit by the Spanish flu. The medical historian Howard Phillips dissected the onslaught and progress of the disease introduced by soldiers returning from the First World War that spread rapidly as they travelled to their homes throughout the country. Within six weeks, more than three hundred thousand South Africans of all races were dead—some 6 percent of the total population.²

Given this history, the fear of rampant COVID-19 in March 2020 was a test for government. South Africa has a population of fifty-eight million (hundreds of thousands of whom have tuberculosis and millions of whom have HIV/AIDS), a failing economy, widespread poverty, high levels of homelessness and unemployment, a lack of clean water and sanitation, poor health and education services, high levels of corruption, and little social support. Confronted by the pandemic, and appreciative of the extremely high risks, the state immediately announced a total lockdown. The army was mobilized; citizens were confined to their homes (even when numerous people lived in makeshift shacks) and subject to a curfew; universities, schools, and businesses (except essential services) were closed; groceries and medicine were the only items for sale; outdoor exercise was prohibited; and all

international and internal borders and airports were shut down. Not surprisingly, the poor have been hardest hit by the state's restrictions, and hunger and starvation will be the consequence. Some lifting of restrictions has taken place over the weeks and will continue, but the disease may peak here only in August or September, so the end is not in sight.

An avalanche of scholarship will dissect this era and its social, economic, political, and medical consequences; indeed, that has already begun. The environmental consequences are less visible in the media, but their impact may also endure into the future. Doubtless, the United Nations' Sustainability Development Goal (SDG) no. 3 on good health and well-being will be prioritized in the search for a COVID-19 vaccine, while others, such as SDG no. 13 on climate action, SDG no. 7 on clean energy, SDG no. 14 on life below water, and SDG no. 15 on life on land may be downgraded as governments scramble to regain economic equilibrium.

Much fresh research lies ahead for African environmental history and the connection between disease and environmental justice in a country like South Africa where so many citizens lack access to sanitation and clean water. Surely too, the links between humans and other species will be studied more closely. There is speculation about the wild animal origin of COVID-19, and bats were implicated in the Ebola virus epidemic that killed thousands of Africans after 2014. The illegal killing, trade, and consumption of wild animals will certainly become a greater area of study. We can expect more research on the histories of introduced, invasive (non-native) animal and plant species, and on inter-species transfers. More work on the international trade in rhinoceros horn and other protected species may ensue. In addition, with cleaner urban air devoid of toxic industrial fumes and skies full of aircraft, changes in urban wildlife and human environmental well-being will lead to interesting comparative studies.

Certainly, life without humans has already impacted wildlife species. On South Africa's currently deserted West Coast, thousands of sea birds gorge on sardines while dolphins frolic undisturbed nearby; rare Cape foxes have been encountered on a wine farm in the Western Cape; monkeys have invaded empty homes; while wildlife in national parks is having a respite from the thousands of tourists that usually visit each year.³ Webcams are collecting interesting and fresh data. However, there is a dark side. Without visitors or full staff complements in wildlife reserves and with people starving on their boundaries, poaching for food has increased. And it is uncertain if the developing world will invest in conserving Africa's wildlife post-COVID-19 or if revenue-generating tourists will ever return in full force.⁴ Environmental history may take another turn.

If one's mind has been concentrated on the global perspective of the pandemic, then the scale of the daily routine has contracted to

the domestic. Scale has become important, while time has seemed surreal as lockdown days blur weirdly into each other. The microscale of urban homelife involves the environment too: the silence and beauty of clouds in the sky without planes overhead or the buzz of traffic in the distance; the identification of butterflies on the flowering creeper or the antics of skinks in the shrubbery and gecko lizards running up walls and across ceilings; spider webs glistening in the damp autumn mornings; a single flaming red fruit on *Carissa bispinosa*; and the late afternoon sunlight gleaming orange-gold through the last flower on *Strelitzia regina*. About a dozen bird species visit our small garden daily. Usually I take them for granted, but I have grown to treasure their presence and to observe their behavior more closely. The patterns and soft colors of fallen leaves and the final flowering of a few garden plants have not only given me immense pleasure but also made me think more clearly about a sustainable environment, letting nature “be” and fine-tuning one’s senses to the “small.”

Jane Carruthers pioneered environmental history in South Africa with her early work on the Kruger National Park. She has published extensively on many aspects of environmental history and justice and is currently editor in chief of the South African Journal of Science. She was awarded the American Society for Environmental History Distinguished Scholar Award in 2018.

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Hao Chen

Nonhuman Animals in a Human Pandemic: Past and Present

During this devastating period of COVID-19, the media worldwide has celebrated optimistic, even utopian, stories about domestic or wild animals reclaiming the streets, parks, and even canals while humans stayed home in lockdown mode. The good feelings prompted by these uplifting stories have occasionally been shattered, however, by disturbing news. In March, for instance, local veterinary officers from India began to report abnormal behavior and deaths among monkeys. On April 8, 2020, several media reported the deaths of at least fifteen simians in Pawansa village. Believed to have died from pneumonia, a common complication of COVID-19, the simians' deaths contributed to rising concern about cases of infected animals, from companion dogs in Hong Kong and stray cats in Wuhan to three lions and four tigers at New York's Bronx Zoo (including Nadia, a Malayan tiger that serves as one of the zoo's main attractions). The list did not stop there. On April 26, the Agriculture Ministry of Holland confirmed that animals from two mink farms were infected with the novel coronavirus.

How had those animals become infected? What are their fatality rates? And do the rates pose a threat to the species? Will infected animals transmit the disease to other animals or species nearby? We have limited scientific knowledge with which to answer these questions. One of the few research articles on animals with COVID-19 appeared in *Science* in early April and claimed that ferrets and cats are more susceptible to infection than are dogs, pigs, chickens, and ducks and that cats are at risk of airborne infection.¹ However, this does not mean that dogs could not get infected and die from COVID-19. In an article that appeared in *Nature*, the Agriculture, Fisheries, and Conservation Department of Hong Kong acknowledged that pet owners could inadvertently infect their companion dogs with the virus.² Unfortunately, one such dog, a Pomeranian, the first known human-to-animal case, died on March 16 without any related symptoms.

Like the simians in Pawansa village, we do not know for sure whether the virus caused its death.

Neither article sought to resolve the mystery of the death of the animals but, rather, to suggest advisable strategies for “animal management” during the pandemic. The case in Hong Kong, for instance, highlights the necessity of quarantining companion mammals when the owner tests positive. The foundation of the management strategies rests on an anthropocentric concern for how the virus might “jump” from animals to humans. This worry became a reality on May 20 when the Dutch minister of agriculture, Carola Schouten, confirmed that a mink farm worker might have gotten infected from the sick minks. Two similar cases were reported shortly thereafter, marking what may be the first reports of animal-to-human transmission with solid scientific evidence.

Investigation into this zoonotic disease had begun earlier, when the genetic code of the RNA virus was sequenced at the onset of the COVID-19 outbreak. The search for the origins of the novel coronavirus quickly turned into a witch hunt, however, with two related questions: from which species did the virus “originate” and who should be held responsible for the species barrier jump? Epidemiologists and virologists suggested possible nonhuman animal hosts prior to human infection: bats, pangolins, and ferrets were among the more prominently mentioned possibilities. When these discussions entered the horizon of mass media and the public, unfortunately, much fear and panic toward wild animals also appeared. This kind of anxiety was not without precedent, stretching back at least to the 1990s with the greater awareness of “emerging infectious diseases” originating in wild animals and constituting a serious threat to public health. The danger lies in how a fear-driven overreaction can lead to a brutal and disastrous method of “animal management” during pandemics. In the past, our attempts to use chemicals to kill insects as disease vectors led to species extinction and ecological catastrophe. Poultry species have been euthanized and rendered innocuous all over the world to prevent potential flu viruses from jumping the species barrier. Sadly, death will become the inevitable fate of too many infected nonhuman animals in the pandemic, killed either by the virus or by humans seeking their own protection. Moreover, their deaths may precipitate further ecological disasters.

How can we act differently to prevent this pandemic from triggering actions that create ecological damage? To do so, we will need to rely on scientific research. Importantly, scientists and the policy-makers who sponsor the research can gain a critical and reflective perspective from the study of past epidemics and pandemics. To provide that, historians will need to carefully explore the long history of past pandemics. Recently, historians and anthropologists have sought to dig up the historical and epistemological roots of our ways of

understanding and treating nonhuman animals in past epidemics. It seems that we have followed a script composed by the microbiological revolution: pathogens as villains, nonhuman animals as evil side-kicks who carry the pathogens, and humans as innocent victims forced to fight back.³

Contemporary research into “emerging infectious diseases” has enhanced our understanding of the connection between pathogens and nonhuman animals, however. According to medical anthropologist Christos Lynteris, “the resurgence of zoonotic and vector-borne diseases in the course of the twenty-first century (SARS, Bird Flu, MERS, Ebola, Zika and Nipah) has fostered and complicated scientific framings of nonhuman animal and insect hosts and vectors of infectious diseases as ‘epidemic villains.’”⁴ It has switched the character of pathogens and their animal hosts: now, nonhuman animals appear as the cunning villains who use pathogens as a weapon. But efforts to find alternative ways to understand the connections among pathogens, nonhuman animals, and humans in epidemics need not attempt to pin blame on any particular species. With various conceptual tools to erase the illusion of a divide between humans and nonhumans, the infected nonhuman animals should be a significant part of the histories that we will write about the COVID-19 pandemic.⁵ Indeed, COVID-19 can be used to demonstrate the fluid, non-linear, and interactive associations intertwining human and nonhuman animals, body and landscape, local and global ecology in the process of the pandemic. Hopefully, recognizing the associations will enable us to go through this pandemic in a different way, wherein nonhuman animals and the ecological system can recover along with us.

Chen Hao is associate professor of medical history at Renmin University of China. His most recent books are *Medicine as Ongoing Meaning: Historical Epistemology and the Narratives of Medical Identities in 6–8th Century China* (Shanghai Ancient Book Press, 2019) and *When Diseases Become Trauma: Historical Ontology and the Illness Narratives in Chinese History* (Shanghai Ancient Book Press, 2020). Currently, he is working on the formation of “modern” historiography on ancient/“traditional” medicine and other knowledge in Republican China (1912–49) from a transnational or global perspective.

Notes

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Michèle Dagenais

Revealing the Significance of the Environment: Connecting the Dots in Montreal

“Crises don’t offer an equalizer. They only offer a magnifying lens to witness the inequality that was always there.”¹ This observation is a reminder that not all of us face the coronavirus crisis from an equal footing, even though it affects the entire planet. The pandemic gives us a prism through which we can reveal the power systems and structures that perpetuate social, environmental, and political inequalities at the global as well as the local scale. It uncovers a diversity of buried realities and brings to the forefront new reflections on an array of subjects from physical touch and distancing, to repression and surveillance systems, to the importance of inter-species relations.²

To date, the reading or “mode of knowledge” that predominates in the analysis of the crisis is that of public health and, more specifically, of epidemiology.³ This science, based on figures that measure the cases of infection, is accompanied by a mode of governing by numbers that justifies, on this very basis, health policies and interventions. But, however predominant, it is joined by other views, including an ecological one in which the health crisis is considered in the light of changes to various ecosystems provoked by global capitalism—the interrelated issues of deforestation and habitat destruction, urban sprawl, and the retreat of agricultural land, among them. To overcome this crisis, it is argued, it is necessary to fundamentally transform our way of appropriating nature; we must “replug ourselves back into a planetary metabolism that, however differently expressed place to place, reconnects our ecologies and our economies.”⁴ While these two modes of knowledge are not opposed in public discourse, they nonetheless rarely meet. The former largely prevails in the allocation of authorities who proceed as if the pandemic is only a public health issue calling for the deployment of large-scale health interventions.

The prevalence of health concerns is also explained by its own elevation to the status of “supreme good of human existence,” leading it to

be considered universal and apolitical.⁵ It must be said that “Covid-19 ultimately has a simple and imaginable causal relationship: a virus, symptoms, chances of death—which justifies the goal of eliminating this virus.”⁶ This response is guided by a common trust “in progress reduced to its technical and scientific dimension,” but, in point of fact, the pandemic should be understood as a complex reality and placed in relation to its wider economic, political, and environmental ramifications.⁷ In other words, “understanding the emergence of the pandemic requires thinking about human activities and bio-ecological dynamics together: Covid-19 is not just a medical matter.”⁸

The history of medicine teaches us that, at its origin, health and environment were closely related, with health considered “a state of equilibrium between the organism and its total environment.”⁹ During the urban epidemics of the nineteenth century, health-related problems were still associated with environmental issues, although health authorities were unsure which of the environmental elements—water, air, waste—were responsible for outbreaks of disease. For this reason, the solutions adopted to restore public health would primarily rely on the sanitation of physical environments, especially through the development of sewage systems and clean drinking water infrastructures. Toward the end of the nineteenth century, the discovery of bacteria led to a change in the way of interpreting the causes of disease, which were then considered to be transmitted by a single external agent—namely, infectious microbes. The individual rather than the environment was the harbinger of disease.¹⁰ Bacteriology thus led to a refocus on the individual and of his or her disarticulation from the environment.¹¹

While these two notions of disease have never been mutually exclusive, the environmental vision of health reemerged in the 1960s and 1970s.¹² In a world where chemicals were used on a massive scale to produce goods, feed populations, and fuel an energy-intensive mode of production and consumption, maintaining human health was again reliant on the well-being of the environment. Over the ensuing decades, scientists have increasingly recognized that human health depends on environmental health. However, in the wake of COVID-19 and declared states of emergency, these two realities are once more dislocated.

This is particularly the case in Montreal, which became sadly infamous in mid-May by making its way to the top four cities most affected by the coronavirus.¹³ Montreal appeared in its darkest light, both as a noxious and highly contaminated expanse. The desire to contain the outbreak of the epidemic led the city’s health authorities to count the cases of infection at the smaller scale of boroughs. This data revealed that the virus disproportionately affected precarious populations, mainly in Montreal North and to the east in Hochelaga-Maisonneuve, rather than those in more privileged boroughs such as Outremont and Westmount, almost all of which are located in the

west, effectively dividing the island into two distinct sections.¹⁴ Counting the number of people infected and analyzing those statistics has revitalized a familiar social geography of the city and of the island, one that took shape during the emergence of the industrial city in the mid-nineteenth century. At the time, wealthy social classes moved away from the city center and settled uphill, away from both the toxic fumes of factories and the wastewater discharged in the rivers surrounding the island. Working-class boroughs developed in proximity to industrial sectors, mainly located downhill from the center of the island on the southern and then on the northern slope, where the municipality chose to discharge its wastewater during the construction of its sewer system.

Of course, over the past hundred years, the demography of these areas was partially transformed, and its environments altered. However, the health statistics numbering the cases of infection have also revealed the bad living conditions of populations in Montreal's poorer boroughs. Here, as elsewhere, it is clear that one of the effects of the current crisis is to materialize inequalities in an even more striking way.¹⁵ This is why, beyond the public health portrait of the pandemic, it is crucial that environmental historians (myself included) contribute to the knowledge currently in circulation. Our research has the potential to outline how past and present ecological factors and social dynamics combine to make the populations of these neighborhoods particularly vulnerable, but it can also help us to understand the complex ramifications at the root of the current crisis.

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Notes

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Sandro Dutra e Silva

The Blooming of May in a Firestorm of Stupidity: Pandemic, Environment, and Politics in Contemporary Brazil

When we are born, we cry that we are come
To this great stage of fools.
— William Shakespeare, *King Lear*, Act 4, Scene 6¹

In this time of pandemic, the customary euphoria attending the arrival of May in central Brazil proved noticeably absent. In the southern hemisphere, May is celebrated for the imperial brightness of autumn that it brings. May represents a seasonal transition between the rainy and dry seasons, and the mornings present a dull cloudiness that covers the valleys and the *veredas*. As the skies clear, lush meadow grasses emerge along with the pink flowering *Paineira-Rosa* (*Ceiba pubiflora*), a tree of the Malvaceae family, known in Goiás as *barriguda* (big belly) due to the swollen shape of its lower trunk.² The mild and pleasant freshness of autumn in the highlands of central Brazil has long been an invitation for people to go out, invading the bars, restaurants, and squares of the region's cities. Impressive is the indescribable blue that curtains the firmaments, as sung in *Mês de Maio*, a well-known standard of Brazilian country music: "Blue sky has shone / Month of May has finally arrived / Eyes will open up to so much color / It is May, and life has its splendor."³ But this year, rather than life and splendor, the heralds of May announced the tragic arrival of the grim reaper, wearing the black cloak of misfortune.

On May 4, 2020, the *Wall Street Journal* reported that deaths due to COVID-19 in Brazil had surpassed those in China. The article joined many others to criticize the Brazilian government's response to the pandemic, calling attention to the anti-scientific incompetence of President Jair Messias Bolsonaro's administration. On May 9, the

number of deaths from COVID-19 surpassed ten thousand. Public health researchers now expect Brazil to become the pandemic's next epicenter, pointing to the poor sanitary and public health conditions in many parts of the country, the limited distribution of effective tests to detect the disease, and the imperfections of the Brazilian Unified Health System (Sistema Único de Saúde [SUS]).⁴ But looming above them all is the political mismanagement—and the ensuing firestorm about the stupidity of the government's response—that characterizes Brazilian governance in this time of COVID-19.

Early on in the crisis, one prominent, but problematic, rationale connected the disease to the wealthier classes. To be sure, wealthy Brazilians returning from trips overseas comprised the first wave of cases, igniting outbreaks in some of the country's most elite neighborhoods. Nevertheless, the disease quickly spread to poorer areas, devastating large favelas in São Paulo, Rio de Janeiro, and Manaus, among other Brazilian cities.

COVID-19 has exposed the general weakness of global health care.⁵ The lack of reliable tests has produced crippling discrepancies, especially in Brazil, where rates of testing remain far below those of other countries.⁶ Evidence indicates that the Brazilian scenario is profoundly grave—accurate numbers of infected people are in fact much higher than current metrics suggest—and that Brazil is heading toward an abrupt spike in infections and deaths. The deficiencies in intensive care units, which are now adapted exclusively to serve those contaminated by the virus, expose the fragility of the SUS in meeting the new demands. Inadequacies in the health care system are complicated by political pressures, as forcefully explained by the former health minister, Luiz Henrique Mandetta. Upon leaving the ministry on April 16, Mandetta castigated President Bolsonaro's reckless handling of health policies, including his dismissal of social distancing as unnecessary because the virus, he claimed, was just a "cold." The minister's farewell speech offered an extraordinary defense of life, the SUS, and science in Brazilian society, but it invited harsh criticism from the allies and supporters of the president.⁷ Mandetta's replacement resigned after less than a month, signaling the overall decay of responsible leadership.⁸ Based on the concept of free public health as a human right and an integral component of social development, the Brazilian health system has thus far remained resilient. But it is an unenviable position, facing political meddling that undercuts its efforts to address the crisis.

The spread of COVID-19 has amplified a grave and profound crisis in Brazilian governance. Indeed, the same forces that have made the country so susceptible to COVID-19 also severely threaten its young and fragile democracy. As Albert Camus warned us, stupidity always persists, but the ineptitude of Brazil's current government appears of historic proportion, terrifyingly so.⁹ Science and the systematic

pursuit of knowledge, for example, are dismissed outright, while Bolsonaro's vain and inhumane approach to governance exposes the social and political wounds of the recent past and adds to them new atrocities that will not soon heal.¹⁰

The real and public threats to democratic governance in Brazil operate as a backdrop to the pandemic. As late as April, amid an appallingly inadequate response to the virus, the president himself openly supported and participated in public marches for a return to a military dictatorship. Based on a prosaic and denialist ideology about real dangers such as climate change and pandemics, Bolsonaro's most passionate followers made an absurd defense of authoritarianism in the middle of the pandemic.¹¹ In fact, the conscious promotion of ineptitude has become a serious feature of his government. A recent editorial identifying the Brazilian president as the greatest threat to the country highlighted troubling data, including the doubling of the death rate in early May, which marked Brazil as the world's new leader in transmission rates.¹² The editorial juxtaposed this with Bolsonaro's casual dismissal of a journalist's query about Brazil's growing death toll: "So what? I am sorry. What do you want me to do? My name is Messias (Messiah), but I am not a miracle worker." Apparently, his government's inept and ineffectual response was all the country could hope for. Where was the fool to say to the king: "He should not have been old till he had been wise?"¹³

History shows us a long and unfortunate record of inept dealings with disease.¹⁴ However, using the pandemic as an ideological wedge, as it is currently employed in Brazil, seems to be a new feature of modern populist governance.¹⁵ The pandemic, in fact, has reaffirmed the maladroit and anti-scientific strategies of the government that are apparent in its approaches to myriad important issues. A cursory glance at the administration's environmental policies-cum-atrocities, for instance, reveals an entrenched and persistent pattern of inept governance well beyond the current public health crisis. In August 2019, for example, the director of the National Institute for Space Research, Ricardo Galvão, was dismissed for releasing empirical data—satellite imagery that demonstrated the massively increased prevalence of fires raging in the Amazon—that the government saw as "bad news." Galvão's dismissal alarmed and outraged the scientific and environmental communities, but it exemplified the government's *modus operandi* in denying science. By undermining solid science, they were free to enact their agenda, even when it had no basis in empirical realities. Both the Global Fire Emissions Database and the National Aeronautics and Space Administration have since confirmed the data that landed Galvão in hot water, but evidence for massive deforestation in the Amazon is routinely contested by the government.¹⁶ Suggestive of their emphasis on public relations rather than science, Bolsonaro's followers mocked the fire outbreaks in

Australia in 2020, questioning whether scientists and the press would also blame their president for these tragedies. However, the bad news seems to be endless. Ricardo Salles, the minister for the environment, has recently leveraged the pandemic to defend the deregulation of environmental policy.¹⁷ Fresh threats to the fate of the Amazon forest and its people in this time of pandemic have made this May a month of terrible omens.¹⁸

Between fires and pandemics, ineptitude seemingly reigns in the halls of Brazilian power. Vocal deniers in the Brazilian government will continue to question the emerging data on the pandemic, just as they did with the fires in the Amazon and continue to do with unfounded denials of global climate change. Denial has become a key component in the toolbox of right-wing populism. Its insistence on refuting scientific consensus shows how, for this government, objective knowledge is indeed an inconvenience. The political expediency of polarizing information through coordinated ideological attacks reinforces the persistence of ineptitude as an ideological, political, and electoral strategy.

If these solemn and disquieting realities make this May anything but festive, I nevertheless see grounds for hope as I peer out my window: May continues flowery and unblemished. Thus, nature, unwaveringly, at least for now, follows its usual pace amid the devastating firestorm of governmental ineptitude.

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Notes

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Gerard J. Fitzgerald

Martin Arrowsmith Travels to St. Hubert: Remembering a Public Health Past and Constructing a Future during COVID-19

As they entered, Martin saw under a street light the first stirring of life: a crying woman and a bewildered child following an open wagon in which were heaped a dozen stiff bodies. “And I might have saved all of them, with phage,” he whispered.

— Sinclair Lewis, *Arrowsmith*¹

On September 7, 1910, Dr. William T. Sedgwick read a paper titled “On the Proper Correlation of Physicians, Engineers and Other Specialists in Public Health Work” at the thirty-eighth annual meeting of the American Public Health Association, which was held that year in Milwaukee, Wisconsin. A professor of biology at the Massachusetts Institute of Technology and one of the foremost public health practitioners in the nation, Sedgwick was a firm advocate of a multidisciplinary approach to the field. He began his talk by noting that “the extensive and increasing participation of engineers, chemists, biologists and other specialists with physicians in public health work is a notable and encouraging feature of our time.” Since “the health of a community of human beings” had proven to be “the resultant of a multitude of various factors such as race characteristics, climate, economic conditions, occupation, housing, food and drink, water supply, sewerage, etc.,” he concluded, “it is plainly impossible for any one person to have knowledge of all.”² Sedgwick thus saw the field of public health as necessarily incorporating a large spectrum of diverse specialists who collectively provided expertise for framing and hopefully solving problems impacting the health and well-being of human populations. Were he alive today, I would like to think that

Sedgwick would include environmental historians in that group of experts.

Environmental history is uniquely situated as a bridge between the histories of medicine, public health, science, and technology, providing historiographical tools for perspective and analysis into the relationship governing the complex sociocultural, biological, biomedical, and economic factors that drive both the zoonotic origins of the current outbreak and our varied cultural and political responses to the pandemic. As someone currently finishing a book on the history of airborne disease research in the United States during the early twentieth century, I am constantly aware of how I perceive the past while simultaneously trying to make sense of the here and now and, in rare moments, the future. My response to current events is based, in part, on a number of books and articles I have read and used in classes and seminars.

Having taught about the history of disease, pandemics, and biological weapons research, I have given a great deal of thought over the years to what it might be like to live and survive a global pandemic. Of the many books written on infectious disease outbreaks, the work that has most captured my imagination on the horrific dangers of such an event is one of fiction: Sinclair Lewis's 1925 novel *Arrowsmith*, the winner of the 1926 Pulitzer Prize, an award that Lewis declined. The penultimate section of the book deals with Dr. Martin Arrowsmith's journey to the Caribbean island of St. Hubert to thwart a bubonic plague outbreak—an outbreak that intriguingly originates in China, carried by flea-ridden rats who travel the world by ship—with his newly discovered “X Principle,” better known today as bacteriophage. In this exotic locale, far removed from his elite Manhattan laboratory, Arrowsmith oversees human experimentation among the lower castes of a stratified society still under British colonial rule. The expedition is a failure. On St. Hubert, Arrowsmith experiences the tragic death of his beloved wife to an accident, the loss of his friend to the plague, and a sense of existential dread, terror, and confusion when his experimental plans to save part of the island's population collapse. His faith in himself, and even in biomedical science, is momentarily shattered.

It was this palpable sense of dread, terror, confusion, and hopelessness from the moment that Arrowsmith and his party arrives at the island in the dead of night that has always stayed with me and haunted me. Dread and terror were what I was expecting in 2020, an echo of the feeling of hopelessness that drove the strange, vacuous silence of those who survived the devastation of the 1918 flu pandemic. In the United States today, there is little feeling of dread among a surprising portion of the population and no silence as voices, arguably too many voices, fill the airways and the Internet with a great deal of noise and very little light, only adding to the confusion.

There is, however, plenty of failure, resulting for the most part from inaction rather than bold (if misguided) efforts like those of Lewis's Arrowsmith.

In the midst of this disquiet and confusion, the question for environmental historians is: what can we do, and where might we turn, to do something in the here and now? One answer is to use our training to try to make sense of this public health crisis in a way that reflects the unique nature of our discipline. More than a century ago, Sedgwick saw the makeup and practice of public health in a similar way to John McNeill's "big tent" description of "current" environmental history, which may explain both how I came to be in the field (you let anyone in) and also why I find myself often working on research projects dealing with case studies linking public health with environmental themes.³ In addition, there is an ethical and moral component binding together research studies of this nature, making such history important to understanding who we are as human beings. Moreover, as Christopher Sellers has noted, while we still sometimes inadvertently talk past each other, environmental historians and historians of medicine have much to learn from each other, and just as much to share with each other, as we try to make sense of our complex world.⁴

At the end of the day, in the summer of 2020, we are each the primary historical actor in our own story of the pandemic. Unlike Arrowsmith, who had to travel by ship to the plague outbreak, the virus that causes COVID-19—severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2)—comes to us, a fact that makes the social and spatial dynamics of disease transmission all the more frightening. But, in so doing, it also provides a unique opportunity. The pandemic will no doubt change all of us, for better and for worse, just as the crucible of his brief stay on St. Hubert changed the arc of Arrowsmith's life. One possible guide for making sense of the world today is to bear witness to the unfolding pandemic, just as Kate Brown did to the horrors, misdeeds, and mistakes in *Plutopia*, a brilliant examination of lives lost and landscapes destroyed in the pursuit to produce weapons-grade plutonium during the Cold War.⁵ Brown, who conducted interviews and carried out research trips to restricted areas in the former Soviet Union, was unfairly criticized in some reviews for placing herself in the narrative. I thought her approach to the material greatly benefited not only the story she was writing but also the field of history itself. One can look to Brown on how we might carefully insert ourselves into the current disaster as narrators, treading lightly but with a firm hand, open eyes, open ears, and, perhaps most importantly, open hearts. The latter is especially crucial in constructing the future that we will need going forward as we adjust to COVID-19.

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Shen Hou

In the Name of Health

The shutdown of Wuhan caused by the novel coronavirus started on January 23, 2020, two days before the Chinese New Year, and quickly a sense of panic became contagious, spreading even faster than the virus itself, thanks to the Internet. My hometown—Qingdao, a metropolis of nine million people—was suddenly silent, and its streets vacant, although it was never officially closed down (like all of the cities outside Hubei Province).

For almost five months, I stayed on the campus of Qingdao University where my parents' apartment is located and, from there, watched the seasons move from winter to spring to early summer: trees budded and flourished, flowers bloomed and withered, fish swam, birds flew, and turtles bathed in the sun. Once, I even spotted a grey heron gliding across the early spring blue skies, flying to the nearby seashore. In contrast to that liveliness in nature, I saw no other *Homo sapiens* for almost two months, except my mother and two or three delivery workers. It seemed that all of the hustle and bustle had moved to the virtual world, which became more crowded and noisier than ever, filled with voices of hope, anxiety, sorrow, xenophobia, blind nationalism, cautious optimism, fear of an expanding Leviathan, anger over social injustice, and warning of a potential Cold War between East and West. But, within the walls of the campus, nature looked so healthy, robust, and luxuriant, even though it was a very simplified, highly tamed campus ecosystem, that I tended to forget all of those outside dangers threatening my own health and that of the Chinese or the world's people. Then one day in late January, I noticed someone heavily spraying chlorine disinfectant right in the campus—part of “a war against the epidemic” (the phrase appearing over and over in the headlines of every Chinese national and local newspaper and on social media). It was a war being waged very close to me in the name of human health.

A very fluid concept, health has been defined and redefined throughout history but mainly has been celebrated as an unquestioned good. While many other concepts, such as beauty, permanence, and stability, have been challenged and critically scrutinized, health has become an “inalienable right” of all humans and subject to little critical scrutiny. When we historians look back at the history of health, we tend to focus on why some people got better health care

and some did not or on the social, political, or economic progress generated by the human pursuit of good health. Environmental historians have pushed further than most to ask how disease was rooted in disturbances of the natural ecology. Yet, in general, environmental historians have not examined critically enough the impact of human health as a demand, a kind of consumer good, on the environment. We need to ask, more than ever, what consequences our “health-seeking” behavior entails for the whole environment. We need to inspect the medical methods we have developed to enjoy more perfect health (to pay attention, for example, to all of the bad stuff that hospitals put into the environment) and to think about the consequences for other forms of life inherent in our remedies. Historians should look back into the past and ask not only whether we are more or less healthy than we once were but also what harm have we done to the planet in the name of human health.

Back to that empty campus where the human residents numbered only two hundred, isolated in an area of some two hundred hectares. Beyond the campus walls, in metropolitan Qingdao, there have been only sixty-five COVID-19 cases detected since January, while the closest discovered case was 4.5 kilometers from the campus. Nonetheless, the university started spraying disinfectant everywhere, seemingly without first worrying about whether it was necessary or effective. Similar episodes are unfolding all over China—in rural and urban spaces—and Wuhan, the worst affected place, has endured daily showers of disinfectant in every neighborhood.

In this modern chemical age, such spraying and disinfecting has become universal. Tons of pesticides are still purging all of the “vermin,” and many kinds of detergents flow into our sewer systems every day. Inspired by Rachel Carson’s warnings almost sixty years ago, more people have questioned the necessity of such products. But once such chemicals are used in the name of health, the questioning fades. In late February, for example, among the online hullabaloo over COVID-19, I found a short article titled “Wuhan Will Face Grave Danger in the Post-COVID-19 Age.” The anonymous author warned that the overuse of chlorine-based disinfectant might lead to serious environmental problems later on. But that warning, which seemed written by an amateur with no data, was soon forgotten in the heated war against the virus.

In an interview with *Chinese Science and Technology Daily* on February 17, Yingdang Peng, a researcher from the National Research Center of Municipal Pollution Control, offered an assurance that the chlorine dosing would not cause serious pollution to public water supplies, though he acknowledged that it would create more serious trouble with the flora and soil microbes. Ironically, Peng reported that many fish were killed in Taiwan during the 2003 severe acute respiratory syndrome epidemic when disinfectant was dumped into the Danshui River. Beijing, the global center of that epidemic, must have

used much more of the chemical, although the interview was quiet on this subject. Interestingly, it was published under a title that posed the issue as a question: “Overuse of Disinfectant Severely Pollutes Underground Water?” The question mark was meant to soothe anxiety about the degradation of drinking water. But what about the death of fish or microbes? The message seemed to be: let us forget about them in the name of health.¹

In 2015, *Environmental History* published a forum on “Technology, Ecology, and Human Health since 1850,” which ranged over “characteristics of pathogen-ecologies in the Anthropocene, technological networks, ecological disruption, new evolutionary niches, novel materials, mismatch diseases, and knowledge production.”² The forum offered important insights into the origin of modern diseases and the impacts of technology on various ecosystems. But we need to go back well before the mid-nineteenth century. Technology is not merely a modern phenomenon; it includes all of those innovations that we humans have used to feed and defend ourselves and to fight against and exploit nature, a pattern going back to the Paleolithic age. Equally important, technology and cultural practices are not only responsible for diseases, but they also are powerful instruments for seeking health. As such, people often forgive the shortcomings of technology when it is applied in the name of health and often ignore how that technology can undermine the health of the rest of nature or ignore the vital connections between nature and human bodies.

A familiar example of the bad consequences of health practices has been the drainage and filling of marshland to disperse *zhang qi* (瘴气, literally translated as miasma, but the Chinese term is more specific, referring to sick air caused by the humid climate and rotten plant and animal bodies in China’s south). *Zhang qi* was believed to be the source of many diseases, especially malaria. Its defeat was a story told on two levels: a victory over nature in the name of human health and a victory of agricultural civilization over “savagery.” The latter has been questioned and even subverted, but the former victory remains virtuous and solid for it was won in the name of human health.

The demand for human health, however, has long been rooted in our phobias about the natural world and its dangers as well as in faulty medical theory. “Health,” in fact, became a pursuit of power and conquest over nature. We need to understand how the concept of human health has expanded into a total war on nature, becoming the dark side of health history. It includes our fears, our intolerance of any discomfort, our “war” mentality, our technological assault on nature in the name of health. Rachel Carson wrote about what humans everywhere in the postwar period were doing or demanding be done to secure an abundant food supply—soaking the earth in pesticides. How have public health officials and experts, along with the

medical profession and drug companies, all resisted seeing that their remedies can make health problems worse not only for people but also for all living organisms?

It is time for historians to pay more attention to the unintended environmental consequences of our long pursuit of health. We should ask: what remains unchanged about those unintended consequences when the technology to acquire health has become increasingly sophisticated and chemical and what is different? What have been people's reactions to those outcomes based on different environmental and medical knowledge? In the universal drive for better health, how has the experience varied from place to place? We should acknowledge some ancient truths: Hippocrates's integration of human health with its environment, for example, as well as traditional Chinese medicine's perception of the human body as an internal cosmos influenced by, and reflecting, the external cosmos.

Our modern perception of health has gone beyond Hippocrates or traditional Chinese medicine or, indeed, any folk understanding of the environment's influence over human bodies. When scientists like Aldo Leopold wrote about the restoration of the health of the land and Rachel Carson crafted her fable of a silent spring, neither believed physical health should be thought of simply as a human need. They both measured health by wildlife abundance, diversity, and stability as well as by human vital statistics. They both recognized the animal side of humans and the co-evolution and vulnerability that we share with the rest of nature, and we should too.

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Dolly Jørgensen

Tracking Animals in a Pandemic

The global pandemic puts a spotlight on human-animal relations and how human histories are intertwined with animal bodies. Environmental historians have demonstrated a steadily growing interest in investigating animals since the late 1980s, so thinking about animals in historical terms is nothing new.¹ But our COVID-19 moment can prompt us to consider how environmental history—and, more specifically, animal history—can help us to make sense of the traces of human-animal entanglements in proliferating news reports.

The severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) virus that causes the disease COVID-19 is zoonotic, meaning that it jumps between different species, like a host of other diseases ranging from avian flu to Zika and from bubonic plague to Ebola. Close contact with animals, including the exploitation of wildlife through hunting and trade, translates into higher risk of disease spillover.² There has been much debate about the source of SARS-CoV-2, with bats or pangolins being the likely carrier, and initial human exposure possibly from animals in a market in Wuhan, China.³ Animal history scholarship has shown that animals have often been touted as the villains when they become disease carriers, becoming targets of eradication programs, so historians could have predicted the calls for bat removal and killing that arose in the wake of the virus outbreak.⁴ History tells us that animal eradication programs not only affect the animals but also ripple through society, structuring political, scientific, economic, and cultural relations.⁵

While COVID-19 is the result of human-animal entanglement, the vaccine to fight against it will be as well. Macaques are being used as SARS-CoV-2 vaccine trial subjects, a situation that has a historical colonial context.⁶ Newspaper articles have highlighted llamas, like four-year-old Winter, with antibodies that show promise for fighting the related Middle East respiratory syndrome and SARS viruses.⁷ Usually kept out of public view, laboratory animals have made heroic appearances in coronavirus news reports. Such appearances echo the historian Joanna Dean's discussion of Connaught Laboratory's aesthetic presentation of calves used in smallpox vaccination preparation programs during the early twentieth century.⁸

COVID-19 exposes the relations between humans and the animals in our daily lives. People have been panic-buying pets: sales of chicks skyrocketed in the United States as people staying home decided to make spring chickens their spring project, and animal shelters have emptied because of so many adoptions.⁹ Even when the highest lockdown restrictions were in place in Europe, exceptions were always made for walking pets—an exception that some in Spain tried to take advantage of by “walking” pets like chickens and fish.¹⁰ If one knows the history of pets, none of these stories seem out of place. As Kathleen Kete observed in her study of nineteenth-century Paris, “petkeeping imagined a better, more manageable version of the world. It described the promise and sometimes displaced the terrors of class.”¹¹ The companionship of animals helps counteract the loneliness of social distancing and quarantine.

Animals besides pets have been seen in emptied city streets as businesses and schools shut down in the pandemic: goats running through Llandudno, Wales; wild boars roaming Barcelona, Spain; a kangaroo hopping through downtown Adelaide, Australia; three penguins strolling in Cape Town, South Africa.¹² Many cities teeming with livestock transitioned to livestock-free pet-friendly abodes in the early twentieth century, so these developments are flashbacks to earlier urban configurations.¹³ Urban dwellers have intentionally reduced the presence of livestock in the past, so while such rewilding makes for good media spectacle, it seems unlikely to be embraced as a long-term condition.¹⁴

Although we tend to put animals into convenient categories such as pets, livestock, and wildlife, the corona situation has revealed that even apparently “wild” animals can be dependent on humans. In Southeast Asia, sacred cattle, temple monkeys, and stray dogs have required extra feeding since most people are now staying home.¹⁵ These animals exist in a liminal position between domestic and wild.¹⁶ The same goes for unwanted species: the United States Centers for Disease Control and Prevention issued a bulletin warning about aggressive urban rat behavior as their normal sources of food—restaurant and shop leftovers—dwindled because of closures.¹⁷ Pests like rats continue to cross the line between public and private, laying bare social inequalities that have structured urban life, both past and present.¹⁸

Animals in zoos likewise live in a liminal position.¹⁹ Some people were stunned when the director of Neumünster Zoo in Germany stated that, as funds run low for shuttered zoos in the wake of the lockdown, they might have to resort to feeding the animals to each other.²⁰ Yet, as scholars have remarked, managed death is a regular part of zoo operations, so the suggestion should not be surprising.²¹ Zoos are trying to encourage connection with the animals even as they were cut off from their regular visitors. In order to get the

income flowing even in a time of physical distancing, the San Antonio Zoo in the United States organized drive-through zoo days that allowed patrons to stay in their cars as they drove along the walking paths next to the animal enclosures.²² This is a new spin on the historical drive-through safari park.²³ Animal watching is happening remotely as well: online viewership of the Smithsonian's National Zoo in Washington, DC, skyrocketed after the lockdowns began.²⁴ Modern zoos have a history of promoting nature appreciation through technology—concrete landscapes, selected vegetation, and carefully constructed fences create the illusion of “natural settings”; moving the viewing to a digital platform does not necessarily decrease the viewer's connection with nature.²⁵ With no visitors, the Sumida Aquarium in Tokyo was so concerned that their spotted garden eels would get timid around human faces that they organized a “Remember the Humans” event for the public to facetime their eels—there were two million live views during the three-day event.²⁶ There is always a question of who is watching who(m) at the zoo(m).

In the inundating flood of media, especially as those of us staying at home consume ever greater quantities of it, corona animal stories are presented as novel news. Environmental history scholarship, however, proves differently. Today's human relationships with animals that are virus hosts, experimental bodies, household companions, urban invaders, sacred dwellers, and captive subjects are founded in historical entanglements. While much about the pandemic and how society will respond to it in the long term is still unknown, we know that animals will continue to leave tracks in the pandemic story.

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Thanks to my family who supported me writing this article while we were all stuck at home for weeks during the pandemic. At least the animal stories provided some laughs.

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Claudia Leal

A Matter of Time

I walk Atenea, day after day, noticing how my neighborhood in downtown Bogotá changes. During the long weeks in March and April when almost everyone stayed indoors due to the strict lockdown, I was among the lucky few allowed to leave their homes, all thanks to a stubborn and highly energetic four-legged creature. Atenea gave us our daily pass to freedom, and, more, she has been my son Niko's playmate and a much-needed cuddly friend in these bizarre times. As the city opens up, and my neighbors begin to emerge from their hideouts, I continue my routine of visiting our two parks and walking the streets with Atenea.

My experience of confinement, and my husband and kids' experience of it, has been deeply influenced by this boxer-mix dog, for whom our 126 square-meter apartment seems too small. There are a number of explanations for why our family includes a member of *Canis familiaris*, along with four *Homo sapiens*. The one that we recount most often is that a skinny, but extremely social, young dog jumped on the bus we hired for a school field trip and has been living with us ever since. That was eight months ago. An alternative story widens the temporal scale considerably—taking us back a couple centuries—and has to do with the development of dog breeds, initially for tasks such as bull baiting and controlling cattle but, increasingly, to provide companionship for urban dwellers. A third story stretches exponentially further into the past, transporting us thousands of years back to a radically different world when dogs were domesticated. Without the transformation of wolves into dogs and of working animals into pets (and, in the case of my family, of a coincidental encounter in the countryside), the lives of many people in the COVID-19 world would have been very different.

Teaching a class on the history of animals has helped me see how these various layers of time affect our realities. By examining how human history is entangled with that of animals, rivers, and earthquakes, environmental history is in a privileged position to make us aware of the ways in which the interplay of remarkably different time frames allows us to understand the present. That is the case with the COVID-19 crisis, which is well beyond the place that Atenea and other dogs might have in it. Different time scales illuminate why my kids are spending endless hours in front of their computers and

cannot see their friends, why the streets seem to be a distant memory for my high-risk parents, why some of my neighbors depend on the bags of groceries donated by other neighbors, and why the university semester drags on as never before, while my capacity to concentrate diminishes by the day.

Viruses, those extremely tiny entities that can replicate within cells, evolved over a billion years ago. Innumerable viruses exist, and have existed, in the plants and animals that populate the planet, and, since we *Homo sapiens* evolved (around two hundred thousand years ago), they have been jumping to us and making us sick. However, only in the last century have they become a truly global menace, as shown by the Spanish flu that circulated the world killing millions between 1918 and 1920. Then, and more so today, people living in urban environments, and moving faster throughout the world, have benefited those viruses that find the bodies of the eight billion living humans to be a propitious home and that spread easily from one to another. But, for a virus to thrive, it first needs to jump from an animal to a human. As people occupy every inhabitable place and interact daily with abundant domestic animals and occasionally with cornered wild species, the opportunities for these spillovers abound. In the last half-century, as David Quammen masterfully recounts in *Spillover*, many new zoonoses have produced scary outbreaks.¹ A mixture of difficulties for transmission and prompt responses has saved us from larger catastrophes. Yet, in the last sixty years, planes, cities, hunting, and sprawl have produced a global humanized environment highly susceptible to pandemics. The colossal transformation of the world that John McNeill and Peter Engelke so clearly portray in *The Great Acceleration* has made us more vulnerable to animal-borne diseases.²

By dealing with the natural world, environmental history not only reveals and explores many of the ties between humans and nature but also integrates human time frames with those of natural processes and entities. Two pivotal periods in history help us grasp the larger significance of our current conundrum: on the one hand, the last half-century when people have transfigured the planet in an unprecedented manner and, on the other, the long span of time between one and two billion years ago when life as we know it began to evolve. To the degree that it combines those scales, environmental history underscores what people and societies have long wanted to forget: that we too are part of nature; no surprise then that coronaviruses live in humans no less than pangolins and bats. Allowing our historical minds to travel beyond the Middle Ages or classical times gives us a better understanding of what it means to share this planet. Yet we cannot just dwell on the insights that result from thinking about the distant past. COVID-19 speaks loudly about time in the present tense, as shown by the velocity of spread and the deceitful lack of change captured by the words of a friend: "Now, every day is Sunday." Time

might seem to stand still for those shuttered in apartments and houses, but it certainly does not in the emergency rooms and not for a RNA virus that can mutate as it advances hastily through the streets and homes of Bogotá and the world.

As I walk with Atenea, I wonder if the insights that uniquely position environmental history to make sense of what is happening, and to achieve a broader understanding of history, will provide an opportunity for this field, like the virus, to spillover and spread in places where it could be much stronger.

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J. R. McNeill

Bats, Battiness, and the COVID-19 Pandemic

The summer of 2020 feels like a hectic and historical moment with one crisis nested inside another like Russian *matryoshka* dolls. The United States is roiling in civil unrest more serious than any since 1968, reeling from unemployment more widespread than any since 1934, and, like most of the rest of the world, raveled in a public health crisis more acute than any since 1918. In the background remains the slowly unfolding environmental crisis—of climate change, biodiversity loss, toxic pollution, soil degradation, and much else besides. The COVID-19 pandemic pushes its spiky tentacles into all of these crises.

The pandemic is an environmental history event as well as a public health crisis. The immediate ancestor of the virus known as severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) long circulated inconsequentially among bat colonies in southern and south-western China and perhaps in Southeast Asia as well. SARS-CoV-2, however, like a handful of other coronaviruses before it, leapt to humans, a jump known as zoonotic spillover, perhaps via the world's most trafficked animal, pangolins, in November 2019. It then became the latest agent behind a lengthy string of so-called emerging diseases. At least three-quarters of the pathogens causing the hundreds of emerging infections recorded since 1945 are species jumpers like SARS-CoV-2. It is sobering to ponder the fact that the world harbors billions, perhaps trillions, of different viruses. Between forty thousand and one million of them inhabit mammals, and only about 250—far—replicate in human cells.¹ Most are unable to prosper inside human bodies. But, no doubt, some that thus far have left us alone will be properly configured to give us trouble. More species-jumping viruses are coming our way, following in the wake of SARS, Middle East respiratory syndrome (MERS), Ebola, HIV, Marburg, Lassa, Zika, and, longer ago, rabies, influenza, smallpox, and measles. SARS and MERS are both coronaviruses, like SARS-CoV-2, and both are recent refugees from bat colonies—in the case of SARS, probably via civet cats, and in that of MERS, via camels.

The chief reason that assaults from emerging diseases seem to be coming thick and fast is because we are providing the pathogens

more and better chances to leap to our bodies. Humans rub shoulders with unfamiliar species in the world's biodiversity hotspots more frequently than ever before, increasing the number of viruses and bacteria that get within leaping distance of us. We burn forests and shrink available habitat for wild creatures, pushing them to seek food from farms or storehouses. We hunt hundreds of kinds of wild animals, and more successfully than ever, and convey millions of captured creatures and carcasses to crowded cities. So viruses already equipped with the right bag of tricks to circulate successfully among us have more chances than ever to do so, and those, like SARS-CoV-2, that first need to make a change or two via mutation, do as well.

Most of these versatile viruses come from bats or rodents, the two most diverse families within the mammalian province of the animal kingdom.² Part of the reason for that is that most of them are social creatures living in tightly packed colonies. Bats, for example, blithely host swarms of viruses that do them no harm. They travel easily among colonies and across bat species because of bats' airborne mobility.

We used to be poor hosts compared to bats and rodents. Our more remote ancestors, who lived in small mobile communities almost certainly harbored few viruses, for the same reason that other great ape species carry few viruses. (Chimpanzees apparently host only about twenty virus varieties, including one ancestral to HIV). Small communities do not suit viruses, at least not the ones that provoke immune system response. They amount to cul-de-sacs: viruses quickly run out of welcoming bodies and fade out. But we have changed our ways. It was the gradual emergence of a new kind of human society starting about 5,500 years ago, featuring large numbers of people living cheek by jowl in cities and associated villages, that converted our ancestors into good habitat for viruses. Within the last few thousand years, we have become more bat like in our social habits and, as a result, have become much better at sustaining viruses, including some that do us great harm.

SARS (also known as SARS-CoV-1) and SARS-CoV-2 are both highly transmissible from human to human via respiratory secretions, the latter more so than the former. So when they jumped to us, in 2002 and 2019 respectively, our penchant for jet travel and crowded urban habitats provided ample opportunity for them to infect millions. Through both luck and effective public health responses organized by the World Health Organization (WHO), SARS was stopped in its tracks after about eighteen months in 2004. It killed fewer than one thousand people, mainly in South China, Hong Kong, Taiwan, Singapore, and Toronto. SARS-CoV-2, thanks both to bad luck and inadequate public health responses, apparently moved within days from Wuhan to every major Chinese city and within a month or two to more than 180 countries around the world. The bad luck included

batty politicians, such as Xi Jinping and Donald Trump, who were more fearful that the virus might tarnish their image than that its virulence might kill citizens, and the fact that Chinese cities such as Wuhan were, by 2019, far more frequently linked to other cities around the world by air travel than they were in 2002–04.

While, over the last five thousand years, we have become more like bats (and rodents) in our social habits, in the last one hundred years, we have become more bat like in another respect: we now can fly. Our heightened mobility, especially in the last fifty years when air travel has become routine, assures the efficient spread of viruses among us. The integration of provincial China into the global web woven by passenger flights has assured the quick dispersal of SARS-CoV-2.

If SARS-CoV-2 had the intellectual capacity to design transport systems and buildings to ease its path from lung to lung, it would come up with something like what we have constructed ourselves. If it had the capacity, it would also lobby for public health systems designed for economic efficiency, with no “wasted” hospital beds, intensive care units, or unoccupied nurses and doctors, aligning itself with those who argue for reduced public health budgets. It would want societies with, in effect, weak immune systems, unable to mount an energetic response to spreading infection. SARS-CoV-2 has not needed to design the world to suit its preferences because we have done that work on its behalf, as we have for many other viruses, beginning 5,500 years ago.

In two other ways the history of the ongoing pandemic is an environmental history event. I will touch only briefly on them, confident that my colleagues in this forum will take up both. First is the way in which the pandemic in every country underscores the enduring realities of environmental injustice. The risk of exposure varies tremendously according to the circumstances of people’s lives. People living in crowded environments, such as prisons, or working in crowded environments, such as meatpacking houses, are orders of magnitude likelier to encounter SARS-CoV-2 than are, say, history professors. Moreover, the impact upon people of exposure to SARS-CoV-2 varies as well, and some of that variation is explained by social and environmental circumstances (some results from other things such as age). A lifetime of breathing polluted air has made some lungs more vulnerable to respiratory diseases than others. Data from both China and the United States indicate a robust statistical relationship between air pollution, especially particulate matter, and COVID-19 susceptibility. In the United States, Medicaid recipients, which means about sixty-five million poor people disproportionately from minority populations, are four times likelier to die from COVID-19 than other Americans. In this and other ways, the pandemic is an environmental justice story, joining a litany familiar to environmental historians.³

The second way in which the pandemic is an environmental history event, or at least resembles one, can be seen in the conspicuous failures of international political leadership and, in many countries, of national leadership. Pandemic prevention and response is a public good, like clean air or clean water. Only public authorities can provide it efficiently. It is also an international and global public good, like a stable climate. It is much easier to provide it with collaboration across borders than without such collaboration. Outside of a few—thus far—happy cases such as South Korea, Japan, Hong Kong, New Zealand, Iceland, and Ghana, for example, national leaders were slow to take SARS-CoV-2 seriously. Some, including Vladimir Putin, Jair Bolsonaro, and Donald Trump, openly encouraged citizens to raise their risk of exposure. Unschooled in science and history, they failed to recognize what COVID-19 might become and distrusted those who did. No major political leader sought to craft a global campaign to secure the public good of pandemic prevention, and some sought to undermine the WHO's efforts to do so. A global system of roughly two hundred sovereign states with often competing interests is not calculated to foment international cooperation. It takes leadership, and a recognition of leaders' responsibilities with respect to public goods, to achieve it.

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Gregg Mitman

The Unruliness of a Virus

The word “hotspot” can mean a place where fires flare, where novel viruses appear, where human rage erupts. In the turbulence of ecological, public health, and political crises, hotspots portend disaster and death. Too often, hotspots and the menaces they pose are only made visible, only made objects of concern, when they threaten lives most valued in the brutal structures of capitalism and white supremacy that have gone hand in hand for more than four hundred years.

In early January 2020, firestorms continued their months-long sweep across Australia turning “the sun red, the moon orange, and the sky an insipid grey,” as the environmental historian Nancy Cushing described it.¹ The harshness and extent of the smoke from a continent on fire was unprecedented—a word we would need to use again as 2020 progressed. As the fires raged, many residents of Sydney and other Australian urban centers who could afford to donned face masks or stayed indoors to protect themselves from the health risks posed by breathing in fine-grained particulate matter, smaller than a red blood cell or most bacteria, that filled the air. Media images of blazes imperiling and disrupting the lives of charismatic koalas and white Australians prompted the world to take notice. But, for decades, the threats posed to life on a warming planet had already been felt by many, mostly non-white, people.

The racial geography of the Anthropocene, notes Laura Pulido, is marked by “the uneven and unfair distribution of death.”² In the 1995 Chicago heat wave, black residents on Chicago’s South Side lost lives and loved ones in numbers disproportionate to their share of the city’s population.³ At the 2009 United Nations climate summit in Copenhagen, a protest organized by the Pan African Climate Justice Alliance raised the rallying cries of “No to Climate Colonialism, No to Climate Genocide.” With an accord that set a global goal to limit warming to two degrees Celsius, the result was, in the words of Archbishop Desmond Tutu, “to condemn Africa to incineration.”⁴

By the end of January, the world grew anxious as another threat—a rapidly replicating single strand of ribonucleic acid encased in a protein capsule—surfaced in Wuhan, China, and quickly spread to eighteen countries. The virus, much like the particulate pollution from Australia’s bush fires and coal-fired power plants, can work its way

deep into the lungs, inflicting damage on the body's respiratory and cardiovascular systems. Again, what the air contained was toxic, putting health care professionals and other workers deemed essential—grocery store clerks, warehouse laborers, meat-packers, and delivery people, among others—at greater risk of exposure and death. In the United States, these fault lines of exposure closely tracked along racial and socioeconomic divides.

As the pandemic spread, people who had the luxury of doing so sheltered in place. Airplane travel plummeted, car traffic decreased, and nonessential businesses closed. In New Delhi, Hong Kong, Los Angeles, New York City, and other major metropolises across the globe, skies cleared. Atmospheric nitrogen dioxide, a major component of air pollution produced by the burning of fossil fuels, decreased by as much as 60 percent across northern China, Western Europe, and the United States.⁵ By early April, global carbon dioxide emissions had dropped by 17 percent compared to 2019 levels. As the fiftieth anniversary of Earth Day drew near, many saw in the clear skies a hopeful omen of what lifestyle changes, reconsidered resource allocation, and government action, mobilized to contain a virus, could achieve if channeled into addressing the climate crisis.⁶

Some considered the pandemic crisis to be an ecological crisis. Western news outlets were quick to identify live animal markets in Wuhan—bustling with people, domestic animals, and wildlife, including bats, pangolins, and snakes—as hotspots, where viruses might spill over from animal to human. Underlying these news stories is a One Health paradigm, wherein the health of all life on Earth is interconnected. In this scenario, habitat loss and species extinction are considered to be causal factors in the emergence of novel viruses like SARS-CoV-2, as industrial agriculture and extractive industries gobble up the last remnants of “pristine” nature and force humans and wildlife into closer contact.⁷

Such spillover stories trade upon a discourse of purity and pollution, whereby viruses transgress species divides. In declaring COVID-19 a public health emergency of international concern, the World Health Organization (WHO) put the emerging infectious disease into a category that includes bioterrorism and environmental catastrophes. Think Bhopal and Chernobyl. But spillover stories can too readily stigmatize people and regions and thereby ignore the industrial ecologies at play in capitalist modes of production favoring a pathogen's emergence and spread.⁸ The president of the United States blamed China for the virus's origin. His words incited fear and hatred and spurred attacks on people of Asian descent. More often than not, wealthy nations see zoonotic diseases, like severe acute respiratory syndrome (SARS), Ebola, and Zika, as problems of the Other, thereby stigmatizing disease locales, like Asia, sub-Saharan Africa, and Latin America. Such hotspots concern wealthy nations only when global

health is perceived to be threatened and when biodiversity loss is interpreted, too easily, as having created a Pandora's box of pestilence unleashed by nature as a revenge on humans.⁹

Just four months after the WHO declared COVID-19 a public health emergency of international concern, new hotspots appeared across America. These were made visible by another breathing trouble—the murder via asphyxiation of a black man by a white Minneapolis police officer. The violent end to George Floyd's life sparked flames of protest against an ongoing national illness. For eight years, the Black Lives Matter movement has cast a harsh light on the hotspots of violence, racism, and police brutality that people of color in America face every day. Floyd's dying words, "I can't breathe," speak to centuries of structural violence and racism, spawned by the theft of indigenous land and the enslavement of black people, upon which a violent white settler colonial nation was built. This history accounts for the huge economic and health disparities suffered by non-white people in America. Mortality rates among African Americans for asthma are almost three times those of whites and have been for decades.¹⁰ In the United States, 22 percent of counties are predominately black, but those counties account for 58 percent of COVID-19 deaths nationally.¹¹ A zip code in America is a prescient indicator of the hotspots where structural racism, inequitable environmental burdens, and racial health disparities converge.¹²

The hotspots proliferating across the globe admittedly signal a planet in flux—a changing climate, emerging diseases, habitat fragmentation, species loss, toxic exposures, and more. But these are not just perturbations in some idyllic balance of nature. They are, foremost, products of capitalism as an ecological regime: eruptions flowing from deep fissures in nature-society relations, produced by capitalism's insatiable appetite for cheap land and labor, which lay bare what the feminist science studies scholar Michelle Murphy calls the economization of life.¹³ In the logics of unbridled economic growth and development, some human lives are worth more than others. In this epoch of the sixth extinction, some species must die, so that others, deemed more valuable, may thrive.

The unruliness of a virus has made visible what the privilege of whiteness continually seeks to obscure and erase: "Capitalism requires inequality; racism enshrines it," as the geographer Ruth Wilson Gilmore writes.¹⁴ In the engineered worlds of capitalism's making, of which the plantation is a progenitor, differential valuations of life—of black, brown, and white bodies—are made and remade.¹⁵ To see the pandemic as an ecological crisis, and fail to see the circuits of global capital, labor inequalities, and racial disparities that have produced uneven geographies of hotspots in the United States and across the globe, is to ignore the ecologies of economic and racial injustice that permeate both this pandemic and climate change.

More than one hundred years ago, in the midst of a world war, W. E. B. DuBois asked: "How can love of humanity appeal as a motive to nations whose love of luxury is built on the inhuman exploitation of human beings, and who . . . have been taught to regard these human beings as inhuman?"¹⁶ In the midst of a pandemic, as a virus and police brutality expose yet again the violence of racial capitalism for all to see, it is a question more alive now than ever.¹⁷

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Notes

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Gabriella Petrick

A Can of Beans: Food Systems and COVID-19

On May 31, 2020, protestors in Kansas City threw a can of Bush's Black Beans at riot police to show their outrage over the killing of not just George Floyd but also many, many, black men and women across the United States. On June 6, Portland police tweeted that garbanzo beans were thrown at them during protests. The choice of projectile is telling, for the same systemic racism challenged by Black Lives Matter is evident in the food system that produced the cans hurled at the police. Put another way, the call for food justice is also a call for racial justice because of the disproportionate burden that black and brown Americans face in laboring to produce the food that Americans consume—as the COVID-19 crisis has powerfully revealed. Such workers are often underpaid and frequently live in communities where access to healthy foods is difficult to obtain not only because these workers cannot afford it but also because the grocery stores in their communities have closed. The protests and riots have made the problem even worse in places like the South Side of Chicago because stores and bodegas have closed, further limiting access to any food, let alone healthy food.

As a historian of food systems, I am keenly interested not just in how and where our food is produced and by whom but also in who has access to particular types of food, how it is produced, and how it is acquired. The conversations about food and food production tend to be twee ones by well-intentioned urban “food influencers” like Alice Watters, Frances Moore Lapé, Michael Pollan, Marion Nestle, José Andrés, Danny Meyer, Dan Barber, and Tom Colliccio. Each of these, especially José Andrés, has done much good in communities by not only shifting the conversation around food, food systems, and the environment but also by getting food to communities in need. Yet these voices are largely white and largely male. Each of these women and men say that they are trying to promote more just, ecologically diverse, and ethical food systems, but their efforts have not changed the structural inequalities embedded in food production or access to affordable healthy food. Having also trained as a chef at the Culinary Institute of America and having worked in food service establishments from barbecue pits, to country clubs, to wine bars, to

very high-end restaurants, I understand the industry from the inside out. Because of COVID-19, I am also in the unusual position of working in a small independent wine shop, which I will comment on later in the essay.

In the midst of the shutdown, *The New Yorker's* Hannah Goldfield featured restaurateur Dan Barber's efforts to sell boxes of "astonishingly lovely vegetables and prepared foods" as a way to help the farmers, foragers, and fishermen, who supply his Blue Hill restaurants, through the collapse of the restaurant industry due to COVID-19.¹ While the new project may help to keep his supply network afloat, it offers little, if any, assistance to the prep cooks, line cooks, servers, and other restaurant employees who lost their incomes because Barber's restaurants were closed to help stem the pandemic. Priced from \$68 to \$170, these boxes are designed to feed only the wealthiest Americans. To be sure, Dan Barber and the Stone Barns Center for Food and Agriculture, the non-profit farm and educational center that partnered with Blue Hill on a former Rockefeller estate, have done, and continue to do, very good things, including preserving agricultural land and encouraging biodiversity, but these small projects cannot save agriculture and the environment or fundamentally change the complex web of food systems.

In a conversation with *The New Yorker's* Helen Rosner, the Nigerian artist-activist Tunde Wey framed the restaurant crisis rather differently. He highlighted the systemic racism that restaurants perpetuate on a daily basis by exploiting the labor of workers across every sector of the industry, including not just in fast food and chain operations but also in high-end restaurants.² The implications of Wey's critique go far beyond restaurants, offering a fundamental critique of neoliberal capitalism that rewards those at the top and exploits those at the bottom. The critiques resonate across the network of food systems that exploit the labor of those who are now deemed "essential" to feeding the vast majority of Americans. The invention of the category of "essential workers" links the pandemic to food systems and to the social unrest playing out in cities and towns across the country. The lack of diversity in the conversation that frequently surrounds food and food systems silences those who labor to produce, process, transport, and stock the food we take for granted. Not coincidentally, it is these workers in the fields, in the packing plants, in the warehouses, in the grocery stores, and now (as the nation attempts to reopen) in the restaurants who are both contracting COVID-19 and dying from it at higher rates than almost any other group of workers. They are also underpaid and largely considered disposable not just by the large monopolistic corporations that dominate food production, distribution, and retail but also by our federal government, which invoked the Defense Production Act to keep workers in unsafe environments in order to keep food on grocers' shelves and American tables.³

I am an “essential worker.” I never planned on being essential. Though I am framed as a “hero” and a “warrior,” I am neither. What I am is expendable according to my government, large corporations, and my employer who underpays me for my expertise. No hazard pay, no bonus, just some free wine so I can apply my expertise to keep the store stocked with new inventory, keeping customers from being bored with their choices in the store. Don’t get me wrong—I like my job, the storeowner, and my colleagues, but my fondness for them does not diminish the fact that I and so many other essential employees are knowingly exploited. We all are.

In my Food, Violence, and Social Change course, I relentlessly repeat: “Hungry people are violent people.” Revolutions frequently turn on citizens’ stomachs and the government’s ability to feed its citizens. COVID-19 and the murder of George Floyd and many, many black Americans show that the safety nets created by the New Deal and Great Society initiatives—inadequate though they were—were dismantled in order to ensure that essential workers lived impoverished, yet productive, lives. It is also no coincidence that these workers tend to be black or brown.

But there are larger links back to the environment. The power of large producers not only affects workers in the field, packing plant, or warehouse, but it has also entrenched farmers and ranchers into a type of peonage where they are simply stewards of commodities through a system where they have little or no power. This, in turn, has consequences not only for how land is used and/or abused to extract profits but also for the biodiversity on the land and around the farms and farming communities. This is not an issue limited to the United States. Global biodiversity is shrinking as land is cleared for an agriculture based on neoliberal politics and the globalization of food production. The “sixth mass extinction” that is accelerating across the globe is not just about fossil fuel emissions; it is also about domesticating wild land for various forms of agriculture that further reduce the biodiversity of plants and animals across the globe.⁴ Locust swarms in Africa have as much to do with food systems as they do with the loss of biodiversity, climate change, and neoliberal capitalism. COVID-19 has brought all of these issues out into the open, revealing not only the fragility of these systems but also the vulnerability of those actually producing the food.

Consolidation and monopoly and oligopoly power have created behemoths throughout various systems, from fresh food (produce, meat, dairy), to processed foods and beverages (Unilever and 3G Capital), to retail (Walmart and Kroger in the United States). While consolidation gave consumers illusory lower prices, they came at a real cost. Wages stagnated, taxes stagnated, work hours shrank, and benefits such as health care, paid vacation, and sick leave evaporated for most workers. Communities, both rural and urban, have felt the

effects as these now “essential workers” have slipped from the working class to the working poor. The lack of social services and health care, access to healthy foods, and exposure to more toxic (biological and chemical) environments have made COVID-19 more lethal in these communities, which are largely comprised of Americans of color, even as large corporations reap ever-larger profits.

COVID-19 thus forces us to confront both food and racial justice. As historians, we need to look to the past for models of more resilient, sustainable, and biologically diverse food systems while simultaneously ensuring that essential workers benefit from these changes. In 1967, as Martin Luther King Jr. launched his Poor People’s Campaign, he said in his “Other America” speech at Stanford University that “it is as necessary for me to be as vigorous in condemning the conditions which cause persons to feel they must engage in riotous activities” as the riots themselves, explaining that “a riot is the language of the unheard.” We have not listened, and, tragically, we have made conditions worse. Throwing a can of beans at the police can simultaneously embody the rejection of systemic racism and be a call for food and environmental justice, and it illustrates the cultural power of food in America and beyond. The pandemic has exposed the true cost of nourishing Americans and gives us the opportunity to envision a more just and equitable set of systems to sustain people and ecosystems across the country and prevent the “recurrences of violence and riots over and over again.”⁵ It is an open question as to whether we have the courage to do so.

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Liza Piper

Pandemic Relations

On March 11, 2020, the World Health Organization declared that COVID-19 was a pandemic.¹ In the days that followed, as my university and my community closed down public spaces and created new rules around social distancing, my thoughts turned to Sarita Siegel and Gregg Mitman's 2015 film, *In the Shadow of Ebola*. There is a scene, six minutes in, where young Joseph Urey expresses sadness at the loss of social interaction in the face of the Ebola epidemic in his home of Monrovia, Liberia. "It is just hard to resist touching human beings," Joseph says, "yup, so it's just hard."²

We watched this excellent film in the final week of my first-year course on the history of plagues and epidemics from the ancient world to the present. I developed the course to introduce environmental history to undergraduate students in a Canadian province with a political culture notoriously hostile to environmentalism. (Musician k.d. lang once quipped that, growing up in rural Alberta, she found it easier to come out as a lesbian than as a vegetarian.) We use pathogens and disease to study how humans are immersed in, and shaped by, their relations with other-than-human nature through time. Students—who come from across campus, including many in premed studies and nursing—leave the course grounded in the histories of zoonoses and epizootics, famines, population density, vectors, sanitation, contaminants, and antibiotic resistance.

I arrived at the intersection of environmental history and the history of disease by way of Alfred Crosby's work on "virgin soil epidemics," which is an essential part, Crosby argues, of the process of ecological imperialism.³ The core insight of Crosby's book *Ecological Imperialism* was to center relations between humans and other-than-human nature in the process of European imperialism.⁴ However, the problem of "virgin soil epidemics," beyond that awful name, is that they are premised on the vulnerability of Indigenous bodies to European power.⁵ The mechanism of "virgin soil epidemics" relies on a power differential that is naturalized into those bodies that were subjugated by the processes of settler colonialism—their supposed immune insufficiency that arose from generations on the wrong side of the seams of Pangaea.⁶ In my work, I shift the lens away from Indigenous bodies and on to colonial structures of power: the new ecological relationships they engendered—whether they were new

settlements, seasonal rhythms, transportation networks, or relations with animals—and the experiences of disease that arose as a result.⁷ Colonial control by settlers and southern Canada connected northern Indigenous peoples—the Inuvialuit, Gwich'in, Sahtu Dene, Tr'ondëk Hwëch'in, Tlicho, Denesuline, Métis, and others—to new disease centers, facilitated the spread of infectious pathogens via trade routes and, later, through treaty gatherings, undermined food security and fostered the creation of dangerously unsanitary settlements and residential schools. The effects of infectious disease outbreaks, in turn, disrupted historical relations with the land and undercut northern leaders as they asserted sovereignty in the midst of dramatic social, economic, and political upheaval.

Since the appearance of severe acute respiratory syndrome coronavirus-2, close attention has been paid to the differential effects of the virus on bodies distinguished, in the first instance, by age and immune vulnerability. As the pandemic and responses to it have evolved, new differences in susceptibility have emerged. There are occupational differences: among the more vulnerable are people employed in hospitals, long-term care facilities, meat-processing plants, and other places that have continued to operate during extended lockdowns with varying degrees of protection from the risks of a novel pathogen. There are differences of geography that reflect neighborhood density, dependence on public transportation, and air pollution. And there are differences that hew to class, race, and gender. Sorting out the causal connections between apparent disparities in morbidity and mortality will be a major undertaking in the wake of the pandemic. At the broadest level, these connections are the social determinants of health: “The conditions in which people are born, grow, live, work and age,” observes the World Health Organization, are “mostly responsible for health inequities—the unfair and avoidable differences in health status seen within and between countries.”⁸ There is contemporary awareness that these social determinants are born of power differences and context, not biology. Nineteenth- and twentieth-century European, Canadian, and American commentators witnessing the vulnerability of Indigenous populations lacked this necessary insight, and it is from their writings that the model of “virgin soil epidemics” was effectively born.⁹

Environmental historians have indispensable skills for this post-pandemic accounting—to consider how built spaces, urban and travel geographies, food production, work and commodity flows, and local environments have changed through time to produce a global ecology that has facilitated the spread of the coronavirus and influenced the disparate mortality we see in its wake. As I teach in my first-year class, the best way to undertake such an analysis is to follow the pathogen through our world, from its origins, to its preferences (humidity, heat, cold), its seasonal ebbs and flows, and its

interactions with other pathogens and physical environments. Such analysis depends on a capacity to interpret the work of virologists, epidemiologists, urban geographers, and other specialists; it also requires the passage of time. Pathogens can surprise, and we know them through our shared history. Historical perspective on this coronavirus requires having the patience, privilege, and luck to see this moment and its reverberations through.

Environmental historians are trained to explore complex relationships from the perspective of viruses and their ecologies, without losing sight of the social and cultural relationships that make human history. To return to Joseph Urey's moving and perceptive observation that it is so hard for us to keep from touching one another—whether in the loss of intimacy and the emotional effects that has wrought or in the resistance to public health measures designed to keep us apart, to keep our faces masked, and to hinder the virus's spread—we see how the history of this pandemic is about how we interact with one another. We cannot lose sight of the coronavirus as part of us: our relationships with one another—unequal, divergent, and connected—are the “nature” that is integral to this and every pandemic.

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Notes

My gratitude to Sean Kheraj for sharing his insights on this reflection.

- 1 March 11 was also the ninth anniversary of the Fukushima Daiichi nuclear disaster, a coincidence in time that could serve as the subject for analysis drawing on Sara Pritchard's essential essay, “An Envirotechnical Disaster: Nature, Technology, and Politics at Fukushima,” *Environmental History* 17 (April 2012): 219–43.
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Libby Robin

Bunkering down in the New Normal

I am writing today—April 22, 2020 (the fiftieth anniversary of Earth Day)—from the bunker of COVID-19 lockdown, deeply conscious of the environment within, of bodies as vectors of change, of the vulnerability and unlikelihood of survival in a world of invisible threats to present and future life. Isolation shrinks us, frightens us, and closes us inwards. We do what we can to send uplifting readings and poetry to distant friends, as e-mails lengthen back to letters. The world is both intimate and hostile. Screen conversations and “zoom drinks” circle around personal safety in a global world. We struggle to understand the institutions that hold us in this new world. Sometimes we talk about national responses, but increasingly it is about what smaller units can (and cannot) do: states, cities, ourselves. #StayHome is the message on my phone. Our homes are our last safe biomes.

Trust in numbers, to use Theodore Porter’s phrase, is paramount. We all “pull together” to “flatten the Covid-curves.”¹ As the world becomes increasingly dependent on digital technologies, “virtual solutions” are touted: online teaching at universities and schools, surveillance apps for citizens, online shopping, and uber delivery. But are these real, long-term solutions? COVID-19 is immediate and personal: we care about those we know and love; we worry how they are negotiating the horrors of the very present moment. One of my friends says the week now only has three days: yesterday, today, and tomorrow. We seize on the philosophies of Mr. Dick, in *David Copperfield*, who could always choose just one thing to do in times of paralysis: let’s make a cup of tea—a next step.

Isolation enforces being right here, in the present, now. Yet we also want a future. Political talk is turning to the endgame: what happens when we begin again on the unknown “other side” of hibernation? What will happen to Western economies that run on growth? The mismatch between scale and aspirations is disorienting. And we worry anxiously about what happens if there is no “other side.”

In Australia, we had no time between the long bushfire season and the arrival of the plague. Our traditional long beach holidays were canceled: the roads were closed. People escaped from the coast under

police patrols. The shocking air quality closed our universities, our museums, and our businesses. From December 20, 2019 to January 3, 2020, Canberra, our “bush capital,” set in the blue hills of wild bushland, became the world’s most polluted city. It achieved severe air pollution completely without manufacturing or heavy industries, right through the Christmas shutdown when there were hardly any cars on the roads.

The new normal is ever-changing crisis. We are suffering a new sort of post-traumatic stress disorder—a present traumatic stress dystopia. We are not managing a crisis but, rather, living with uncertainty and the unexpected, not knowing how long each crisis will continue before another arrives. Crises overrun each other and compound the pain. For the two years before the fires, there was no rain. Many Australian farmers had been tied to home, hand-feeding livestock daily. There was a mass fish kill in the lower Darling River. Whole towns like Pooncarie ran out of water. The drought was terrible, even “unprecedented,” just like all that has happened since. The changing rainfall patterns that brought the drought fanned the fires and then, on January 20, 2020, dumped a hailstorm on Parliament House that ruined twenty thousand cars and all the greenhouses and skylights at my university and at the Commonwealth Scientific and Industrial Research Organisation. It took two weeks to get damaged vehicles towed away, by which time, on January 25, we had our first four reported cases of COVID-19, the day before our major summer public holiday, Australia Day. The plants under shattered glass all died, the research was lost, and there has not been a moment since to restart it. After closing the university because the poor air quality affected computer systems, the hailstorm broke the windows, then a major flood burst into the damaged buildings in February. Our university campus is now closed completely for COVID-19 until the end of June. Some of the buildings are being repaired. Other new building works have been stopped completely. Cost cutting is happening everywhere.

How can environmental history help us navigate the predicament of a global virus, of life locked down by multiple Anthropocene forces? Julia Adeney Thomas comments that, while a problem might be solved by experts—a vaccine might solve COVID-19, for example—the Anthropocene predicament demands something else.² We are all in this together (as they keep saying). The whole of society participates in the path traveled, and yet the pain is unequally shared. This is a moral dilemma, not just a health crisis. What sort of a society will come after COVID-19? While history is good at “uncertain” and copes well with eclectic sources and imperfect data, environmental history enables a nuanced sense of place and of situatedness and yet stretches imaginatively to global society and planetary consequences. The idea of the environment itself was coproduced with the idea of globalization in the postwar years of “world-mindedness,” the decade

that invented the World Health Organization, global financial markets, and the scientific Soil Conservation Service.³ The rational idea of “global” has been around for seven decades, but global soul-searching has taken a new twist. What does a planetary morality look like in a world where humanity is a geological force and an invisible virus stirs the inequality pot in new ways? We need to scale up morality and imagination, not just numbers.

The hibernation pause forces new choices, and the isolation offers us a different place from which to think. What should be started again, and what should be restarted differently? Not just poor countries are unequal, as the Gini index reveals.⁴ The United Nations’ Millennium Ecosystem Assessment argues that we need “significant changes in policies, institutions and practices that are not currently under way.”⁵ Environmental history takes us beyond technological solutions, beyond the horrific present and the uncomfortable immediate future. Fifty years after the first Earth Day, surely we can bring to the discussion a longer, more ecologically nuanced view of our predicament and how our political and economic systems create and foster it. The Anthropocene is neither safe nor just, but our perspective on the planet can change choices, and, as the plague has revealed, small early choices can have exponential later consequences.

As my thinking has turned toward deep futures, I have found strength in reading David Farrier’s *Footprints*, a book launched virtually in COVID times.⁶ In his search for future fossils, Farrier returns to the fundamentals of being human, to questions of “narrative, myth, image and metaphor” and what they will look like in the deep future, in the future fossils of collapsed ecosystems. His question asks: how might I be a good ancestor? He argues for a role for poets, not just palaeontologists. Fossils of the future, the stratigraphic markers of the Anthropocene, such as mass plastic, nuclear traces, or the concrete left behind by megacities, will reveal the moral and imaginative priorities of our times.

Being here now is a privilege. The world has stopped briefly, and how it starts again is still full of possibilities. We need to be thinking and writing and reflecting on what we have and what we stand to lose. What matters? What do we love and care about? I have a clear view out my window of autumn color. The air is clear. The choking smoke will return next summer or the one after, but, right now, my local kookaburras, magpies, and currawongs sing up the garden. An eastern spinebill hovers on red trumpet flowers filled with nectar. There is a lot happening, even without the noise of passing planes. In this strange time of isolation, I watch and listen and read and think. I try to read the garden. Reading nature is one way to travel into deep futures that matter, perhaps. It is worth a try. It is the only travel possible right now.

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Edmund Russell

Coevolution in a Time of Coronaviruses

The COVID-19 epidemic is a chance by-product of the coevolution of coronaviruses with nonhuman populations. The epidemic, with its patterns of human and nonhuman populations repeatedly changing in response to each other, underscores the degree to which coronavirus epidemics offer excellent case studies in the emerging field of coevolutionary history.¹ This essay focuses on the coevolution of coronaviruses with populations of scientists in the twenty-first century.

We know little about coronaviruses in general—that is, all species in all habitats—because of our priorities. People typically care most about viruses that cause disease in human beings, second about viruses that cause disease in domestic animals and plants, and least about viruses in the wild. Funding for research generally follows these priorities. Before 2003, coronaviruses were at the bottom of the top category of priority. They were in the top category because they caused disease in people, but they were at the bottom of it because the diseases they caused—common colds—were mild. They were also in the second category because they caused disease in domestic animals, including chickens, turkeys, pigs, cattle, and horses.² Researchers devoted little effort to coronaviruses in the wild.

Interest in coronaviruses surged in 2003 because of the emergence of a new human disease, severe acute respiratory syndrome (SARS), which infected about eight thousand people and killed about eight hundred, for a 10 percent mortality rate. Scientists identified a coronavirus, which they dubbed SARS-CoV, as the cause of the disease.³ Interest in coronaviruses rose higher in 2012, when Middle East respiratory syndrome (MERS) emerged. Scientists identified another coronavirus, named MERS-CoV, as the cause. The disease infected about twenty-five hundred people and killed about nine hundred of them, for a mortality rate of about 37 percent.⁴ SARS and MERS prompted a search for the origins of SARS-CoV and MERS-CoV. At first, the goal was to identify the species in which these coronaviruses lived before jumping to people. Researchers identified candidate mammals—civets and raccoon dogs—sold in live animal markets in China as

possible hosts for SARS-CoV. They thought camels probably transmitted MERS-CoV to people.⁵

How did these hosts get the coronaviruses? That question spurred a search for coronaviruses in the third category of priority, viruses in the wild. Genetic analysis suggested SARS-CoV and MERS-CoV probably migrated from bats, to intermediate hosts, to people. Once they looked, researchers found a “huge diversity” of coronaviruses in bats and a “huge diversity” of coronaviruses in birds. If you are a virus with an eye to reproduction, bats and birds are great hosts. Both fly, enabling them to spread viruses far. Bats, and some birds, live in dense colonies, making it easy for viruses to travel among individuals. As far as we know, these coronaviruses usually cause no disease in their hosts.⁶

Most likely, mutations enabled coronaviruses to migrate from bats, to intermediate hosts, to people. Mutations are changes in genetic codes, which in coronaviruses means changes in single strands of ribonucleic acid (RNA). Coronaviruses mutate at moderate to high rates compared to other viruses with single strands of RNA. Mutations generate diversity in traits, and diversity increases the odds that a virus will have traits that enable it to live in a new host species. Many individual coronaviruses must have landed on human bodies over time, but only some could survive and reproduce in human bodies. They became the founders of populations with distinct genetic traits that we call SARS-CoV and MERS-CoV.⁷

When SARS and MERS appeared, human populations began coevolving with the viral populations that caused them. The diseases killed too few people to cause measurable evolution in human genotypes, but they prompted evolution in human cultural traits. One cultural trait in populations of scientists was the practice of searching for the causes of SARS and MERS. The frequency of that behavioral trait rose from zero to substantial. Another behavioral trait that rose was the practice of referring to certain viruses as SARS-CoV and MERS-CoV. A third behavioral trait that increased was publishing papers about SARS-CoV and MERS-CoV.⁸

Mutation probably led a third coronaviral disease to appear in the twenty-first century: COVID-19.⁹ Populations of scientists evolved in the same ways they evolved in response to SARS and MERS. The frequency of searching for the cause of the disease, of referring to a virus by a certain name (SARS-CoV-2), and of publishing papers about the virus rose. Researchers concluded that SARS-CoV-2 most closely resembled two bat coronaviruses they had identified a few years earlier.¹⁰ As of this writing, the intermediate host is unclear.¹¹

People soon facilitated evolution in SARS-CoV-2 populations. By behaving like bats and birds—flying and living in dense populations—people quickly spread SARS-CoV-2. But they did not spread viruses with identical traits. Mutation in SARS-CoV-2 led to multiple

strains, and carriers introduced different strains to different areas, leading to distinctive populations of viruses.¹² By analyzing viral genomes, geneticists concluded that a resident and a tourist in Italy harbored different strains from different parts of the globe.¹³

The scale of human adaptation to SARS-CoV-2 dwarfs the responses to SARS-CoV and MERS-CoV. Governments instituted quarantines, closed businesses, stopped travel, and forced people to stay indoors. The genetic coevolution of viral populations, and the cultural coevolution of human populations, will continue. As scientists put it in one publication, “the future of human CoV outbreaks will not only depend on how the viruses will evolve, but will also depend on how we develop efficient prevention and treatment strategies to deal with this continuous threat.”¹⁴ The coevolution of people and coronaviruses will make excellent studies for future historians.

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Christopher Sellers

Back to the Future

Among the many fallacious assumptions that COVID-19 has laid bare is that we in the developed world have freed ourselves from the age-old scourge of deadly epidemics. Evidence for this hard-won immunity has seemed so strong that the more recent challenges of AIDS and Ebola have failed to dent this collective sense of where we have come. Bolstered by the concepts of an “epidemiological” or “health transition,” this same progress narrative has undergirded much work in medical and environmental history from the 1960s onward.¹ For most Americans, an achieved insulation from infectious threats had become so ingrained and invisible that entire courses in the history of public health—including my own—have centered on making students aware and appreciative of its historical achievement. This narrative is now going to need a serious rethink.

In my own class on public health history, I regularly opened the semester by asking students to compare the three episodes in the introduction to Randall Packard’s 2007 history of malaria. In a pointillist foreshadowing of malaria’s global history, he sketches the outbreaks in Archangel, a town in northern Russia, in 1922–23; in Bengal, India, in the 1870s; and in Palm Beach, Florida, in 2003. The more astute students pick up on that reading’s elephant in the room, a huge difference in death rates then versus “now.” A thousand died from malaria in Archangel alone, part of an estimated six hundred thousand deaths overall across central Eurasia. But, in Palm Beach, all eight who were diagnosed with malaria recovered, and as I used to write on the board to reinforce the point: no one died.² Now the students on my Long Island, New York, campus have had a front-row seat to a pandemic that may well kill more than six hundred thousand and that has already slain one hundred thousand Americans, nearly seventeen thousand of them in New York City alone. After three short months—which, for historians, passes for the twinkling of the eye—the Archangel episode suddenly mirrors the epidemic experience of modern Americans far better than does that of 2003 Palm Beach. Not just my opening but also much else in this class has been rendered obsolete, though student interest is certainly going to be a lot easier to rouse.

Environmental as well as medical historians are going to be pondering the implications of this jarring reversal for years to come. AIDS,

Ebola, the rise of antibiotic resistant tuberculosis—all of these episodes look more like portentous harbingers of COVID's death dealing. In our own veritable bastion of global development and modernity, the modern wizardry of medicine and public health have proven no match for the virus's capacity to mow tens of thousands down. While environmental historians and a growing number of medical historians have primed us to expect an onslaught of climate-related disaster, hardly anyone beyond a small band of public health experts (with notable exceptions such as Mike Davis and Laurie Garrett) had an inkling that, in 2020, a modern-day virus could so thoroughly devastate developed as well as developing countries, bringing most societies and economies across the earth to nearly a full stop.³

One lesson I see for our field is that we need environmental histories not just of disease-carrying vectors like bats or mosquitoes but also of microorganisms. While environmental history has many tools for examining the "wet markets" of Wuhan and the ecological history of bats from which the virus may have jumped, the extraordinary damage wrought by this miniscule sliver of not-quite life has made the persistently perilous co-existence of our own species with microbes themselves harder to ignore. Viruses like COVID-19 do not even have their own DNA; they squirt a strand of ribonucleic acid into the living cells of other creatures in order to replicate. Overwhelmingly, this virus's impact on human history did not come until its numbers began multiplying inside human lungs and spreading through built environments worldwide. Among environmental historians, works and wisdom like that of Rene Dubos, a mid-twentieth-century microbiologist, whose ecological perspectives about bacterial as well as human ecology contributed to that era's environmentalist strains of thought, deserve a revival.⁴ Because our physiology remains vulnerable to these least visible of organisms, so do our societies, however modern, scientifically informed, and well heeled their public health defenses may be. The habitation of the planet by microbes—viruses as well as bacteria, archaea, and others—long preceded our own, and, as COVID-19 has reminded us, humanity remains locked in an ancient struggle to fend off the threats they can pose. That physiological vulnerability needs situating alongside all we have been learning in recent decades about our dependencies on their ecological communities, or "microbiomes," within and around us.⁵

I am struck as well by how COVID-19 has scrambled many prevailing notions about disease and time. Most Americans continue to die from chronic diseases that take years to develop and turn deadly, like cancer or heart disease. Yet COVID-19 transports our disease experience back to when acute ailments, acquired in a moment and manifesting over mere weeks, were the foremost killers. Compared to other recently emerging threats of acute infection, like severe acute

respiratory syndrome (SARS) or Ebola, COVID-19 has spread much faster and more widely largely because of the length of its incubation period. As many as two weeks after becoming infected people can silently and unknowingly spread the virus, and it is also easily passed along through the air, not just through direct contact with the body or fluids of another victim. In this and other ways, COVID-19 has also reconnected modern Americans' experience with disease to those preceding our nation's transition away from high infectious death tolls. Like those who faced the 1918 influenza pandemic, we have as yet no cure for its victims, no vaccination, and, at least in the United States for the first few months, not even a widely distributed diagnostic test. Reintroducing an inscrutable enormity to the germ threat, COVID-19 has raised serious questions about the extent and durability in the United States of twentieth-century public health's "silent victories."⁶

The insufficiencies and failures of public health in the time of COVID-19 pose abundant questions of mutual interest to environmental and medical historians, whose answers promise to push these two fields into further and deeper engagement with one another. Among these, how did so many American health experts become convinced over the last century that the worst infectious diseases were behind us—that we had "conquered" them?⁷ The answers may well alter our modernizing narrative of public health, spanning new sciences, infrastructural interventions, state building, and social practices and culminating in mass vaccinations and antibiotics that struck a coup de grace to the mortality toll from infectious diseases in the United States. What I elsewhere have described as this era's "place neutrality" opens some doors to understanding what was being left out. Assuming that infectious illness could be alleviated strictly through the clinical encounter between a doctor and a patient, health professionals left doors wide open for neglecting influences on health in patients' own environments, setting the stage for new sciences, politics, and state building around environmental pollution.⁸ But COVID also calls environmental historians' attention to a public health system shielding us from infectious diseases. In the United States over the preceding decades, the public health system was losing much ground to privately practiced, clinical medicine, even as modern regimes of environmental protection took shape. More recently, our modern oversight of both pollution and infectious disease have been forced by a triumphant political conservatism into the same boat. That same national leadership that has questioned and set about dismantling the scientific underpinnings of many of America's environmental policies also ignored expert warnings about COVID for too long, ensuring the devastation that it has brought to our shores.

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Notes

- 1 A. R. Omran, "The Epidemiological Transition: A Theory of the Epidemiology of Population Change," *Milbank Memorial Fund Quarterly* 49 (1971): 509–38; J. Frenk, J. L. Babodilla, C. Stern, T. Frejika, and R. Lozano, "Elements for a Theory of the Health Transition," *Health Transition Review* 1 (1991): 21–38.
- 2 Randall M. Packard, *The Making of a Tropical Disease: A Short History of Malaria* (Baltimore: Johns Hopkins University Press, 2007).
- 3 Mike Davis, *The Monster at Our Door: The Global Threat of Avian Flu* (New York: New Press, 2005); Laurie Garrett, *Betrayal of Trust: The Collapse of Global Public Health* (New York: Hachette Books, 2011).
- 4 Rene Dubos, *Mirage of Health* (New York: Anchor, 1959).
- 5 Caroline Ash and Kristen Mueller, "Manipulating the Microbiota," *Science* 352 (April 2016): 530–31, <https://doi.org/10.1126/science.352.6285.530>; "How Microbiomes Could Save the Planet," *Scientific American Blog Network*, accessed June 6, 2020, <https://blogs.scientificamerican.com/observations/how-microbiomes-could-save-the-planet/>.
- 6 John W. Ward and Christian Warren, eds., *Silent Victories: The History and Practice of Public Health in Twentieth-Century America* (New York: Oxford University Press, 2006).
- 7 Charles-Edward Amory Winslow, *The Conquest of Epidemic Disease, A Chapter in the History of Ideas* (Princeton: Princeton University Press, 1944).
- 8 Christopher Sellers, "To Place or Not to Place: Toward an Environmental History of Modern Medicine," *Bulletin of the History of Medicine* 92 (2018): 1–45, <https://doi.org/10.1353/bhm.2018.0000>.

Mart A. Stewart

Marking the Boundaries of Contagion: Vietnam and COVID-19

Vietnam has been an outlier to the global COVID-19 pandemic and, at the same time, is thoroughly immersed in it. The Vietnamese government and citizenry have so far maneuvered a path that has mobilized the formidable social capital of the Vietnamese people and launched several precisely targeted public health initiatives to limit the pandemic's effects: as of this writing in late June, 355 cases have been diagnosed since the first reported case on January 23 with zero deaths. In spite of real hardship among millions of Vietnamese, the nation's economy has remained afloat and is prepared to bounce back when the pandemic abates. The story of the pandemic in Vietnam, largely ignored by the pandemic narrative that has evolved in the Western English-language press, is a genuine success story (so far), especially for a country that shares a border with China, has a substantially larger population than Italy's in an area that is smaller than California's, and has two cities with populations approximately equal to New York's.

Part of this success is rooted in its recent experience with spillover epidemics. Vietnam was the first country outside of China to experience the severe acute respiratory syndrome (SARS) epidemic in 2003 and has had extended and ongoing experience with zoonotic diseases by way of several avian flu epidemics (most notably, in 2005).¹ Consequently, political leaders and health officials in Vietnam acted swiftly and preemptively (even before the first case was reported in Ho Chi Minh City) to manage a virus that has waited for no one. The first two cases were Chinese nationals, just two days before the Tet holidays, when hundreds of thousands of travelers might have meant the rapid spread of the virus, and this incentivized the Vietnamese government to ramp up its response quickly. With still only six cases in Vietnam, the Vietnamese prime minister declared the virus a national epidemic on February 1, a day after the World Health Organization officially upgraded the outbreak to a "public health emergency of international concern," largely shut down the northern

border with China, closed schools and universities, and developed protocols for targeted screening and quarantining individuals and, for infection clusters, groups. The government recommended the wearing of masks by anyone serving the public, increased the production of personal protective equipment, and launched an aggressive and effective information campaign to educate the public about the virus and how best to manage it.²

After twenty-two days without new cases, travelers from new hot-spots in Europe and the United States introduced the virus to Vietnam again, and the Vietnamese government developed a fuller response. In late March, they suspended international entries, and exceptions, including returning nationals, were required to submit to health checks and fourteen-day mandatory quarantines. In early April, the government announced a period of “national social distancing,” banned all gatherings, closed bars, restaurants, and massage and karaoke parlors, and encouraged residents to stay home for several weeks. This, along with the quick quarantining of identified cases, brought this phase of the pandemic to a close in Vietnam, and, by late May, many businesses and public services had opened up again. Very few cases, all returnees from abroad, were reported through the end of June.

The Vietnamese have collectively marked off infection control boundaries at all scales, with an accuracy that has not only demonstrated a precise understanding of the COVID-19 contagion environment they have sought to manage but also the social and political actions necessary for that management.³ Nothing has affirmed the collective effort of Vietnamese citizens to contain the routes of contagion and signal the unity of their efforts as much as the wearing of surgical masks. That Western tourists largely eschewed masks in the early weeks of the epidemic, added to their potency as a cultural emblem. The cloth masks sold on street corners in Vietnam, which many Vietnamese wear to provide some protection against air pollution when riding on motorbikes, were largely replaced by pleated white, pink, and blue surgical masks (figure 1). The masks have become ubiquitous, and even the notion of love in the time of COVID-19 has been adorned with them: a couple in Hanoi staged their pre-wedding photoshoot while giving away two thousand masks, and florist shops have created “health bouquets” for the Vietnamese to say “I love you” with masks and hand sanitizers on Valentine’s Day.

At the end of March, the government made masks mandatory, and the police began fining those who were spotted not wearing one, but most Vietnamese in general have voluntarily donned them in public (figure 2).⁴ Indeed, the cornerstone component of Vietnam’s success in limiting the pandemic has been the participation of the Vietnamese citizenry. The observation by some Vietnam watchers on distant shores that Vietnam has launched a successful pandemic



Figure 1. Vietnamese motorbike drivers replaced the fabric masks used to protect against air pollution with surgical masks. These became a ubiquitous expression of participation in the campaign to face down the pandemic. Ho Chi Minh City, mid-February 2020. Credit: Photo by author.

containment initiative because it is an authoritarian state with a repressive apparatus for forcing citizen compliance is one that relies on Cold War tropes that do not acknowledge the continuing importance of extended families and the mutual obligations that bind them together, nor on the informal grassroots support for public health initiatives that has a deep history in Vietnam.⁵

At the same time, the Vietnamese government is clearly interested in exporting their success in diplomatic terms, especially by using their newly acquired prestige to assert new leadership roles in the Association of Southeast Asian Nations. It has also carefully cultivated an image of modernity in its efforts to keep the death rate at zero. A British pilot who contracted the disease at one of the significant hotspots in Ho Chi Minh City, the Buddha Bar and Grill, and who acquired celebrity status as Patient no. 91, was the subject of the most visible effort to cultivate this image. As he inched toward survival after sixty-eight days on a ventilator and began to eat, sit up in bed, move by wheelchair to get some fresh air, and talk with nurses and doctors, the press hovered. The patient eventually identified by the British Broadcasting Corporation (BBC) as Stephen Cameron has become the best publicist of all for the extraordinary health care he received in order to keep him alive—at one point, he was tended by eleven nurses in three shifts, for example. “If I had been almost

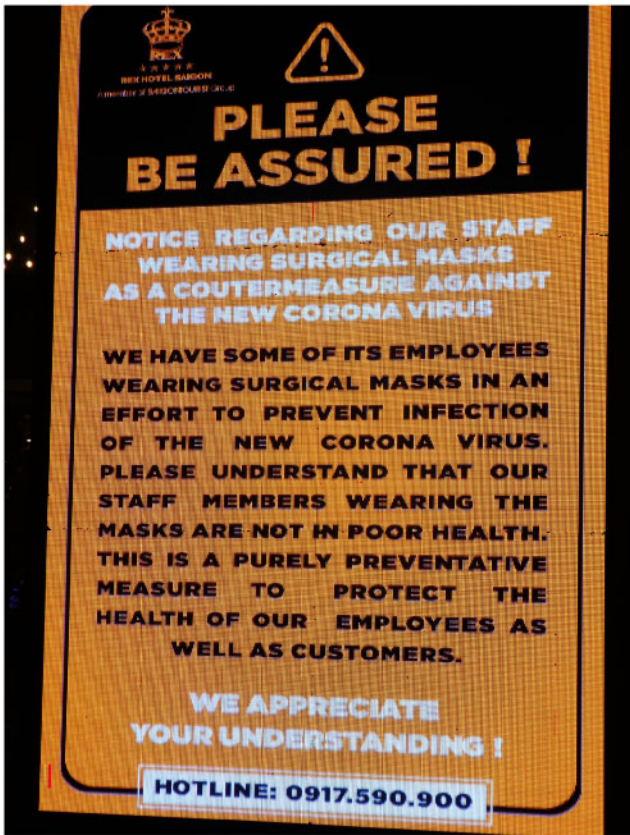


Figure 2. Signboard addressing differences in mask cultures at the entryway of the Rex Hotel in Ho Chi Minh City in mid-February. Foreign correspondents gathered daily at the Rex during the Vietnam War, and it is now an upscale hotel for tourists. Credit: Photo by author.

anywhere else on the planet, I'd be dead. They'd have flipped the switch in 30 days," he told *BBC News*.⁶

The Vietnamese response has also been largely ignored by the very busy discussions in the mainstream Western press about national variations in responses to the pandemic. This sparse coverage has noted Vietnam's success but has featured two representative caveats: questioning the transparency of the Vietnamese government in its reporting of epidemiological data and attributing the success to the presumed ability of Vietnam's government to force everyone to march in unison. Missing from this coverage has been any acknowledgment of the capacity of the people in this relational society to understand potential routes of transmission and how they could be controlled and what they were encountering in environmental terms and to mobilize in the direction of a goal that was, yes, good for the

Vietnamese nation but that also contributed to the health and safety of their neighbors and members of their extended families. This, and the speed and precision with which the Vietnamese government and health officials have acted, have so far accomplished a response to this zoonotic disease from which others could learn. Yet Vietnam has also been largely ignored on the pandemic world stage, and historians will want to ask why.⁷

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Notes

My thanks to Ly Lan and colleagues in Vietnam for information and hospitality in February while I was on the ground and the epidemic was unfolding there and to Mark Hersey for his attentive editing of this essay.

- 1 On avian flu, see Natalie Porter, "Bird Flu Biopower: Strategies for Multispecies Coexistence in Vietnam" *American Ethnologist* 40 (February 2013): 133–48. Altogether, avian flu epidemics have killed sixty-seven people and have required the culling of sixty-six million fowl in Vietnam.
- 2 For a full timeline, see Minh Vu and Bich T. Tran, "The Secret to Vietnam's COVID-19 Response Success: A Review of Vietnam's Response to COVID-19 and Its Implications," *The Diplomat*, April 18, 2020, <https://thediplomat.com/2020/04/the-secret-to-vietnams-covid-19-response-success/>. The success of the Vietnamese information campaign, which included national level teleconferencing with health leaders, posters, texts, articles in the state-run press, information via loudspeakers in rural communes, and a catchy handwashing song that attracted global recognition, in "communicating the unknown" has been effective enough that it has already been studied outside Vietnam for its replicable lessons. See Hong Kong Nguyen and Tung Manh Ho, "Vietnam's COVID-19 Strategy: Mobilizing Public Compliance Via Accurate and Credible Communications," *ISEAS Yusof Ishak Institute Perspective* (Singapore) 69 (2020), https://www.iseas.edu.sg/wp-content/uploads/2020/05/ISEAS_Perspective_2020_69.pdf. Communication efforts also emphasized the successful history of mass mobilization against outside threats. For example, the government has labeled its campaign against COVID-19 the Spring General Offensive of 2020—an obvious reference to the General Offensive, General Uprising of 1968—the Tet Offensive. The Vietnamese authorities also acted to stop the circulation of "fake news" about the pandemic: citizens and celebrities who have spread false news about the epidemic or promoted false cures have been censured or fined. "Epidemic of False Rumors Breaks Out amid COVID-19 Crisis," *Vietnam News*, February 13, 2020, <https://vietnamnews.vn/opinion/op-ed/592200/epidemic-of-rumours-breaks-out-amid-covid-19-crisis.html>; see also "Three-Fourths of Vietnam's Cities, Provinces Further Delay School Reopening through February over COVID-19," *Tuoi Tre News (English)*, February 15, 2020, <https://tuoitrenews.com>.

- vn.news/education/20200215/threefourths-of-vietnam-s-cities-provinces-further-delay-school-reopening-through-february-over-covid19/53012.html.
- 3 The most important components of the Vietnamese campaign to contain the virus have included quick and preemptive action, a unified policy based on the best advice of health experts, effective and clear communication and messaging, qualified closing of national borders, targeted testing with quick results, effective quarantines for those who test positive or who have been in contact with those who have, quick and early hospitalization, the manufacture of adequate personal protective equipment, and grassroots public support.
 - 4 Medical anthropologist Christos Lynteris has noted that wearing masks at a time of epidemic disease is a social and emblematic cultural event and not just for hygienic purposes, especially in Asia: "Why Do People Really Wear Face Masks during an Epidemic?" *New York Times*, February 13, 2020, <https://www.nytimes.com/2020/02/13/opinion/coronavirus-face-mask-effective.html>; "Couple Gives Away Face Masks on Hanoi Streets in Viral Pre-Wedding Photos," *Tuoi Tre News (English)*, February 5, 2020, <https://tuoitrenews.vn/news/lifestyle/20200205/couple-gives-away-face-masks-on-hanoi-streets-in-viral-prewedding-photos/52864.html>; "Coronavirus-Inspired Bouquets a Novel Valentine's Gift in Vietnam," *Tuoi Tre News (English)*, February 12, 2020, <https://tuoitrenews.vn/news/lifestyle/20200212/coronavirus-inspired-bouquets-a-novel-valentines-gift-in-vietnam/52961.html>; "Ho Chi Minh City Fines People for Not Wearing Masks in Public," *Tuoi Tre News (English)*, March 28, 2020, <https://tuoitrenews.vn/news/society/20200328/ho-chi-minh-city-fines-people-for-not-wearing-masks-in-public/53722.html>.
 - 5 The question of transparency and accuracy of the epidemiological data from Vietnam has been notable since many observers simply do not believe it. But the Vietnamese data has been accepted from the beginning by the World Health Organization and Centers for Disease Control and Prevention, and public scrutiny has also found them accurate. See "Vietnam Not Covid-19 'Rotten Apple': 285 Sign Open Letter to Johns Hopkins University," *Medium*, June 16, 2020, <https://medium.com/@vietnamnotcovid19rottenapple/vietnam-not-covid-19-rotten-apple-285-sign-open-letter-to-johns-hopkins-university-9ffb551b85d7>; see the section "Can We Trust Vietnam's Data," in Anna Jones, "Coronavirus: How 'Overreaction' Made Vietnam a Virus Success," *BBC News*, May 15, 2020, <https://www.bbc.com/news/world-asia-52628283>. On the response as an authoritarian one, see Bill Hayton and Tro Ly Ngheo, "Vietnam's Coronavirus Success Is Built on Repression," *Foreign Policy*, May 12, 2020, <https://foreignpolicy.com/2020/05/12/vietnam-coronavirus-pandemic-success-repression/>. This article generated a rich discussion by the online Vietnam Studies Group, sponsored by University of Washington, and its argument, which emphasized the repressive character of the Vietnamese response to the pandemic, was rejected in several ways by the experts in this group, who also emphasized the importance of grassroots public support and broad cultural traditions of support for collective health in Vietnam. See also Christof Giebel, "'Vietnam's Coronavirus Success Is Built on Repression' Say What!?" *An International Educator in Vietnam* (blog), May 15, 2020, https://markashwill.com/2020/05/15/vietnams-coronavirus-success-is-built-on-repression-say-what/?fbclid=IwAR2Eo8VEAD_UCiZEyEXEyhvMFr5HjPNCS8Cgglj3HTicLQ9fSGMNqXa-0Y. When I was on a bus in Ho Chi Minh City while in Vietnam in February, a stranger offered me a surgical mask and then chatted with my wife (the Vietnamese writer and translator Ly Lan) about it; she later told me that it was a representative act of hospitality, not of reproach.

- 6 Vu and Tran, “Review of Vietnam’s Response to COVID-19”; Huong Le Thu, “Vietnam Shows ASEAN Valuable New Form of Leadership,” *Asian Review*, June 25, 2020, <https://asia.nikkei.com/Opinion/Vietnam-shows-ASEAN-valuable-new-form-of-leadership>; Oliver Barnes and Bui Thu, “Patient 91: How Vietnam Saved a British Pilot and Kept a Clean Covid-19 Sheet,” *BBC News*, June 27, 2020, <https://www.bbc.com/news/world-asia-53196009>.
- 7 Mark A. Ashwill, “Vietnam: An Outlier in the Coronavirus Epidemic and HE?” *University World News*, March 14, 2020, <https://www.universityworldnews.com/post.php?story=20200313063615630&fbclid=IwAR2Kx-SsehHsTiplZZTICwJnBVYCaV18ruL8oMMFkluordlpVc9%E2%80%A6>; George Black, “Vietnam May Have the Most Effective Response to Covid-19,” *The Nation*, April 24, 2020, <https://www.thenation.com/article/world/coronavirus-vietnam-quarantine-mobilization/>. For examples of the narrative arc of the spare coverage in the mainstream US press, see Nector Gan, “How Vietnam Managed to Keep Its Death Toll at Zero,” *CNN News*, May 30, 2020, https://www.cnn.com/2020/05/29/asia/coronavirus-vietnam-intl-hnk/index.html?fbclid=IwAR2vWID-EwH7Mu7gcz_3GaRfivFm1UqaKfXeaG6PIEKAUV%E2%80%A6; Mike Cerre, “How Vietnam’s Authoritarian Government Succeeded at Containing COVID-19,” June 9, 2020, <https://www.pbs.org/newshour/show/how-vietnams-authoritarian-government-succeeded-at-containing-covid-19>. Since this essay was written in June, Vietnam experienced a serious outbreak centered in Da Nang, with skyrocketing case numbers, the first COVID-19 deaths, and challenging contact tracing—after ninety-nine days with no community transmission. Deploying the strategy developed in the early weeks of the pandemic, Vietnam had contained this outbreak by the end of August. The total number of cases and deaths remain remarkably low. A pattern of further outbreaks and ongoing vigilance is likely.

Frank Uekötter

In Order to Understand COVID-19, Historians Need to Leave Their Academic Silos

Thanks to COVID-19, medical historians have learned how scholars of the Muslim world felt after 9/11. In response to requests from journalists desperate about a new angle on the virus, historians have reviewed pandemics from the medieval plague to swine flu. They have provided the public with insights from similar events in the past, and they have given fellow historians some relief that, at a time when demand for academic insights was at an all-time high, medical experts did not have the show to themselves. Thanks to colleagues that many of us did not even know a few weeks ago, the historical community has had something to say about ongoing events. Is it not great to have a diversity of historical disciplines? As events unfold, other scholars will get requests. The economic toll calls for insights from colleagues who have studied the Great Depression. Diplomatic historians can make us more informed about the history of the World Health Organization. Cultural historians are invited to dissect ethnic stereotyping. Environmental historians can talk about the decrease of air pollution, and for those who feel that this is not a good issue at a time of mass unemployment, there are always the pangolins.

Environmental historians are naturally inclined to appreciate diversity in our profession. After all, open-minded colleagues allowed the field to get started a few decades ago. But with so many voices in play in today's history departments, maybe it is time to bring another issue into focus: how does all of this come together? Writing the history of the corona pandemic will be a straightforward affair as long as historians stay in their silos. Medical historians can talk about the frenzied research and the heroic work of physicians and nurses. Economic historians can talk about the economic fallout. Political historians will hand down judgments on the performance of various governments. But straightforward as such paths might be, they would

inevitably prove inadequate; individual contributions do not simply add up, no more than bricks build a cathedral by themselves.

More to the point, the COVID-19 crisis is all about how a number of seemingly disconnected things converged. I would hate to explain this to someone who was in intensive care recently, but the coronavirus is not the nastiest thing we have ever seen on the pathogen front. It gained its force because several chains of events overlapped. In other words, COVID-19 is a staunch reminder that there is only one history, and a historical discipline that is essentially a set of tribal sub-disciplines is not in a good position to write that history. We do not even have a good paradigm. Most historians learned about total history in graduate school and never bothered about it again. Environmental historians might recall ecology's old adage that "everything is connected to everything else," but that does not quite grasp the nature of our current predicament. The story of COVID-19 is about how some developments became entangled with some other developments in such a rigid way that the range of options narrowed dramatically.

Several narratives converge in the history of the coronavirus crisis. First, there is the virus itself: more lethal and contagious than other pathogens and with an incubation period that allowed for rapid spreading in the age of transcontinental jet travel. Second, the medical profession could decipher and quantify the threat and its likely trajectory with amazing speed and precision. In the nineteenth century, several generations of physicians sought to decode the mysteries of cholera, but in the case of COVID-19, medical researchers agreed on the essentials within a few weeks. As a result, decision-makers had a clear idea about the challenge at hand. Third, medical projections gained a visual urgency through dramatic pictures. In a global village, pictures of Italian military trucks and mass graves in New York City alarmed media users all over the West. (As is so often the case, the view from the Global South was a more complicated affair; COVID-19 provided another reminder that, in today's world, things are typically treated somewhat less seriously until they affect white people in a Western metropolis.)

The fourth narrative is about the welfare states in Western democracies. In the nineteenth century, a lockdown meant soldiers enforcing a *cordon sanitaire*, and that was it. But Western citizens view disaster relief as something akin to a birthright nowadays, and democratic governments have allocated billions upon billions with scant debate. A fifth narrative was about national and international politics: totalitarian rule in China, Trump's America, Bolsonaro's Brazil, the woes of Brexit Britain, lingering tensions between Italy and the European Union, and so on. It is only through the intricate entanglements between these narratives that things went from business as usual to global lockdown within a few weeks.

Seen in this way, the COVID-19 crisis does not look all that exceptional anymore. In an age of globalization, seemingly disconnected narratives can become enmeshed fairly quickly. It only needs an ecological crisis that combines with socioeconomic issues, fragile and contested institutional frameworks, and a multitude of political arenas. For an example, look at Kim Fortun's book on the 1984 industrial disaster in Bhopal, India, and its aftermath. It was an easy case on first glance: what could possibly be complicated about a chemical factory killing thousands with lethal emissions? But when you have a multinational corporation, Indian and international activists, American liability lawyers, weak medical services, overtaxed authorities, and an Indian government seeking to attract international investors, things get messy very quickly. Most crucially, it was not a lack of moral concerns or political activism that turned Bhopal into a regulatory quagmire. It was the unstable coexistence of multiple frames of references and the tensions and aporias that grew from the competition between these frames.¹

An interconnected world breeds tensions and conflicts, and they are not just the result of evil capitalists and unaccountable governments. But are historians up to telling these entangled, nonlinear stories? As long as they stay in their academic silos, I fear not. Medical historians will identify the researchers who solved the mysteries of COVID-19. Economic historians will explain why some companies weathered the storm and others went bankrupt. Political historians will distinguish between more and less competent governmental responses. There are advantages to such linear histories, not least that they benefit from a clear moral compass. No medical historian will be kind to a physician who pitched quack remedies or to politicians who ignored medical advice.

But there is a more compelling story waiting to be told, a story composed of a multitude of overlapping narratives. There may be a few heroes and villains, but there will be an awful lot of gray informed by a world of context, for at its center is a story about how the range of options can shrink within days and how people and decision-makers became subject to a whirlwind of events beyond their own control. It will be a story worth telling, not because it offers moral certainties but, rather, because it speaks about life in the twenty-first century. The story of COVID-19 is a tale about entanglements in a global age.

Two things stand in the way of multidimensional, nonlinear storytelling. First, people favor simple linear narratives for a reason. Stories are a human coping mechanism, and this coping mechanism is particularly in demand in the face of an event with no obvious sense or purpose: a natural disaster, a pandemic, an industrial accident. Stories provide moral clarity or at least the semblance thereof. In other words, linear storytelling is as much about feeling well when words are failing as it is about understanding things.

The second obstacle to multidimensional storytelling has to do with the fragmentation of the historical profession. Scholars are ill-equipped to tell nonlinear stories if they remain stuck in their academic silos. But maybe environmental historians can take the lead with a daring dash? We have a long-standing interest in the big picture, we are not terrified by nonhuman actors, and, thanks to the language of ecology, we are more familiar with complex and unexpected interactions than other disciplines. We can tell stories on multiple levels, including that of the natural world, and maybe we can even cope with multiple storylines that do not add up. COVID-19 is a chance to develop a new, nonlinear style of storytelling. We need it to make sense of a pandemic, and of life on a small, interconnected planet.

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Note

- 1 Kim Fortun, *Advocacy after Bhopal: Environmentalism, Disaster, New Global Orders* (Chicago: University of Chicago Press, 2001).

Conevery Bolton Valencius

Environmental History in the Time of COVID: History from within the Whirlwind

The Hebrew Bible tells the story of a holy man seeking guidance in a time of death and violence. From the cave where he has taken refuge, he witnesses a whirlwind, an earthquake, and then a rushing fire. Through each calamity, though the man listens, he cannot hear the voice of God. These upheavals are followed by utter silence. In that silence, the prophet hears God speaking. He understands how to go forward and tell his story.¹

We are in the whirlwind. Earthquakes shake our foundations, and fires rage all around. We do not know what the end of this upheaval will be. As historians, we are accustomed to looking back at such times with the benefit of silence—the accretion of years, the blunting of pain, the death of all involved. But now we do not have that silence. We may be huddled inside, alone or crowded alongside many others, or we may be anxious and vulnerable out on a plain over which winds rush and fire threatens. Our challenge is to hear through to the quiet beyond. We must take the leap of telling our stories from within the whirlwind. Here is what I am telling myself about this task.

“Keep sharing the truths of the past, even in the face of skepticism and denial.”

Concluding a recent online conference on history and the COVID pandemic, the historian of medicine Keith Wailoo observed that we historians may not know what will happen in this crisis, but we do know what the next chapters are likely to look like because of what they have looked like in the past.² That is powerful knowledge. We honor the world that has supported our expertise when we speak about the likely shape of next chapters, pointing out that crises shape governmental power, that regulations get unraveled when citizens look elsewhere, and that environments shape human health as pervasively and powerfully as any microbe.

“Find the bravery to tell big stories.”

US historians know that the United States did not come together as one to defeat the evils of fascism in the middle of the last century. Many of our non-historian friends and relatives know that too. Still, they yearn to hear some version of that sweeping history once in a while because that story makes sense of aging photos of relatives lost to war, diminished family opportunity or great-grandparents’ poverty, and environments remade by munitions depots and hazardous war wastes. History is complicated, contingent, and made up of small details that require painstaking research to uncover. At the same time, those details add up to larger narratives with the potential to help people see that on the other side of crisis can be oppression and inequity as well as possibility, access, and even justice. We may be beset with daily anxiety—for many, daily tragedy—but I believe that we historians can and should use our story making to assert that narratives do endure, that political failures do not choke all voices, that pandemics are not the end of history. Part of our job is to dig down for the small details, but we cannot afford to leave the writing of big narratives to others less encumbered by detailed knowledge. Few big stories have straightforward, happy endings. Nonetheless, simply to demonstrate that stories go on—that narratives continue—is a powerful assertion of both truth and hope.

“Those of us fortunate enough to have full-time employment that allows us to use our skills should stand in solidarity with all those trained to be historians who are being forced to find other ways to make a living.”

Many have lost academic jobs or are losing hope of finding one, and this crisis is likely to exacerbate an already dire situation. It is not enough to find more ways for doctoral candidates to eke out a post-doctoral existence. Those with influence need to make the strong case with administrators, with funders, and with the public that historical knowledge and critical skills shape stronger citizens, more engaged voters, and healthier societies and economies. We need to recognize and engage the full academic community by boosting, rather than overlooking, those who do good work without a university affiliation after their names.

Further, those who have found ways to keep going as scholars, but in unexpected ways, should never apologize for inhabiting multiple roles. In 2011, I weathered the Great Recession that I thought might transform my home-by-choice decision into a lost-academic-career existence. Through extraordinary good fortune and the help of many in this environmental history community, I got back into full-time academic work after seven years of researching and writing while raising young children. Many times during those part-time years, I was

discouraged that I was neither a particularly productive historian nor a particularly patient mother. Yet, eventually, I finished those articles and that book, and my small children grew into immense teenagers who make me laugh, despite my manifest impatience. If you are fortunate enough to find ways to keep working as a historian, but not able to focus full-time, take heart and keep working at what you love and at what gives you joy. I was no less a historian when stacks of diapers tumbled off my desk. You are no less a historian if you also deliver food or tutor high schoolers or staff a retail counter. Those of us pushed into caregiving by the pressures of this pandemic can and should find mentors and build communities to push back against the subtle disparagement of gender discrimination. Those of us with the privilege to serve as evaluators and mentors must take into account the long lead times that many of us will need to unfold our stories because of the economic pressure of this challenging period.

“When pain and injustice overwhelm, we need to be gentle with ourselves and each other.”

Scholars in communities hit hardest by our current tragedies of disease and racism bear particular burdens. Sometimes academic work has to wait. Yet no one should feel traitor to the needs of the world for finding in the work of history a respite from current challenges. For me, working on my book during our pandemic is a way to write myself toward the future in which I want to live. Like digging in my garden or recording offkey soprano for the Zoom choir of my little parish, writing can for me be a form of prayer. So, too, are my other labors as a historian. The time I spend responding to my students helps them construct better chapters for themselves. Pushing my institution to be more responsive helps, perhaps a little, move it toward a more just future. Writing true stories about the past does build a better world.

When I think of a whirlwind, I think not only of the unknown and the overwhelming but also of fiercely etched swirls of oil paint that make meaning out of seemingly chaotic color. I think of rising crescendos of notes in a symphony and overlapping beats of hip-hop samples that seem to be piling up without sense until a new rhythm comes flowing out. I think of passages in novels whose beauty and insight tell me that others have been in the whirlwind with me. I remember new green on an Arkansas forest floor in the seasons after a tornado rampaged through.

And so I implore every historian who can to keep writing and researching and making sense of the past because that is what we do and that is who we are and that is our gift to the world. Remember that words have power, that facts matter, and that stories are what we can offer as present-day prophets to a world shaken by the whirlwind.

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Notes

I appreciate comments by the Independent Women Scholars Salon (Lara Friedenfelds, Kara W. Swanson, Katheryn Viens, and Ilyon Woo) and Boston College Undergraduate Research Fellow Andrew T. Ritter.

- 1 1 Kings 19: 11–13.
- 2 Keith Wailoo, “Pandemic, Creating a Usable Past: Epidemic History, COVID-19, and the Future of Health,” *ZOOM Webinar*, May 8–9 2020, concluding remarks. This webinar was sponsored by the Princeton University Department of History and the American Association for the History of Medicine.

Marco Armiero
**COVID-19, the World,
and Me**

I distinctly remember reading the first news from Wuhan about an aggressive virus spreading there and commenting to my family that it would not make the front pages unless the West was touched. We were discussing the provincial and colonial attitudes of the Global North. Places outside the Global North can serve as a space for war, misery, extreme weather events, and diseases, but this space is not “ours.” At the very core of any colonial project lies the production of the “Other,” be it people or places radically Other from a reassuring and racialized “we.” Historically, the Othering process has ensured a narrative justification to exploitation and appropriation, which has survived the colonial period reproducing itself through the unjust relationships of neoliberal globalization. But I must acknowledge that over dinner that evening we would have never guessed that just a few months later the fallacy of the Othering narrative would have materialized so harshly in our lives. COVID-19 entered my body so powerfully that it almost killed me. I was hospitalized for almost a month, passing through the traumatic experience of ten days more or less unconscious in the intensive care unit (ICU). When I entered the ICU, the doctors called my family so that we could say good-bye; it was clear that my chances of surviving were not high. Later, I discovered that I had only a 50 percent chance of coming out alive from the ICU.

I am starting my reflection on the present pandemic situation with my personal experience in part, I must confess, because at this moment it is quite difficult for me to focus on anything else. Clearly, the virus has occupied not only my body but also my mind. While I am struggling to place that experience behind me, I believe I should not try to forget it—which is not easy to do anyway—but to make sense of it. Luckily enough, as a scholar, I have always been comfortable with acknowledging my positionality, or, in other words, I have often mixed my personal and academic life. As feminist practices have taught me, the personal is political, and, being a radical scholar, I would add that everything is political, including my scholarship and what is happening to my body and the world. Instead of trying to erase emotions, memories, and feelings, as if it were possible to know

something only through words, concepts, and theories, I have argued for an embodied understanding of the world and our place in it. Actually, in my research, I have maintained that the politicization of issues and subjects often occurs through the embodied experience of injustice, contamination, and oppression.¹

An easy path would be to interpret my individual experience of COVID-19 as proof that we are all in the same boat. What I was lamenting at dinner with my family—the West’s apparent inability to care for events occurring elsewhere—had backfired on me, clearly proving that there is no “elsewhere” on this planet, at least not in these globalized times. Struggling to breathe and to stay alive in my local hospital, I realized that anyone can be affected by COVID-19. Was I, then, the embodied demonstration that this virus is the ultimate equalizer of any inequalities? In a recently published article, J. A. Patel and colleagues tried to demonstrate the contrary. As they write, “on various occasions, the phrase, ‘COVID-19 does not discriminate’ has been repeated. This, however, is a dangerous myth, sidelining the increased vulnerability of those most socially and economically deprived.”² Reflecting on apocalyptic movies and their anesthetization of class and race inequalities, Shakti Jaising has argued that although we might all be vulnerable to diseases, “some are more vulnerable than others.”³ These words resound what Robert Nixon has written about the Anthropocene: “We may all be in the Anthropocene but we’re not all in it in the same way.”⁴

Jaising particularly underscores the racial and social inequalities that expose people of color and African Americans to higher rates of contagion and death as a consequence of poor working and living conditions and meager access to health services.⁵ A recent study offering some preliminary data on racial inequalities in the current pandemic has lent credence to Jaising’s contentions.⁶ At the beginning of April, 51 percent of COVID-positive patients (and 67 percent of the victims) in Chicago were African American, though African Americans represent only 14.6 percent of Illinois’s population. Similarly, in Michigan, Wisconsin, and Louisiana, African Americans have been disproportionately hit by the virus.⁷ In a powerful essay in the *New York Times Magazine*, journalist Linda Villarosa has exposed the disturbing entrenchment of COVID-19 diffusion and severity with the United States’ long-lasting history of racial oppression.⁸ Villarosa reveals the familiar narrative technique of blaming the victims for the structural injustices in which they are trapped—something that I have called the toxic narratives that silence/normalize injustice.⁹ Of course, the virus does not hit African Americans or Latinx because of some preposterous non-appropriate behavior but, rather, because they do not enjoy racial privileges.

Class, gender, and race intersect in the coronavirus as well as in everything else. A structurally unjust world provides for an unequal

distribution of both harms and protections. Apart from the virus per se, the entire epidemic apparatus unveils the truth about a system built to reproduce privilege through normalizing injustice. The quarantine—where implemented—has been based on the assumption that people have the option to remain at home while still receiving their salary and the ability to return to their jobs when the epidemic slows down. Perhaps, the first misleading assumption is that everyone has a safe home in which to seek refuge and implement the golden rule of social distancing, while, in the real world, many are homeless or struggling in overcrowded environments. In Italy, during the worst times of the pandemic, several public personalities—actors, soccer players, singers, and the like—posted appeals on their social media accounts, calling on people to stay home: being at home did not look so bad from their amazing apartments with astonishing views and perfectly furnished children’s rooms. I suspect that they were also not extremely concerned about how to pay their bills by the end of the month. Furthermore, imagining homes as safe places ignores the reality of domestic violence against women—several sources have confirmed the growth of gender-based violence during the quarantine.¹⁰ And even beyond the violence, the quarantine has heavily impacted women’s lives, forcing the burden of care work to fall even more heavily on their shoulders.

As race, class, and gender are extremely relevant in our cities, dramatically affecting the ways in which people have experienced COVID-19, the injustices prove even more marked between the Global North and South. Countries impoverished by colonialism, extractivism, and neoliberal policies often have weak health and sanitary infrastructures. The Indian writer Arundhati Roy has reported the appalling misery that has swept the subcontinent with the arrival of the virus. She has approached COVID-19 through the experiences of the urban poor, living in informal settlements and surviving with informal jobs, many of them already targeted because of religious or caste discrimination. According to Roy, the Indian government’s policies have added insult to injury, pushing the urban poor into a spiral of insecurity, poverty, and violence.¹¹ Roy has not been alone. The *Washington Post*, for instance, published a report on COVID-19 in India that argued that slums are the places where the war against the virus will be decided.¹² In places like those, social distancing can only be a fantasy, while poverty pushes people to make a choice between either dying of hunger or of coronavirus, a dilemma that reaches far beyond the slums of the Global South.

Mike Davis has repeatedly argued that famines as well as epidemics are not just ecological facts, they are rather the byproduct of socio-ecological relationships, which in the Global South assume the features of Western colonial/neocolonial power.¹³ In Brazil, COVID-19 has hit both the urban poor of the favelas and the Indigenous people

of Amazonia, even as the nation's leaders—like those elsewhere, including the United States—politicize the virus, downplaying its severity. According to Felipe Milanez, a Brazilian scholar and activist fighting for Indigenous people's rights, the government's management of the epidemic should be understood as a coherent strategy that comprises the new extractivist policies and the renewed support for evangelization.¹⁴ In an article published in *The Atlantic*, Uri Friedman has uncovered the social and racial inequalities through which COVID-19 manifests itself in Brazil. For thirteen million Brazilians living in favelas, the usual guidelines against the spreading of the contagion, like washing hands frequently and keeping social distance, are a fancy luxury.¹⁵

While acknowledging the wide divide separating the Global North and South in terms of infrastructures and resources, I argue that COVID-19 has also done something to that narrative. It has challenged the Othering project not because it has made the entire world equal but, rather, because it has revealed the social injustice and white privilege undergirding our "perfect" democratic societies. The Othering project not only builds a narrative structure that functions to exploit and expropriate "Others," it produces a reassuring "we" with its corollaries of rights, progress, and modernity. It must be in some barbaric, or at least other, elsewhere that death and life are predicated on class, race, and gender; it cannot happen here, it cannot contradict our sense of a superior "we." COVID-19, instead, has unveiled the injustices entrenched in our lives, sometimes in our bodies. The virus does not make all of us equal, but it does reveal how much our society works through the reproduction of injustice and privilege not only in some faraway place but also among us in the rich United States, in the isolationist United Kingdom, in Europe, and in Australia.

No, my experience with COVID-19 does not prove we are all in this together. It does not mean that I was wrong and that the Global North does indeed care for what occurs elsewhere because we are, after all, the same species living on the same planet. My experience proves, once more, that class and global inequalities matter in this pandemic. I live in a European country where workers' struggles in the past and high taxation ensures access to public health for all. This is why I was able to receive excellent health care from the local hospital. Although I am not Swedish and I cannot even speak the language—indeed, shame on me—I was not discriminated against and I was not afraid to enter the health system (many sources speak of the spreading of contagion among immigrants because of their anxiety of dealing with public officials, including doctors). It is not my intention to contribute to the sometimes celebratory discourse on Sweden as the perfect society—a reputation that has taken a serious hit over its handling of the epidemic. I am sure that racism also exists here;

actually, it is probably growing, at least judging from the electoral polls. Some comments about immigrants as the major problem for the spreading of COVID-19 in the country—because of their lack of language skills and natural social-distancing attitudes—seem quite close to nationalistic, if not racist, arguments. But this offers a reminder that I was a privileged immigrant, from a European country working as a university professor, more an expat than an immigrant. Our family's social capital also made a difference; the Italian embassy in Stockholm mobilized to support us, while we could rely on doctors we knew back in Italy to ask for explanations about what was happening to me or, to be frank, just for a bit of informed comfort. Also, I kept both my job and salary, without any anxiety about my economic future. Since I came home from the hospital, I have been able to spend my convalescence/quarantine in a comfortable home, with all of the gadgets that can make isolation less oppressive. I even have the privilege to keep working as much as I wish, writing pieces such as this one or participating in webinars, because, indeed, I have the privilege to have a job that I love.

In the end, no, my embodied experience of COVID-19 does not make me a part of a global tragedy. It just confirms that we live in an unjust world where privilege largely decides who lives and who dies. COVID-19 is not, as some environmentalists have argued, the earth's rebellion against humans; I do not think that the planet is sending us a message, and I am not celebrating the return of the wild in the cities or the reduction of pollution in some areas. This is not because I have something against wild boars roaming the streets of Rome or clear skies over Milan but, rather, because I believe that real and progressive socio-ecological changes cannot occur over the dead bodies of the most vulnerable people, leaving intact the unjust structures of oppression (re)producing death and poverty. Consequently, I believe that the virus is not nature's revenge but, instead, another manifestation of the fact that the dominant socio-ecological system is unsustainable and is reproducing itself, making some humans and nonhumans disposable. Borrowing from some activists back in Italy, I would say that COVID-19 is only a symptom of a larger virus that has killed the public health system, decent social housing, secure jobs, food sovereignty, and even the faculty to imagine alternatives to this state of affairs. This is why I have often spoken of the emergence of the Wastocene, not literally as the age of waste but, rather, as the age of wasting relationships—that is to say, relationships that continuously (re)produce privilege through the production of wasted people and places.

We need a vaccine against COVID-19, an effective cure, and preventive practices to stop the contagion. But we also need a critical analysis of what brought us here, of the intrinsic injustices of the current system, and an exploration of the possible alternatives. For this,

humanities and social sciences research is key, provided that scholars are willing to throw themselves into the middle of the tempest, blending their scholarship with viruses, injustices, health policies, illegal immigrants, and people living in the slums and in the forests. In respect to socio-ecological injustices, neither immunization nor isolation offers a long-term solution. Will we, as environmental historians, be willing to break free from the intellectual lockdown, severing good scholarship from the need to change the socio-ecological relationships that have driven us into this crisis?

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Notes

In this short piece, I have not mentioned the love and affection that my family and I have received from every corner of the world. I do believe that this was the most precious privilege we actually had. I consider this piece a tribute to that care and love we have received in this difficult time. I also wish to thank Gregg Mitman, who encouraged me to write about my experience and commented on a first draft. Finally, many thanks to Mark Hersey who helped improve this text.

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