

Colloquy



THE BIOECONOMICS OF DOMESTICATING ZONNOSES

SARAH GREEN

University of Helsinki

 <https://orcid.org/0000-0002-7026-383X>

Almost every aspect of nonhuman animal life—including genetic material—has been traded for centuries (Phillips 2015; Chaiklin et al. 2020). The African grey parrots that Hans Lucht (2022, this issue) mentions in this Colloquy are members of just one of thousands of species involved: both legal and illegal trade in so-called exotic animal species dates back to at least Roman times (Wazer 2016), and farmed animals, or livestock (literally living assets), have equally long histories as traded animals. In the animal-breeding business, genetic material, such as that of racehorse studs, is directly on sale (Cassidy 2002). In fact, Sarah Franklin (2007, 105–6) suggests that the industrialization of animal farming in the United Kingdom was predicated on precisely the commodification of the animal’s genetic material. Of course, as nonhumans, these animals do not participate in bioeconomics in the same way as Ruben Andersson (2022, this issue) describes in this Colloquy: nonhuman animals can never fully engage as actors in these markets; they remain commodities, bought and sold by humans. In passing, Nikolas Rose (2007, 33) has observed that the domestication of animals preceded the subsequent emergence of bioeconomics, indicating that the activity involved in bioeconomics is not new.

Rather, what is new in the twenty-first century is the transformative thought that vitality, as such, could be commodified.

At the same time, [Ghassan Hage \(2017\)](#) argues that the Euro-American concept of domestication is rooted in the assertion that every living thing exists for some purpose, and from a human-centered perspective, the best purpose would be for human use. This idea of domestication, he suggests, has been generalized and extended as a principle that covers everything: all things in the world should be amenable to such domestication, to being put to human use. The relationship between this and the colonial project of looking for useful things around the planet for the purposes of trade or manufacture seems fairly obvious. Moreover, the introduction of imported livestock almost invariably accompanied colonization ([Anderson 2006](#); [Chaiklin et al. 2020](#); [Urbanik 2012](#); [Wilcox and Rutherford 2018](#)).

That the term *livestock* in the past also referred to enslaved persons makes clear that the border between the actor and the commodity in the sale of living entities never really concerned respect for species boundaries. Instead, it reflected the hierarchical relations between the lives buying and selling and the living material being sold (see also [Franklin 2007](#), 52). More rarely, *livestock* had another, euphemistic, meaning in the eighteenth and nineteenth centuries: it described fleas, lice, ticks, and other parasites that can live on human or nonhuman animals. In this metaphorical use of the word (the *Oxford English Dictionary* calls it “humorous”), the commercial meaning fades to emphasize the “live” element—the fact that any living substance invariably involves comingling with other, co-present forms of life.

The threat of infection posed by comingling with other living entities has constituted a matter of human concern for many centuries ([Lynteris 2020](#); [Hotez 2016](#); [Oldstone 2010](#); [Vittecq et al. 2014](#)). Where this overlaps with the economics of vitality, two kinds of mobility are involved: the movement of nonhuman animals across space for trade, and the capacity for living entities to hop across bodily boundaries and cause disease. The majority of human infectious diseases are zoonoses: that is, pathogens that have moved from nonhuman animal bodies to human bodies, causing disease in humans. The virus that causes COVID-19, SARS-CoV-2, proved to be a particularly successful border-hopper, but there have been many others: SARS, MERS, various bird influenzas, Zika, dengue, yellow fever, and AIDS are all caused by viruses of different types; bubonic and pneumonic plague are caused by bacteria; malaria stems from a parasite that lives in mosquitoes (and is the deadliest parasite affecting humans to date). Of course, humans can also infect nonhuman animals (called “reverse zoonosis”); during the COVID-19 pandemic, this particularly involved farmed mink, infected with

SARS-CoV-2 by humans. In Denmark, one of the largest mink-farming countries in the world, the government ordered the destruction of around 15 million mink to prevent new variants of SARS-CoV-2 from developing in those populations and re-infecting humans.¹

The decision to have animals killed en masse to try and control the spread of infectious disease between bodies forms part of bioeconomic mobility, though not the kind people usually have in mind when using the phrase. In Europe, the outbreak of major livestock disasters such as foot-and-mouth disease invariably leads to a mass culling of animals. Yet the illness caused by foot-and-mouth is not itself deadly; most infected animals recover in a relatively short time. In the past, most commercial livestock industries in the United Kingdom accepted foot-and-mouth as an endemic disease (Woods 2004). Only with the intensive development of animal trade and industrialized farming practices did the scorched-earth approach, one that involves killing every single animal within a given territory, appear acceptable. Drawing on Abigail Woods's work, Frédéric Keck (2020, 13) notes that the economic, rather than zoological, rationale for this kind of response "reveals the vulnerabilities of a global interconnected economy." The particular character of mobility in the context of bioeconomics appears to be the problem. The sheer scale of the businesses involved makes the potential speed with which a disease could spread an enormous threat—not to individual animals, but to the economic interests of those involved in livestock farming. From this perspective, the killing of huge numbers of animals in one spot to contain the damage makes (economic) sense. Bio-economics are like that sometimes: the economics of life itself has led to a great deal of death at times.

In other words, developments in bioeconomic mobility, meaning increases in intensive animal farming, combined with increases in the transportation of live animals for trade (Phillips 2015), have led to an equally large increase in the potential for infections to both develop and spread. That in turn has generated a fundamental sense of visceral insecurity, both about life itself and about the economy. Marthe Achtnich's (2022, this issue) contribution to this Colloquy focuses on the deep sense of insecurity felt by both migrants and border guards in Libya. In the case of nonhuman animal bioeconomic mobilities, a sense of human insecurity arises from a growing awareness of microbes, the living entities that accompany animals and people as they move. In the industrialized version of that kind of bioeconomics, there is no hesitation about mass destruction in response to a sense of insecurity about the spread of disease.

In the past fifty years, the number of live animals transported across borders has quadrupled, standing at around 2 billion animals per year.² The animals themselves have also transformed, bred as they are for particular purposes: hugely muscular beef cattle, pigs differentiated by whether they are destined to become chops or salami, chickens that can double in size in record time. Very few places in the world still have their locally bred farm animals (Phillips 2015; Urbanik 2012). A veterinarian I spoke to in Beirut, a man who had developed artificial insemination for cattle in Lebanon, told me that local breeds could not compete with the size and productivity of industrially developed ones. Artificial insemination had increased, he added, because of endemic diseases in Lebanon among most farmed animals. To avoid the problem, people imported certified disease-free genetic material to breed their animals. He noted that almost nothing local remained in Lebanese cattle farming—a condition found almost everywhere now (Phillips 2015). Madeleine Reeves (2022, this issue) observes in this Colloquy that a combination of new reproductive technologies and a wealth gap between world regions and populations has created a market for new human genetic material. In the bioeconomic trade for nonhuman animals, these same technologies have undergone exponential extension, with the ironic effect of massively reducing biodiversity. Trade in nonhuman life itself has concentrated into a small number of huge enterprises.

The importance of attending to mobility becomes clear: the issue is not simply the genetic modification of animals for commercial purposes as a conscious part of a bioeconomic industry; what is crucial is the concentration of control over this trade in the hands of a few, and the spread of these technologies and animals across the world. That form of bioeconomic mobility has globally altered farmed livestock.

Concomitant changes in farming also affect uses of the landscape: goats and sheep are increasingly kept indoors and fed on commercial fodder, making hills and forests more available to wild boar, jackals, wolves, and other animals whose numbers have increased rapidly. Those changes have created different forms of comingling, ones that generate potential for all kinds of new mobilities, particularly for the pathogens that cause zoonotic disease in people. And *that* has created a new bioeconomic market. For most of the history of trade in nonhuman life itself, microbes have been considered an unwelcome byproduct of the comingling of living entities, and efforts have concentrated on permitting the desired commercial activity (trade, farming, breeding, etc.) while preventing zoonotic effects (Engelmann and Lynteris 2020; Bashford 2016; Varlık 2015).

In more recent years, as the science for understanding and dealing with these diseases has developed apace, the zoonoses themselves have gained bioeconomic value, one that is axiomatically about mobilities: zoonosis describes the process through which a living entity travels from one body (nonhuman animal) to another (human) and causes disease, unbidden. The market in detecting and intervening in that mobility has been growing for decades, building not only on the potential lethal threat that zoonoses pose, but more importantly, on the potential for people to develop ways to contain, control, or prevent such threats (e.g., Léger et al. 2017). Natalie Porter's (2019) ethnographic study of bird flu in Vietnam demonstrates the financial stakes of attending to zoonotic threats and Keck's (2020) study of virus researchers working on zoonoses in Taiwan, China, and Hong Kong demonstrates the way different forms of knowledge—scientific, political, social, and cultural—are drawn upon when confronting the historically shifting economic challenges of zoonoses. Borrowing from Hage, we might call this an attempt to “domesticate” zoonoses, a process that has progressed rapidly in the age of COVID-19. The ability to manage zoonoses so that people can coexist with them marks the next step in creating value from the vitality resulting from mobility.

ABSTRACT

The majority of diseases that afflict humans are shared by nonhuman animals, and three-quarters of emerging diseases do so. People have known this for centuries, understanding that diseases traveled the same routes as did traders, migrants, and soldiers. Zoonosis is a process that involves the movement of a pathogen from a non-human animal body to a human animal body, which then triggers disease. In the past, this reality mostly served as an impediment to the bioeconomics of working with animals; in more recent years, research on zoonoses has turned animals into part of bioeconomic logic in themselves. [borders; crosslocations; animals; nonhuman; domestication; zoonoses]

NOTES

Acknowledgments The research for this text has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation program (grant agreement no. 694482, Crosslocations).

1. For an article detailing the destruction, see “Denmark Announces Cull of 15 Million Mink over Covid Mutation Fears,” *Guardian*, November 4, 2020, <https://www.theguardian.com/environment/2020/nov/04/denmark-announces-cull-of-15-million-mink-over-covid-mutation-fears>.
2. See “Two Billion and Rising: The Global Trade in Live Animals in Eight Charts,” *Guardian*, January 20, 2020, <https://www.theguardian.com/environment/2020/jan/20/two-billion-and-rising-the-global-trade-in-live-animals-in-eight-charts>.

REFERENCES

- Achtnich, Marthe
 2022 "Bioeconomy and Migrants' Lives in Libya." *Cultural Anthropology* 37, no. 1: 9–15. <https://doi.org/10.14506/ca37.1.02>
- Anderson, Virginia DeJohn
 2006 *Creatures of Empire: How Domestic Animals Transformed Early America*. Oxford: Oxford University Press.
- Andersson, Ruben
 2022 "The Bioeconomy and the Birth of a 'New Anthropology.'" *Cultural Anthropology* 37, no. 1: 37–44. <https://doi.org/10.14506/ca37.1.06>
- Bashford, Alison, ed.
 2016 *Quarantine: Local and Global Histories*. New York: Palgrave Macmillan.
- Cassidy, Rebecca
 2002 *The Sport of Kings: Kinship, Class, and Thoroughbred Breeding in Newmarket*. Cambridge: Cambridge University Press.
- Chaiklin, Martha, Philip Gooding, and Gwyn Campbell, eds.
 2020 *Animal Trade Histories in the Indian Ocean World*. Cham, Switzerland: Palgrave Macmillan.
- Engelmann, Lukas, and Christos Lynteris
 2020 *Sulphuric Utopias: A History of Maritime Fumigation*. Cambridge, Mass.: MIT Press.
- Franklin, Sarah
 2007 *Dolly Mixtures: The Remaking of Genealogy*. Durham, N.C.: Duke University Press.
- Hage, Ghassan
 2017 *Is Racism an Environmental Threat?* Malden, Mass.: Polity.
- Hotez, Peter J.
 2016 "Southern Europe's Coming Plagues: Vector-Borne Neglected Tropical Diseases." *Plos Neglected Tropical Diseases* 10, no. 6: n.p. <https://doi.org/10.1371/journal.pntd.0004243>
- Keck, Frédéric
 2020 *Avian Reservoirs: Virus Hunters and Birdwatchers in Chinese Sentinels Posts*. Durham, N.C.: Duke University Press.
- Léger, Anaïs, Marco De Nardi, Robin Simons, Amie Adkin, Giuseppe Ru, Agustín Estrada-Peña, and Katharina D. C. Stärk
 2017 "Assessment of Biosecurity and Control Measures to Prevent Incursion and to Limit Spread of Emerging Transboundary Animal Diseases in Europe: An Expert Survey." *Vaccine* 35, no. 44: 5956–66. <https://doi.org/10.1016/j.vaccine.2017.07.034>
- Lucht, Hans
 2022 "EU Border Control in Niger: From Migrants to Gold, Drugs, and Rare Animals." *Cultural Anthropology* 37, no. 1: 16–22. <https://doi.org/10.14506/ca37.1.03>
- Lynteris, Christos
 2020 *Human Extinction and the Pandemic Imaginary*. New York: Routledge.
- Oldstone, Michael B. A.
 2010 *Viruses, Plagues, and History: Past, Present, and Future*. New York: Oxford University Press.
- Phillips, Clive J. C.
 2015 *The Animal Trade*. Wallingford, Oxfordshire, UK: CABI.
- Porter, Natalie
 2019 *Viral Economies: Bird Flu Experiments in Vietnam*. Chicago: University of Chicago Press.
- Reeves, Madeleine
 2022 "Vital Labors: Transacting Oocytes across Borders in the Post-Soviet Space." *Cultural Anthropology* 37, no. 1: 23–29. <https://doi.org/10.14506/ca37.1.04>

- Rose, Nikolas
 2007 *Politics of Life Itself: Biomedicine, Power, and Subjectivity in the Twenty-First Century*. Princeton, N.J.: Princeton University Press.
- Urbanik, Julie
 2012 *Placing Animals: An Introduction to the Geography of Human-Animal Relations*. Lanham, Md.: Rowman and Littlefield.
- Varlık, Nükhet
 2015 *Plague and Empire in the Early Modern Mediterranean World: The Ottoman Experience, 1347–1600*. Cambridge: Cambridge University Press.
- Vittecoq, Marion, Frédéric Thomas, Elsa Jourdain, François Moutou, François Renaud, and Michel Gauthier-Clerc
 2014 “Risks of Emerging Infectious Diseases: Evolving Threats in a Changing Area, the Mediterranean Basin.” *Transboundary and Emerging Diseases* 61, no. 1: 17–27.
<https://doi.org/10.1111/tbed.12012>
- Wazer, Caroline
 2016 “The Exotic Animal Traffickers of Ancient Rome.” *Atlantic Monthly*, March 30.
<https://www.theatlantic.com/science/archive/2016/03/exotic-animals-ancient-rome/475704/>
- Wilcox, Sharon, and Stephanie Rutherford, eds.
 2018 *Historical Animal Geographies*. New York: Routledge.
- Woods, Abigail
 2004 *A Manufactured Plague: The History of Foot-and-Mouth Disease in Britain*. London: EARTHSCAN.