Lumen
Selected Proceedings from the Canadian Society for Eighteenth-Century Studies
Travaux choisis de la Société canadienne d'étude du dix-huitième siècle

LUMEN

What Is an Animal? Contagion and Being Human in a Multispecies World

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Volume 40, 2021

URI: https://id.erudit.org/iderudit/1083166ar
DOI: https://doi.org/10.7202/1083166ar

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Publisher(s)

Canadian Society for Eighteenth-Century Studies / Société canadienne d'étude du dix-huitième siècle

ISSN

1209-3696 (print)
1927-8284 (digital)

Explore this journal

Cite this article

Cole, L. (2021). What Is an Animal? Contagion and Being Human in a Multispecies World. *Lumen*, *40*, 35–53. https://doi.org/10.7202/1083166ar

Article abstract

From the early modern period to well into the eighteenth century, cattle plagues, murrains, or what were called “great cattle mortalities” were often analogized to bubonic plague; felling animals in devastating numbers, these catastrophes likewise afflicted living creatures on a grand scale. Three Enlightenment cattle pandemics (1709–1720, 1742–1760, and 1768–1786) propelled governments across Europe to enact harsh regulatory measures, including widespread slaughters, quarantines, and major disruptions of trade. This article examines works by Theophilus Lobb, Richard Bradley, Nathaniel Hodges, and Daniel Defoe, among other writers and physicians, who responded differently to the ways in which human and animal health were biophysically and imaginatively linked.

What Is an Animal? Contagion and Being Human in a Multispecies World

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In 1745, Theophilus Lobb published his two-part *Letters relating to the plague and other contagious distempers*. The final letter in this influential medical text, addressed in 1714 to John Milner, a landowner and J.P. for Middlesex, is an account of "Distemper among the Cattle"; it focuses on rules and remedies "for farmers on treating Cattle sick of a contagious Disease; and for Preserving the well Cattle from the Effects of the Infection."[1] Lobb is explicit in his assumptions about the possibility of cross-species contagion. The first rule for farmers in the "contagious Season" is to hire a "faithful Servant" to watch the cattle closely for any sign of illness; the tenth is for this person to keep "to the Windward-Side" (383) of sick cattle, carefully avoiding "Taking their Breath" (388). While administering "drenches" and other medication, caretakers should wet their hands with a mixture of salt and vinegar, thought to discourage disease, and wear a "*Linnen* Garment," also wetted with vinegar, then dried:

> To be buttoned close under their Chins, and at their Wrists, while they are among the *sick Cattle*, and put it off before they go to any other Business. And such garments may be useful to *Physicians*, *Surgeons*, and others, when visiting People sick of the *Plague*; and may decently made of Linnens dyed of *blue*, or of a *Chocolate*, or *Snuff-Colour Brown*, which will not at all, or very little, be altered by the *Vinegar*. (388–89)

1. Theophilus Lobb, "Letter VIII: Relating to contagious Sicknesses among Cattle," *Letters relating to the plague and other contagious distempers* (London: Printed for James Buckland, 1745), 382–83. Hereafter cited in text.

Lobb's remarks about protective garments may remind us of efforts, past and present, to prevent the spread of infection, and his letter as a whole is historically and epidemiologically significant. Lobb draws analogies between the treatments of human and animal plague, and outlines preventive measures that display a prescient understanding of cross-species infection. Human caretakers, vulnerable to contracting diseases from their animals, should try to avoid the exhalations of their sick cattle; farmers should wear special gear not just for their own safety, but because they could unwittingly carry plague to others, humans and animals. Underwriting both fears is the suspicion that cattle contagion, like human plague, can be conveyed through what Lobb calls "pestilential, infecting Particles" (357), and that, adhering to other persons, animals, or things, these "Particles" can turn anything into what we now call a disease vector.

This essay examines works by Lobb and other writers and physicians who sought to articulate the ways in which human and animal health were biophysically and imaginatively linked. We now know that over 70% of human diseases, viral and bacterial, are zoonotic, or capable of mutating and crossing species bounds.[2] Although zoonosis was not understood fully in the eighteenth century, cattle plagues, murrains, or what were called "great cattle mortalities" were often analogized to bubonic plague because they afflicted living creatures on a grand scale and in devastating numbers. During the first year of a rinderpest or anthrax outbreak, some seventy percent of cattle were usually lost, often tens and even hundreds of thousands, a mortality rate that outstrips losses reported for human plague.[3] Between 1711 and 1769, more than 200 million cattle died in Western Europe from mysterious

2. This figure is drawn from the One Health website. The One Health Initiative is a collaboration among the American Veterinary Association, the American Medical Association, the Centers for Disease Control, environmentalists, and medical institutions devoted to promoting work on health across disciplinary boundaries and species divisions. One Health practitioners seek to reposition the history of medicine as "a series of interspecies interactions," to use Abigail Woods's phrasing. See her "Introduction: Centring Animals Within Medical History," in *Animals and the Shaping of Modern Medicine: One Health and Its Histories*, ed. Abigail Woods, Michael Bresalier, Angelo Cassidy, and Rachel Mason Dentiger (Basingstoke, U.K.: Palgrave Macmillan, 2018), 11.

3. The Netherlands in particular was devastated by an astonishing number of cattle plagues. See J. A. Faber, *Cattle-Plague in the Netherlands During the Eighteenth Century* (Wageningen: Veenman-Zonen, 1962).

disease. These "great mortalities" of livestock were typically interpreted by Christian Europeans in biblical terms that rendered murrains and bubonic plagues etiologically indistinguishable; the ten plagues of Egypt, after all, had wreaked havoc among both cattle and men. Biblical and actual proximities between humans and animal plague helped explain the terror a downed cow could provoke in pre-modern times. Agricultural historian Clive Spinage tells the story of how a group of fourteenth-century cowherders, fearing the Black Death, fled when their cattle began to die; a few contagious animals roamed the countryside, spreading the disease without interference from panic-stricken humans who were fearful of cross-species infection.[4] Mirroring the prophylactic measures applied to ward off human plague, folk remedies and charms were sometimes used on animals. English cattle were every so often adorned with herbal amulets made in the form of a cross; onions—thought to draw off disease—were on occasion hung around the necks of infected animals or placed in their stalls.[5] Superstitions around human and animal sickness intersected, as did the events themselves. In short, mass animal die-offs were considered evils in their own right, harbingers of human plague, and precursors to regional famine for their role in disrupting local and regional food systems.

Although Lobb, who had been trained as a non-conformist minister, acknowledges the possibility that plagues can be "inflicted by some destroying Angel" (175), religion was by no means the only lens through which these catastrophes were viewed. The endemic, recurring qualities of cattle and human plague offered physicians and agriculturalists secular models of contagion; these conditions engendered materialist ways of imagining how epidemic diseases spread, devastated populations, and eventually petered out. Husbandry texts in the early modern period attempted to balance religious and occult explanations of the plague with etiologies that proffered practical advice. In England, John Fitzherbert's *Boke of Husbandry* (1540) was the first text to deal with mass animal die-offs; Leonard Mascall's *First Booke of Cattell* followed in 1587, and then a glut of manuals in the eighteenth century,

4. C. A. Spinage, *Cattle Plague: A History* (New York: Kluwer Academic / Plenum Publishers, 2003), 5. See also George Fleming, *Animal Plagues: Their History, Nature, and Prevention*, vol. 1 (London: Chapman and Hall, 1871).

5. Susan Drury, "Herbal Remedies for Livestock in Seventeenth and Eighteenth-Century England: Some Examples," *Folklore* 96, no. 2 (1985): 245.

especially during the fatal outbreaks of 1712 and the 1740s.[6] During the same period, several important figures in the annals of human medicine used their knowledge of contagion to influence or develop public policies during periods of outbreak: for example, Girolamo Fracastoro, who argued for the presence of "plague seeds"; Bernardino Ramazzini, the so-called "father" of occupational medicine; and Giovanni Lancisi, physician to Pope Clement XI.[7] In the late seventeenth century, the Royal Society and its counterparts in other European countries began to share information about outbreaks, possible cures, and effective means of containment, thereby reinforcing international networks of knowledge. Physicians Richard Mead, Thomas Bates, Daniel Layard, and other Englishmen, such as Lobb, drew freely on both early modern sources and their continental contemporaries in producing treatises that sought to modernize theories of contagion.[8] In these and other texts we can uncover substantial evidence that, at least until the mid-eighteenth century, human and animal health were treated as overlapping, mutually generative matters of concern.

What follows is a broad exploration of the history and literary representation of multispecies contagion. Because so little of this history is known, I look first—and briefly—at the early modern period, when both zoonotic and enzootic diseases became global phenomena exacerbated by the transnational trade in animals and animal products. Referencing the livestock trade and the concomitant threats of contagion, William Shakespeare's *The Merchant of Venice*, I argue, captures

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6. John Fitzherbert (attributed), *The Boke of Husbandry* (London: In fletestrete in the house of Thomas Berthelet, 1540); Leonard Mascall, *The First Booke of Cattel* (London: Printed by Iohn Wolfe, 1587).

7. Girolamo Fracastoro, *De contagione et contagiosis morbis* (Venice, 1646); Berardino Ramazzini, *De contagiosa epidemia, quae in Patavino agro, & tota fere Veneta ditione in boves irrepsit: Dissertatio* (Padua: Gio. Batt. Conzatti, 1712); and Giovanni Maria Lancisi, *Disseratio historica de bovilla peste* (Rome: Joannis Mariæ Salvioni, 1715).

8. Richard Mead, *A short discourse concerning pestilential contagion and the method to be used to prevent it* (London: Printed for Sam. Buckley, 1720); Thomas Bates, "A brief account of the contagious disease which raged among the milch cowes near London, in the year 1714. And of the methods that were taken for suppressing it," *Philosophical Transactions* 30 (1718): 872–85; and D. P. Layard, *An essay on the nature, causes, and cure of the contagious distemper among the horned cattle in these kingdoms* (London: Rivington, 1757). A longer list of eighteenth-century manuals and reports can be found in Charles F. Mullet, "The Cattle Distemper in Mid-Eighteenth-Century England," *Agricultural History* 20, no. 3 (1946): 144–65.

the experience of living in a world rife with enzootic and epizootic disease during the Bard's time.[9] From Shakespearean England I turn to the eighteenth century and to the three cattle pandemics (1709 to 1720, 1742 to 1760, and 1768 to 1786) that incited governments across Europe to enact harsh regulatory measures, including widespread slaughters, quarantines, and major disruptions of trade. By the eighteenth century, accounts of contagion shift away from miasma theory, from theories of "bad air" as the cause of disease, toward something often resembling species-specific viral or bacterial transmission. In differentiating between human and animal disease, these accounts of infection shaped the very definition of "human." This section hones in on several key plague texts—including Daniel Defoe's *Journal of the Plague Year* (1722), written shortly after the first of England's great epizootic outbreaks—to elucidate the stakes of debates about the causes and transmission of disease. In my concluding thoughts, I raise vital historiographical questions about the human-centred focus of histories of medicine, literary histories, and the medical humanities, arguing for a multidisciplinary, non-anthropocentric approach to mammalian disease.

Zoonotic Europe

By the final decade of the sixteenth century, when Shakespeare wrote his earliest plays, Europe had suffered at least nine major cattle plagues. Since 1500, it had experienced roughly one a decade, and for at least 300 years it had recorded organized efforts to understand and manage these diseases. Between 1470 and 1570, a new transnational system had emerged in the marketing of livestock; by 1600, a global cattle network had all but eclipsed former regional marketing systems.[10] Venice, as Karl Appuhn has argued, was a centre for the Mediterranean livestock trade, buying and selling between 100,000 and 200,000 animals imported from Hungary a year, this number shifting depending on

9. "Enzootic" refers to disease in any non-human population; "epizootic" refers to an enzootic disease that has become widespread. While these words are associated primarily with matters of scale, "zoonotic" denotes a means of transmission, from animals to humans.

10. On international trade routes, see Ian Blanchard, "The Continental European Cattle Trades, 1400–1600," *The Economic History Review* 39, no. 3 (1986): 427–60.

plague and war.[11] Unsurprisingly, then, sixteenth-century Venice was also an epicentre for epizootic diseases and regulatory efforts to control them. In his monumental study *Cattle Plague: A History*, Spinage describes periodic diseases associated with cattle in the Veneto. In or around 1514, people in Padua and Venice were "afflicted" by an "epidemic dysentery" after eating diseased cattle flesh imported from Hungary.[12] The Council of Venice demanded that diseased animals be killed and, "under penalty of death," "forbade the distribution" of beef (including veal) and animal products such as butter, milk, and cheese.[13] In 1590, a similar outbreak occurred, and the Council of Venice once again outlawed beef and the same animal products.[14] Eight years later, rinderpest from Germany spread to Italy, killing 13,000 cattle, and precipitating another episode of human dysentery. Although the Venetian state ordered the destruction of infected animals, the plague nevertheless spread to France where, in 1604, the health department in Lyon commanded that any cattle intended for slaughter be inspected by "a master butcher in the presence of a commissioner of health" and that infected bodies be buried two metres deep and covered with quicklime.[15] The international cattle trade, then, had a dark and persistent underside: as an agent in the spread of zoonotic and enzootic diseases at a time when the mechanisms of their transmission were poorly understood.

Great Britain seems to have been less frequently plagued with cattle disease than Italy, in part because, until 1666, it imported most of its cattle from a comparatively isolated Ireland. Yet as I have argued elsewhere, Shakespeare's audience members—especially those involved in international trade like his characters Shylock, Antonio, and Bassanio—would have been alert to the rewards and risks posed by importing and exporting livestock.[16] As Shylock jokes, "A pound of

11. Karl Appuhn, "Ecologies of Beef: Eighteenth-Century Epizootics and the Environmental History of Early Modern Europe," *Environmental History* 15, no. 2 (2010): 268–87.

12. Spinage, *Cattle Plague*, 97.

13. Ibid.

14. Ibid., 98.

15. Ibid.

16. Lucinda Cole, "Zoonotic Shakespeare: Animals, Plagues, and the Medical Posthumanities," in *The Routledge Handbook of Shakespeare and Animals*, ed. Karen Raber and Holly Dugan (London: Taylor and Francis, 2020), 104–15.

man's flesh taken from a man / Is not so estimable, profitable neither / As flesh of muttons, beefs, or goats."[17] The more one knows about the prices of mutton, beef, and goat meat, the more grimly ironic this jibe appears. Allusions to this lucrative market in animals crop up elsewhere in the play; when Shylock's daughter converts to Christianity, Lancelot quips: "This making of Christians will raise the price of hogs. If we grow all to be pork eaters we shall not shortly have rasher on the coals for money" (3.5.19–21; trans.). Local demand drives up prices; the unlikely prospect of the city's substantial Jewish population suddenly converting is both a joke about local demand driving up prices and an incitement to ever riskier trading ventures. In a city-state of canals, boats, and little arable land, such humour gestures to the complex ecological and economic systems devoted to feeding—and profiting from—its residents. In turn, this trade in pigs, sheep, and cattle helped to shape national, gendered, and ethnic identities. It is no accident, in this respect, that Venice's Jewish ghetto was confined to the same district—the *sestiere* Cannaregio—as its public slaughterhouse, or that Shylock thinks of racial and religious antagonisms in terms of the city's meat-markets.[18]

Shakespeare's references to animal disease in *Merchant of Venice* help to illuminate the economic, social, and medical contexts otherwise occluded from the period's literature. The most dramatic connection between epidemic cattle disease and international trade centres on Antonio, a wealthy, middle-aged tradesman. At his trial, the patient and resigned Antonio encourages Bassanio to leave him to Shylock's knife: "I am a tainted wether of the flock / Meetest for death" (4.1. 113–14). Although "tainted" is often defined as "castrated," the more common, historically specific definition is "corrupted," "stained," or "infected"; "wether" refers to a sheep or ram; and "meetest for death" reflects the necessity for culling this diseased animal before it infects

17. William Shakespeare, *The Comical History of the Merchant of Venice*, in *The Norton Shakespeare*, ed. Stephen Greenblatt *et al.* (New York: Norton, 1997), 1.3.64–68. All subsequent references are to this edition and are cited parenthetically in the text.

18. As Karl Appuhn mentions, cattle, sheep, and goats were brought from the mainland by boat to San Giobbe, where the animals were killed and processed. See "Ecologies of Beef: Eighteenth-Century Epizootics and the Environmental History of Early Modern Europe," 276. Early modern maps of Venice locate the Jewish ghetto very close to the slaughterhouse.

the rest of the herd. In short, Antonio seems to be echoing husbandry manuals like Mascall's *The First Booke of Cattel*; according to this English author, because the "sicke" animal will "infecte … with the same disease" others that smell it, the creature must be removed from the rest of the herd and killed—indeed, buried in a "deepe pitte" so that dogs do not unearth and eat the carrion.[19] In one respect Antonio's identification with a diseased animal points to the moral and spiritual economies of Christianity; he cannot save himself, but his sacrificial death will benefit the greater good. In another respect, his identification with *infected* cattle gestures to the commercial, environmental, agricultural, and medical economies that render humans and animals alike vulnerable to contagious disease. Mascall warns that even transporting the animal skin to the tanner may endanger humans: he has been "credibly tolde," he says, about "some Beastes" that died of murrain having spread infection that "fleaed" the skin, and of what happened to the person who transported the skin to the tanner, the horse who carried the skin, and the tanner himself.[20] All these soon died, he continues, humans and animals alike stricken by a "marvellous infection."[21] Mascall's adjective, "marvellous," suggests both the ambiguity of causal agents and the terror of "infection," while reinforcing the intuited, destructive threat of cross-species contagion.

Contagion and Species Difference, 1712–1721

In 1711, rinderpest found its way from Tartary through Hungary to herds at Padua, presumably (and perhaps apocryphally) from one stray Dalmation ox; by October, the disease had enveloped the "length and breadth of the Venetia" and was "raging with undiminished force."[22] The Venetian Senate turned to the medical faculty at the University of Padua for help. Its principal professor of medicine, Bernandino Ramazzini (1633–1714), wrote a broadside chastising the misguided medical men who, he says, thought it beneath their dignity to attend

19. Mascall, *The First Booke of Cattel*, 67.
20. Ibid.
21. Ibid.
22. Lise Wilkinson, "Rinderpest and Mainstream Infectious Disease Concepts in the Eighteenth Century," *Medical History* 28 (1984): 131. This is most thorough account of rinderpest and theories of contagion.

to cattle, and insisted in the name of public health that all the sick ones be culled, killed, and buried. Two years later, and while the disease was still raging, Giovanni Maria Lancisi (1654–1720) took up the public health project after Ramazzini's death. On Lancisi's recommendation, Pope Clement XI wrote and delivered a series of edicts that prohibited the trade in meat, hides, and fat of infected animals. Penalties for disobeying the Pope's proscriptions included death by hanging; nonetheless, despite such draconian measures, the Venetian plague spread to the continent and in particular throughout Holland, and then to England in 1714. Thomas Bates, surgeon to King George, had been stationed in Sicily during the initial Italian outbreak.[23] Charged with stamping out the contagion in England, he more or less replicated Italy's policies. Although Bates was quick in containing the disease, over a million and a half English cattle died between 1711 and 1714, either felled by plague or slaughtered for disease mitigation.[24] According to Spinage, compensation for people who voluntarily slaughtered their animals, rather than selling their meat or milk, was a maximum of £2 for full-grown cows, and less for calves.[25]

The treatises by Ramazzini, Lancisi, and Bates all reject or at least modify ancient theories that attributed cattle plague to the movement of heavenly bodies, putrefaction, diet, earthquakes, or "bad air." They also all take seriously the question of whether rinderpest, murrain, or cattle plague could cross species boundaries. While acknowledging similarities between cattle plague and human smallpox, Ramazzini, in contrast to many of his predecessors, argues that the contagion affected only cattle. Yet like Mascall and Lobb, he nevertheless insists that humans could carry it, essentially serving as a reservoir host, to use a term from modern epidemiology.[26] Lancisi similarly describes cattle plague as a kind of "poison" passing from beast to beast, albeit one that could be transmitted by "other animals, birds, and men."[27] Bates freely admits that the "Nature of Contagious Diseases are but little understood," and then posits cross-species infection as a rare

23. Spinage, *Cattle Plague*, 112.
24. See Mullet, "The Cattle Distemper in Mid-Eighteenth-Century England," 144.
25. Spinage, *Cattle Plague*, 112.
26. Mullet, "The Cattle Distemper in Mid-Eighteenth-Century England," 145.
27. Ibid., 145, note 4.

occurrence. "The Providence of God has so disposed of the matter of Animal Bodies," he writes, "as to render Contagious Diseases very seldom infectious to different Species."[28] Ultimately, though, he agrees with his Italian predecessors that humans and even goods may be carriers of epidemic cattle plague. In his words:

> experience demonstrates, that Contagions may be communicated to the same Species, by touching the Woolen, Linnen, etc. to which the Infectious *Effluvia* of the Diseased had adhered, tho' the two Bodies should be at a very great distance; and I verily believe that more Hundreds had died from the Infection, which was carried by the Intercourse that the Cow keepers had with each other, than single ones by the original Putrifaction.[29]

In short, Bates outlines a chain of contagion in which disease is conveyed from humans to animals via clothing and objects that passed between cowkeepers and their cows.

Given what we now know about rinderpest, many of Bates's assumptions are remarkably accurate. As a virus, rinderpest can spread in several ways; mostly commonly, an animal is exposed to infected droplets, either in the breath of another animal, or through excretions and secretions containing the virus. Although cousin to human measles, rinderpest is not (like bubonic plague) zoonotic. Rinderpest cannot be transferred directly from humans to animals—and is therefore not what scientists now call "anthrozoonotic"—but it can be carried in *fomites*, the medical term for objects or clothing that house infection: the "Woolen, Linnen to which," according to Bates, "the Infectious *Effluvia* of the Disease had adhered."[30] While these eighteenth-century physicians do not regard rinderpest as capable of reproduction and therefore not as what we now recognize as a virus, together they offer solid empirical progress beyond Mascall's description of the contagion as "marvellous." In part, this improvement rests in their collective understanding that cattle plague and bubonic plague, despite some etiological similarities, are distinct infections. From their perspective, cattle disease marks a key point of *difference* between humans and

28. Bates, "A brief account of the contagious disease which raged among the milch cowes near London, in the year 1714…," 884.

29. Ibid.

30. Ibid.

other animals, and cattle distemper, which was regarded as a *shared* affliction in the fifteenth and sixteenth centuries, now becomes a sign of species distinction. As Bates put it, "The Providence of God has so disposed of the matter of Animal Bodies, as to render Contagious Diseases very seldom infectious to different Species."[31]

This growing confidence in the species-specific nature of contagion was tested in 1720 when cattle plague again ravaged northeast Germany, Italy, and parts of Switzerland and France. The cattle murrain around Marseilles was followed by a human epidemic so severe that, according to reports, many people considered setting the whole town on fire. One physician arrived in a town "without Bread, without Wine, without Meat, without Medicines," and stinking of dead human and animal bodies, as some 4000 people had died in a single day.[32] France eventually built a plague wall to isolate the Mediterranean city from the rest of Provence. The return of bubonic plague to France, as medical historians and Defoe scholars recorded, produced not only general alarm but also a rash of print in England. Nathanial Hodges's *Loimologia, or an Historical Account of the Plague in London in 1665* was translated into English and republished in 1720, along with John Quincy's remarks on the plague.[33] Defoe relied on both sources in the crafting of his *Journal of the Plague Year.*

Defoe's fictional text nonetheless departs from his sources, Hodges and Quincy, in depicting cattle disease and its biophysical relationship to humans. Addressing cattle disease seven times in his short treatise, for example, Hodges is preoccupied with the possible *proximity* of animal to human transmission. A Galenist, he regards bubonic plague as arising from a "poisonous Aura," from a "Corruption of the nitrous Spirits in the Air" that affects many people at the same time; the 1665 infection, he believes, was imported from Holland in "Packs of Merchandice."[34] Hodges rejects popular stories about the direct

31. Ibid.

32. Richard Bradley, *The Plague at Marseilles Consider'd, with Remarks Upon the Plague in General, Shewing Its Cause and Nature of Infection*, 3rd ed. (London: Printed for W. Mears, 1721), viii.

33. Nathanial Hodges, *Loimologia, or an Historical Account of the Plague in London in 1665… To which is added, an Essay on the different Causes of Pestilential Diseases, and how they became Contagious*, 2nd ed. (London: Printed for E. Bell and J. Osborne, 1720).

34. Ibid., 31–33.

transmission of cattle disease to humans but agrees that humans and cattle can both be infected through a "common cause," such as bad air, even if they respond differently.[35] Quincy similarly considers the possibility of cross-species infection by distinguishing between *epidemic* diseases that arise from a common cause, and *contagious* ones associated with "subtle and active Particles" that, in his view, can "penetrate the Pores of other Animals, and occasion a like Coagulation of their Blood."[36] In ways that underscore the uncertainty at the time about what we would now call blood groups, he admits the possibility of cross-species infection: when the contagious particle is "of that Nature" to "Taint the Blood of other Animals," he explains, "animals will be 'seized equally with Men'"; if infection does not always occur, this is only because "the Blood of Animals is different from humane Blood."[37] In other words, the contagion "Particles" may not always find a suitable home, or host. Both of these texts, then, acknowledge that cattle suffer from diseases that are at least sometimes contracted by humans. And, as in *The Merchant of Venice*, humans are *entangled* in a network of relations that includes cows, air, ships, packets of wool, pastures, cowkeepers, government policies, animal spirits, blood—all constituents of a large, teeming world.

When Defoe's *Journal of the Plague Year* is read within the context of multispecies contagion, two characteristics of the text are cast in bold relief. Unlike Hodges's *Historical Account*, Defoe only mentions cattle twice, both times in passing, and never in reference to the plague. He first refers to a group of people who, having fled London for the countryside near Henalt Forest, "suffered" such "great extremities" that they had turned outlaw: they "offered many violences to the county; they robbed and plundered, and killed cattle and the like."[38] Here, Defoe associates cattle-killing with threats to property, even vandalism, but he refuses to be explicit about the relationship between "extremities" and hunger or comment on disruptions of food

35. Ibid., 61.
36. Quincy quoted in Hodges, *Loimologia*, 263.
37. Ibid.
38. Daniel Defoe, A *Journal of the Plague Year*; *Being Observations or Memorials, of the most Remarkable Occurrences… Which happened in London During the last Greate Visitation in 1665* (London: Printed for E. Nutt, A. Dodd, and J. Graves, 1722), 171. Hereafter cited parenthetically in the text.

supplies, an outcome common to both human and animal plague. Defoe's second allusion to cattle occurs in the story of a "citizen" who, having broken out of his house at Aldersgate, escapes to a garret room at an Islington inn called the Pied Bull—a garret because the other rooms had been let to "some drovers being expected the next day with cattle" (85). The gentleman dies in the house, and within the week fourteen more people succumb to contagion in Islington. What these two stories have in common—and how they differ from Defoe's source literature—is that cattle are relegated to the background, removed to the shadows of an urban landscape otherwise densely populated by humans alone.

Instead, Defoe's novel is markedly concerned with meat, infected animal products rather than sick animals. We see signs of a potentially contaminated food system in the allusion to slaughtered cattle, and suggestions of an international cattle trade in the detail about the anticipated drovers. Significantly, several passages in the novel focus on butchers and their "tainted" or contaminated meat—the plague raged "so violently" among the "butchers" and "slaughter-houses" across the street from him that, rather than expose himself, the narrator prefers to go without eating meat (92). In the shambles near Newgate, two people fall dead, giving rise to the rumour that all the meat is "infected" (279). Allegedly, the meat at Whitechapel is so "dreadfully visited" (which means *handled with pestilential hands*) that butchers began to slaughter cattle elsewhere and then bring the meat into the neighbourhood on horses (92); and those customers willing to venture to the shambles will not "take [meat] off the butcher's hand," but "off the hooks themselves" (93). Thus, in Defoe's novel, living cattle and their afflictions are largely, although not completely, occluded by disembodied pieces of flesh that can be a disease vector for humans. Nevertheless, an international network of trade, cross-species pandemics, impassioned treatises on containment and cure, and coordinated systems of disease inform, however tacitly, Defoe's imagined scenes of human food insecurity and fears of mortality, which are set in a city context during England's last sustained experience of bubonic plague.

Lessons from the 1740s

While bubonic plague loosened its grip on England and the continent, cattle plague raged on in the eighteenth century. In Holland, rinderpest became endemic and, according to Englishman Robert Dossie, apparently irreversible, if not permanent: as he laments, "there seems little hope it will be soon be expelled."[39] This murrain entered England in 1745 and dragged on for a decade there; during this period, Lobb's *Letters relating to the plague and other contagious distempers* and a host of articles on cattle plague appeared in widely read venues, such as the *Philosophical Transactions* and the *Gentleman's Magazine*. According to one historian, the outbreaks of the 1740s and 1760s were "important enough in the government's collective mind, to vie with the '45 rebellion in Privy Council discussions in the autumn and winter of 1745–46, and to provide the opening item for the King's speech to Parliament in January 1770."[40] Contagious cattle disease was often framed by rulers and cultural commentators alike as a national emergency. Dossie, a friend of Samuel Johnson's, calls on government and citizens to provide "a means of security against a very momentous national evil."[41] Describing in detail the devastating loss of cattle in the Netherlands, he insists that "what happened there ought to be equally an object of our dread, as of our compassion."[42] Dossie contends, therefore, that it befits

> every individual to exert his utmost endeavours, according to his situation, to avert this impending danger of one of the most heavy calamities that can befall any European country: and more especially our own; where the luxurious habits of the common people, the difficulty of obtaining a supply of cattle from other places, and the high prices of the necessaries of life, would render the effects of a scarcity of horned beasts, and consequently all other provisions, peculiarly grievous and intolerable.[43]

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39. Robert Dossie, "Observations on the Murrain, or Pestilential Disease of Neat Cattle," in *Memoirs of Agriculture and Other Economical Arts* (London: Printed for J. Nourse, 1771), 2.364. Interestingly, Dossie uses the word "virus" (437), by which he means *contagious matter.*

40. John Broad, "Cattle Plague in Eighteenth-Century England," *The Agricultural History Review* 31, no. 2 (1983): 106.

41. Dossie, "Observations on the Murrain, or Pestilential Disease of Neat Cattle," 367.

42. Ibid., 481.

43. Ibid., 482.

He enjoins his country to consider seriously the national implications of a transnational disease, even if that means isolating England from "malignancies" originating from the continent, which may be carried, he writes, by foreign leathers (or "skins") and woolens.[44] Dossie's rhetoric of alarm, considered alongside other discursive responses to the 1740s outbreak, demonstrates a larger affective shift: the panic surrounding bubonic plague, which dominated the seventeenth century, seems to have been replaced in the eighteenth century by apprehensions about rinderpest, anthrax, and other versions of enzootic and zoonotic infection.

If published treatises evidence this revolution in medical fears, why is there so little record of cattle disease in literary culture? Is it simply because those who produce and consume literature tend to be socially and economically distant from agricultural concerns? Laurence Sterne, for one, mentions cattle plague in his letters, but he was not a London coffee houses denizen; as a rural clergyman, he likely had direct contact with drovers, tanners, farmers, butchers, and labouring-class women, who—as Anne Milne has argued—often took care of a country house's livestock.[45] Generally speaking, though, literary references to cattle plague—at least in England—are sparse and elliptical. Indeed, as far as I have been able to discover, a long history of cattle plague produced exactly two fictional works unequivocally related to eighteenth-century English enzootic outbreaks, the first in 1717 by John Morphew and the second in 1747 by William Dodd. Morphew's poem deploys a familiar tactic: linking rinderpest to a particular monarch, here George I, who ascended to the English throne in 1714, and was partly responsible for sometimes-unpopular containment edicts. Calling cattle plague "the German Disease," Morphew accuses farmers of killing their healthy, if over-the-hill, cattle in order to gain the 40 shillings promised by the government: "A gen'rous bounty, that destroy'd / More cattle than the plague annoy'd."[46] Within Morphew's

44. Ibid., 466–71.

45. Sterne's response to cattle distemper is discussed in Percy Fitzgerald, *The Life of Laurence Sterne* (London: Chapman and Hall, 1864), 1.296–97. Anne Milne analyzes labouring-class women and cattle in *Lactilla Tends Her Fav'rite Cow: Ecocritical Readings of Animals and Women in Eighteenth-Century Labouring-Class Women's Poetry* (Lewisburg, PA: Bucknell University Press, 2008).

46. Spinage identifies and briefly discusses Morphew's poem (*Cattle Plague*, 114).

poem, cattle disease appears primarily as an occasion for political satire rather than a topic of serious epidemiological reflection and debate.

The second poem, Dodd's "Diggon Davy's resolution on the death of his last cow: A pastoral," is more telling about the circumstances under which cattle plague was erased almost entirely from an anthropocentric literary-historical record. Dodd's verses were published (in part) by Edward Cave in the *Gentleman's Magazine* during the enzootic outbreak of the 1740s. The poem features two shepherds, Diggon and Colin, meeting in the contagious fields, the former lamenting that this new cattle plague, "where every gale contains the seeds of death," has taken two of their cows: Mully and Susan. Having tried all the recommended cures to no avail, Diggon describes in uncomfortable detail the demise of the latter animal:

> Dejected first she hung her drooping head,
> Refus'd her meat, and from her pasture fled;
> Then dead and languid seem'd her plaintive eye,
> Her breath grew noisome, and her udder dry;
> Erst sweet that breath as morning gales in May,
> And full that udder as of light the day.
> Scorch'd with perpetual thirst, short sighs she drew,
> Furr'd was her tongue, and to her mouth it grew:
> Her burning nostrils putrid rheums distill'd,
> And death's strong agonies her bowels fill'd;
> Each limb contracted, and a groan each breath,
> Lost ease I wish'd her, and it came in death:
> Cast out, infected, and abhorr'd by all,
> See how the useful, and the beauteous fall!
> Not ev'n her skin, when living, sleek and red,
> Can ought avail me, Colin, now she's dead.[47]

Those familiar with husbandry manuals would have recognized in Dodd's description the stages and symptoms of rinderpest, which include mouth lesions ("Furr'd was her tongue"), discharge from the nose ("Her burning nostrils putrid rheums distill'd"), diarrhea ("death's strong agonies her bowles fill'd"), and dehydration ("perpetual thirst"). Indeed, the immediate occasion for this poem, Dodd later reported, was a bet placed with his roommate on whether the cattle disease cur-

47. William Dodd, "Diggon Davy's resolution on the death of his last cow: A Pastoral," in *Poems by Dr. Dodd* (London: Printed by Dryden Leach, 1768), 260–64.

rently raging in England resembled the bovine plague described in Virgil's *Georgics*, which is cited throughout.[48] In its multidisciplinary ambitions, "Diggon Davy's resolution on the death of his last cow: A Pastoral," can lay claim to a tradition that includes not only influential literary figures, including Abraham Cowley and John Dryden, but also a host of lesser-known translators and adapters of Virgil's works, like William Benson, John Martyn, and James Hamilton who, as Frans de Bruyn argues, sought to align the *Georgics* with contemporary scientific knowledge.[49]

Dodd's pastoral underscores the relationship, still close in the eighteenth century, between human and animal disease, and the extent to which zoonotic and enzootic afflictions were perceived as cultural, scientific, economic, and affective problems. Stripped of its epidemiological entanglements, Dodd's poem reads as an extended joke about the sentimentality of the poet's shepherd persona, who laments his "beauteous" bovine, Susan. Embedded, alternatively, in the history of cattle plague, the poem assumes a kind of affective pathos grounded in scientific realism and becomes an elegy to the futile efforts to manage a disease described by Dossie, as we have already noted, as "one of the most heavy calamities that can befall any European country."[50] From the latter perspective, "Diggon Davy's resolution on the death of his last cow: A Pastoral" reminds us how we—readers, historical and contemporary—are likewise entangled in a creaturely world, despite our best efforts to deny it, and how much individual, social, and political bodies are dependent on multispecies health. The human and animal subjects of Dodd's poem (Diggon, Colin, Mully, and Susan) are all touched by the cattle plague, the medically and emotionally devastating force that precipitates the speaker's lament, and one which remains strangely anomalous within eighteenth-century imaginative literature.

Despite the scarcity of putative depictions of cattle plague in the period, by the end of the long eighteenth century, the real-world effects of ignoring the interwoven nature of human-animal wellbeing were already being noted by commentators like the French journalist and

48. See A. D. Barker, "The Early Career of William Dodd," *Transactions of the Cambridge Bibliographical Society* 8, no. 2 (1982): 220.

49. See Frans De Bruyn, "Eighteenth-Century Editions of Virgil's *Georgics*: From Classical Poem to Agricultural Treatise," *Lumen* 24 (2005): 149–63.

50. See footnote 43 above.

historian Michel Placide-Justin. Accounts of cross-species infections or zoonotic outbreaks appeared, for example, in writings on colonial economies and ecologies. In *Histoire politique et statistique de l'Île d'Hayti, Saint-Domingue; écrite sur des documents officiels et des notes communiquées par Sir James Barskett* (1826), Placide-Justin describes what appears to have been an anthrax outbreak that occurred in 1770, after an earthquake devastated Port-au-Prince and other settlements in the French colony of Saint-Domingue. Damaged port towns were unable to supply agricultural estate owners with codfish, the major food staple for the many Africans enslaved on the sugar plantations. At the same time, Spanish cattle rangers, experiencing what Placide-Justin calls an *epizootie*, were salting, selling, and distributing meat from the infected cattle, thereby, spreading the *germe* of the disease.[51] Over the next six weeks, more than fifteen thousand people, white and black, died—in the largest anthrax epidemic ever recorded—before colonial administrators belatedly halted distribution of the infected meat. Without beef or cod, however, famine devastated the colony, and another fifteen thousand people expired. Diggon Davy's imagined misfortunes look slight in comparison to this tragic chapter in the history of multispecies disease, the differences between his plight and those of the French and Africans in Saint-Domingue being those registered by geography, genre, diagnosis, and scale. Both serve as potent warnings to us, given the continued growth of international markets in cattle, for the possibilities of devastating enzootic and even zoonotic outbreaks, which remain grave threats to human and animal health.

Conclusion: Multidisciplinarity in a Multispecies World

The medical humanities would seem to be the discipline most capable of uncovering ecological, economic, and epidemiological relationships that connect the human and the animal, the past and the present, disease and ecology, Europe and its colonies. William H. McNeill provided a foundation for this kind of analysis over forty years ago when he stated in *Plagues and Peoples* (1976) that "[m]ost and probably all of the distinctive infectious diseases of civilization transferred to human

51. Justin's description can be found in David M. Morens, "Epidemic Anthrax in the Eighteenth Century, the Americas," *Emerging Infectious Diseases* 8, no. 10 (2002): 1160–62.

populations from animal herds."[52] Yet, aside from rabies, enzootic and zoonotic diseases have been the subject of little sustained attention by medical historians. No wonder, as the late Roy Porter asserted over twenty years ago, "in the academic world, it is automatically assumed that an 'historian of medicine' is a person who works on a history of human medicine."[53] Porter attributed this assumption to what he describes as modern notions of human *difference from*, and *primacy over* animals; Enlightenment scholars may wish to take issue with Porter's chronology of human-animal difference—we, after all, can claim the breathtakingly anthropocentric Descartes. It nevertheless remains true that while science studies (with its "non-human turn"), environmental studies, and especially critical animal studies have mounted powerful attacks against anthropocentrism, most scholars, in the words of One Health advocate Abigail Woods, "have not significantly revised their perceptions of what constitutes medical history."[54] Undoubtedly, the human tragedies of COVID-19, reportedly the result of a virus harboured by cave bats mutating to infect humans, will change this bias. The reality of a deadly virus that brought down a global economy will necessarily force many scholars into new examinations of transnationality and zoonotic diseases. Ideally, though, this recent pandemic will also bring about serious ethical reflection on what it means to be one species living among fellow creatures whose food, air, and space we share. To the extent that the humanities as an amalgamation of disciplines has a post-pandemic future, its fate is dependent on a collective humanist embrace of our (sometimes contagious) more-than-human world.

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52. William H. McNeill, *Plagues and People* (New York: Anchor Books, 1989 [1976]), 69.

53. I borrow this point from Woods' introduction to *Animals and the Shaping of Modern Medicine: One Health and Its Histories*, 12. For the original context, see also Roy Porter, "Man, Animals and Medicine at the Time of the Founding of the Royal Veterinary College," in *History of the Healing Professions*, vol. 3, ed. A. R. Mitchell (Wallingford: CABI, 1993), 19.

54. Woods, "Introduction: Centring Animals Within Medical History," 12.