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Epidemics that End with a Bang

▼ **SPOTLIGHT ARTICLE** in *How Epidemics End*, ed. by Erica Charters

▼ **ABSTRACT** To answer how epidemics end, one must ask two intersecting but separate questions: first, how particular waves of epidemics end, whether of yellow fever, cholera, plague; and second, how epidemic diseases become eradicated—either through scientific intervention, as with smallpox in the 1970s, or simply by disappearing for reasons that remain mysterious, as with the Second Plague Pandemic from ca. 1347. This article challenges two general notions on how epidemics end. First, individual waves of plagues in European municipalities or regional states did not just fade into the sunset. By the late 16th century, their ends were celebrated with artistic displays, musical and poetic performances, ex-voto gifts, and bangs ranging from tambourines to military salutes. Second, the five-century Second Pandemic of plague—that is, the disease—did not end with declarations or scripted performances, but with another sort of bang. Instead of the usual assumption that epidemic diseases decline gradually over time, progressively inflicting lighter loads of virulence and mortality, the last significant plague outbreaks in most regions in Europe returned to heights of mortality not seen since the Black Death of 1347–1351. Finally, this article adds an obvious but rarely mentioned variable for understanding epidemic endings. Before widespread vaccination, the characteristics of these disappearances depended on the type of disease.

▼ **KEYWORDS** 16th century, 1700–1850, Black Death, History of Emotions, History of Medicine, Plague

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According to Charles Rosenberg's dramaturgy, epidemics had no final act; instead, they "ended with a whimper not a bang."¹ From my reading of epidemics in antiquity, the Middle Ages, and the Renaissance, Rosenberg strikes me as correct. Plagues in antiquity could have their thanksgiving celebrations to promote unity and propitiate the gods—as with one reported by Livy that spread through the Roman Empire in 399 BCE—but these occurred at the climax, not the end of epidemics.² Nor do we find such celebrations demarcating other major pandemics of antiquity, as with the pan-European and Middle Eastern Antonine plague of 165–180 CE, the pestilence of 312–313 CE, or the Justinianic plague of ca. 541 to ca. 750.³ Moreover, with the Black Death and its numerous sequelae into the 16th century, I know of no officially declared endings from the church or state, despite organized processions and votive offerings during these afflictions.⁴

With the pan-peninsula plague of 1574–1578, centred in Italy, this dramaturgy without end, however, ended.⁵ By January 1576, from evaluating the city-wide death books (*i libri dei morti*) of plague victims, Milan's Health Board judged it safe to reduce its quarantine restrictions to allow household heads to join religious processions. By February, the downward trend continued, leading to further easing of restrictions, and in mid-March the city's death books recorded no plague deaths for the first time since 1575.⁶ The Health Board, however, did not then declare an end to the epidemic. Venice had made that mistake a year earlier only to see plague deaths return, lasting into 1577. Instead, Milan's Health Board decided to set a date to celebrate the end of their epidemic to coincide with the feast day of Europe's most popular plague saint, Sebastian, on January 20, 1577. With processions of citizens, songs, poetry, new artistic commissions, ex-voto gifts, public singing, artillery salutes, and fireworks, the Milanese health board carefully planned and then declared their "liberation" from the plague of 1575–1576.⁷

Yet Venice remains best remembered for its big bangs to end plagues. I know none, however, before its miscalculated declaration of 1576. Second time lucky: on July 22, 1577, the Venetian declaration proved plague-free, and the foundation stone of Andrea Palladio's *Il Redentore* was laid amidst celebrations that have continued every year since (even in 2020 with COVID-19). In addition, Venice should be known for another innovation of 1577: the invention of new form of plague-writing devoted entirely to the descriptions, expenses, and emotions of plague finales. These detailed the processions, recitations of poetry, production of new paintings, lavish

1 Rosenberg (1989, p. 8).

2 Cohn (2018, pp. 38–41), for this pandemic and others reported by Livy.

3 Nutton (2004, p. 24) and Stathakopoulos (2008, p. 536), for the first two; the literature for the Justinianic plague is vast.

4 Cohn (2018, Ch. 4).

5 Cohn (2010).

6 On these records compiled and preserved by Milan's Health Board, see Cohn (2010); Carmichael (1998).

7 Cohn (2010, pp. 100–115), from contemporary plague chronicles, called "Successi della peste," by the Jesuit priest Paolo Bisciola, the notary Giacomo Filippo Besta, the cavalier Asciano Centorio Degli Ortensi, and the merchant Olivero Panizzone Sacco. What follows on 16th-century plagues in Italy overlaps with claims I make in Cohn (2020).

ephemera, street furnishings, and tapestries, all accompanied by “sounds of artillery fire, trumpets, tambourines, and songs of the *popolo*.”⁸ I know of 12 of these publications for Venice alone commemorating its plague ending of 1577. One pamphlet by the little-known Muzio Lumina concentrated on the exhilaration of the crowds that lined the entire Grand Canal—no social distancing now:

Lord, having witnessed the plague in Venice, I would have never believed that so many could have survived. Suddenly, it seemed the population had doubled. With such a great throng of people, it was difficult to imagine how they all could be contained even within [Venice's] spacious squares.⁹

Plague returned to Venice 53 years later with greater destructive force, and its end was re-celebrated with bangs and the foundation of an even bigger ex-voto church, Santa Maria della Salute in 1631.¹⁰

The cities of northern Italy were not alone in celebrating plague endings. Sicily's plague of 1624 ended by paying tribute to Santa Rosalia's miraculous cures. When no further plague deaths in Palermo were recorded that year, its senate invested 15,000 gold coins (*aureorum*) and solicited further funds from the city's principal nations (*gens*) of foreign bankers and merchants—the Catalans, Florentines, Genoese, and Neapolitans—to construct four well-buttressed triumphal arches, “decorated at the highest expense [*maximo sumptu*]” with paintings, insignia, epigrams, verses, 48 columns draped with painted silk interwoven with gold and silver, and other decorations. A large building was “preciously attired with long curtains.” In addition, four new open spaces (*aere*) were created in the city, along with 33 altars decorated with insigne and vases “ingeniously crafted in gold and silver” and erected at each of the city's major street crossings, together with “innumerable other ornaments ... exciting the highest admiration” in thanksgiving to Santa Rosalia for ending the plague. In celebrating the end of this plague—Sicily's worst since 1348—“the entire city was converted into a gigantic temple” in honour of Santa Rosalia.¹¹ Moreover, these celebrations of plague liberation have continued to the present with annual processions; a bare-footed trek to Rosalia's supposed burial grotto, 8.606 km above the city; and fireworks. With the Jesuits and Rosalia's miracles, these declared epidemic endings spread to Goa, Peru, Brazil, and California, and not only for plague.¹²

This short narration raises several questions. First, why were official declarations of plague endings with thanks to saints and celebrations of deliverance so long in

8 Cohn (2010).

9 According to Edit 16, the Italian database of all known publications from the 16th century published in Italy or presently found in Italian libraries, Lumina (1577, pp. 141–142) is his only publication. Cicogna (1847) mentions him but not with an occupation.

10 Hopkins (2000).

11 Société des Bollandistes (1643–1940), September, Vol. 2, S. Rosalia, 4 September, Appendix Miraculorum, XXII Corpus S. Rosaliae solemnium pompa per urbem circumlatum finis pestilentiae ejus beneficio impetratus, no. 235.

12 Cohn (2018, pp. 88–91). These also occurred in smaller Sicilian towns such as Corleone and Bivona, and more than a century later commemorated Messina's last disastrous plague. These ceremonies and their expenses are detailed in *Acta Sanctorum* (1643–1940), in various lives of Santa Rosalia and her plague and other disease miracles.

coming, awaiting the last quarter of the 16th century? One reason may pertain to burial and other death records for entire cities and indications of causes of death, at least of plague. This quantitative reckoning also required a certain sophistication in disease diagnosis before the so-called laboratory revolution. These practices of diagnosis had been developing since the second half of the 14th century with quarantine legislation and punishment of violators. Underpinning whether a household should be locked up, or its members transported to *lazaretti* or plague huts on city outskirts, depended on diagnoses to identify a household or any of its members as having been afflicted by plague. By the late 14th century, doctors and the laity were making judgements about epidemic diseases on whether they were “true plague” or only “pestilential fevers.” Furthermore, they were distinguishing between different diseases with similar clinical traits, such as plague and a “disgusting” one called *pondi* that spread in the same months during the plague of 1390. Based on differences in symptoms and the time it took for its victims to die, an anonymous Florentine chronicler (called the pseudo-Minerbetti) argued that the disease then spreading through the Florentine countryside was *pondi* and not plague.¹³ Even earlier, the merchant-chronicler Matteo Villani argued that a disease spreading south of Florence during another plague year, 1358, was not plague, even though “one caught it from others like plague, and it left spots.” Like Minerbetti, Villani grounded his diagnosis in epidemiology. Unlike plague, the disease spreading near his city was “a long illness and few died from it.”¹⁴ The first city-wide burial records began at Arezzo during the plague of 1373, and distinguished plague victims from other deaths with a marginal “P.”¹⁵ By the plague of 1449–1452, the Health Board of Milan instituted death books that attempted to attribute the cause of death for all burials within the city. Yet, despite these developments in vital statistics, Health Boards and their governments took another 128 years before officially declaring ends to epidemics of plague.

A second question arises: were these declarations, with their joyful public and artistic celebrations followed by annual commemorations, limited to Catholic countries? The answer is yes and no. First, declarations of epidemic endings appear in England as early as 1563, when the archbishop of Canterbury, Edmund Grindal, devised special prayers of thanksgiving printed for use after the end of plague. However, there are no signs that this plague was later remembered with anniversary celebrations including works of art or fireworks.¹⁶ Another 269 years later, after cholera had devastated the British Isles and large parts of continental Europe, the city of Exeter closed its shops and set October 11, 1832 “as a day of solemn public thanksgiving to Almighty God for the abatement and almost total cessation of the Cholera.” Here, there was a sense of public participation. As in at least 72 other places

13 Bellondi (1915–1919, p. 23).

14 Villani (1995, Vol. 2, p. 273). For similar diagnostic distinctions of plague and other diseases from the early 15th century north of the Alps, see Cohn (2003, pp. 135–137).

15 Antionella (1985).

16 Slack (1985, p. 229). I thank Paul Slack for this note. The next one I know appears in Edinburgh in 1602, when its city council officially declared the end of plague on May 1 and held “a solemn thanksgiving” for it on May 20: Creighton (1894/1965, Vol. 1, p. 370).

across the British Isles that year, the poor of Exeter had rioted against the medical profession, accusing it of inventing the disease to kill off the poor. Now, in Exeter, the poor “deeply regretted” their previous “unhappy prejudice” towards the medical profession and made subscriptions to fund a lasting memorial to Exeter’s doctors.¹⁷ In addition, the Corporation for the Poor presented physicians with certificates of praise and monetary awards.¹⁸ After Philadelphia’s “trial by cholera in 1832,” various Christian denominations organized a day of thanksgiving to recognize the sacrifices of the Sisters of Charity and 13 physicians, who had entered the city’s hospital at the epidemic’s height, “after nurses had died or abandoned their posts.”¹⁹

The most elaborate thanksgiving celebration that I have found to mark an epidemic end in the United States was a declaration by the city of Memphis after the most devastating epidemic to ravage the US before the Great Influenza of 1918–1919. The 1878 yellow fever epidemic raged through eight southern states, crippling more than 200 towns.²⁰ On Thanksgiving Day (November 28, 1878), Memphis celebrated that epidemic’s end “with an immense mass-meeting” across social classes. “Unanimously,” the assembled crowd adopted 23 propositions of gratitude that thanked “the volunteer physicians and nurses,” various organizations such as the Odd Fellows, Masons, Knights of Honor, Ancient Order of Working Men, Independent Order of Mutual Aiders, military companies, “white and coloured,” who remained on duty during the pestilence, and lastly, “to the martyred dead [so that] their names should go down in the annals of our city, honoured, revered, and blessed.”²¹ Yet none of these acts of thanksgiving experienced the long-term remembrance or celebratory anniversaries seen in Milan, Venice, Palermo, and other cities and towns in Catholic Europe.²² In fact, the memorials promised by the poor at Exeter were never fully realized, even in 1832.²³

Yet all of these historic endings of epidemics differed from present-day declarations by the World Health Organization (WHO), such as the supposed end to the Third Pandemic of Plague in 1960 or its three declarations for the end of Ebola in West Africa between May 2015 and January 2016.²⁴ In contrast to the declarations above issued between 1577 and 1878, which engaged entire city populations across social classes in elaborate celebrations, those of the WHO were administrative decisions from above without public participation or celebration. Its notifications were

17 Shapter (1849, pp. 258–260).

18 Shapter (1849, pp. 261–262).

19 Watson (2009, p. 13); and Cohn (2018, pp. 277–278). For other thanksgiving celebrations, declaring the ends of plague in the 18th century and cholera in the 19th century in Protestant countries, see Charters & Heitman (2021, p. 214).

20 Baker (1968, p. 260).

21 For the full list of these 23 “salutes,” see Keating (1879, pp. v–vi).

22 The only historian I know to have recalled even the Memphis celebration of 1878 is Oldstone (2010, pp. 116–117), but only with one short sentence. As for Italy, inhabitants of Licata (Sicily) process annually with the relics of their plague saint, who protected them from a plague in 1662 that never arrived: Morabito (1961–1987).

23 Shapter (1849, p. 261).

24 Charters & Heitman (2021, pp. 213–214).

communicated more widely among international politicians and medical experts than with the local communities that had been afflicted.²⁵

The ending of the 500 years of plague constituting the Second Pandemic is another matter. As Paul Slack demonstrates in this special issue and is well attested by Daniel Defoe's *A Journal of the Plague Year*, published in 1722, no one knew or expected the Great Plague of London in 1665–1666 to be Britain's last major plague.²⁶ Or, as Saint Rosalia's miracles in the late 17th and 18th centuries reveal, anxieties over plague infection continued to reign in Palermo long after that city's last plague in 1624. With her miracles, she managed to expunge plagues from spreading to epidemic proportions when ships and contraband goods landed in Palermo's harbour from plague hotspots, breaching quarantine rules, as reported in 1691, 1710, 1720, 1743, and 1744.²⁷

In retrospect, a curious pattern emerges from the multiple endings of the Second Pandemic, first in the Republic of Ragusa then across various regions of Italy, and then in states north of the Alps. As with COVID-19, these patterns reflect interactions between human and governmental measures on the one hand, and probably genetic developments on the other. First, quarantine measures that included sophisticated methods of plague surveillance with border guards, plague spy networks, and international reporting enabled some regions by the 16th century to widen the original spacing of plague outbreaks from between one every 8–15 years to intervals that stretched for a century or more. Second, the last significant plague in a region tended to inflict the highest rates of mortality since the Black Death, and for some regions even higher than during the Black Death. In other words, the Second Pandemic also ended with a long series of big bangs, starting with the Republic of Ragusa. It was the first state to rid itself of plague of the Second Pandemic, and it came with its most disastrous plague since the Black Death in 1526–1527, even if it experienced a minor tremor of plague 6 years later in 1533.²⁸ In Italy, however, the last disastrous plagues most often passed without minor after-tremors. For Lombardy and the Veneto, their last plague of 1629–1632 eviscerated 50% of the population of Milan—more than any previous plague in the city's history, including the Black Death—and for Venice, it was a third of the population, the highest mortality rate since 1348.²⁹ The last plague

²⁵ Charters & Heitman (2021, p. 214).

²⁶ Slack (2021a).

²⁷ For these references in the *Acta Sanctorum*, see Cohn (2018, p. 91). Networks of plague informers stationed across Europe, and by the late 17th century also into northern Africa and Asia, endowed Italian states with greater efficacy to prepare quarantine defences and increased their knowledge of plagues that did not breach their borders; see Cohn (2010, pp. 247, 299–300). On earlier plague correspondence from the late 15th century between officials within territorial states to health officials in capital cities, see Leonard (2014).

²⁸ Tomić & Blažina (2015).

²⁹ Cohn (2018, Ch. 6). As this plague moved southward to Bologna and Florence, it became less virulent, for reasons yet to be explained, and at Siena and further south few, if any, plague mortalities were recorded. For Florence, see Henderson (2019).

for Genoa and Naples and their hinterlands occurred in 1656–1657, annihilating higher proportions of population, between a half and two-thirds.³⁰ Curiously, none of the populations stricken by plague in 1629–1633 were touched by the plague of 1656–1657, even in regions in Lombardy and Piedmont that bordered the Genoese state. Western Sicily's last plague of 1624–1625 was also its worst since the Black Death; and in eastern Sicily, the plague of Messina in 1742, limited strictly to the city and its hinterland, may have been the worst of them all, stripping between two-thirds and three-quarters of its population. Similar patterns are seen north of the Alps, as with the plague of 1708–1712 that struck both sides of the Baltic sea from Copenhagen into Prussia and Lithuania and in Norway and Sweden.³¹ Finally, the plague of Marseille in 1720–1724, which raged through parts of southern France and which is often wrongly claimed as Europe's last plague, killed 50% of urban and rural populations.³² These multiple regional plague endings fail to underlie the general “narrative” of epidemics, that is, that epidemics decline slowly by gradually becoming progressively less virulent.³³

Moreover, in places such as Lombardy and the Veneto, where the demographics of these plagues' finales have been best studied, new patterns of plague susceptibility emerged that reverse trends seen since the late 14th century. Instead of plague deaths clustering overwhelmingly in cities, they now raged as high or almost as high in smaller towns and villages of the hinterlands.³⁴ Instead of plague having become predominantly a disease of the poor, it now spread across social divides to afflict elites in near-equal proportions to the poor; instead of plague deaths concentrating among children and adolescents, it now became more evenly distributed through the age pyramid; and its seasonality changed from peaking in the hottest and least humid months of June and July to the most humid, wintry months of November and December.³⁵ These epidemiological shifts suggest genetic transformation—the appearance of unaccustomed variants of *Yersinia pestis*. However, new genetic research has yet to venture into these baroque cemeteries or ask questions of Europe's last big plagues, despite well-preserved plague corpses from 1630 in excavated sites, such as the *Ospedale Maggiore* in Milan.³⁶ Had this genetic transformation become too deadly for its own long-term symbiotic survival with human hosts?

Most epidemic diseases have not followed the Second Pandemic's patterns of disappearance. However, at least one pandemic shows a roughly similar ending in the United States. Although yellow fever's U.S. finale in 1905 may not have been the Deep South's most deadly yellow fever epidemic, it showed no signs of declining

30 Cipolla (1976, p. 56), estimates that Genoa's plague losses were even higher: 55,000 of a population of 73,000, or 75%.

31 Frandsen (2010).

32 Beauvieux (2017). For similar patterns of plague endings in Cairo in 1835, Constantinople in 1841, and other places in Egypt and the Ottoman Empire between 1824 and 1844; see Slack (2021b, p. 15).

33 Charters & Heitman (2021, p. 217).

34 For Naples and its hinterland, mortalities remained higher in the capital: Corsini & Delille (1979, p. 55).

35 Alfani (2013, pp. 414, 424); and Alfani & Percoco (2019). For the seasonality of Florence's plague in 1630–1631, see Henderson & Rose (2016, p. 127).

36 Vaglianti & Cattaneo (2013).

in virulence or its spread. It devastated southern states from Texas to Florida. The balance of forces ending this pandemic in U.S. history, differed, however, from the regional endings of the Second Pandemic plague. With yellow fever, its North American end depended overwhelmingly on human intervention—the discovery of the mosquito vector, *Aedes aegypti*, and on public health organization, aided by widespread volunteerism and education in employing mosquito nets, household screens, and campaigns to eliminate stagnant water close to human habitation.³⁷

This article challenges two general notions on how epidemics end. First, individual waves of plagues in European municipalities or regional states did not just fade into the sunset. By the late 16th century, their ends were celebrated with artistic displays, musical and poetic performances, ex-voto gifts, and bangs from tambourines to military salutes. Second, the five-century Second Pandemic of plague—that is, the disease—did not end with declarations or scripted performances but with another sort of bang.³⁸ Instead of the usual assumption that epidemic diseases decline gradually over time, progressively inflicting lighter loads of virulence and mortality, the last significant plague outbreaks in most regions in Europe returned to heights of mortality not seen since the Black Death of 1347–1351.³⁹ Finally, this article adds an obvious but rarely mentioned variable for understanding epidemic endings. Before widespread vaccination, the characteristics of these disappearances depended on the type of disease.

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³⁷ Cohn (2018, pp. 387, 404–407).

³⁸ Moreover, as Paul Slack (1981, pp. 469, 472–473) argued 40 years ago, the end of the Second Pandemic was not a single event but occurred in regional stages. The framework essay for the Oxford project now generalizes further: the ends of epidemics, whether of individual waves in individual localities or for the diseases themselves, were regional and multiple: Charters & Heitman (2021, p. 218).

³⁹ On the usual assumption, see Charters & Heitman (2021, p. 217).

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