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Contagion and Pandemics. Plague in Early Modern Medical Thought

Concetta Pennuto

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EPIDEMICS AND PANDEMICS

Epidemics and Pandemics

Philosophical Perspectives

MICHELE NICOLETTI AND ALESSANDRO PALAZZO

BREPOLS

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5. Contagion and Pandemics

Plague in Early Modern Medical Thought

▼ **ABSTRACT** Beginning in the mid-fourteenth century, the second pandemic of plague afflicted Europe with regular outbreaks until the eighteenth century. Populations learned to live side-by-side with the disease, whereas physicians and public officials tried to understand the nature and behaviour of the plague in order to save lives and guarantee health. The notion of contagion, which was already developed in ancient sources and whose fields of application are not limited to medicine, was tested in everyday experience. The extreme danger associated with a disease like plague impelled practitioners to create means to protect themselves, but this was also a stimulus for them to meditate on their relation with patients and on their own responsibilities. Following a short historical introduction, I propose to analyse the notion of contagion on the basis of ancient and early modern sources, in order to underline the interaction between medical theory and practice. The social and ethical engagement of the practitioners is visible not only in the public health measures implemented, but also in the evolution of mentalities at the bedsides of plague-afflicted patients.

Since Antiquity, physicians have been confronted with outbreaks of contagious diseases, which compelled them to elaborate medical knowledge permitting them to understand the causes and behaviour of these transmissible afflictions. The word 'plague' (*pestis, loimos*) referred to maladies spread in the air by miasmas, as Hippocrates explained, and striking patients who did not adopt a healthy life-style, according to Galen. During the Renaissance, ancient theories of contagion were rethought and adapted in the light of everyday experience, for, from the fourteenth century, Europe was ravaged by the Black Death, that is, *Yersinia pestis*, which can take the forms of bubonic, pneumonic, and septicemic plague.¹ When contagion affects

¹ On the different forms of *Yersinia pestis*, see Christian E. Demeure and others, 'Yersinia pestis and the plague: an updated view on evolution, virulence determinants, immune subversion, vaccination, and diagnostics', *Genes & Immunity*, 20 (2019), pp. 357–70; Kathryn A. Glatter and Paul Finkelman, 'History of

a society, as Andrew T. Price-Smith has pointed out, many domains are impacted, including economics, politics, demography, productivity, fertility, and migrations, because of the direct or indirect threat to the interests of states and populations.² In fact, ever since the first epidemics of plague, physicians and public officials have conferred and worked together in the interest of public health to ensure the security of populations and prevent mortality, as is illustrated by the works of Carlo Cipolla on the fight against an invisible and deadly enemy.³ Such collaboration proved potentially beneficial for the governance of society. Thus, many of the measures adopted during an outbreak of plague were maintained when the outbreak ceased. As the example of London shows, according to the study of Harold J. Cook, this could become a model for governments in introducing medical directives and schemes to preserve health and guarantee order.⁴

The social and political impact is not the only aspect of contagion that merits analysis. Obviously, contagion also affects medical knowledge, namely the search for the causes of transmissible diseases, their way of acting, and the therapies for them. In this context, the medical application of the word ‘contagion’, whose etymology implies the act of touching, is implicated in a cross-cultural melting pot of legal, philosophical-moral, religious, literary, and pathological references, as is illustrated by Vivian Nutton.⁵ The public health and medical aspects of contagion thus give rise to a third level of thought in the context of transmissible disease. From an epistemological point of view, the scientific and cultural effects of the notion of contagion in medicine also have clinical repercussions, since the outbreak of a contagious disease transforms the manner of taking care of patients. This is not a simple technical point, which can be explained with reference to public health. It is an ethical and deontological subject, which particularly affected practitioners, as one can comprehend from reading Renaissance sources. Physicians and other practitioners, such as surgeons, became responsible for treating sick persons independently of their life-style, moral behaviour, and social status.

In approaching this set of problems, this article focuses on early modern medical thought during the outbreaks of the second pandemic of plague (fourteenth to eighteenth centuries), in four sections. After a brief introduction on the subject of pandemics, and plague in particular, the notion of contagion is analysed through a reflection on the evolution of medical thought at the intersection of different cultures and practices. Then, a short view of how physicians faced an outbreak of plague

the Plague: An Ancient Pandemic for the Age of Covid-19’, *The American Journal of Medicine*, 134 (2021), pp. 176–81. See also chapter 3 of this volume.

2 Andrew T. Price-Smith, *Contagion and Chaos. Disease, Ecology, and National Security in the Era of Globalization* (Cambridge, Mass.–London, England: The MIT Press, 2009), pp. 16–18.

3 Carlo M. Cipolla, *Contro un nemico invisibile. Epidemie e strutture sanitarie nell’Italia del Rinascimento* (Bologna: Il Mulino, 1985).

4 Harold J. Cook, ‘Policing the Health of London: the College of Physicians and the Early Stuart Monarchy’, *The Society for the Social History of Medicine*, 2 (1989), pp. 1–33.

5 Vivian Nutton, ‘Did the Greeks Have a Word for It? Contagion and Contagion Theory in Classical Antiquity’, in *Contagion. Perspectives from Pre-Modern Societies*, ed. by Lawrence I. Conrad and Dominik Wujastyk (Aldeshot: Ashgate, 2000), pp. 137–62.

leads into the last section on the practitioner at the bedside of the patient. From my point of view, the study of the relationship between the practitioner and the patient still needs further investigation with respect to early modern medicine. This is perhaps one of the most durable contributions of the medical thought of such famous physicians and surgeons as Girolamo Fracastoro and Ambroise Paré, or of lesser known doctors, like Nicolas de Nancel, as one can appreciate when confronted with current pandemics.

1. The Plague and the Plagues: Histories of a Disease

In 2011, an article by Kirsten Bos and colleagues announced that it was now possible to obtain a draft genome of the infectious agent of the Black Death (1347–1351), that is, the pandemic of plague which struck Europe in the mid-fourteenth century and is now known by the name of bubonic plague, from its major sign: the bubo. By a genomic investigation conducted on 46 teeth and 53 bones of Black Death victims from the East Smithfield burial ground (London: 1348–49), the authors of this article were able to show not only that the bacterium *Yersinia pestis*, a recent evolution of the bacillus *Yersinia pseudotuberculosis*, was responsible for the pandemic of plague,⁶ but also that this medieval plague ‘was the main historical event that introduced human populations to the ancestor of all known pathogenic strains of *Y. pestis*’, which originated in Asia.⁷ Before and after the pandemic of the fourteenth century, other waves of pestilence are known, which may be related to *Y. pestis*. In fact, 18 *Y. pestis* isolates have been identified as belonging to the genomic area of plague.⁸

When studying contagion, pandemics, and epidemics, historians, philosophers, as well as biologists, are confronted with recurrent reports of plague, from Antiquity to the present day. Beginning in Antiquity, the world plague (*pestis*) became the name attributed to such epidemic scourges, which caused great mortality because of their speed of action and propagation, and their persistence in time and space. Plague thus became the most frightening disease to face for physicians, public officials, and patients. During Antiquity, many plagues are reported in literary, historical, religious, and medical sources, the most famous of which are ‘the plague of Athens’ (fourth Century BC) and ‘the Antonine plague’ (2nd Century AC).⁹ Even if these plagues are

6 Kirsten I. Bos and others, ‘A draft genome of *Yersinia pestis* from victims of the Black Death’, *Nature*, 478 (2011), pp. 506–10. See also the results of the analysis of 100 skeletal remains in Verena J. Schuenemann and others, ‘Targeted enrichment of ancient pathogens yielding the pPCP1 plasmid of *Yersinia pestis* from victims of the Black Death’, *Proceedings of the National Academy of Sciences of the United States*, 108 (2011), pp. 746–52.

7 Bos and others, ‘A draft genome’, p. 508.

8 Michel Drancourt, ‘Plague in the genomic area’, *Clinical Microbiology and Infection*, 18 (2012), pp. 224–30.

9 On ancient plagues, see, for instance, Jean-Noël Biraben, *Les hommes et la peste en France et dans les pays européens et méditerranéens*, 2 vols (Paris-La Haye: Mouton, 1975–76), I, pp. 22–25; A. J. Holladay and J. C. Poole, ‘Thucydides and the Plague of Athens’, *The Classical Quarterly*, 29 (1979), pp. 282–300; James Longrigg, ‘Epidemic, ideas and classical Athenian society’, in *Epidemics and ideas. Essays on the historical perception of pestilence*, ed. by Terence Ranger and Paul Slack (Cambridge: Cambridge University Press,

not yet confirmed as epidemics of *Yersinia pestis*, the written production concerning them is still very important for understanding medical thinking and the notion of contagion, as we will see in the second section of this article. Moreover, during Antiquity other contagious diseases were known and considered particularly cruel, such as leprosy, a disease which ravaged Europe during the Middle Ages.¹⁰

It is at the end of the Antiquity that one finds evidence of the first great pandemic of the plague nowadays attributed to *Y. pestis*: the Justinian plague (541–750). Not only do the sources describe the symptoms and signs of bubonic plague, but biologists have been able to identify the infectious agent.¹¹ After this first pandemic of plague, two other pandemics are currently known: the one renowned as the Black Death, which started in the mid of the fourteenth century (1347–1351), as we have said, and persisted until the 1720s, when the last outbreak was named The Great Plague of Marseille (1720–1722); and the so-called ‘third pandemic’, which started in the nineteenth century and still persists at present.¹² The pandemic beginning with the Black Death and lasting 400 years, that is, the second pandemic, is the one which led physicians to elaborate complex theories on contagion and during which they also collaborated with officials to create effective means of combatting the mortality and the pathology, as well as of preventing the spread of the scourge. The second pandemic was not an endemic disease; rather, it came from Asia, as historians and biologists have demonstrated. Signaled in Armenia as coming from China or Africa, the plague travelled along the commercial routes, such as the silk road.¹³ It entered Europe through Samarkand, where two great paths allowed travel to the West, via the Caspian Sea and Crimea. Along the route were Genoese merchants, who frequented towns for trading purposes, so the plague travelled to Constantinople, and, from there, to Sicily, Marseille, and all of Europe. At the start of the year 1348,

1992), pp. 21–44; Lisa Kallet, ‘Thucydides, Apollo, the Plague, and the War’, *The American Journal of Philology*, 134 (2013), pp. 355–82; R. P. Duncan-Jones, ‘The Antonine Plague Revisited’, *Arctos*, 52 (2018), pp. 41–72. See also chapter 1 of this volume on the Athenian plague.

¹⁰ Elinor Lieber, ‘Old Testament “Leprosy”, Contagion and Sin’, in *Contagion. Perspectives from Pre-Modern Societies*, pp. 97–136; Françoise Bériac, ‘A propos de la fin de la lèpre: XIII^e–XV^e siècles’, in *The Regulation of Evil. Social and Cultural Attitudes to Epidemics in the Late Middle Ages*, ed. by Agostino Paravicini Bagliani and Francesco Santi (Firenze: Sismel-Edizioni del Galluzzo, 1998), pp. 159–73; François-Olivier Touati, ‘Contagion and Leprosy: Myth, Ideas and Evolution in Medieval Minds and Societies’, in *Contagion. Perspectives from Pre-Modern Societies*, pp. 179–201; Luke Demaitre, *Leprosy in Premodern Medicine. A Malady of the Whole Body* (Baltimore: The Johns Hopkins University Press, 2007).

¹¹ Lester K. Little, ‘Life and Afterlife of the First Plague Pandemic’, in *Plague and the End of Antiquity. The Pandemic of 541–750*, ed. by Lester K. Little (Cambridge: Cambridge University Press, 2007), pp. 3–32; Biraben, *Les hommes et la peste*, I, pp. 25–48.

¹² Kirsten I. Bos and others, ‘Eighteenth century *Yersinia pestis* genomes reveal the long-term persistence of an historical plague focus’, *eLife* (2016), available at <https://elifesciences.org/articles/12994#content> (last accessed 26.9.2021). On the persistence of plague in Western Europe, see Ann G. Carmichael, ‘Plague Persistence in Western Europe: A Hypothesis’, in *Pandemic Disease in The Medieval World. Rethinking The Black Death*, ed. by Monica H. Green (Kalamazoo-Bradford: ArC Medieval Press, 2015), pp. 157–91; Meriam Guellil and others, ‘A genomic and historical synthesis of plague in eighteenth century Eurasia’, *Proceedings of the National Academy of Sciences of the United States of America*, 117 (2020), pp. 28328–35.

¹³ Biraben, *Les hommes et la peste*, I, pp. 49–52.

Western Europe was contaminated by the plague.¹⁴ Once established in Europe, the plague continued to spread, causing recurrent outbreaks and evolution of the original infectious agent.¹⁵ Outbreaks were linked to many sociological factors, such as journeys, trading, exchanges between maritime regions, wars, pilgrimages, and so on. Between the mid-sixteenth and the mid-seventeenth centuries, one can count a plague-wave about every ten years, with the persistence of the disease in many areas of Europe.¹⁶

From the first outbreak, physicians were confronted with a quite unknown disease, which killed thousands, even millions, of people in a very short time. As far as we know, the plague devastated China beginning in 1331 and killed millions of people; in Europe, historians highlight the demographic shock caused by the Black Death: in many regions, 50% to 70% of the population died of the plague.¹⁷ Western physicians had no memory of the first pandemic (sixth–eighth centuries)¹⁸ and had to search for both the causes and the treatments in contemporary and ancient medicine. One of the first medical reactions to the spread of the disease is the study made by the professors of medicine of the Sorbonne University in Paris in 1348. King Philippe de Valois (Philippe VI: 1328–50) asked the physicians of the faculty of medicine to study the scourge in order to find the appropriate means to fight against it.¹⁹ The first words of the study underline the astonishment of the physicians, who had to look for the causes of this deadly disease.²⁰ According to medieval medical thought, the primal cause was found to lie in celestial constellations, especially in the 1345 conjunction of the three superior planets (Jupiter, Saturn, and Mars) in the zodiac sign of Aquarius.²¹ This distant cause was echoed by a series of proximal causes linked to the influences of the stars, such as the corruption of the air, water, and food.²²

14 Biraben, *Les hommes et la peste*, I, pp. 52–55.

15 Kirsten I. Bos and others, 'Eighteenth century *Yersinia pestis* genomes', pp. 5–7.

16 Edward A. Eckert, *The Structure of Plagues and Pestilences in Early Modern Europe. Central Europe, 1560–1640* (Basel: Karger, 1996).

17 Rinaldo Comba, 'Il rilevamento demografico : prima e dopo la peste nera', in *La peste nera: dati di una realtà ed elementi di una interpretazione* (Spoleto: Centro Italiano di Studi sull'Alto Medioevo, 1994), pp. 155–73; William Naphy and Andrew Spicer, *Plague. Black Death and Pestilence in Europe* (Wiltshire: Tempus, 2004), pp. 30–34; Stéphane Barry and Nibert Gualde, 'La Peste noire dans l'Occident chrétien et musulman 1346/1347–1352/1353', in *Epidémies et crises de mortalité du passé*, ed. by Dominique Castex and Isabelle Cartron (Pessac: Ausonius, 2007) pp. 201, 210–13.

18 A major problem was the language, since one of the most important sources for this pandemic was written in Greek: Procopius of Caesarea (*Bella Persica*, II, 22–23). See Evelyne Samama, 'Thucydide et Procope: Le regard des historiens sur les épidémies', in *Air, miasmes et contagion. Les épidémies dans l'Antiquité et au Moyen Age*, ed. by Sylvie Bazin-Tacchella and others (Langres: Dominique Guéniot, 2001), pp. 55–74.

19 H. Emile Rébouis, *Étude historique et critique sur la peste* (Paris: Alphonse Picard–Croville-Morant et Foucart, 1888), p. 34.

20 *Compendium de epidimia per Collegium Facultatis medicorum Parisius ordinatum*, ed. by H. Emile Rébouis, in *Id., Étude historique et critique sur la peste*, p. 70.

21 *Compendium de epidimia*, pp. 76–80. On the astrological causes in French medical literature, see Joël Coste, *Représentations et comportements en temps d'épidémie dans la littérature imprimée de peste (1490–1725). Contribution à l'histoire Culturelle de la peste en France à l'époque moderne*. Préface du professeur Yves-Marie Bercé (Paris: Honoré Champion Editeur, 2007), pp. 309–20.

22 *Compendium de epidimia*, pp. 80–84.

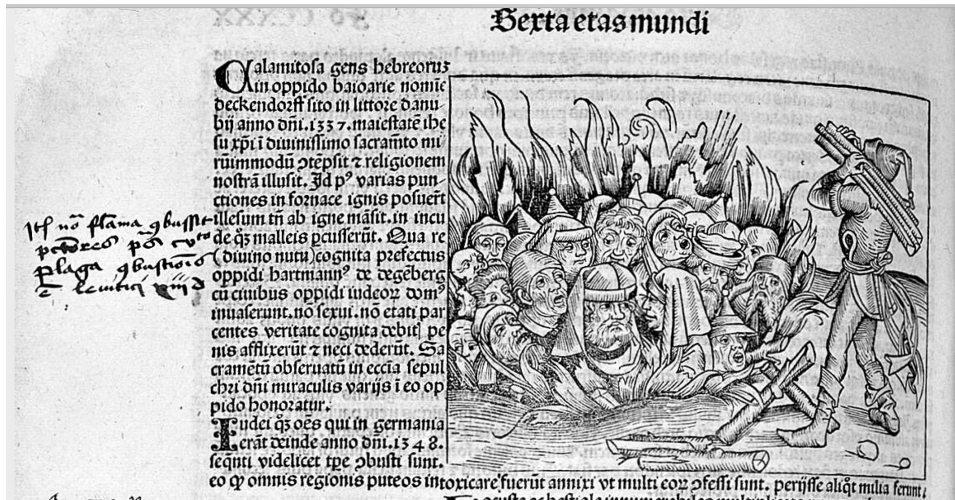


Figure 1. Hartmann Schedel, *Liber chronicarum* (Nuremberg: Anton Koberger, 1493), fol. 230v. © Wellcome collection

In the medical literature produced during the spread of the first outbreak and the following epidemic waves, these causes were discussed and the discussions enriched by reflections on eclipses, comets, terrestrial and meteorological cataclysms, like earthquakes and storms, as well as by considerations of wars and famine. Moreover, these secondary causes were frequently interpreted as a consequence of God's wrath, because of men's sins, religious heresies, the cohabitation with non-Christian people (Muslims and Jews) and persons already sick, such as lepers.²³ Jews were particularly targeted by the accusation of being responsible for the spread of the plague. They were suspected of working with lepers, Muslims, and the devil in order to poison wells, thus spreading the plague. Historians have recorded many massacres of Jewish people during outbreaks of pestilential diseases in Europe, in continuity with preceding persecutions.²⁴

Historians underline similar reactions when syphilis started to spread in Europe, at the end of the fifteenth century. It was a new and unknown disease, which, moreover, affected the genitals. Thus, another target could be aimed at, namely prostitutes, and especially foreign prostitutes, who were considered 'to bring a variety of diseases, including plague', as Laura J. McGough has underlined.²⁵ During the sixteenth century in Venice, these 'loose women' had to be segregated from 'respectable women' and

23 See Biraben, *Les hommes et la peste*, II, pp. 7–17.

24 See Biraben, *Les hommes et la peste*, I, pp. 57–65; Naphy and Spicer, *Plague*, pp. 59–63; Anna Colet and others, 'The Black Death and Its Consequences for the Jewish Community in Tàrrega: Lessons from History and Archeology', in *Pandemic Disease in The Medieval World. Rethinking The Black Death*, pp. 63–96.

25 Laura J. McGough, 'Quarantining Beauty: The French Disease in Early Modern Venice', in *Sins of the Flesh. Responding to Sexual Disease in Early Modern Europe*, ed. by Kevin Siena (Toronto: Centre for Reformation and Renaissance Studies, 2005), p. 232.

placed in permanent quarantine: the island of Giudecca was chosen, where Jews already lived segregated in order to placate the wrath of God.²⁶

2. Plague Contagion and Medical Theories

Ever since Antiquity, ‘contagion’, in medicine, has signified the transmission of a disease by both direct and indirect contact between one body and another.²⁷ In ancient Latin, *contagio* and *contagium* were formed from the association of *cum* (with) and *tangere* (to touch), thus indicating the contact, the relation, between two entities, the influence and communication of matter, especially corrupted and polluted matter. Ancient philosophers widened the semantic application of the word ‘contagion’: as Mirko D. Grmek has pointed out, in Cicero, *contagio* can refer to the relations between natural phenomena, thus translating the Greek word *συνπάθεια*.²⁸ As heirs to the ancient knowledge, Renaissance philosophers, physicians, and humanists underlined the semantic application of the word ‘contagion’ to the communication between entities. For instance, quoting ancient literary sources such as Virgil, Juvenal, Pollux, and Lucretius, the Latin dictionary of Ambrogio Calepino (1435–1510 c.), first published in 1502, finds the origin of the synonymous words ‘contagium’, ‘contagio’, and ‘contages’ in the association of ‘con’ and ‘tago’, from ‘tango’. A contagion refers to a disease contracted by contact: ‘morbus qui ex contactu contrahitur.’²⁹ This dictionary continued to be enriched and printed in the following decades by other humanists. In a late edition of the eighteenth century, the three words ‘contages’, ‘contagio’, and ‘contagium’ became three distinct entries. ‘Contages’ is described as synonymous with ‘contagium’, and both words indicate an infirmity transmitted by contact: ‘male attaccaticcio [...] morbus, qui ex contactu contrahitur, a contingo’; the word ‘contagio’ is the one which could be translated, in Italian, by ‘contagio, infezione’ (contagion, infection).³⁰ The image of contact is distinctly expressed in the Latin dictionary of Robert Estienne (1503?–1559). At the entry ‘Contactus, Contagium’, one reads: ‘Vide Contingo’ (See ‘to touch’, ‘to affect’).³¹ So, under the entry ‘contingo’, one can find ‘contactus’, ‘contagium’, ‘contagio’, and ‘contages’, with

26 McGough, ‘Quarantining Beauty’, pp. 211–37.

27 Danielle Gourevitch, ‘Peut-on employer le mot d’*Infection* dans les traductions françaises de textes latin?’, in *Mémoires V, Textes Médicaux Latins Antiques*, ed. by Guy Sabbah (Saint-Etienne: Publications de l’Université de Saint-Etienne, 1984), p. 49.

28 Mirko D. Grmek, ‘Les vicissitudes des notions d’infection, de contagion et de germe dans la médecine antique’, in *Mémoires V, Textes Médicaux Latins Antiques*, ed. by Guy Sabbah (Saint-Etienne: Publications de l’Université de Saint-Etienne, 1984), p. 54.

29 Calepinus (*Impressum Rhegii Lingobardiae industria presbyteri Dionysii Berthochi impressoris, 1502*), fol. m7v. On Ambrogio Calepino, see Thomas B. Deutscher, ‘Ambrogio Calepino’, in *Contemporaries of Erasmus*, vol. 1, ed. by Peter G. Bietenholz and Thomas B. Deutscher (Toronto-Buffalo-London: University of Toronto Press, 1985) p. 244.

30 Calepinus *hoc est Lexicon Latinum* (Patavii: Typis seminarii, 1741), p. 212.

31 *Dictionarium Latinogallicum* (Lutetiae: apud Iacobum Dupuys, excudebat Franciscus Stephanus, 1570), p. 311. On Robert Estienne, see Elizabeth Armstrong, *Robert Estienne, royal printer* (Cambridge: Cambridge University Press, 1954).

examples of contagion between bodies ('contagio cum corporibus'), gazes ('contagio aspectus'), minds ('contagio conscientiae'), crimes and evil ('malorum contagiones', 'sceleris contagio', 'turpitudinis contagio'), nature and terrain ('naturae contagio', 'terrena contagio'), and war ('contagio belli').³²

In fact, the word 'contagion' covered quite large cultural fields, since the transmission of a disease was only one of the areas of its application. Religions, too, were concerned with contagion, namely with the contamination of a religion by another religious faith. In his study of contagion, Saul Jarcho shows how different religions were considered as infectious, with serious consequences for populations. For instance, in Antiquity, Jews could be expelled because they were accused of infecting Roman customs, just as Christians were considered to be superstitious. Fathers of the church, including Tertullian, established an analogy between fevers and heresies, implying the communicability of noxious physical and cultural conditions. The image of contagion in religious thought was also employed, however, to represent communication between God and humankind by the touch (*tactus*), as *The Creation of Man* by Michelangelo (1475–1564) illustrates.³³ The corruption of religion by 'false religion' and idolatry became a theme discussed by many philosophers into modern times,³⁴ as did the theme of superstition, which Paul-Henri Thiry d'Holbach (1723–89) considered a form of unholy contagion allied to tyranny and moral corruption.³⁵

Yet religion and politics are not the only cultural and social fields in which the notion of contagion can be used to explain the dissemination of an idea and a condition. The quarantine of prostitutes and 'loose women' was presented not only as a sanitary decision, but also as a moral one, isolation being a means of social control, as also in the case of the confinement of Jews in ghettos.³⁶ In the same manner, the notion of the transmission of love, which figured in both ancient philosophy and medicine, was frequently cited as an example of the communication of a physical, moral, and psychological condition between two persons. Love can be contagious because the rays emitted by the beauty of the beloved person or object penetrate through the eyes and affect the imagination, as was theorized by Marsilio Ficino (1433–99) and other writers in early modern philosophical, medical, and literary thought. Moreover, if ocular contagion transmits love, it can also transmit affliction, through the evil eye.³⁷ Similarly, the contagion of love can become a pathological condition, namely

³² *Dictionarium Latinogallicum*, p. 316.

³³ Saul Jarcho, *The Concept of Contagion in Medicine, Literature, and Religion* (Malabar: Krieger Publishing Company, 2000), pp. 27–41.

³⁴ See, for instance, Matthew Day, 'The Sacred Contagion: John Trenchard, Natural History, and the Effluvial Politics of Religion', *History of Religions*, 50 (2010), pp. 144–161.

³⁵ Paul-Henri Thiry d'Holbach, *La contagion sacrée ou Histoire naturelle de la superstition*, ed. by Jean Pierre Jackson (Paris: Coda, 2006).

³⁶ Laura J. Mc Gough, *Gender, Sexuality, and Syphilis in Early Modern Venice* (New York: Palgrave Macmillan, 2011), pp. 112–15.

³⁷ Donald Beecher, 'Windows on Contagion', in *Imagining Contagion in Early Modern Europe*, ed. by Claire L. Carlin (Houndmills: Palgrave, 2005), pp. 32–46.

lovesickness, acknowledged in medical treatises of the Renaissance as the result of a humoral and emotional mutation in the body of the beloved person.³⁸

In general, emotions and physical conditions can be communicated by vapours or *species* exhaling from bodies, as early modern physicians stated. This is the case with laughter, which can become pathological.³⁹ Indeed, the notion and the term of contagion can be applied in many fields, more than this short survey offers, since political, cultural, philosophical, medical, and literary questions involve a metaphorical lexicon which illustrates an idea and a way of operating.⁴⁰ This way of operating can be transmitted by different means: sight and touch in the case of love, not only for the beloved but also for the lover;⁴¹ touch and exhalations in the air, in the case of a transmissible disease.

Pollution of the air has been at the core of the notion of contagion since Antiquity. As Jacques Jouanna explains, in Hippocratic medicine one can find the word *miasma* — a word whose origin is not medical, since it indicated the action of staining. It was used to describe the spots of blood left after a crime or the impurity of a disease, as in the case of epilepsy.⁴² In this sense, *miasma* is quite close to *infectio*, a word also coming from the lexicon of dyers (*infectores*), who transmitted colours to woven materials.⁴³ The notion of infusion in the act of colouring or staining allowed the link with medicine and health, because of the image of spot and dirtiness a *miasma* and an *infectio* can evoke. Thus, the notion of *miasma* could especially serve to identify the causal agent of a disease. In the case of a widespread disease, like a pestilent fever, the physician could make use of the image of *miasma* in the air to explain the pollution which infused the disease in many people at the same time and in different places. This situation was a quite difficult epistemological one for the physicians, who had to distinguish between the individual and the general disease. The latter could be explained by an external cause, like the polluted air; the former by an internal cause.⁴⁴ Accordingly, one can read in *Nature of man*:

38 Dominique Brancher, 'Du poème à la chair: La contagion érotique des traités médicaux (xvi^e–xvii^e siècles)', in *La contagion. Enjeux croisés des discours médicaux et littéraires (xvi^e–xix^e siècle)*, ed. by Ariane Bayle (Dijon: Editions Universitaires de Dijon, 2013), pp. 25–40.

39 Dominique Bertrand, 'Contagious Laughter and the Burlesque: From the Literal to the Metaphorical', in *Imagining Contagion in Early Modern Europe*, ed. by Claire L. Carlin (Houndmills: Palgrave, 2005), pp. 177–194.

40 See Philippe Monneret, 'Epilogue linguistique. La contagion comme métaphore', in *La contagion. Enjeux croisés des discours médicaux et littéraires*, pp. 161–75.

41 Lise Wajeman, 'La contagion pétrifiante ou des dangers de l'agalmatophilie', in *La contagion. Enjeux croisés des discours médicaux et littéraires*, pp. 41–55.

42 Jacques Jouanna, 'Air, miasme et contagion à l'époque d'Hippocrate et survivance des miasmes dans la médecine posthippocratique', in *Air, miasmes et contagion*, pp. 9–11.

43 Gourevitch, 'Peut-on employer', p. 50.

44 Paul Demont, 'Notes sur le récit de la peste athénienne chez Thucydide et sur ses rapports avec la médecine grecque de l'époque classique', in *Formes de pensée dans la Collection hippocratique. Actes du IV Colloque International Hippocratique, Lausanne 21–26 septembre 1981*, ed. by François Lasserre and Philippe Mudry (Genève: Librairie Droz, 1983), p. 345.

Diseases arise, in some cases from regimen, in other cases from the air by inspiration of which we live. The distinction between the two should be made in the following way. Whenever many men are attacked by one disease at the same time, the cause should be assigned to that which is most common, and which we all use most. This it is which we breathe in. For it is clear that the regimen of each of us is not the cause, since the disease attacks all in turn.⁴⁵

Thus, in order to explain a widespread fever, namely a *loimos* (plague), like the Plague of Athens or the Antonine Plague, Hippocratic and Galenic physicians make use of the notion of miasma. A miasma could be an emanation from the stars to the earth, transmitted meteorologically, as well as one coming up from the earth, for instance after an earthquake, from swamps, or from decomposed corpses, as in the aftermath of wars.⁴⁶ In his work on the difference of fevers (*De differentiis februm*), Galen (second century) utilized these arguments in characterizing the miasma as pollution by seeds of disease (λοιμοῦ σπέρματα).⁴⁷

These physical phenomena could explain the origin of the infection of the air from a *miasma* or many *miasmata*, but the physician must also understand how they work. In the Hippocratic treatise *Breaths*, one can find the description of the particular way of acting of a pestilential fever, which is a common fever caused by the air: 'epidemic fever has this characteristic because all men inhale the same wind; when a similar wind has mingled with all bodies in a similar way, the fevers too prove similar'.⁴⁸ But this was too simple a theory, which could not explain why, in the case of a common disease like a widespread pestilential fever, someone survives or is not attacked by the disease, even if he or she breathes the same air. This question is a major one, which early modern physicians also tried to answer, and on which they elaborated theories of contagion based on their own experience.

In fact, the first physicians confronted with the plague, and early modern physicians generally, were imbued with ideas derived from Hippocratic and Galenic treatises. To answer this very important question, which could permit physicians to understand how really to save patients, they could read in Hippocrates that the reason why a common disease could strike one species of living beings but not all was that 'one body differs from another, one air from another, one nature from another and one nutriment from another'.⁴⁹ Galen went further in his treatise on the difference

45 Hippocrates, *Nature of man*, in Hippocrates, English trans. by William Henry Samuel Jones, vol. 4, The Loeb Classical Library, (Cambridge, Mass.-London: Harvard University Press-William Heinemann, 1959), Chap. 9, p. 25.

46 Jouanna, 'Air, miasme et contagion', p. 14.

47 Galen, *De differentiis februm*, in Galenus, *Opera omnia*, ed. by D. Carolus Gottlob Kühn, vol. 7 (Lipsiae: Prostat in officina libraria Car. Cnoblochii, 1824), I. 6, p. 291. See Vivian Nutton, 'The Seeds of Disease: An Explanation of Contagion and Infection from the Greeks to the Renaissance', *Medical History*, 27 (1983), pp. 1-34.

48 Hippocrates, *Breaths*, in Hippocrates with an English trans. by William Henry Samuel Jones, vol. 2, The Loeb Classical Library, (Cambridge, Mass.-London: Harvard University Press-William Heinemann, 1959), Chap. 6, pp. 233-235.

49 Hippocrates, *Breaths*, p. 235.

of fevers, establishing a connection between the seeds of the pestilential disease and the suitability and state of preparation of the body (τοῦ πάσχοντος ἐπιτηδειότης) to be struck. This preparation is to be found in men and women whose bodies are in an appropriate condition to receive those seeds and putrefy, because they are full of excrement, they live idly by participating in feasts and getting drunk, they suffer from plethora, they abuse their sexuality, and so on.⁵⁰ Galen offered to succeeding physicians a medical theory which could be supported by the laws of hygiene and the prevention of diseases. This theory was also a philosophical one, since it was based on the interaction between the agent (the seed) and the patient (the body) during their contact. It was an Aristotelian principle⁵¹ which led Galen to explain the interaction between the agent and the patient as the result of a correspondence produced by the life-style of the sick person.

Medieval and early modern physicians appropriated this concept when they found themselves confronted with a common fever, even before the spread of the plague. In the *Conciliator*, Pietro d'Abano (1250–1316) was able to benefit from the Galenic theory of fevers transmitted to him by the *Canon* of Avicenna (970–1037) in elucidating the action of the pestilential fever (*febris pestilentialis*) as the action of an agent on a patient because of contact between the two.⁵² Moreover, Galen's *De differentiis februm* was known during the Middle Ages, thanks to the twelfth-century translation by Burgundio da Pisa (1110 c.-93).⁵³ Pietro quotes Galen's treatise on the difference of fevers when he comes to expound the functioning of putrid fever, and he introduces the notion of seed (*semen*) as the cause of the pollution of the air.⁵⁴ In continuity with this epistemological exposition of the way pollution spreads the disease, the physician Pietro da Tossignano (Pietro Curiali, second half the fourteenth century-1407), professor of medicine in the universities of Padova, Bologna, and Pavia,⁵⁵ describes plague as the putrefaction of the air because of noxious miasmas. His *Consilium pro peste evitanda* (1398) was edited and translated during the Renaissance within the *Fasciculus medicinae* of Johannes de Ketham (1415?-1470?), beginning with its first printed edition of 1491. In this Latin version, the corruption of the air is caused 'ex pulvere istorum vaporum malorum' (by the dust of these

50 Galen, *De differentiis februm*, p. 291.

51 Aristotle, *On the Soul*, in Aristotle, *On the Soul, Parva naturalia, On Breath* with an English trans. by Walter Stanley Hett (Cambridge, Mass.-London: Harvard University Press-William Heinemann, 1935), II. 2, 414a11–12, p. 78 (Translation, p. 79: 'For it is upon that which is affected and in a given condition that the activity of what is producing an effect seems to operate').

52 Petrus Aponensis, *Conciliator controversiarum, quae inter philosophos et medicos versantur* (Venetiis: apud Iuntas, 1565), Diff. XCIII, fol. 142r.

53 See Stefania Fortuna, *De differentiis februm tradotto da Burgundio da Pisa*, in 'Galeno Latino. Catalogo della tradizione latina di Galeno: manoscritti ed edizioni', available at <https://www.galenolatino.com/traduzioni.php?id=1> (last accessed 26.9.2021).

54 Pietro d'Abano, *Conciliator controversiarum*, f. 143r.

55 See Augusto De Ferrari, 'Curiali, Pietro', in *Dizionario Biografico degli Italiani*, 31 (Roma: Istituto della Enciclopedia italiana, 1985), [https://www.treccani.it/enciclopedia/pietro-curiali_\(Dizionario-Biografico\)/](https://www.treccani.it/enciclopedia/pietro-curiali_(Dizionario-Biografico)/) (last accessed 26.11.2021).

noxious exhalations).⁵⁶ These noxious exhalations are at the origin of many common pestilential diseases. Among these, the epidemic disease ('infirmetas epidimialis') is the one which appears suddenly and strikes communities of people at the same time with many kinds of illness, such as anthrax accompanied by fevers, dysentery, bubonic plague, smallpox, and measles.⁵⁷ At the end of the fifteenth century, in his *Consilio contro la pestilenza* (1480), Marsilio Ficino comes back to the idea of noxious vapours as the vehicle of transmission of the plague, joining in a single image the poisonous exhalation ('vapore velenoso') of the air and its action by contact ('si appicca', it sticks).⁵⁸ Ficino explains that this poisonous exhalation can act on the bodies it touches only if these are suitable ('disposti') to receive it. Quoting Galen and Avicenna, he says that a body is suitable for the action of the plague if it is full of filth ('imbratti'), stinking humours, putrefying nourishment, warm and humid matter, unclean, with the heart weakened by intercourse and passions, and the pores of the flesh either too open or too closed.⁵⁹ The responsibility of the patient is represented in an image found in the *Vanquete de nobles cavalleros* by the physician Luis Lobera de Avila (1480–1560).⁶⁰ This work has chapters on the foods which can be dangerous during a pestilence, such as fruits. Especially interesting is the representation of a physician who abandons a patient and his entourage because the patient has not followed his advice not to eat fruit. The physician turns his back on the patient and he will not return, since the patient is responsible for his disease.⁶¹

Not all physicians agreed in attributing responsibility to the patient, especially in the case of a pestilential contagion. In his treatise on contagion, the physician Girolamo Fracastoro (1478–1553) develops a theory of the communication of the disease based on the action of analogy and sympathy among bodies. One should not forget that his *De contagione, contagiosis morbis et curatione* (1546) was published in the same volume as his treatise on sympathy and antipathy, *De sympathia et antipathia rerum*,

56 Pietro da Tossignano, 'Consilium pro peste evitanda', in Johannes de Ketham, *Fasciculus medicine revisus per Georgium de Monteferrato* (Venetiis: per Joannem et Gregorium fratres de Forlivio, 1491), Chap. 1 'Diffinitio proprie pestilentie', fol. b6r. On the history of this book, see Tiziana Pesenti, *Il Fasciculus medicinae, ovvero le metamorfosi del libro umanistico* (Treviso: Antilia, 2001).

57 Pietro da Tossignano, 'Consilium pro peste evitanda' (1491), Chap. 1 'Que sint infirmitates pestilenciales', fol. b6r: 'Infirmetas epidimialis est facta subito et in uno momento temporis, communis multitudine hominum, quia in tali epidimia egritudines apparent diverse. Nam aliquibus insunt carbunculi cum febre, aliquibus disinterie, aliquibus glandule vel apostemata, aliquando variole, aliquando morbili'.

58 Marsilio Ficino, *Consilio contro la pestilenza*, ed. Enrico Musacchio et con un saggio introduttivo di Giampaolo Moraglia (Bologna: Cappelli editore, 1983), Chap. 1 'Che cosa è pestilenza', pp. 55–56. On this treatise, see Teodoro Katinis, 'A Humanist Confronts the Plague: Ficino's *Consilio contro la Pestilentia*', *Modern Language Notes*, 125 (2010), pp. 72–83; Teodoro Katinis, 'Per la fortuna di Ficino nel Cinquecento: il caso dei *Dialoghi sopra le cause della peste universale* di Alessandro Puccinelli', *Bruniana et Campanelliana*, 26 (2020), pp. 453–66.

59 Ficino, *Consilio*, Chap. 3 'Come si distende la peste et in quali persone', pp. 58–59.

60 See Carlos José Hernando Sánchez, 'El banquete de damas y caballeros, la corte galante de Carlos V en Nápoles', *Bulletin hispanique*, 119 (2017), p. 444.

61 Luis Lobera de Avila, *Vanquete de nobles cavalleros e modo de bivar ... et trata del regimen curativo e preservativo de las fiebres Pestilenciales et de la Pestilencia* (Lutetiae Parisiorum: Georgii Iosse, S. D. [Augsburg: H. Steiner, 1530]), fols I4v-K1r.



Figure 2. Luis Lobera de Avila, *Vanquete de nobles cavalleros e modo de bivar ... et trata del regimiento curativo e preservativo de las fiebres Pestilenciales et de la Pestilencia* (Lutetiae Parisiorum: Georgii Iosse, S. D. [Augsburg : H. Steiner, 1530]), fol. K1r. © Wellcome Collection.

and that there are links between the two texts.⁶² In fact, in his treatise on sympathy, Fracastoro establishes his medical theory on a philosophical basis by exploring similar natural phenomena (both physical and psychological), which function by natural inclination, *sympathia*, or natural repulsion, *antipathia*, like the attraction between the iron and the magnet, the repulsion between water and oil, the lion and the cock, cabbage and rue, as well as the communication of the yawn and the functioning of the emotions.⁶³ Contagion is merely one of these natural phenomena: ‘inter quae et contagionum natura est’.⁶⁴ The notion of attraction and repulsion, sympathy and antipathy, is the basis of the theory of Fracastoro, who elucidates the harmony (‘consensus’)

62 Girolamo Fracastoro, *De sympathia et antipathia rerum liber unus. De contagione, contagiosis morbis et curatione libri tres* (Venetiis: apud heredes Lucaeantonii Iuntae Florentini, 1546). The bibliography on Fracastoro is very copious. See, for instance, Charles and Dorothea Singer, ‘The Scientific Position of Girolamo Fracastoro (1478?-1553) with Especial Reference to the Source, Character and Influence of his Theory of Infection’, *Annals of Medical History*, I (1917), pp. 1–34; Enrico Peruzzi, ‘Antiocultismo e filosofia naturale nel *De sympathia et antipathia rerum* di Gerolamo Fracastoro’, *Atti e memorie dell’Accademia Toscana di Scienze e Lettere La Colombaria*, 45 (1980), pp. 41–131; Vivian Nutton, ‘The Reception of Fracastoro’s Theory of Contagion: The Seed That Fell among Thorns?’, *Osiris*, 6 (1990), pp. 196–234; Amalia Perfetti, ‘La *Syphilis sive de morbo gallico* de Jérôme Fracastor: exemple de la diffusion de Lucrèce en Italie dans la première moitié du XVI^e siècle’, *Revue d’histoire des sciences*, 55 (2002), pp. 263–72; *Girolamo Fracastoro fra medicina, filosofia e scienze della natura*, ed. by Alessandro Pastore and Enrico Peruzzi (Firenze: Leo S. Olschki, 2006); and, with a broader approach, Roger Teysou, *La théraputique de Fracastor. Lexique des médicaments* (Paris: L’Harmattan, 2017).

63 For a catalogue of these natural phenomena, see Girolamo Fracastoro, *De sympathia et antipathia rerum Liber I*, Edizione critica, traduzione e commento a cura di Concetta Pennuto (Roma: Edizioni di Storia e Letteratura, 2008), Chap. 1, pp. 12–14.

64 Fracastoro, *De sympathia* (2008), p. 14.

and the discord ('dissensus') between bodies by citing the Aristotelian principle of the interaction of the agent and the patient that we have already found in Galen: 'Est praeterea rerum consensus et dissensus alius in agendo [...] Neque enim omnia in omnia agunt, sed certa solum in certa'.⁶⁵ This action is based on the conjunction of the agent and the patient because of the 'materiae aptitudo': 'Ergo in omni actione tria praecipue requiruntur [...]: Sunt autem facultas agentis, aptitudo materiae et applicatio conveniens'.⁶⁶

Fracastoro defines contagion as 'an infection that passes from one thing to another' ('contagio sit quaedam ab uno in aliud transiens infectio').⁶⁷ Three kinds of contagion are possible: by direct contact, by a fomes, and at a distance.⁶⁸ In all of these cases, the vehicle of contagion are the seeds ('seminaria') emanating from the infected body to the second body, then from the second to the third, and so on. Fracastoro is quite close to the Galenic theory of contagion, since he makes use of a corpuscular theory of miasma. Moreover, the seeds cannot act and multiply if they do not find a suitable recipient body, namely a body with which they have harmony ('sympathia', 'consensus', 'analogia').⁶⁹ Nevertheless, according to Fracastoro, the suitability of the recipient body is not due to the life-style of the patient. He does not agree with Galen and his successors on this point. The 'analogia' among the bodies is a natural one: it is not based on the Galenic predisposition of the patient ('patientis aptitudo', τοῦ πάσχοντος ἐπιτηδειότης), but on the predisposition of the matter ('materiae aptitudo'), as he explains in the treatise on sympathy. In his theory of contagion, the shift from the patient to the matter allows Fracastoro to discharge the patient from responsibility for his contamination and that of others, since experience demonstrates that healthy people, even men and women who have a good (hygienic) style-life, also get sick of the plague. Fracastoro makes use of a paradoxical argumentation about the unsound predisposition of the patient: 'nam primo mirum videtur in decem millibus hominum, qui in pestilentia pereunt, eam esse praeparationem in omnibus, praesertim quod videmus innumeros exactissime sanos existentes, et nullo vitio humorum depravatos, concipere tamen contagionem illam ex sola conversatione cum pestilentia affecto, aut ex illius vestibus'.⁷⁰

65 Fracastoro, *De sympathia* (2008), Chap. 11 'De analogia rerum in agendo', p. 74 ('In action, there is also another harmony and discord among things [...] In fact, all things do not act on all things, but only certain things on certain things').

66 Fracastoro, *De sympathia* (2008), p. 74 ('In every action, three main factors are necessary [...]: the capacity of the agent, the suitability of the matter, the right application').

67 Girolamo Fracastoro, *De contagione et contagiosis morbis et eorum curatione*, Translation and notes by Wilmer Cave Wright (New York-London: G. P. Putnam's Sons, 1930), I. 1 'Quid sit contagio?', pp. 2-3.

68 Fracastoro, *De contagione* (1930), I. 2 'De prima contagionum differentia', p. 6.

69 Fracastoro, *De contagione* (1930), I. 3-5, pp. 8-20; I. 8 'De analogia contagionum', p. 38.

70 Fracastoro, *De contagione* (1930), II. 3 'De pestilentibus febribus', p. 80 (p. 81: 'for in the first place, it seems remarkable that this predisposition should exist in every one of ten thousand persons who die when there is a plague; especially when we see that countless persons who are perfectly healthy and whose humors have suffered no depravity, nevertheless catch that contagion from merely associating with the plague-stricken, or from his clothes').

3. The Physician at Stake, the Officials in Action

Girolamo Fracastoro was an experienced physician, who specialized in contagious disease.⁷¹ He reasoned on the basis, not of a theoretical paradigm, but of a realistic assessment and observation of natural phenomena. The contagion of a pestilent fever is independent of the state of a patient's body: a patient can have good or poor health before being struck by the plague:

possunt enim esse in aliquo mensurate humores, potest abesse omnis obstructio, omnis plenitudo, pestilentia tamen ab alio concipi [...] quinimo illud fieri potest, ut in aliquo praeparatum sit aut phlegma aut cholera, ut putrescant ex praedictis principiis, minus tamen corripantur a contagione, quam humor alius, quod analogia non sit ad illos.⁷²

Fracastoro adopts a deontological approach, which might disturb the traditional Galenic physician, able to transfer to the patient responsibility for the failure of medicine. The Fracastorian physician remains with the patient, and tries to adapt therapies to the different conditions of the ill body. He must inquire into its previous state. Moreover, the physician has to fight against the disease, since its mortality depends also on its degree of aggressivity. As one reads in the third book of *De contagione*, the physician distinguishes between the 'truly pestilent' fevers, which are mostly fatal, and the 'malignant' fevers, which are often fatal. The therapy is determined by the interaction between the dangerousness of the disease and the condition of the matter of the patient's body, especially the degree of corruption of this matter.⁷³ Fracastoro furnishes arguments for the physicians who want to be at the bedside of patients and collaborate with the political authorities in order to eliminate the disease. As a matter of fact, in everyday life, there were physicians and surgeons committed to fighting the plague. As one may gather from Joël Coste's study of the French situation, the fight against the plague was conducted on four levels: medical practice, public administration, the community, and individuals.⁷⁴

Physicians and surgeons practising during the many outbreaks of plague of the second pandemic left treatises in order to shed light on the disease and its treatment, as well as the ways of preventing contamination and death.⁷⁵ The experience of the plague was related in clinical observations, which describe the signs and the symptoms of the disease. According to the surgeon Ambroise Paré (1509?-90), a

71 See also chapter 6 of this volume on Fracastoro.

72 Fracastoro, *De contagione* (1930), II. 3, pp. 82-84 (pp. 83-85: 'The humors in some individual may be in a normal condition, obstruction and plethora may be entirely lacking, and yet the plague may be contracted from another person. [...] In fact it may happen that, in an individual, either the phlegm or the bile is predisposed to putrefy [...], but that they nevertheless are not infected by the contagion so much as some other humor is infected, because the analogy with them is lacking').

73 Fracastoro, *De contagione* (1930), III. 5 'De cura febrium pestilentum communi', p. 211.

74 Coste, *Représentations et comportements*, esp. Chapters 4-10.

75 Ann G. Carmichael, 'Universal and Particular: The Language of Plague, 1348-1500', in *Pestilential Complexities: Understanding Medieval Plague*, ed. by Vivian Nutton (London: The Wellcome Trust Centre for the History of Medicine, 2008), pp. 17-52.

physician does not need much time to recognize that a person is sick: the pain and the ‘tumour’ in the armpit or the groin, together with the spots on the body, are the signs of the malignant illness.⁷⁶ Paré adds a description of more internal signs, giving a very vivid portrait of the afflicted, then of the dying, person based on his own experience, since Paré was not only a healer but also a patient of the plague, as we will see in the next section. Consider these passages from Paré:

en la peste, le coeur, auquel gist la vie, est principalement assailly [...] Parquoy les malades frappez de peste ont souvent defaillance de cœur, et tombent comme esvanouis. Le pouls est quelquesfois remis, et par fois trop frequent, et principalement la nuict. Ils sentent des punctions et demangeaison par tout le corps, et principalement aux narines, comme piqueures d’espingles, qui procedent de la vapeur maligne, montant des parties inferieures [...] Ils ont semblablement la poictrine chaude et ardente, avec grande palpitation et battement de cœur, disans sentir grande douleur sous le mammelon du tetin senestre, avec courte haleine, et grande difficulté de respirer [...] Pareillement ils ont toux et douleur d’estomach, enfleure de flancs ou costez: pour-ce qu’à cause de la debilité de la chaleur naturelle, se multiplient beaucoup de ventositez, qui sont cause de ladite extension: voire que le ventre en est quelquesfois si fort enflé, qu’on diroit estre une espece d’hydropisie, nommee *Tympanites*. D’avantage, ils ont nausée, ou appetit de vomir, c’est à dire, que l’estomach leur bondist, qui vient à raison qu’il a connexion avecques les parties nobles, et se ressentent du venin mortel de tout le corps: autres ont grands vomissemens et frequens, jettans une cholere jaune, et aucunesfois verte ou noire, correspondante aux selles en varieté de matiere et couleur: et à aucuns sort le sang tout pur en grande abondance, non seulement par le vomissement, mais aussi quelquesfois par le nez, par le siege, et par la verge, et aux femmes par leur matrice [...] la face se monstre hideuse, et est veue de couleur plombée et livide, les yeux ardents, estincelans, rouges, et comme pleins de sang, ou d’autre couleur, et larmoyans. Le tour des paupieres est livide et noir, comme si elles avoyent esté battues et meurdries, et ont la face hideuse à voir, et tout le corps jaunastre, tellement qu’ils ne ressemblent point à eux-mesmes, de façon qu’on les decognoist, et telle chose signifie la mort proche.⁷⁷

76 Ambroise Paré, ‘Livre de la Peste’, in Ambroise Paré, *Les oeuvres*, vol. 3, Edition critique par Evelyne Berriot-Salvadore, Jean Céard et Guylaine Pineau, Sous la direction d’Evelyne Berriot-Salvadore (Paris: Classiques Garnier, 2019), Chap. 14 ‘Des signes de la peste presente’, pp. 2315-16.

77 Paré, ‘Livre de la Peste’, pp. 2316-17. For the English translation, see Ambroise Paré, ‘Of the Plague’, in *The Workes of that famous Ambrose Parey*, Translated out of Latine and compared with the French by Tho. Johnson (London: Printed by Richard Cotes, and Willi Du-Gard, 1649), Chap. 13 ‘Of the signs of such as are infected with the Plague’, pp. 546-47: ‘Wherefore the chiefest and truest signs of this diseases are to bee taken from the heart, beeing the mansion of life [...] Therefore they that are infected with the Pestilence, are vexed with often swooundings and fainting; their puls is feebler and flower then other, but sometimes more frequent, but that is specially in the night-season; they feel prickings over all their bodie, as if it were the pricking of needles; but their nostrils do itch especially by occasion of the malign vapors rising upwards [...] their breast burneth, their heart beateth with pain under the left dug, difficultie of taking breath, ptissick, cough, pain of the heart, and such an elation or puffing up of the *Hypochondria*, or sides of the bellie, distended with the abundance of vapors raised by the force of the feverish heat, that

Les signes mortels, et qui demonstrent le cœur estre saisi, sont fièvres tresardentes et continues, la langue aride et seiche, de couleur noire, et quand les malades ont grande difficulté d'inspirer [...] Autres ont veilles continuelles, dont s'ensuit resverie et alienation d'esprit, et souvent meurent comme furieux et enragez. Aucuns ont une contraction et convulsion de tous les membres, defaillances frequentes de cœur, accompagnées de hocquets, et tombent souvent en syncope. [...] et ont appetit continuel de vomir, qui provient de la venenosité de la matiere [...] le vomissement est puant, et de matiere verte, comme jus de porreaux, et quelquesfois de couleur noire ou rouge: aussi aucunesfois est de sang tout pur, comme nous avons dict, et ont sueur froide, la face livide, hideuse et noire, et le regard esgaré.⁷⁸

Ambroise Paré resorts to a rich panoply of images and colours to convey the suffering of the patient, especially the signs which indicate the pain and the decomposition of the body. All the body is affected: the pictures and gravures of the plague cannot produce the same effect, since they cannot express the physical and psychological status of the patient.

In Paré's text, the reader hears the patient vomiting, grasping for breath, suffering from abdominal pain. The body of the patient empties of blood, and the face becomes the portrait of death. What can a physician, a surgeon, or anyone present do to save the patient or at least relieve his or her suffering? According to the texts, one should intervene as soon as possible with surgical operations, such as bloodletting and enemas, and pharmaceutical treatments in order to drive away the poisonous contamination and protect the heart. Moreover, in the case of a bubo, the surgeon should induce suppuration, practice drainage and scarification; in the case of a carbuncle, the treatments include scarification, suction cups, bloodletting and topical applications. These treatments are only some of the medical and surgical therapies, since the patient is also to be submitted to special diets, sweatings, and fastings.⁷⁹ Once again, Paré's text provides a colourful description of the procedures, especially when the surgeons have to practice an operation, such as removal of the bubo. Differential

the patient will in a manner seem to have the Tympanie. They are molested with a desire to vomit, and oftentimes with much and painful vomiting, wherein green and black matter is seen, and alwaies of divers colors, answering in proportion to the excrements of the lower parts [...] oftentimes blood alone, and that pure, is excluded and cast up in vomiting [...], but also verie often out of the nostrils, fundament; and in women, out of the womb; [...] all the whole face hath an horrid aspect, and as it were the color of lead, the eies are burning red, and as it were swoln, or puffed up with blood, or anie other humor, shed tears; and to conclude, the whole habit of the bodie is somewhat changed, and turned yellow'.

78 Paré, 'Livre de la Peste', Chap. 15 'Des signes mortels de la peste', p. 2320. See Paré, 'Of the Plague', Chap. 14 'What signs in the Plague are mortal', p. 547: 'It is a most deadlie sign in the Pestilence, to have a continual and burning fever, to have the tongue drie, rough, and black, to breathe with difficultie [...] to have phrensie and madness together, with [...] great watching; to have convulsions, the hicket, heart-beating, and to swound verie often and vehemently [...] and dailie vomits of a green, black, and bloodie color; and the face pale, black, of an horrid and cruel aspect, bedewed with a cold sweat, and verie mortal signs'.

79 For a portrayal of the means employed, see Coste, *Représentations et comportements*, pp. 270–307.

diagnosis allows the practitioner to appreciate the nature and dangerousness of the bubo:

Au commencement que la fluxion de la bosse se fait, les malades disent sentir à l'emunctoire comme une corde tendue, ou un nerf dur, avec douleur poignante: puis la matiere s'assemble comme une glande, et peu à peu, et en brief temps s'engrossit et s'enflamme [...] Si la tumeur est rouge et se grossit peu à peu, c'est bon signe. Celle qui est livide et noire et tardive à venir, est dangereuse. Aussi il en y a qui viennent promptement et d'une grande furie, et ne tiennent la forme commune, c'est à dire, que subitement deviennent enflammées avec grande tumeur et douleur intolerable, et telles sont communément mortelles.⁸⁰

The therapy for treating the bubo is a long and arduous, since it is based on the application of 'cupping-glass', which implies special treatment with unguents, vesicatories, cantharids, cataplasms, fomentations, and cauteries.⁸¹ The everyday life of a medical practitioner consisted of such acts, performed in the context of a general mobilization of the entire community. In fact, because of the recurrent outbreaks of plague during the second pandemic, officials and physicians became involved in the creation of public health boards, health officers, permanent institutions and magistracies. Large and small towns and states in what is now Italy were pioneers in this respect from the arrival of the Black Death in 1348, as Carlo M. Cipolla has pointed out: other countries, including France, Switzerland, and England, followed the Italian examples.⁸² Dialogue between officials and physicians was essential in order to establish the diagnosis of plague and activate public health measures. Medical error or under-estimation of the health situation could cause a delay in carrying out the necessary sanitary measures and thereby lead to a high rate of illness and death. During the outbreak of the plague of 1575–76, in Venice, the university professors of medicine Girolamo Mercuriale (1530–1606) and Girolamo Capodivacca (1523–89) argued that the disease was not plague and defended their diagnosis before other colleagues, who did not agree with them, and officials. As reconstructed by Richard Palmer, a medical debate was held in the 'Sala del Maggior Consiglio' in Venice, and the resulting decision was that this disease was not plague. A conflict between the two

80 Paré, 'Livre de la Peste', Chap. 33 'De l'aposteme pestiferee, appellee bubon ou bosse', pp. 2385–86. See Paré, 'Of the Plague', Chap. 30 'Of a pestilent *Bubo*, or Plague-sore', p. 563: 'In the beginning, while the *Bubo* is breeding, it maketh the patient to feel, as it were, a cord or rope stretched out in the place, or a hardned nerv with pricking pain: and shortly after the matter is raised up as it were into knob, and by little and little it groweth bigger, and is inflamed [...] If the tumor be red, and increas by little and little, it is a good and salutarie sign: but if it bee livid or black, and com verie slowly unto his just bigness, it is a deadlie sign; It is also a deadlie sign if it increas suddenly, and com to his just bigness as it were with a swift violence, and as in a moment, have all the symptoms in the highest excess; as pain, swelling and burning.'

81 Paré, 'Livre de la Peste', Chap. 34 'De la cure de l'aposteme pestiferé', pp. 2386–94.

82 Carlo M. Cipolla, 'The origin and development of the Health Boards', in Id., *Public Health and the Medical Profession in the Renaissance* (Cambridge: Cambridge University Press, 1976), pp. 11–66.



Figure 3. Luys Lobera de Avila, *Bancket oder Gastmal der Hofe und Edellent* (Francfort: Charles Egen, 1563). © Collection BIU Santé Médecine

physicians and the ‘Provveditori alla Sanità’ erupted, as well as an increasing number of deaths.⁸³

The ‘Provveditori alla Sanità’, who did not agree with the two physicians, had to take care of the population and prevent the demographic, economic, and social disaster of yet another outbreak of plague. The numerous registers, diaries, and chronicles conserved in the archives and libraries of all Europe describe the fear, even panic, and the misery of daily life.⁸⁴ These sources are essential if one wants to understand the impact of the lists of deaths, sick persons, houses marked and shops closed, interruptions of public services, and persons confined in *lazarettos*. In the ‘Relatione del contagio di Goritia’ (1682) by Giovanni Maria Marusig (1641–1712),

83 Richard Palmer, ‘Girolamo Mercuriale and the Plague of Venice’, in *Girolamo Mercuriale. Medicina e cultura nell’Europa del Cinquecento*, ed. by Alessandro Arcangeli and Vivian Nutton (Firenze: Leo S. Olschki, 2008), pp. 51–65. See also Vivian Nutton, ‘With Benefit of Hindsight: Girolamo Mercuriale and Simone Simoni on Plague’, *Medicina e Storia*, 11 (2006), pp. 5–19.

84 On the fear, see Jean Delumeau, *La peur en Occident XIV^e–XVIII^e siècle* (Paris: Fayard, 1978), pp. 98–142.

one finds a day-by-day catalogue of dead persons, of houses closed and marked by the sign announcing the presence of sick persons, of ways to find food and remedies, of measures to prevent acts of violence, of religious vigils and prayers to ward off the disease, of ways of providing assistance to poor persons and children. The lists of deaths are not numbers, but persons, identified by name, age, and links with other persons.⁸⁵

4. Preserving People from Plague: The Doctor and the Patient

Given the extremely high rate of mortality during an outbreak of plague, preservation from it was one of the major preoccupations, not only of treatises, but also of medical practice, especially in the relationship between the doctor and the patient. Medical and historical researchers highlight the practical side of Renaissance medicine, showing how attentively the doctor stays at the bedside of the patient, listening to him or to her, working with other professional colleagues, such as surgeons, midwives, and apothecaries.⁸⁶ Nevertheless, the nature of the medical visit during a wave of pestilence still needs more investigation. Early modern medical sources are rich in descriptions of the way physicians and their assistants could remain safe from the plague when visiting the patient. In these sources, one can also find many commentaries describing how to take care of sick and dying persons, which show the ethical and charitable commitment of these doctors.

The highly dangerous contamination of plague was a reason either to flee or to be protected, if it was necessary to stay in the towns, as was especially the case for the physicians treating victims of plague. The first medical advice for avoiding contagion was to protect oneself from the infectious breath of the patient, as well as from the contaminated bed sheets, pillows, and clothes. As one can read in Pietro da Tossignano's treatise, the air of the patient's room must be purified in the interest, not only of the sick person, but also of those who stay with him. For this purpose, one could make use of rose-branches dampened with vinegar and sandalwood, as well as perfumes made of myrrh, incense, aloe, and so on. Bed sheets must be immersed in vinegar and changed frequently; the walls of the room must be washed with water and vinegar. A large number of lemons should be placed on the bed.⁸⁷ In such a purified room, the physician follows a strict procedure in treating the patient. Pietro

85 Maria Cristina Cergna, *Il diario della peste di Giovanni Maria Marusig (1682), Edizione del testo e delle illustrazioni originali dell'autore*, con un saggio di Rienzo Pellegrini (Mariano del Friuli: Edizioni della Laguna, 2005). For a historical picture of the religious actions undertaken to repel out the plague, see Biraben, *Les hommes et la peste*, vol. 2, pp. 56–84.

86 Jerome Bylebyl, 'The manifest and the hidden in the Renaissance clinic', in *Medicine and the five senses*, ed. by William F. Bynum and Roy Porter (Cambridge: Cambridge University Press, 1993), pp. 40–60; Michael Stolberg, 'Bedside Teaching and the Acquisition of Practical Skills in Mid-Sixteenth-Century Padua', *Journal of the History of Medicine and Allied Sciences*, 69 (2014), pp. 633–64.

87 Pietro da Tossignano, '*Consilium pro peste evitanda*' (1491), Chap. 4, 'De modo curativo', fol. b7r: 'Aer camere sic rectificetur pro illis qui stant in camera sicut pro egro aspergendo cum ramis et frondulis, et rosis madefactis in aceto cum sandalis cum perfumigiis ex mira, ture, silloaxloe, storace, et similibus.

explains that, after the body of the patient has been purified by bloodletting and enema, the surgeon can intervene with scarification of the bubo (*apostema*) or the carbuncle (*anthrax*), a very dangerous operation because of the matter that can flow out of these excrescences.⁸⁸ The practitioners have to be very cautious for additional reasons: the heat of both the means of treatment (cauterisation) and the exhalations from the body of the patient is very dangerous. In this situation, the physicians must be particularly careful because of the noxious vapours, and he should avoid physical contact. The matter of these exhalations is so dangerous, so subtle and poisonous, that this explains why physicians fall ill: ‘Caveat sibi medicus a malis fumis, et non tangat cum manu, quia una materia distillari subtilis est contagiosa intantum quod medici postea infirmantur’. Thus, Pietro suggests a recipe for a purifying drug.⁸⁹

The very practical medical chapters of Pietro da Tossignano’s treatise inspired an illustration of a medical visit to a plague-stricken patient in the 1493 edition of the *Fasciculo di medicina* by Johannes de Ketham; this illustration was not present in the first edition of 1491, but was retained in the following Latin editions.⁹⁰

A quite similar explanation of the way the physicians could be protected from the plague when visiting the patient in his house was proposed by the French physician Auger Ferrier (1513–88). Ferrier, born in Toulouse, studied medicine at the University of Montpellier and became a personal physician of Queen Catherine de’ Medici (1519–89).⁹¹ During the epidemic of 1548, he wrote a book proposing ways to be preserved from contagion: *Remedes preservatifs et curatifs de peste*. Reading Ferrier’s pages on the medical visit allows one to appreciate the precautions physicians had to adopt in order to avoid contagion, as well as their fear, and particularly the meticulous measures advised to prevent contact with the body of the patient, his excrements, and his family:

Quand vous serez pres de la maison du pestiferé, envoyez quelcun devant, qui face ouvrir toutes les portes de la maison, et les fenestres de la chambre ou gist le patient: et tandis arrestez vous un peu à la rue.
Et commandez que lon allume bon feu à la chambre du malade.

Ponendo lintheamina madefacta in aceto cum cortinis, et sepe renovando, etiam muri camere aspergantur sepe aqua et aceto. Et sint super lecto et banchis multi citri’.

88 Pietro da Tossignano, ‘*Consilium pro peste evitanda*’ (1491), Chap. 4, ‘De corporis evacuatione et de cristeri faciendo’, ‘De cura apostematis’, ‘De cura Antracis’, fol. b7r.

89 Pietro da Tossignano, ‘*Consilium pro peste evitanda*’ (1491), Chap. 4, ‘Cura circa accidentia quae veniunt a pravitate materie’, fol. b7v (‘The physician has to avoid bad exhalations, and he must not touch. In fact, a single stuff of a thin catarrh is contagious. This is why physicians get sick’).

90 Pietro da Tossignano, ‘Consiglio per la peste’, in Johannes de Ketham, *Fasciculo di medicina* Vulgarizzato per Sabastiano Manilio Romano (Venetia: Zuane et Gregorio di Gregorii, 1493), fol. e2r. See, for instance, Pietro da Tossignano, ‘*Consilium pro peste evitanda*’, in Johannes de Ketham, *Fasciculus medicine* (Venetiis: per Joannem et Gregorium de Gregoriis fratres, 1500), fol. c5r.

91 On Auger Ferrier, see Ingrid De Smet, ‘Of Doctors, Dreamers and Soothsayers: The Interlinking Worlds of Julius Caesar Scaliger and Auger Ferrier’, *Bibliothèque d’Humanisme et Renaissance*, 70, 2, (2008), pp. 351–76; Jean-François Gourdou, *Le professeur Augier Ferrier et la reine Catherine de Médicis* (Paris: Saint Honoré éditions, 2016).

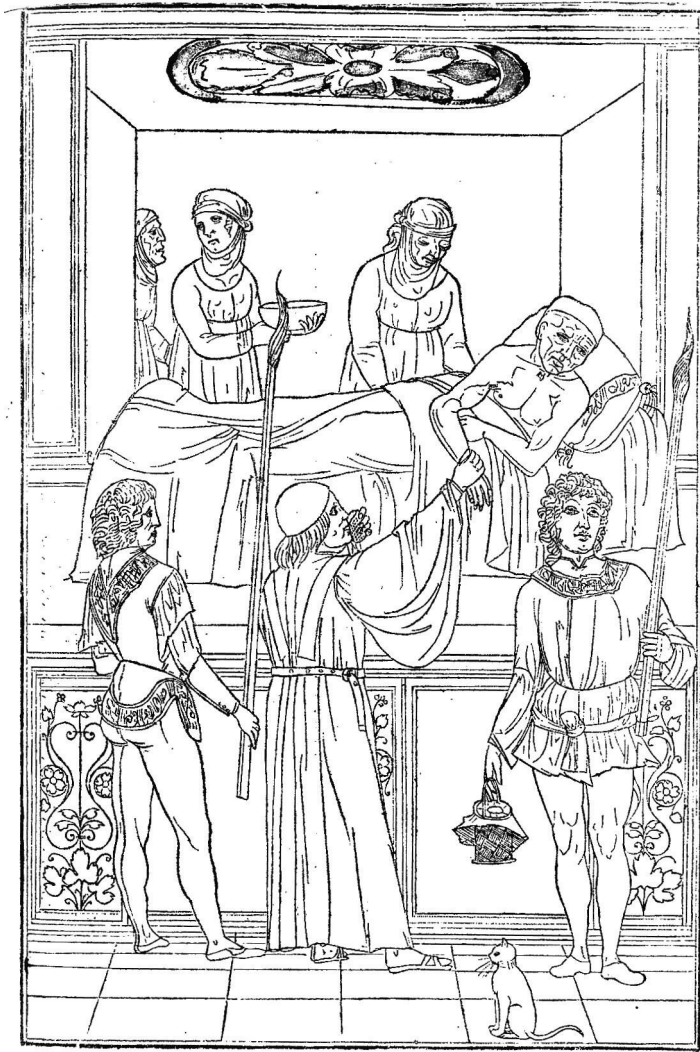


Figure 4. Johannes de Ketham, *Fasciculus medicine* (Venetiis: per Johannes et Gregorium de Gregoriis fratres, 1495). © Wellcome Collection

Puis ferez descendre une eschauffette pleine de charbons ardans, avec l'encens, roses, myrrhe, benioin, ladanum, styrax, cloux de giroffle, et semblables odeurs, pour en faire fumigation.

Et quant et quant faites allumer votre piece de boys de genevrier: et ainsi entrez hardiment, faisant passer devant vous ledit personnage avec ladite fumigation d'encens, myrrhe, etc. et le suyvez, tenant à l'une main ledit boys allumé: et à l'autre vostre pomme de senteur, ou vostre bouquet, ou latide esponge, l'appliquant au nez.

Et en ceste façon marcherez iusques dens la chambre, là ou ferez mettre ladite eschauffette avec ledit encens, à celle fin que l'odeur s'espande par toute la chambre.

Ainsi, tenant dens la bouche quelque chose de vostre massapan, et tenant l'une main au pres du nez avec lesdites odeurs, et ayant en l'autre ladite piece de genevrier allumee: vous regarderez d'un peu loing vostre patient, et l'interroguez de son mal, et de ses accidens: et s'il ha douleur, ou quelque tumeur en aucune partie, la visiterez.

Puis vous approcherez, et en luy tournant le dos, baillerez vostre piece de boys à quelcun qui la tienne devant vostre face. Et avec vostre main tournée en arriere, toucherez le poulx du malade, et le front, et la region du cœur: tenant tousiours quelque senteur au pres du nez.

Puis visiterez l'urine, et autres excremens, si bon vous semble, et si la condition du malade le merite. Car certainement il est fort dangereux s'approcher des excremens de telz malades.

Parquoy s'il fault que vous les visitez, faites tenir ledit genevrier fumigant et allumé au devant de vostre face, et n'oubliez tenir quelques odeurs au pres du nez.

Ce fait prenant congé de vostre patient, prenez vostre genevrier allumé, et le tenant au devant de vous, sortez hors de la maison.

Incontinent que serez hors, iettez ce que vous aviez dens la bouche, et prenez quelque autre chose dudit massapan. Laquelle macherez tout au long du chemin, et ainsi vous en retournerez à votre logis.

Et notez qu'au lieu dudit boys de genevrier, vous pouvez user de une torche, en la mesme forme et maniere qui ha esté dit du genevrier.⁹²

92 Auger Ferrier, *Remedes preservatifs et curatifs de peste* (Lyon: par Jean de Tournes, 1548), 'Quand le medecin, ou autre va voir les malades de peste', pp. 52–56 ('When you are near the house of the plague-afflicted person, send someone ahead to open all the doors of the house and the windows of the room where the patient is lying. During this time, wait a little in the street.

Order a good fire to be lit in the room of the sick person.

Then, you will order a warming-pan to be brought down full of burning coals, with incense, roses, myrrh, benzoin, labdanum, styrax, cloves, and similar herbs, in order to perform fumigations.

At the same time, ask for your piece of juniper-wood to be lit. So, enter boldly, having the person go ahead who is holding the said fumigation of incense, myrrh, and so on. Follow him with, in one hand, the said wood ignited and, in the other, either your pomander or your bouquet or the previously mentioned sponge, applying it to your nose.

In this way, you will proceed to the room, where you ask the warming-pan previously mentioned, with its incense, to be placed, so that the scent spreads through the whole room.

So, keeping some of your marzipan in your mouth and one of your hands near your nose with the previously mentioned aromatics, and in the other hand the lighted juniper previously mentioned, you will look at your patient from a little distance and ask him about his disease and symptoms; and if he feels pain or has a tumour anywhere, you will examine this.

Then, you will approach him and turn your back, giving your piece of wood to someone so that he keeps it before your face. And with the back of your hand, you will touch the wrist of the sick person, his forehead, and the region of the heart, always keeping some scent near your nose.

After this, you will examine the urine and the other excrements, if you think it is important and if the state of the sick person justifies it. For to come close to the excrements of these sick persons is undoubtedly very dangerous.

The physician, as well as any person who is going to visit a person afflicted by the plague, is urged to avoid any direct or indirect contact, since the disease can reach a person through infected air, objects, and the sick body itself. Direct and indirect contacts must be prevented by purifying the air with perfumed smoke, by keeping oneself distant from the excrements and the body of the sick person, and by turning away one's own face in order not to inhale his poisonous breath. The ordinary act of taking the pulse necessitates a specific manoeuvre, with the physician keeping his back turned to the patient. Moreover, the physician is protected by a kind of pharmacological marzipan, the ingredients of which are chosen from the remedies against poison of galenic medicine.

All the gestures and techniques that one can see in the illustration from Pietro da Tossignano–Ketham and read about the pages of Auger Ferrier are designed to protect the breath of the physician, and his body. In the same period, physicians also proposed other methods of keeping safe from contagion. In his 1566 treatise on the plague, the physician François Valleriole (1504–80) underlines how the lives of those attending the sick person are in danger, since they breathe the same air and are close to the excrements of their bodies. So, according to Valleriole, after praying to God to save him and taking all the possible precautions against contagion, the practitioner turns his face from the sick person in order to avoid his breath and the infection (*infection*). Moreover, the practitioner must wear clean clothes and be scrupulous about his physical hygiene.⁹³

In 1567, one year after the publication of Valleriole's book, the Chancellor of the University of Medicine of Montpellier and personal physician of the King of Navarre, Laurent Joubert (1529–83), described the clothes the doctor should wear if he wants to be protected from the plague, since these clothes impede the passage of the poisonous and bad-smelling air coming from the patient. It is very important that the tissue of these clothes should be thick and tightly woven. The best material is animal leather, especially the kind made from goat-skin, called *Marroquina*, as well as

Thus, if you must examine them, have the fumigant and lighted juniper kept before your face, and do not forget to keep some scent near your nose. When this is done, in taking leave of your patient, take with you your lighted juniper, and, holding it in front of you, get out of the house.

As soon as you are outside, throw away what you had in your mouth and take another piece of the previously mentioned marzipan. You will chew this all along the way and in this manner return to your lodging.

Note that you can make use of a torch instead of the juniper-wood mentioned in the same form and manner as has been specified regarding the juniper.

See Coste, *Représentation et comportements*, pp. 264–65.

⁹³ François Valleriole, *Traicté de la peste* (Lyon: par Antoine Oryphius, 1566), Chap. 16 'De l'ordre et regime que doibvent observer ceux qui assistent aux malades de peste pour le servir', pp. 186–91. On Valleriole and the plague, see Véronique Montagne, 'Le discours didascalique sur la peste dans les traités médicaux de la Renaissance: rationaliser et/ou inquiéter', *Réforme, Humanisme, Renaissance*, 70 (2010), pp. 103–12; Guylaine Pineau, 'Soigner la peste sans défier la colère divine dans les traités médicaux du XVI^e siècle', *Seizième siècle*, 8 (2012), pp. 173–90. Véronique Montagne has also analysed Valleriole's rhetorical language concerning plague in her book: Véronique Montagne, *Médecine et rhétorique à la Renaissance. Le cas du traité de peste en langue vernaculaire* (Paris, Classiques Garnier, 2017).



Figure 5. Jean-Jacques Manget, *Traité de la peste* (Genève: chez Philippe Planche, 1721). © Collection BIU Santé Médecine

clothes without fur, such as those made with silk.⁹⁴ In the following years, physicians continued to search for garments offering protection from the plague, as Joël Coste explains, citing sources from the seventeenth and eighteenth centuries,⁹⁵ until they arrived at the very famous costume of the plague doctor to be seen in one of the last treatises on the pandemic which had started in Europe in the mid-fourteenth century, namely the 1721 *Traité de la peste* by the Genevan physician Jean-Jacques Manget (1652–1742):⁹⁶

94 Laurent Joubert, *De peste liber unus* (Lugduni: apud Ioannem Frellonium, 1567), Chap. 11 'In aere pestilenti quomodo agendum sit: et de illius correctione, quot, quibusque modis fiat', pp. 75–77. Joël Coste quotes the passage from the French edition of 1581: Coste, *Représentations et comportements*, p. 265.

95 Coste, *Représentations et comportements*, pp. 266–267.

96 See Jean-Jacques Manget, *Traité de la peste* (Genève: chez Philippe Planche, 1721), Chap. 12 'L'ordre que les Magistrats doivent tenir pour se conserver en santé en tems de Peste, et se garantir de ce mal contagieux', pp. 170–71.

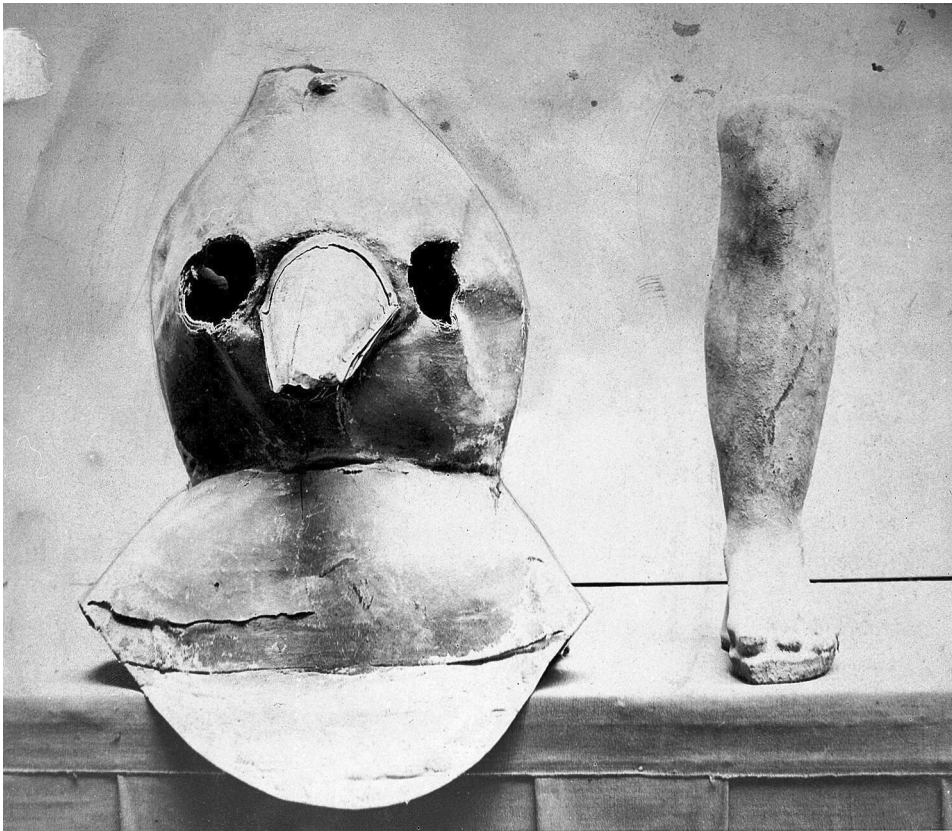


Figure 6. Plague apparatus from a lazaretto in Venice. © Wellcome Collection

This clothing resembles the protective apparel physicians could wear when working in a *lazaretto*, such as is shown in The Wellcome Collection:

The interest of the physicians in protective measure was justified because of the great number of them who contracted the plague. The famous surgeon Ambroise Paré underlines the human and ethical engagement practitioners make when treating plague-stricken patients, and recounts his own activity at their bedsides during three years. As he explains in his treatise on the plague of 1568, he practiced surgery in order to heal such patients. He was asked by the Queen to write the treatise after she saw, in 1564, a great many sick and dying patients in Lyon. Paré accepted, since, according to him, despite the great number of treatises already written on plague, he had to practice Christian charity by healing the miserable victims of the plague (*'une infinite de pauvres maladies pestiferez'*).⁹⁷ Paré knew the suffering of the patients not only because he treated them, as we have seen, but also because he had experienced

⁹⁷ Ambroise Paré, *Traicté de la Peste, de la petite Verolle et Rougeolle: avec une brefve description de la Lepre* (Paris: de l'Imprimerie d'André Wechel, 1568), 'Epistre à Monsieur Castellan', fols *2v–4r.

the disease, with a painful bubo in his right armpit and carbuncle on the belly. He hopes that his experience may encourage young students to engage actively with their patients.⁹⁸

Respect for the patient, compassion for his suffering, and for the entourage at the moment of dying — all these elements are at the core of both the experience and the treatise of the physician Nicolas de Nancel (1539–1610), who practiced medicine in the French town of Tours during the epidemic of the 1580s. This humanist physician is especially known for his former activity as pupil, colleague, and secretary of Pierre de la Ramée (Ramus: 1515–72), of whom he wrote a very interesting biography.⁹⁹ Because of the wars of religion, Nancel left Paris in the 1560s and went to Douai, where he studied medicine. In 1570 he settled in Tours, working as a physician in the town, then as the personal physician of Eléonore de Bourbon, the abbess of Fontevraud.¹⁰⁰ In 1581, his treatise *Discours tres ample de la Peste, divisé en trois livres, adressant à Messieurs de Tours*, was published in Paris. The treatise is divided into three large books: the first one is on the definition and causes of the plague; the second is about prophylactic measures against the plague; the last explains the therapies. In his treatise, Nancel makes many references to the nature of Touraine, its food, and the possibility of finding many ingredients for remedies. Moreover, he wants to show how a surgeon in Tours's *lazaretto* operates in treating plague-stricken patients and understanding their illness. At the end of the first book, Nancel copies description by the surgeon Simeon, who was treating patients in the *Sanitat* (Lazaretto) of Tours. This description was written at the request of Nancel, who wanted to know the signs of the plague the surgeon could see in the *Sanitat*. Simeon explains what the signs are, such as headache, stomach pain, vomiting, trembling, cold sweat, palpitation, syncope, and so on. After this list, Simeon describes the pestilential bubo and points out that he dissected dead persons, finding putrefaction in the left ventricle of the heart and alteration of the blood and the liver, which becomes violet and black.¹⁰¹

In this work, the reader is immersed in the everyday life of a practitioner, by way of a case-history report intended to inform other physicians, surgeons, and especially public officials. In fact, Nancel explicitly writes for the officials of Tours, *Messieurs de Tours*, who are responsible for the public health of the town and the working conditions of the practitioners. This is why Nancel closes his treatise with another

98 Paré, *Traicté de la Peste*, fol. *4r: 'Davantage, ceste experience a esté faite en moy mesme ayant esté touché de ce mal et souffert l'aposteme pestilent souz l'aisselle dextre, et le charbon au ventre. [...] Quand ores le tout ne profiteroit que pour donner courage aux ieunes estudiants, qui desirent parvenir à la Chirurgie, cela leur peut donner assurance de traicter les pauvres malades.'

99 Marie-Dominique Couzinet et Jean-Marc Mandosio, 'Nouveaux éclairages sur les cours de Ramus et de ses collègues au Collège de Presles d'après des notes inédites prises par Nancel', in *Ramus et l'Université* (Paris: Editions rue d'Ulm, 2004), pp. 11–48; Katharine MacDonald, *Biography in Early Modern France, 1540–1630. Forms and Functions* (Leeds: Legenda, 2007), Chap. 4 'Medicine and Method in Nicolas de Nancel's *Petri Rami Vita* (1599)', pp. 61–79.

100 MacDonald, *Biography in Early Modern France*, p. 62.

101 Nicolas de Nancel, *Discours tres ample de la Peste, divisé en trois livres, adressant à Messieurs de Tours* (Paris, Chez Denys du Val, 1581), Book 1, 'S'ensuit un advertissement du Chirurgien du Sanitat de Tours, touchant ce qu'il a trouvé et descouvert en la peste, de l'an present 1580', pp. 106–08.

discourse, written by himself, which provides officials with a procedure for protecting people during a pestilence: *Advertissement particulier à Messieurs de Tours, touchant la police et reglement qu'on doit garder et tenir en temps de peste*.¹⁰² After the description of the beautiful and wholesome territory of Tours, Nancel explains how to purify the air using fire perfumed by the many medicinal plants of the abbey-gardens. He suggests some measures for avoiding contagion. For instance, when meeting someone, it is sufficient to shake hands instead of kissing; one should also avoid meeting if one is not protected by an antidote; the food markets, especially those with meat, must be placed outside the town; one should avoid selling the goods of the dead, since they can retain the contagious poison of the plague; and of course, to flee is the best way to ensure safety.¹⁰³ Nevertheless, the physician must not forget the poor and sick, whose lives are in danger during the outbreak of plague. According to Nancel, nobody must mistreat the plague-afflicted. On the contrary, it is important to treat them with kindness and grace, without either keeping them imprisoned or burying them before they die. In fact, this is the reason why many people conceal their illness, thereby creating great danger for their entourage. Nancel points out that some sick people are prepared to be interred in their gardens because they fear the way they may be treated by physicians and their assistants in the *lazaretto*. So, officials must ensure that sick people are transported to the *Sanitat* in order to be nourished and healed at the expenses of the citizens and the bourgeois. All their bedding must be preserved, cleaned, and given back to them or their heirs:

Ie seroye d'advys [...] qu'on traittast les povres malades gratuitement et humainement, sans leur barrer, bacler, cadenasser et cheviller leurs portes et fenestres, et les enterrer auparavant qu'ils soient morts. Qui est occasion, que plusieurs celent et dissimulent leur mal, au grand danger de leurs domestiques, parens, voysins et amis : et craignants telle rigueur, endurent leur maladie, sans y prouvoir ; ainsi mourants, craignant de mourir : et quelquefois se faisant enterrer en leurs caves et celiers, ou iardins, s'ils en ont.

Les povres doivent estre transportés à l'hostel Dieu, ou au Sanitat [...], pour y estre nourris et secourus aux despens des citadins et bourgeois et emportés avec eux, leurs lits et coites, draps et couvertures, ciels et cortines, estants ja infectés de la contagion. et demeurer audit Sanitat ou Hospital, pour l'usage d'eux et des autres malades : pour crainte, que les laissant en leur maison, ou y estant remportés, ils baillent le mal aux autres domestiques ; comme nous en avons veu l'experience. il en sera fait registre et memoire, pour leur rendre, ou à leurs successeurs et heritiers, long temps après tout le mal cessé.¹⁰⁴

102 Nancel, *Discours*, pp. 342–66.

103 Nancel, *Discours*, pp. 342–60.

104 Nancel, *Discours*, p. 362 ('In my opinion [...] one should treat the poor sick persons graciously and humanely, and not bar, close, lock, and bolt their doors and windows, burying them before they are dead. This is why many of them conceal and hide their disease, presenting a great danger to their servants, relatives, neighbours, and friends. And being afraid of this harshness, they put up with their disease and do

These are the last pages of Nancel's treatise, which echoes Ambroise Paré's engagement on behalf of the patient. The experience of the disease — and in Paré's case also as a patient — pushes these practitioners to ask for compassion, respect, and care for the patient, including the dying. What Nancel's pages show is the destiny of a poor patient, who cannot be treated in his own house. In fact, the illustration of the medical visit in the treatises of Pietro da Tossignano and Auger Ferrier concerns a patient who can stay in his own room, able to have a doctor come to him. But what about the others? Nicolas de Nancel et Ambroise Paré describe their condition, especially Nancel in his portrait of the situation in Tours. The plague-afflicted patient is not afraid of death. He is afraid of the conditions of the *Sanitat*. So he prefers to die at home and does not reveal his disease. A physician cannot accept this situation for two reasons: it is a way of propagating of disease; it is an unethical violation of the relationship between the doctor and the patient, contrary to the deontology of the Hippocratic medical oath.¹⁰⁵ Nancel asks the officials to work to safeguard the human dignity of the plague-stricken poor. For his part, the physician must ensure correct diagnosis and have experience of the disease. In this way, he can identify and treat the real sick patient, without committing a fatal error by sending someone to the *Sanitat* who does not have plague:

Ainsi seroit bon, qu'il y eust quelque Medecin gagé et deputé, qui aiant veu et manié une fois les malades, donnast certain iugement, si c'est peste ou non peste. Car nous avons veu, que par ignorance du mal, et seule souspeçon, plusieurs ont esté portés au Sanitat des pestiferés, qui n'avoient point de peste.¹⁰⁶

Conclusion

As this short view of the impact of contagion and pandemics in societies and medicine shows, since Antiquity physicians confronted themselves with epidemics they called plague. Independently from the nature of ancient epidemics, the development of a

not have it taken care of. So they die, while fearing to die. And sometimes, they have themselves buried in their cellars or gardens, if they have them.

Poor people should be carried to the Hôtel-Dieu or to the Sanitat [...] to be fed and assisted at to the expense of the town-dwellers and wealthier citizens. And with them should be brought their beds, clothes, sheets, blankets, canopies, and bed curtains, which have already been infected by the contagion. These are to remain in the said Sanitat or Hospital to be used by them and other patients, for fear that, if they are left in their house or are taken back to it, they will propagate the disease to the others who live there, as we have already seen happen. A register and list of them will be made so they may be returned, or given to their successors and heirs, well after the disease is over and done').

¹⁰⁵ See Thomas Rütten, 'Receptions of the Hippocratic "Oath" in the Renaissance: The Prohibition of Abortion as a Case Study in Reception', *Journal of the History of Medicine and Allied Sciences*, 51 (1996), pp. 456–83.

¹⁰⁶ Nancel, *Discours*, p. 364 ('It would be a good thing if there were some physicians employed and empowered, who, having previously seen and handled the sick, would judge with certainty if a disease is plague or not. For we have seen that, because of lack of knowledge of the disease and simple suspicion, many persons have been brought to the Sanitat for the plague-afflicted who had no plague whatever').

theoretical thought in Hippocratic and Galenic medicine about what contagion is and how people react to it, as well as the accumulation of experiences in the fight against transmissible diseases were conveyed to medieval and modern medicine as sources to face the pandemics of the Black Death (1347–1351), which dwelled in Europe until the eighteenth century. During the four centuries the plague, *Yersinia pestis*, lasted in Europe, physicians had the possibility to elaborate theories about its causes, the way of its communication from one person to another, and the reasons why some people could survive to it. During the sixteenth century, a lexicon about contagion was elaborated, which mirrored the epistemological thought about the way natural phenomena communicate, exchange, attire and repel each other. The philosophical substratum to the medical theory, mixed with the clinical experience of the disease, let physicians like Fracastoro question the Galenic notion of the responsibility of the patient in contracting the plague. The survivors were no more the good patients physicians could hope to treat, but they were people whose body was predisposed by its own nature to repel or fight the seeds of the plague.

This deontological switch in medicine echoed the direct experience of the plague by doctors and surgeons, who were involved in the daily treatment of patients. The narrative by a surgeon like Ambroise Paré, who was both a person affected by the disease and a caregiver, allows us to hear the voice of the patients, whose suffering body is decomposed by the disease. Paré listened to his patients (“les malades disent”, patients say) in order to understand how the plague acted in their body, in every body. Thus, physicians and surgeons were precious collaborators for the magistrates and officials, who had to create public health boards in order to contain the spread of the epidemics. Being protected from the plague by special clothes and gestures, they could be useful in the fight against the disease. Nevertheless, the preventive measures and the creation of *lazarettos* should not be a discharge for caregivers in their ethical engagement to respect the patient until his or her last breath of life. The local experience of a doctor like Nicolas de Nancel and the surgeon Simeon of Tours becomes an epistemic tool for other physicians and surgeons, who need to develop means to ensure the best treatment for patients suffering from plague. So, one of the major questions for a physician or a caregiver, who wants to preserve the dignity of patients affected by a tremendous disease like plague, becomes how to accompany them and take care of their future life or their unavoidable death.

Bibliography

- Aristotle, *On the Soul*, in Aristotle, *On the Soul, Parva naturalia, On Breath* with an English trans. by Walter Stanley Hett (Cambridge, Mass.-London: Harvard University Press-William Heinemann, 1935).
- Calepinus (*Impressum Rhegii Lingobardiae industria presbyteri Dionysii Berthochi impressoris*, 1502).
- Calepinus *hoc est Lexicon Latinum* (Patavii: Typis seminarii, 1741).
- Compendium de epidimia per Collegium Facultatis medicorum Parisius ordinatum*, ed. by H. Emile Rébouis, in Id., *Étude historique et critique sur la peste* (Paris: Alphone Picard-Croville-Morant et Foucart, 1888), pp. 70–145.
- d'Holbach, Paul-Henri Thiry, *La contagion sacrée ou Histoire naturelle de la superstition*, ed. by Jean Pierre Jackson (Paris: Coda, 2006).
- Dictionarium Latinogallicum* (Lutetiae: apud Iacobum Dupuys, excudebat Franciscus Stephanus, 1570).
- Ferrier, Auger, *Remedes preservatifs et curatifs de peste* (Lyon: par Iean de Tournes, 1548).
- Ficino, Marsilio, *Consilio contro la pestilenza*, ed. Enrico Musacchio et con un saggio introduttivo di Giampaolo Moraglia (Bologna: Cappelli editore, 1983).
- Fracastoro, Girolamo, *De sympathia et antipathia rerum liber unus. De contagione, contagiosis morbis et curatione libri tres* (Venetiis: apud heredes Lucaeantonii Iuntae Florentini, 1546).
- , *De contagione et contagiosis morbis et eorum curatione*, Translation and notes by Wilmer Cave Wright (New York-London: G. P. Putnam's Sons, 1930).
- , *De sympathia et antipathia rerum Liber I*, Edizione critica, traduzione e commento a cura di Concetta Pennuto (Roma: Edizioni di Storia e Letteratura, 2008).
- Galenus, *De differentiis febrium*, in Galenus, *Opera omnia*, ed. by D. Carolus Gottlob Kühn, vol. 7 (Lipsiae: Prostat in officina libraria Car. Cnoblochii, 1824).
- Hippocrates, *Breaths*, in Hippocrates with an English trans. by William Henry Samuel Jones, vol. 2, The Loeb Classical Library, (Cambridge, Mass.-London: Harvard University Press-William Heinemann, 1959).
- , *Nature of man*, in Hippocrates, English trans. by William Henry Samuel Jones, vol. 4, The Loeb Classical Library, (Cambridge, Mass.-London: Harvard University Press-William Heinemann, 1959).
- Joubert, Laurent, *De peste liber unus* (Lugduni: apud Ioannem Frellonium, 1567).
- Luis Lobera de Avila, *Vanquete de nobles cavalleros e modo de bivar ... et trata del regimiento curativo e preservativo de las fiebres Pestilenciales et de la Pestilencia* (Lutetiae Parisiorum: Georgii Iosse, S. D. [Augsburg: H. Steiner, 1530]).
- Manget, Jean-Jacques, *Traité de la peste* (Genève: chez Philippe Planche, 1721).
- Nicolas de Nancel, *Discours tres ample de la Peste, divisé en trois livres, adressant à Messieurs de Tours* (Paris, Chez Denys du Val, 1581).
- Paré, Ambroise, *Traicté de la Peste, de la petite Verolle et Rougeolle: avec une brefve description de la Lepre* (Paris: de l'Imprimerie d'André Wechel, 1568).

- , 'Of the Plague', in *The Workes of that famous Ambrose Parey*, Translated out of Latine and compared with the French by Tho. Johnson (London: Printed by Richard Cotes, and Willi Du-Gard, 1649).
- , 'Livre de la Peste', in Ambroise Paré, *Les oeuvres*, vol. 3, Edition critique par Evelyne Berriot-Salvadore, Jean Céard et Guylaine Pineau, Sous la direction d'Evelyne Berriot-Salvadore (Paris: Classiques Garnier, 2019).
- Petrus Aponensis, *Conciliator controversiarum, quae inter philosophos et medicos versantur* (Venetiis: apud Iuntas, 1565).
- Pietro da Tossignano, 'Consilium pro peste evitanda', in Johannes de Ketham, *Fasciculus medicine revisus per Georgium de Monteferrato* (Venetiis: per Joannem et Gregorium fratres de Forlivio, 1491).
- , 'Consiglio per la peste', in Johannes de Ketham, *Fasciculo di medicina* Vulgarizzato per Sabastiano Manilio Romano (Venexia: Zuane et Gregorio di Gregorii, 1493).
- , 'Consilium pro peste evitanda', in Johannes de Ketham, *Fasciculus medicine* (Venetiis: per Joannem et Gregorium de Gregoriis fratres, 1500).
- Valleriole, François, *Traicté de la peste* (Lyon: par Antoine Oryphius, 1566).

- Armstrong, Elizabeth, *Robert Estienne, royal printer* (Cambridge: Cambridge University Press, 1954).
- Barry, Stéphane, and Gualde, Nobert, 'La Peste noire dans l'Occident chrétien et musulman 1346/1347-1352/1353', in *Epidémies et crises de mortalité du passé*, ed. by Dominique Castex and Isabelle Cartron (Pessac: Ausonius, 2007) pp. 193-227.
- Beecher, Donald, 'Windows on Contagion', in *Imagining Contagion in Early Modern Europe*, ed. by Claire L. Carlin (Houndmills: Palgrave, 2005), pp. 32-46.
- Bériac, Françoise, 'A propos de la fin de la lèpre: XIIIe-XVe siècles', in *The Regulation of Evil. Social and Cultural Attitudes to Epidemics in the Late Middle Ages*, ed. by Agostino Paravicini Bagliani and Francesco Santi (Firenze: Sismel-Edizioni del Galluzzo, 1998), pp. 159-73.
- Bertrand, Dominique, 'Contagious Laughter and the Burlesque: From the Literal to the Metaphorical', in *Imagining Contagion in Early Modern Europe*, ed. by Claire L. Carlin (Houndmills: Palgrave, 2005), pp. 177-194.
- Biraben, Jean-Noël, *Les hommes et la peste en France et dans les pays européens et méditerranéens*, 2 vols (Paris-La Haye: Mouton, 1975-76).
- Bos, Kirsten I., and , 'A draft genome of *Yersinia pestis* from victims of the Black Death', *Nature*, 478 (2011), pp. 506-10.
- , and , 'Eighteenth century *Yersinia pestis* genomes reveal the long-term persistence of an historical plague focus', *eLife* (2016), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4798955/>
- Brancher, Dominique, 'Du poème à la chair: La contagion érotique des traités médicaux (XVI^e-XVII^e siècles)', in *La contagion. Enjeux croisés des discours médicaux et littéraires (XVI^e-XIX^e siècle)*, ed. by Ariane Bayle (Dijon: Editions Universitaires de Dijon, 2013), pp. 25-40.

- Bylebyl, Jerome, 'The manifest and the hidden in the Renaissance clinic', in *Medicine and the five senses*, ed. by William F. Bynum and Roy Porter (Cambridge: Cambridge University Press, 1993), pp. 40–60.
- Carmichael, Ann G., 'Universal and Particular: The Language of Plague, 1348–1500', in *Pestilential Complexities: Understanding Medieval Plague*, ed. by Vivian Nutton (London: The Wellcome Trust Centre for the History of Medicine, 2008), pp. 17–52.
- , 'Plague Persistence in Western Europe: A Hypothesis', in *Pandemic Disease in The Medieval World. Rethinking The Black Death*, ed. by Monica H. Green (Kalamazoo-Bradford: ArC Medieval Press, 2015), pp. 157–91.
- Cergna, Maria Cristina, *Il diario della peste di Giovanni Maria Marusig (1682), Edizione del testo e delle illustrazioni originali dell'autore, con un saggio di Rienzo Pellegrini* (Mariano del Friuli: Edizioni della Laguna, 2005).
- Cipolla, Carlo M., 'The origin and development of the Health Boards', in Id., *Public Health and the Medical Profession in the Renaissance* (Cambridge: Cambridge University Press, 1976), pp. 11–66.
- , *Contro un nemico invisibile. Epidemie e strutture sanitarie nell'Italia del Rinascimento* (Bologna: Il Mulino, 1985).
- Colet, Anna, and , 'The Black Death and Its Consequences for the Jewish Community in Tàrrega: Lessons from History and Archeology', in *Pandemic Disease in The Medieval World. Rethinking The Black Death*, ed. by Monica H. Green (Kalamazoo-Bradford: ArC Medieval Press, 2015) pp. 63–96.
- Comba, Rinaldo, 'Il rilevamento demografico : prima e dopo la peste nera', in *La peste nera: dati di una realtà ed elementi di una interpretazione* (Spoleto: Centro Italiano di Studi sull'Alto Medioevo, 1994), pp. 155–73.
- Cook, Harold J., 'Policing the Health of London: the College of Physicians and the Early Stuart Monarchy', *The Society for the Social History of Medicine*, 2 (1989), pp. 1–33.
- Coste, Joël, *Représentations et comportements en temps d'épidémie dans la littérature imprimée de peste (1490–1725). Contribution à l'histoire Culturelle de la peste en France à l'époque moderne*. Préface du professeur Yves-Marie Bercé (Paris: Honoré Champion Editeur, 2007).
- Couzinet, Marie-Dominique, and Mandosio, Jean-Marc, 'Nouveaux éclairages sur les cours de Ramus et de ses collègues au Collège de Presles d'après des notes inédites prises par Nancel', in *Ramus et l'Université* (Paris: Editions rue d'Ulm, 2004), pp. 11–48.
- Day, Matthew, 'The Sacred Contagion: John Trenchard, Natural History, and the Effluvial Politics of Religion', *History of Religions*, 50 (2010), pp. 144–161.
- De Ferrari, Augusto, 'Curialti, Pietro', in *Dizionario Biografico degli Italiani*, 31 (Roma: Istituto della Enciclopedia italiana, 1985) [https://www.treccani.it/enciclopedia/pietro-curialti_\(Dizionario-Biografico\)/](https://www.treccani.it/enciclopedia/pietro-curialti_(Dizionario-Biografico)/)
- De Smet, Ingrid, 'Of Doctors, Dreamers and Soothsayers: The Interlinking Worlds of Julius Caesar Scaliger and Auger Ferrier', *Bibliothèque d'Humanisme et Renaissance*, 70, 2, (2008), pp. 351–76.
- Delumeau, Jean, *La peur en Occident XIV^e–XVIII^e siècle* (Paris: Fayard, 1978), pp. 98–142.
- Demaitre, Luke, *Leprosy in Premodern Medicine. A Malady of the Whole Body* (Baltimore: The Johns Hopkins University Press, 2007).

- Demeure, Christian E., and , 'Yersinia pestis and the plague: an updated view on evolution, virulence determinants, immune subversion, vaccination, and diagnostics', *Genes & Immunity*, 20 (2019), pp. 357–70.
- Demont, Paul, 'Notes sur le récit de la peste athénienne chez Thucydide et sur ses rapports avec la médecine grecque de l'époque classique', in *Formes de pensée dans la Collection hippocratique*. Actes du IV Colloque International Hippocratique, Lausanne 21–26 septembre 1981, ed. by François Lasserre and Philippe Mudry (Genève: Librairie Droz, 1983), pp. 341–353.
- Deutscher, Thomas B., 'Ambrogio Calepino', in *Contemporaries of Erasmus*, vol. 1, ed. by Peter G. Bietenholz and Thomas B. Deutscher (Toronto-Buffalo-London: University of Toronto Press, 1985) p. 244.
- Drancourt, Michel, 'Plague in the genomic area', *Clinical Microbiology and Infection*, 18 (2012), pp. 224–30.
- Duncan-Jones, R. P., 'The Antonine Plague Revisited', *Arctos*, 52 (2018), pp. 41–72.
- Eckert, Edward A., *The Structure of Plagues and Pestilences in Early Modern Europe. Central Europe, 1560–1640* (Basel: Karger, 1996).
- Fortuna, Stefania, De differentiis februm tradotto da Burgundio da Pisa, in 'Galeno Latino. Catalogo della tradizione latina di Galeno: manoscritti ed edizioni', <https://www.galeno-latino.com/traduzioni.php?id=1>
- Glatter, Kathryn A., and Finkelman, Paul, 'History of the Plague: An Ancient Pandemic for the Age of Covid-19', *The American Journal of Medicine*, 134 (2021), pp. 176–81.
- Gourdou, Jean-François, *Le professeur Augier Ferrier et la reine Catherine de Médicis* (Paris: Saint Honoré éditions, 2016).
- Gourevitch, Danièle, 'Peut-on employer le mot d'Infection dans les traductions françaises de textes latin?', in *Mémoires V, Textes Médicaux Latins Antiques*, ed. by Guy Sabbah (Saint-Etienne: Publications de l'Université de Saint-Etienne, 1984), pp. 49–52.
- Grmek, Mirko D., 'Les vicissitudes des notions d'infection, de contagion et de germe dans la médecine antique', in *Mémoires V, Textes Médicaux Latins Antiques*, ed. by Guy Sabbah (Saint-Etienne: Publications de l'Université de Saint-Etienne, 1984), pp. 53–70.
- Guellil, Meriam, and , 'A genomic and historical synthesis of plague in 18th century Eurasia', *Proceedings of the National Academy of Sciences of the United States of America*, 117 (2020), pp. 28328–35.
- Holladay, A. J., and Poole, J. C., 'Thucydides and the Plague of Athens', *The Classical Quarterly*, 29 (1979), pp. 282–300.
- Jarcho, Saul, *The Concept of Contagion in Medicine, Literature, and Religion* (Malabar: Krieger Publishing Company, 2000).
- Jouanna, Jacques, 'Air, miasme et contagion à l'époque d'Hippocrate et survivance des miasmes dans la médecine posthippocratique', in *Air, miasmes et contagion. Les épidémies dans l'Antiquité et au Moyen Age*, ed. by Sylvie Bazin-Tacchella and others (Langres: Dominique Guéniot, 2001), pp. 9–11.
- Kallet, Lisa, 'Thucydides, Apollo, the Plague, and the War', *The American Journal of Philology*, 134 (2013), pp. 355–82.
- Katinis, Teodoro, 'A Humanist Confronts the Plague: Ficino's *Consilio contro la Pestilentia*', *Modern Language Notes*, 125 (2010), pp. 72–83.

- , 'Per la fortuna di Ficino nel Cinquecento: il caso dei *Dialoghi sopra le cause della peste universale* di Alessandro Puccinelli', *Bruniana et Campanelliana*, 26 (2020), pp. 453–66.
- Lieber, Elinor, 'Old Testament "Leprosy", Contagion and Sin', in *Contagion. Perspectives from Pre-Modern Societies*, ed. by Lawrence I. Conrad and Dominik Wujastyk (Aldeshot: Ashgate, 2000), pp. 97–136.
- Little, Lester K., 'Life and Afterlife of the First Plague Pandemic', in *Plague and the End of Antiquity. The Pandemic of 541–750*, ed. by Lester K. Little (Cambridge: Cambridge University Press, 2007), pp. 3–32.
- Longrigg, James, 'Epidemic, ideas and classical Athenian society', in *Epidemics and ideas. Essays on the historical perception of pestilence*, ed. by Terence Ranger and Paul Slack (Cambridge: Cambridge University Press, 1992), pp. 21–44.
- MacDonald, Katharine, *Biography in Early Modern France, 1540–1630. Forms and Functions* (Leeds: Legenda, 2007).
- McGough, Laura J., 'Quarantining Beauty: The French Disease in Early Modern Venice', in *Sins of the Flesh. Responding to Sexual Disease in Early Modern Europe*, ed. by Kevin Siena (Toronto: Centre for Reformation and Renaissance Studies, 2005), pp. 211–237.
- Mc Gough, Laura J., *Gender, Sexuality, and Syphilis in Early Modern Venice* (New York: Palgrave Macmillan, 2011).
- Monneret, Philippe, 'Épilogue linguistique. La contagion comme métaphore', in *La contagion. Enjeux croisés des discours médicaux et littéraires (xvi^e–xix^e siècle)*, ed. by Ariane Bayle (Dijon: Editions Universitaires de Dijon, 2013), pp. 161–75.
- Montagne, Véronique, 'Le discours didascalique sur la peste dans les traités médicaux de la Renaissance: rationaliser et/ou inquiéter', *Réforme, Humanisme, Renaissance*, 70 (2010), pp. 103–12.
- , *Médecine et rhétorique à la Renaissance. Le cas du traité de peste en langue vernaculaire* (Paris, Classiques Garnier, 2017).
- Naphy, William, and Spicer, Andrew, *Plague. Black Death and Pestilence in Europe* (Wiltshire: Tempus, 2004).
- Nutton, Vivian, 'The Seeds of Disease: An Explanation of Contagion and Infection from the Greeks to the Renaissance', *Medical History*, 27 (1983), pp. 1–34.
- , 'The Reception of Fracastoro's Theory of Contagion: The Seed That Fell among Thorns?', *Osiris*, 6 (1990), pp. 196–234.
- , 'Did the Greeks Have a Word for It? Contagion and Contagion Theory in Classical Antiquity', in *Contagion. Perspectives from Pre-Modern Societies*, ed. by Lawrence I. Conrad and Dominik Wujastyk (Aldeshot: Ashgate, 2000), pp. 137–62.
- , 'With Benefit of Hindsight: Girolamo Mercuriale and Simone Simoni on Plague', *Medicina e Storia*, 11 (2006), pp. 5–19.
- Palmer, Richard, 'Girolamo Mercuriale and the Plague of Venice', in *Girolamo Mercuriale. Medicina e cultura nell'Europa del Cinquecento*, ed. by Alessandro Arcangeli and Vivian Nutton (Firenze: Leo S. Olschki, 2008), pp. 51–65.
- Pastore, Alessandro, and Peruzzi, Enrico (eds.), *Girolamo Fracastoro fra medicina, filosofia e scienze della natura* (Firenze: Leo S. Olschki, 2006).

- Perfetti, Amalia, 'La *Syphilis sive de morbo gallico* de Jérôme Fracastor: exemple de la diffusion de Lucrèce en Italie dans la première moitié du XVI^e siècle', *Revue d'histoire des sciences*, 55 (2002), pp. 263–72.
- Peruzzi, Enrico, 'Antioccultismo e filosofia naturale nel *De sympathia et antipathia rerum* di Gerolamo Fracastoro', *Atti e memorie dell'Accademia Toscana di Scienze e Lettere La Colombaria*, 45 (1980), pp. 41–131.
- Pesenti, Tiziana, *Il Fasciculus medicinae, ovvero le metamorfosi del libro umanistico* (Treviso: Antilia, 2001).
- Pineau, Guylaine, 'Soigner la peste sans défier la colère divine dans les traités médicaux du XVI^e siècle', *Seizième siècle*, 8 (2012), pp. 173–90.
- Price-Smith, Andrew T., *Contagion and Chaos. Disease, Ecology, and National Security in the Era of Globalization* (Cambridge, Mass.–London, England: The MIT Press, 2009), pp. 16–18.
- Rébouis, H. Emile, *Étude historique et critique sur la peste* (Paris: Alphone Picard–Croville-Morant et Foucart, 1888).
- Rütten, Thomas, 'Receptions of the Hippocratic "Oath" in the Renaissance: The Prohibition of Abortion as a Case Study in Reception', *Journal of the History of Medicine and Allied Sciences*, 51 (1996), pp. 456–83.
- Samama, Evelynne, 'Thucydide et Procope: Le regard des historiens sur les épidémies', in *Air, miasmes et contagion. Les épidémies dans l'Antiquité et au Moyen Age*, ed. by Sylvie Bazin-Tacchella and others (Langres: Dominique Guéniot, 2001), pp. 55–74.
- Sánchez, Carlos José Hernando, 'El banquete de damas y caballeros, la corte galante de Carlos V en Nápoles', *Bulletin hispanique*, 119 (2017), pp. 427–58.
- Schuenemann, Verena J., and , 'Targeted enrichment of ancient pathogens yielding the pPCP1 plasmid of *Yersinia pestis* from victims of the Black Death', *Proceedings of the National Academy of Sciences of the United States*, 108 (2011), pp. 746–52.
- Singer, Charles, and Singer, Dorothea, 'The Scientific Position of Girolamo Fracastoro (1478?-1553) with Especial Reference to the Source, Character and Influence of his Theory of Infection', *Annals of Medical History*, 1 (1917), pp. 1–34.
- Stolberg, Michael, 'Bedside Teaching and the Acquisition of Practical Skills in Mid-Sixteenth-Century Padua', *Journal of the History of Medicine and Allied Sciences*, 69 (2014), pp. 633–64.
- Teyssou, Roger, *La thérapeutique de Fracastor. Lexique des médicaments* (Paris: L'Harmattan, 2017).
- Touati, François-Olivier, 'Contagion and Leprosy: Myth, Ideas and Evolution in Medieval Minds and Societies', in *Contagion. Perspectives from Pre-Modern Societies*, ed. by Lawrence I. Conrad and Dominik Wujastyk (Aldeshot: Ashgate, 2000), pp. 179–201.
- Wajeman, Lise, 'La contagion pétrifiante ou des dangers de l'agalmatophilie', in *La contagion. Enjeux croisés des discours médicaux et littéraires (XVI^e–XIX^e siècle)*, ed. by Ariane Bayle (Dijon: Editions Universitaires de Dijon, 2013), pp. 41–55.