Moving the Plague: the Movement of People and the Spread of Bubonic Plague in Fourteenth Century through Eighteenth Century Europe

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The University of Southern Mississippi

Moving the Plague:  
the Movement of People and the Spread of Bubonic Plague in Fourteenth Century  
through Eighteenth Century Europe

by

Gillian Rae Fowler

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Abstract

Research regarding the *Yersinia Pestis* (bubonic plague) in later medieval and early modern Europe has focused mainly on rat fleas and their role in transmitting the bacteria. This research focuses on people and their day to day movements and how that relates to the spread of bubonic plague across the following three areas of Europe, England, France and northern Italy during the time period between the fourteenth and eighteenth centuries. The changing belief system regarding the cause of these outbreaks emerges within these medieval Europeans which helps to facilitate the growing response to plague outbreaks and the affirmative actions taken to eliminate them.

Key words: Bubonic plague, Yersinia pestis, medieval Europe, England, northern Italy, France, people, fleas, God
Dedication

To all of my friends and loved ones who cheered me on and would not let me quit, this is for you.
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I would like to thank my adviser, Dr. Westley Follett, for his tireless efforts to make me a better writer. Without all of his deadlines, advice and criticisms, this thesis would not have been possible. Thank you for all the hard work you did, it is truly appreciated.

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Table of Contents

Chapter One: Introduction .................................................................................................. 1
Chapter Two: Fourteenth Century and Fifteenth Century Outbreaks ......................... 6
Chapter Three: Sixteenth Century and Seventeenth Century Outbreaks .................... 16
Chapter Four: Eighteenth Century Outbreaks ............................................................. 26
Chapter Five: Conclusion .............................................................................................. 31
Bibliography .................................................................................................................. 34
Appendices ..................................................................................................................... 37
Chapter One: Introduction

_Ring a ring O’ roses, a pocketful of posies._

_Ashes! Ashes! We all fall down._

_Unknown_

If you have ever heard this popular children’s poem, you may have also heard tell of what it is about. As the legend goes, this simple child’s rhyme is based on the fourteenth century plague outbreak in London known as the Black Death. When broken down, the rhyme tells the ghastly day to day sights that residents of infected areas could not escape. The “ring of roses,” for example, was the red circle that surrounded the buboes (the swollen lymph nodes) and a pocket full of poesy flowers was to mask the smell of sickness. The ashes refer to the bodies of the dead that were often times burned, along with their possessions. A person infected with bubonic plague was not a pretty sight to see, and plague outbreaks were an even worse thing to live through. By the fourteenth century, plague was not a new occurrence. Eurasian history has been riddled with outbreaks of varying sizes, and these outbreaks have been categorized.

In the mid twentieth century, French scientist Rene Devignat split the history of plague outbreaks into thirds. These “biovars,” as he called them, began with Antiqua, which covered Justinian’s Plague in 541-2 and ran through 750. Next is one is known as Mediaevalis, this one began in 1347 and ended in 1815. The final “biovar” is Orientalis,
which focuses on the Far East, and began circa 1850s and is considered still ongoing.¹

This paper will deal with the second “boivar,” Mediaevalis.

_Yersinia pestis_ or _Y. pestis_ (bubonic plague) recent research suggests, originated in China circa 600 B.C.E., and was able to leave Asia thanks to merchants following the Silk Road. This happened again in the time leading up to the European outbreak of the fourteenth century. Having left Asia, it was able to spread across Europe by using the best vector it could: people. Whether it was by transporting rats and fleas in their cargo or shipments or on themselves, people would prove to be the easiest way to spread the plague far and wide.²

Plague decimated Europe, however the believed cause and transmission of the pestilence has varied widely. One account of the plague’s arrival has its arrival heralded by a giant star. Jean de Venette, a Carmelite Friar, recounts the arrival of plague in Paris as marked by a giant star breaking into millions of pieces and producing a vapor which was inhaled by city residents.³ In the same account, de Venette goes on to mention “…this pestilence was caused by infection of the air and water.” This theory had ramifications. Jews were “suddenly and violently charged with infecting wells and water and corrupting the air.”⁴ At the same time, many Europeans put the cause for the disease squarely in the divine hands of God. It was widely believed that people were affected because they were sinners. More beliefs regarding the cause of plague included

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² Joseph Patrick Byrne, _Encyclopedia of the Black Death_, Gale Virtual Reference Library (Santa Barbara, Calif.: ABC-CLIO, 2012), 74.
⁴ De Venette, _Chronicle_, 383.
earthquakes and unburied corpses. All these causes resulted in a ‘miasma’ surrounding the infected town.\textsuperscript{5}

The miasmas were thought to cling to not only the town but to the houses of the infected and their neighbors, and breathing the air could result in contracting the plague. Remedies for the infected air cropped up at various times, once of which was during an outbreak in the sixteenth century. Queen Elizabeth I tasked a “Physic” or doctor, to disperse perceived remedies throughout London, with the remedy for the “infected air” calling for dried rosemary, lavender and frankincense to be burned in pans and carried room to room.

Beyond the suspicion of the air itself causing infection, it was widely thought that having contact with the infected would themselves become infected.\textsuperscript{6} This belief will be examined throughout the thesis, as it becomes prominent in regards to the governmental responses to plague outbreaks. If the very air infected people, how was it possible for some people to remain uninfected? For the people of the Black Death and later, it was believed that certain people were predisposed to infection, because God created them with an “imbalance in their humors”.\textsuperscript{7}

Theories of how the bacteria arrived in any given location were not limited to the time of the Black Death. In fact, a twentieth century mathematician and astronomer by the name of Sir Fred Hoyle believed that \textit{Y. pestis} and all other pathogens were actually

\textsuperscript{6} Queen Elizabeth I, as quoted in Rebecca Carol Noel Totaro, ed., \textit{The Plague in Print: Essential Elizabethan Sources, 1558-1603}, Medieval and Renaissance Literary Studies (Pittsburgh, Pa.: Duquesne University Press, 2010) 187.
\textsuperscript{7} Slack, “Responses to Plague”, 437.
brought to Earth by “organic rain” via passing comets. This echoed the “vapor” theory mentioned earlier. Debates are still ongoing in both the historical and scientific communities as to how, exactly, the plague came to be. Likewise, it is even more heavily debated on how the plague was able to spread as rapidly as it did.

Between 1986 and 2004 field research conducted in Tanzania tested the theory that *Pulex irritans*, (the human flea) and *Pediculus humanus* (the louse) spread Y. pestis alongside *Xenopsylla cheopis* (the rat flea). This theory, when examined in conjunction with the theory of people as potential transmitters, has merit. With flea-infested people spreading the plague, the speed of the outbreaks makes sense. Research conducted by investigators during a twentieth-century outbreak has led to the reopening of research into the major European outbreaks between the fourteenth century and the eighteenth century. A Norwegian researcher has since concluded that human fleas played a major role in transporting the plague from one outbreak area to the next during the Black Death and subsequent European outbreaks. It is therefore possible that people themselves acted as a carrier for the plague alongside the rats once the bacterium had obtained a foothold in the country.

Over the course of five centuries, Europeans would go from believing the cause of the outbreaks were God’s divine punishment to the gradual awareness of plague transmission via the movement of people. It is therefore the purpose of this paper to examine the growing awareness regarding the plague. Furthermore, this paper will examine the responses and actions taken by the governments of England, Northern Italy

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8 Clark, *The Fifteenth Century*, 16; The research is based around twelve villages in Tanzania that had no rats to act as transmitters for any type of disease.
and France in order to eradicate the plague threat once and for all. In the following chapter, we will discuss the outbreaks of the fourteenth-century and fifteenth-century and the beginning of the shift away from divine causation.
Chapter Two: Fourteenth Century and Fifteenth Century Outbreaks

Almost from the beginning, people living in infected areas during the Black Death were afraid of being near those infected, or even breathing the same air.¹¹ These people, while still holding onto the idea that God was ultimately responsible for any pestilence or bad thing that happened, were already becoming increasingly aware of plague transmitters. They were on the brink of understating that plague was not limited to divine punishment. Controversial though they might have been, secular responses to controlling the outbreak, which included the isolation of the victim and the incarceration of all their contacts, were greeted with open minds and positivity in most later medieval towns.¹² This chapter aims to understand, not only how plague arrived in Europe, but how later medieval Europeans first began the slow drift away from the belief in God’s divine punishment.

One of the most devastating pestilences to ever hit Europe, *Yersinia pestis* arrived in Northern Italy via a trade ship, in the fourteenth century. However, once that ship docked, all it took was the movement of people to bring the plague from one area to another. The people acted as a trigger for the domino like effect of subsequent plague outbreaks. Eventually, the various governments of England and Northern Italy would likewise associate the spread of plague with the movement of people, even if they also held onto the divine punishment theory. But before people could spread it, the plague had to arrive in Europe.

¹² Slack, “Responses to Plague,” 433.
There are two likely points of entry for *Y. pestis* in Europe just prior to the start of the medieval outbreak known as the Black Death, both of which may be correct. The first, in north-western Italy, was via a Genoese trading ship, passing through Sicily and entering north Italy near Genoa. The second potential point of entry, in north-eastern Italy, revolves around a Venetian trading ship, entering north Italy via Venice. What these two cities had in common was that they both had a trade outpost at the port city of Caffa, on the Black Sea.

Trade and travel in the Black Sea declined dramatically from the mid-1300s to the 1400s, with plague as a suspected reason. At the beginning of that decline, in 1346, the ethnically diverse port of Caffa on the Black Sea was under siege by Tartar troops who themselves were already infected with *Y. pestis*. The infected dead were left behind in the crowded city of Caffa and therefore began infecting others. While it remains unclear whether or not the Tartar troops were fully aware of the consequences of those actions, it has been argued by some that this treatment of the infected dead was the first case of biological warfare. The survivors that fled the city included Italian traders, as both Genoa and Venice shared the trading post at Caffa. Each city had ships that docked there and conducted business at multiple times throughout the year. Because of this, and for the basis of this paper, either point of entry will be presumed correct, as the focus will

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16 Inhabitants of Caffa include Turks, Mongols, Venetians, Genoese, Jews, Armenians and Greeks.
primarily be on the movement of people, rendering which port was the exact point of entry a side note to the overall argument. In late 1347, a trading vessel from a northern Italian port left Caffa and returned home, bringing with it a stowaway: plague-carrying fleas.

By 1347, *Yersinia pestis* had spread through northern Italy, affecting all major towns and ports, including Genoa and Venice. Regardless of which port city saw the first outbreak, northern Italy saw staggering numbers of plague deaths within the first eighteen months of outbreak. The estimated population for Genoa dropped sixty percent of what it had been only a few years earlier.\(^\text{18}\) It would still take more time, but the population of Europe was about to realize that humans were facilitating the spread of *Y. pestis*.

Beginning in the twelfth century and lasting until the mid-fourteenth century, the autonomously governed region of Champagne, in northeastern France, held annual fairs that were the largest trade emporia of the time. The fairs operated in a cycle of six times a year, in four alternating cities.\(^\text{19}\) While none of the cities, Bar-sur-Aube, Lagny, Provins, and Troyes, were major centers for trade during the off-season, Troyes was a textile center throughout the year and did not rely on the Fair to bring increased amounts of people. There are brief mentions of plague induced precautions in Troyes around the time the Black Death began, however details are vague and the precise nature of these precautions is, at this time, unknown.\(^\text{20}\) With accounts of the town decimated by plague, it can be speculated that Troyes was the area in which *Y. pestis* was able to spread across


\(^{20}\) Abu-Lughod, *Before European Hegemony*, 64.
Whether this began while Troyes hosted the fairs is not known, but it is possible. Traders from all across Europe would have been in attendance, but more importantly, with Northern Italy and England having some of the largest trade cities in Europe, they would have had some representation at these annual fairs. For centuries leading up to the Black Death, the Champagne Fairs had gone on, even when Venice and Genoa began falling to the plague they continued to be held. That is, they continued until people began to distrust them. The fear of catching the plague was growing with each passing day.

It was at the peak of the Black Death that the fairs stopped being held. It happened, perhaps, gradually, with the fear of contracting plague outweighing the need to trade. This would have been the trend, until finally there were so few attendants that, while no government officially stopped the fairs, there were not even people to keep the fairs going. It is unclear if anyone from the two northern Italian trading ports went to the Champagne Fairs in 1347-48, however, we do know that *Y. pestis* entered England within a year of the bacteria reaching northern Italy. We can assume, then, that it was at those fairs, or others like them, that *Yersinia pestis* was able to spread further and faster in Europe. Furthermore, we can say the spread of *Y. pestis* used fairs, and the people in attendance as a sort of junction point to reach more areas of Europe. So how did it spread from France to England?

Due to its ever-growing strength as a country, England was a big player in the trade industry, and would have had traders and merchants in attendance at the

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Champagne Fairs. These men would then travel back home. Perhaps the merchants who were attending the fairs in 1348 left France in fear of the plague, or perhaps their business was finished. Regardless, they would have to return home. Once such merchant could have become infected and traveled back to England where they entered the country through the port city of Weymouth in the summer of 1348. Although *Y. pestis* cycled with the seasons, i.e. was at its peak during the hot summer months, then slowly declining until the freeze of winter caused the fleas to either die off or hibernate, only to resurge once again in spring, it had more than enough time, once it entered the country to spread out.

*Y. pestis* did not stay in Weymouth. While there were no major roads connecting Weymouth to any other town, not all local travel was limited to such roads. That did not hinder the movement of people in the area. There could have been smaller roads that led away from the port city, which was due south of Bristol, where the plague struck next. According to the *Chronicle of Henry Knighton*, almost the entire population of Bristol was “seized by the disease.” Knighton also recorded another 1,400 deaths across three parishes. According to one map, Bristol was connected to London via major road, which would have made it easy for *Y. pestis* to travel east, toward London, which is exactly what it did. By late fall 1348, mere months after entering Weymouth, plague reached London. By that time, the population as a whole, in and around the metropolitan city, was in jeopardy of infection. The plague did not care about social

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26 See map: Major Roads in Medieval England, in Appendix.
status or wealth. Infection could, and did, happen at all level of society. From the well-off upper society to the peasants, there was no economic, or social cause to be found. Even Benedictine monks died from the plague.\textsuperscript{28} This goes against medieval Europeans belief that plague was a divine punishment, because surly God would not need to punish his servants?

It is in the records of the Diocese of London, that we catch a glimpse of the potential mortality rates for the Black Death. These records, however, do not depict clergy that died, merely clergy positions that needed staffing. The value of these records lies with the population numbers for the areas where positions were available. In densely populated areas, the number of open positions during and immediately following the Black Death could reach a staggering sixty-six percent.\textsuperscript{29} This shows the correlation between people and the plague. The more people there were, the better the chance of catching the plague. The reason for this was simple. Densely populated areas meant people living, working and generally associating with many different people on a daily basis. This increases the chances of disease transmission from one person to another. This was something the local government of London was realizing also, and they were already crafting more sophisticated ways to limit and control the spread of infection.\textsuperscript{30}

To combat the 1348 outbreak, which in total lasted until 1352, the government of London created what was known as the “medical police.” This police force was tasked with protecting the population of London from those infected. When people contracted plague, they and their household were isolated and quarantined in their home. The

\textsuperscript{28} Clark, \textit{Fifteenth Century}, 35.
\textsuperscript{30} Slack, “Responses to Plague,” 433.
movements of the infected were traced backwards, and those with whom they had prolonged contact were treated similarly, with isolation and quarantine.\textsuperscript{31} The “medical police” likely oversaw all these measures. Quarantine was not the only precaution taken. Persons, once dead, were burned and their belongings, houses and all bedding were fumigated with smoke. On top of these quarantine and clean up measures, there were restrictions on movement, such as limiting the number of people allowed at markets or mass, and increased travel and trade regulations.\textsuperscript{32} If people, and therefore their fleas, were not a facilitator of plague spread, what would be the point of restricting their movement?

As mentioned previously, the theory exists that human fleas and the louse played an equal role in the spread of \textit{Y. pestis}. This theory goes hand in hand with the restriction of peoples’ movement.\textsuperscript{33} Rat fleas alone could not have spread the plague as quickly as the mortality numbers show it was spread. If rat fleas were the only transmitter, more cases of dead rats would undoubtedly been mentioned in the immediate time leading up to the Black Death and other outbreaks. Governments of the time, limited as they were in the knowledge and understanding of science and biology, were aware, to a degree, that people had the potential to spread sickness, and they acted accordingly. The mortality numbers by the end of the Black Death would indicate, on the other hand, that these restrictions did little. Even so, were the limitations on movement not put into place, it is easy to believe the mortality numbers would have been even higher.

\textsuperscript{31} Slack, “Responses to Plague,” 433.
\textsuperscript{32} Slack, “Responses to Plague,” 435
\textsuperscript{33} Clark, \textit{The Fifteenth Century},” 29.
England was not the only country with major causalities as a result of the Black Death. As we’ve seen earlier in the chapter, Northern Italy, and Genoa in particular, suffered high mortality numbers, with Genoa’s population hovering around sixty percent of what it had been, pre-plague. Trade became suspect and was restricted by quarantines in and around the Mediterranean and the mortality numbers increased. As a consequence, trade and more importantly travel declined between 1350 and 1450. Venice, for example, sent only one ship to Levant every two years following the Black Death. While trade declined, wages rose. It is estimated that just after the Black Death ended, wages nearly doubled. The simple fact of how that was possible lies with the population. Anywhere from twenty to fifty percent of the English population alone died in a relatively short amount of time. With less people to pay, more money went to survives that were able to hold a job. More money meant more people at the markets. More and more of a households income was spent on manufactured goods, and less was being spent on food. The term for this is Engle’s Law and it was proving to be true. What did that mean for in terms of potential for plague outbreaks? In Pistoia, Italy, an inland town southeast of Genoa, the response to these increasing wages and plague threats were to restrict imports. For example, official health ordinances, dated May 2, 1348, stated “No one, whether from Pistoia or elsewhere, shall dare or presume to bring or fetch to Pistoia, whether in person or by an agent, any old linen or woolen clothes, for

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38 Voigtlander, “The Three Horsemen of Riches: Plague,” 774-811; Engle’s Law, named after statistician Ernst Engel, states that, as wages and incomes rise, the proportion spent of food falls, even if the actual amount of money spent on food rises.
male or female clothing or for bedspreads; penalty 200 pence.”39 It is safe to assume then that localized governments were aware of Engle’s Law, and that these increased wages also increased the chances of outbreaks in the future.

After the decimation of the Black Death, Y. pestis outbreaks became more and more localized. Whereas they had been a multinational epidemic, after 1400 the outbreaks occurred at a more urban level, hitting densely populated areas more often than the rural villages.40 Between 1400 and 1530 there were upwards of twenty-four outbreaks in London alone. Thirteen of those were wide-spread outbreaks that also hit other cities.41 These outbreaks caused residents to look for cures and treatments beyond those recommended by the local government officials. Various ‘remedies’ were brought forth, not only by ordinary citizens, but by the church to help control the outbreaks as well as help those infected. According to Benedictine monk John Lydgate in the 1420s, pilgrimage was the first step towards healing.42 This advice was in direct opposition to most governments’ stance on the movement of people and its restrictions. It is unknown how many people followed the monk’s remedy. However, it is very likely that people heeded the advice of their secular rulers over the church, and thereby further drifting from the belief that plague was a punishment from God and closer to a belief in a mortal cause for the outbreaks.

Over in Italy, nearly a century after the Black Death subsided, major outbreaks once more occurred. Beginning in 1449 and lasting until 1452, Milan, in northern Italy,

40 Clark, The Fifteenth Century, 2.
41 Clark, The Fifteenth Century, 2.
42 Clark, The Fifteenth Century, 4.
faced another outbreak. It was at this time that the municipal government of Milan began keeping *Libri dei Morti*, or Books of the Dead, and registering all deaths and causes in effort to track deaths and their causes, in hopes of finding a common factor concerning the different illness (including plague) and their symptoms.\(^{43}\) Most illnesses had the same general symptoms, which included fever and vomiting. The plague was no different, so these records were kept in an effort to trace likely outbreaks and eliminate the lesser diseases from the trace.

Fourteen years after its last major outbreak, Milan was again ravaged. This time, 1,880 people died.\(^{44}\) The interesting aspect of this outbreak lies in the clustering of the victims. It has already been established that people were key facilitators of *Y. pestis* movement. Local and regional governments had begun realizing the importance of people, and acted accordingly. However, in the 1400s those acts most likely still entailed quarantining an infected person in their homes, with their families, and tracking their movements and likewise quarantining people they had contact with. What all that meant, was that the *Libri dei Morti* did what the Milan government intended it do to, even if the officials at the time were not aware of it. The result of the Books of the Dead was the emergence of a trend. Researchers in the early twenty first century found that, for the 1468 plague in Milan, the 1,880 victims were from a total of 654 houses. That puts the mortality numbers at 2.88 per house.\(^{45}\)

The restrictions on movement were made obsolete, to a degree, when the quarantine of an infected person inside their home along with the rest of the household

\(^{43}\) Samuel K. Cohn, Jr., and Guido Alfani, "Households and Plague in Early Modern Italy," *Journal of Interdisciplinary History* 38, no. 2 (October 2007): 178.
\(^{44}\) Cohn, Jr., and Guido Alfani, "Households and Plague," 186.
\(^{45}\) Cohn, Jr., and Guido Alfani, "Households and Plague," 186.
was enacted. Still, a person would have been quarantined with fewer people than they would otherwise have associated with on a day to day basis, making the measure effective. With the thought of quarantine in mind, state powers expanded to the point where, by the later medieval to the early modern periods, more sophisticated ways of controlling future outbreaks were established, both on a national as well as on a municipal level.\footnote{Slack, “Responses to Plague,” 433.} However, that is not to say that divine punishment would no longer play into the explanation of plague outbreaks. As we will see later on, during the outbreaks of Elizabethan England, prayer went hand in hand with other potential remedies.

Chapter Three: Sixteenth Century and Seventeenth Century Outbreaks

After the devastation of the Black Death the countries of Europe became more proactive in their defense against the plague. More specifically, northern Italy led the way in combating outbreaks and tracking the spread of the pestilence. While some
preventative actions were taken during both the fourteenth century and fifteenth century outbreaks, it was not until the sixteenth century and the seventeenth century, in the lead up to and the outbreak of the 1660s that both government and health officials began to more actively look for the cause of the epidemic’s spread.

In the sixteenth and seventeenth centuries, both England and northern Italy had already begun to step away from the belief that the plague was a divine punishment with no chance to control the spread, and towards the knowledge that it was spread by people. It was because of that insight that the spread of the plague was, at least partially, controllable and trackable. While neither the proactive nor reactive measures taken guaranteed a low mortality rate, they do provide acknowledgement that people were the key to limiting the outbreak’s reach. These were big steps for the governments of England and northern Italy in the early modern period. Therefore, this chapter will argue that, with the belief in a mortal cause for plague outbreaks now more widespread, both municipal and national governments were able to take more serious measures to combat the outbreaks than they had previously.

By the sixteenth century, *Y. pestis* outbreaks had become more localized, hitting cities on a more local level. These outbreaks were facilitated less by foreign travel and the importation of goods and more by the bacteria that was already present in the area.47 Epidemics of plague were common and more like an everyday occurrence in commercial centers such as London and Venice.48 If these outbreaks were not triggered by the arrival of a merchant ship, as was the case in the fourteenth century, or by the importation of

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foreign goods from areas infected with plague, how were they able to begin? Due to the hibernation of plague-carrying fleas and the fact that *Y. pestis* can survive in the soil itself, once the bacterium had introduced to an area, it could spread without a direct start from foreign travel and/or trade.\(^49\)

This is apparent in the outbreaks of the later part of the Sixteenth Century and the seventeenth century. In 1563, Queen Elizabeth I was faced with a serious plague threat in London. In what can be considered a step backwards in the changing belief in the cause of the plague, Queen Elizabeth believed that God would save the people, just as God was now punishing them. To fight the outbreak both the government and the church worked together, with Elizabeth at the front of the initiative.\(^50\) The Queen wrote to the Archbishop of York stating “… for the amendment of us and our people, to visit certain places of our Realm with more contagious sickness than lately hath been, for remedy and mitigation thereof, we think it both necessary and our bounden duty that universal prayer and fasting be more effectually used in this our Realm.”\(^51\) These remedies, by all accounts, were not optional. Queen Elizabeth I, around the same time, issued orders of quarantine, stating that the house and all its inhabitants should remain “closed up…for six weeks after the sickness be ceased.”\(^52\) This indicates that there was still awareness of people spreading the plague, even though prayer and fasting was believed to be a treatment. The London outbreak killed an estimated 18,000 people, even with the fasting and prayer program in full swing. The fasting likely compromised immune systems, making the chance of fighting off any infection naturally all the more difficult. The

\(^{49}\) Clark, *The Fifteenth Century*, 33.  
^{51}\) Queen Elizabeth I, as quoted in Rebecca Carol Noel Totaro, ed., *The Plague in Print,* 19.  
^{52}\) Queen Elizabeth I, as quoted in Rebecca Carol Noel Totaro, ed., *The Plague in Print,* 183.
situation in London grew bad enough to force Queen Elizabeth I to flee the city with her entire court. At Windsor, she commanded that anyone arriving from London was to be hanged.\textsuperscript{53} If God were to save the population of London from the sickness that he himself sent, why then, did the Queen enact such drastic measures to assure her own well-being? This suggests that there was an awareness, at the time, that people were a cause of the plague spreading from one area to another.

While London was fighting to control its outbreak, the town of Stratford-upon-Avon likewise saw one of the worst cases of plague in 1563. Around 1,000 people died, nearly one-third the entire population.\textsuperscript{54} The causes of the outbreaks are unknown and cannot be traced back to any aspect of travel outside of England. However, if the bacterium that is \textit{Y. pestis} can survive in the soil, it is possible that the bacterium had already been present in the area due to a previous outbreak. People were then able to become infected and spread the disease with the help of no outside source.

By the early modern era, the municipal governments of northern Italy, and of Venice in particular, were aware that merchants and foreign travel facilitated the spread of diseases, including plague.\textsuperscript{55} Although how it spread was still elusive. Venice, following another outbreak between 1575 and 1577, decided to be more proactive in its fight against the bacterium, and sought to track the disease in the area.\textsuperscript{56} Within the unpredictable nature of the plague, whereby it skips or misses this dwelling or that person

\textsuperscript{54} Roberts, “The Plague in England,” 31; This epidemic is also the reason the British lost control of Calais, which happened after plague broke out among the occupying army. Stratford-Upon-Avon was the birthplace of William Shakespeare. He was born at the height of the outbreak.
\textsuperscript{55} Duane J Osheim, “Plague and Foreign Threats to Public Health in Early Modern Venice,” \textit{Historical Review} 26, no. 1 (June 2011): 70.
\textsuperscript{56} Osheim, “Plague and Foreign Threats to Public Health in Early Modern Venice,” 70.
within an infected household, the overall direction it spread was found to be predictable.\textsuperscript{57} The city reintroduced quarantine measures, lasting forty days, due to the plagues long incubation period.\textsuperscript{58} Any ship wishing to dock, or any person traveling into the city by land was required to be placed under quarantine and observed for any sign of infection. The victim could potentially show no sign of infection for days, or even weeks, leaving them able to infect others. Forty days in quarantine eliminated that possibility.\textsuperscript{59}

Most other cities in northern Italy and many other countries in Europe adopted the same safety precautions, something Venice encouraged. Representatives of the Venetian government in both Rome and Naples not only shared information regarding the plague, but applied pressure to their host governments to make sure that strict preventative measures, such as long-term quarantine and detailed records of deaths, were in place.\textsuperscript{60} However, as stated earlier, once \textit{Y. pestis} had infected an area, that same area could become re-infected years later, through the everyday movement of people as they went about their daily lives.

In 1656-57 Genoa again saw a large scale outbreak. This outbreak pushed the officials in northern Italy to look into better ways to control the outbreaks. By the early to mid-seventeenth century, health and government officials were beyond the belief of God divine punishment causing the plague and were finally aware that people carried and spread the disease. They took steps to use that understanding to their advantage.\textsuperscript{61} For

\textsuperscript{57} Slack, “Responses to Plague in Early Modern Europe,” 435.
\textsuperscript{58} Cohn, Jr., and Guido Alfani, 181-182.
\textsuperscript{59} Cohn, Jr., and Guido Alfani, 181-182.
\textsuperscript{60} Osheim, “Plague and Foreign Threats to Public Health in Early Modern Venice,” 70.
\textsuperscript{61} This is the basis for the belief that it was the pneumonic form of \textit{Yersinia pestis} that devastated Europe for centuries. However, that form of the bacterium is, in fact, rare.
example, *lazarettos*, or “pesthouses”, were set up to house the poor that were infected.\(^6^2\) Officials also restricted, if not outright banned many outdoor activities. The bans included public gatherings and children playing in the streets.\(^6^3\) The activities that were restricted included religious meetings or processions and funeral attendance. The restrictions mainly limited the number of people allowed to attend.\(^6^4\) Municipal governments realized that limiting the size of crowds, or eliminating playing in the street, reduced the spread of the plague. These restrictions reduced the chance that an infected person could mix with others and infect them. With the latent infection lasting ten to twelve days, then becoming active for the next twenty but still showing no overt signs of sickness, the risk of the infection spreading was high. It was not until the final week that victims began showing symptoms and died.\(^6^5\) Sadly, these measures did not ensure a low mortality rate.

The governments of northern Italy were not the only ones looking at how to stop the spread of plague. In England, for example, after studying past outbreaks, it seemed to some people that “disease was spread by beggars and vagrants.” To control this, the government of London initiated total household lockdown when a resident was seen to be infected.\(^6^6\) If the outbreak was thought to be widespread within a city, the municipal government would cordon off the entire town, rendering it nearly impossible to enter or leave.\(^6^7\) At the very beginning of the 1592 outbreak, the London Faire was postponed,

\(^6^2\) Slack, “Responses to Plague,” 451; the rich were allowed to stay home if they were infected.
\(^6^3\) Slack, “Responses to Plague,” 444.
\(^6^4\) Slack, “Responses to Plague,” 444; In 1630 the Pope went so far as to excommunicate all health officials in Florence after the governments of Northern Italy restricted the number of people allowed to attend religious gatherings.
\(^6^5\) Cohn, Jr., and Guido Alfani, “Households and Plague,” 182.
\(^6^6\) Slack, “Responses to Plague,” 448-50.
\(^6^7\) Slack, “Responses to Plague,” 450.
owing to the growing knowledge that people could and did spread disease. The city also postponed the induction of the new Lord Mayor of London until it was deemed safe from plague. These measures, on top of the standard quarantine of incoming ships, meant England saw relative success in controlling the spread and movement of the plague over long distances. But as already mentioned, once *Y. pestis* has breached an area, outbreaks could still occur even without direct help from foreign goods.

In 1665, London was once again ravished by plague in the outbreaks historically called the Great Plague. While the official death toll for this outbreak was sixty-nine thousand, there are those that put the deaths at one-hundred thousand, or one in five people. If the later of the two death tolls was correct, that would make it the second highest outbreak since the Black Death in the fourteenth century. Like the outbreaks before it, it is unclear how *Y. pestis* arrived in London, but what was clear, was the movement and mixing of people spreading it faster and to a greater degree than only rat fleas alone would have been able to attain.

A concurrent outbreak, in the town of Eyam, Derbyshire saw, did have a clear starting cause. *Yersinia pestis* arrived in Eyam when a tailor by the name of George Vicars received a cloth shipment from London that presumably contained infected fleas. The city of Eyam outbreak is a peculiar case, as the residences stayed with infected loved ones, and the entire town put themselves under quarantine, with the only exception being a few children who were sent away. An estimated 250 people died by the time the plague

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69 Slack, “Responses to Plague,” 450.
went away in November of 1666. Considering the pre-plague population of the town was around 360, that mortality number is staggering.  

During the Great Plague in London, the isolation rule regarding victims and their households broke down, due to lack of man power to enforce it, leading the sick to wander the streets. City officials were not equipped to care for so many sick people in such a short amount of time, and the people who could leave the city did. As another example of the change in belief regarding the cause and spread of the plague, the citizens of London were able to associate the spread of infection with large groups of people living in close proximity. The countryside, or even a smaller city, had less of a chance of having such a large outbreak. One such well-to-do Londoner, Samuel Pepys, wrote that the city was so unhealthy that “a man may not depend upon living two days to an end.” He then re-wrote his will, got his affairs in order, and left London. Pepys even alluded to the fact that plague could, and often did, have a long incubation period before symptoms were apparent, making it possible for one to carry the fleas and/or louse to other areas before measures were taken to quarantine victims.

Broadsheets titled London’s Lord Have Mercy Upon Us, which included the figures from the Bills of Mortality, typically hung on church doors, and held the best means to determine when the plague was at its peak and when it was waning. The offered the mortality numbers on a week by week basis. For example, on September 7, 1665, the number of people to succumb to plague stood at 6,978 for that week alone. By

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71 Samuel Pepys, “Diary, August 10, 1665,” Berkeley: University of California Press, 1970; 154-155; Pepys mentions that, by October 16, 1665 there were no physicians left in Westminster, only one apothecary.
72 Cohn, Jr., and Alfani, “Households and Plague,” 181-2.
73 See Images: London’s Lord Have Mercy and Bills of Mortality, in Appendix.
November 30, 1665, the number was as low as 333. Finally, by January 22, 1666, only 79 died of plague that week. As mentioned previously, the plague cycled with the seasons, with winter being the time of hibernation. There was no better way to track the cycle than the London’s Lord Have Mercy Upon Us broadsheets that were printed during the plague outbreaks in the 1600s, although it is unclear who wrote them.

Many people used these along with the Bills to determine when it was safe to return to London. Many sheets also had blank spaces for a write in count until the next broadsheet could be published with updated numbers. These sheets thus worked as an almanac of sorts, with plague deaths organized by weeks and months going back to the beginning of the 1600s, making it possible for people to hazard a guess as to when was safest times to be in the city during an outbreak. With the understanding that people were responsible for the spread of infection, these broadsheets could very well have meant the difference between life and death for Londoners. It was important for them to know the cycle of the plague so they could take appropriate precautions before it was too late.

The Great Plague of 1665 was the last large scale outbreak the city of London saw, making it quite clear that, while Yersinia pestis can survive in the soil itself, or even at low levels within a host, it must first be introduced to a region by a third party, such as a cloth shipment from an infected city. Once it was present, determining how it spread was the main key to combating later outbreaks or to eliminating large scale ones altogether.

Chapter Four: Eighteenth Century Outbreaks

By the eighteenth century, both the national and the municipal governments of England and Northern Italy had learned substantial lessons on how to deal with plague outbreaks, England especially. Over the course of the past four centuries, and because of the devastating plague outbreaks that occurred throughout them, it had become apparent to municipal governments that proactivity was key to combating the spread of *Y. pestis*. It was during the final great outbreaks of the eighteenth century that the governments of these two countries found what they needed to eradicate major outbreaks from their lands once and for all. It is therefore the purpose of this chapter to argue that, had France taken the same precautions both England and northern Italy had, they would have likewise been free of major plague outbreaks.

By the eighteenth century, widespread outbreaks were nearly unheard of, thanks to international cooperation, which possibly came about due to increased fear of another devastating, international outbreak. Seaports throughout Europe monitored shipments and people via bills of health, which detailed the health of all on the ship wishing to dock. These bills of health were shared between countries, making it easier to track potential outbreaks areas. The most common area for *Y. pestis* to come from was the Levant.\(^75\) As previously stated, Venice sent only one ship to the Levant just after the Black Death ended, and only every two years.\(^76\)

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\(^75\) Slack, “Response to Plague,” 441-2.
It appeared that Marseille was not as careful in their trade. In 1720, the *Grand Saint-Antoine*, a merchant ship that spent a year traveling the Mediterranean, arrived from the Levant and docked in the port of Marseille, France. During the voyage, one crew member had died of plague. Customs officials required them to dock at an island quarantine some miles off the coast of Marseille. However, that was not exactly what the ship did. The captain relayed the illness suffered by the crew, and afterward, should have immediately entered quarantine at the island, where its goods would be burned. However, money spoke, and both the captain and the deputy mayor of Marseille wanted the goods to be sold. The goods, containing plague-carrying fleas, were offloaded into the city. Then the crew reported for quarantine. The citizens of the town ultimately paid the price for the deputy mayor’s greed. Once the plague was in the town, the municipal government erected what the Italians called *cordon sanitaries* around the city. In other words, they barricaded the town, efficiently closing it off, and locking the residents inside. Marseille was then placed under military control until the outbreak died down. This appears to have been the largest restriction of movement implemented for any bubonic plague outbreak in Europe.

The failure of the *Grand Saint-Antoine* captain and the Marseille government to follow proper procedures brought about the death of an estimated 100,000 people. Over in Venice, however, the opposite was true. When word got around that Marseille was infected, Venice re-doubled on its precautionary measures and quickly put quarantines into effect. Contact outside of the Venetian borders were limited and strictly controlled.

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78 Voigtlander and Voth, “The Three Horsemen of Riches,” 783.
79 Slack, “Responses to Plague,” 441.
80 Devaux, "Small oversights that led to the Great Plague of Marseille (1720–1723)," 171.
The Sanita, or the Italian version of a national health agency began to oversee the selling and trading of produce and used clothing and goods. The municipal government also took care to make sure that the Venetian streets were kept free of sewage. The theory behind the cleaning of the town was, perhaps, that a limited awareness that filth could become a breeding ground for disease, leading to the infection of prostitutes and beggars that would then infect more people. More than that, however, was the close eye they kept on the prostitutes and beggars. It had already been realized during previous century outbreaks that people facilitated the spread of diseases, including the plague. Those were two of the largest groups of people that could more easily spread diseases and infections.81 Because of these proactive precautions taken in 1720, Venice did not suffer a large or even medium sized outbreak.

While Marseille was under lock down, England was preparing for the possibility of another plague outbreak. During the Black Death in the fourteenth century, England attempted to limit the spread of the plague by isolating victims and likewise incarcerating all their contacts.82 By the time of the Great Plague of the later seventeenth century, England again attempted to limit the spread of the plague by fully restricting the movement of residents and quarantining towns.83 While the municipal and national governments of England might very well have kept the spread of plague from what it potentially could have been, the outbreaks still resulted in devastatingly high mortality numbers. England would not sit idly by and wait for plague come to strike again.

81 Osheim, “Plague and foreign threats to public health in early modern Venice,” 68.
82 Slack, “Responses to Plague,” 433; see chapter two.
83 Roberts, “Plague in England,” 33; see chapter three.
When the news of the outbreak in Marseille made its way to London, the local government realized that plague could ravage their land again, at any time. Therefore, they enacted a variety of precautionary measures. One of those measures were taken directly from the northern Italian playbook. Pesthouses (known as *Lazarettos* in Italy) opened to house any who were sick.\(^8^4\) The idea behind these special houses dated back to the outbreaks of the sixteenth century and they were lightly used in the Great Plague of London, but, the resources did not exist at those times to open them in multiple locations, or for a length of time. With the early symptoms of plague resembling the symptoms of many other illnesses, the pesthouses were filled with many different kinds of sicknesses.\(^8^5\) Military personal were stationed around the buildings and ordered to shoot anyone attempting to escape, whether or not they had plague. In that way, a pesthouse was a cross between a prison and a hospital, with the guards stationed outside, and no doctors to treat the sick. Thanks to the knowledge that people transmitted plague, and the proactive measures enacted because of this knowledge, England escaped relatively unscathed with little to no plague outbreaks or deaths.\(^8^6\) From that point in time forward, England had succeeded in eradicating *Y. pestis* within its borders once and for all.

Marseille was the outbreak that proved that the movement of people was instrumental in the spread of plague, and that limiting these movements, especially via quarantine, could be the difference between a small outbreak (or no outbreak at all) and a devastation that could leave an estimated 100,000 people or more dead.\(^8^7\) The majority of countries in Western Europe had already learned that lesson the hard way, but learn it

\(^8^4\) Slack, “Responses to Plague,” 451-2.
\(^8^5\) See image “Drawing of Islington pesthouse,” in Appendix.
\(^8^6\) Slack, “Responses to Plague,” 452.
\(^8^7\) Devaux, “Small oversights that led to the Great Plague of Marseille”, 171.
they did. By the end of the eighteenth century, large-scale plague outbreaks were non-existent in the west, leaving only minuscule and widely spaced instances of plague deaths behind.
Chapter Five: Conclusion

In 1347, Northern Italians fled their trading post at the port city of Caffa on the Black Sea and brought home a deadly bacteria. From there, it was relatively easy to spread *Yersinia pestis* across Europe, and it was all thanks to the movement of people. By using the Champagne Fairs of France and the large amounts of people they drew, the bubonic plague was able to leave the European mainland and find a home in England, where it would stay for nearly half a decade. All of these countries had one large thing in common. They were all heavily populated.

Eventually, both Northern Italy and England were able to take measures against what they had once believed was purely due to divine punishment. They enacted quarantines and restricted the movement of people. These measures, when looking back to the devastation that was the Great Plague of the seventeenth century, seem to have had limited success. However, with the possibility of human fleas also transmitting the pestilence, we can only speculate on how much worse mortality numbers would have been had the governments not opened their eyes to physical causes for infection.

With the near eradication of plague in both Northern Italy and England, it can be determined that the quarantine of people, ships and goods, and restricting the movement of people worked. The failure of government officials to uphold the quarantine measures in Marseille only served to further enforce that theory. People, therefore, were the key to the spread of *Yersinia pestis*. We can even go so far as to say that the migration, trading, traveling and the general congregating done by the human population of Western Europe was even more important in the transmission of bubonic plague than the rats were.
The underlying effect of this research, beyond the study of *Yersinia Pestis* is the emergence of a timeline. We are able to trace the mindset of later medieval and early modern Europeans as they move away from believing that God is the reason for everything that happens and towards the understanding that there are mortal causes for the things that happen in their lives. This research shows us the mindset of the later medieval Christian Europeans as they slowly move towards a new era, the Enlightenment.

There are still many avenues in regards to the bubonic plague to be explored. For instance, how did more rural Eastern Europe escape wide-spread plague mortality? Certainly there were people living in Poland who traveled and mixed with foreigners. Why, then, did *Yersinia pestis* not leave a path of destruction in that area? That question could be expanded to include Russia and the rest of Eastern Europe and how it was affected or not affected by the plague. If areas of Russia or Eastern Europe were, in fact, affected, how did the plague arrive? Was it via Western European trade and travel, or via Asia?

Similarly, further research could trace the spread of plague from its origin in Asia. How did it spread through China and where else, beyond Western Europe, did it go? With more time, we could discover the factors that allowed the Mongols and Tartar troops to become infected before they invaded Caffa in 1346. The Tartar troops left their plague infected dead inside the city in what has been called the first act of biological warfare. This research could, therefore, explore that claim. Did the troops know that their dead would infect their enemies? With that in mind, the Tartar troops could have gone on
to do the same to a different city after seeing the effect their dead had on their enemies. With more time and deeper research, we could find out more about this claim.

On a similar line, further research could explore what plague conditions were like in Asia during the major European outbreaks. With China being the suspected true origin of *Y. pestis*, did they have any luck in combating the plague? How aware were Chinese officials of the measures taken by England and northern Italy to combat the outbreaks and did they undertake any similar measures? A larger study could discover the effect people had in the transmission of plague throughout Asia. These are just some of the research directions this thesis suggests. All could shed light onto how a deadly bacteria killed millions of people in relatively few large-scale outbreaks.
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Appendices

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