The Black Death

Europe in the Fourteenth and Fifteenth Centuries

• Overview of Medieval Europe
  - Germanic/Asiatic invasions (400’s-700’s CE)
  - Viking/Islamic invasions (900’s-1000’s CE)
  - the High Middle Ages (1050-1300 CE)
• the 1300’s and 1400’s CE: another age of economic depression and retrenchment
  - but this time the unrest was not the result of invasion but internal problems
    • e.g. The Hundred Years’ War between France and England
The Black Death

Europe in the Fourteenth and Fifteenth Centuries

- Medieval Europe: 1300-1500 CE
  - also global environmental changes
    - a cooling phase began ca. 1300 CE
    - ecological changes led to the spread of disease
  - the short-term results
    - population decreased
    - the economy stagnated
    - literature and art shows an obsession with the macabre
    - paranoia and superstition increased, e.g. witch trials, the Inquisition
The Black Death

Europe in the Fourteenth and Fifteenth Centuries

• Medieval Europe: 1300-1500 CE
  - the long-term consequences
    • the formation of modern Europe
    • grave changes in mental attitudes
      - a loss of confidence in traditional faith
      - the idea of “Christendom” was abandoned
    • the beginning of the decline of the medieval papacy, e.g. the Avignon Popes
    • the rise of patriotism and nationalism
The Black Death

Europe in the Fourteenth and Fifteenth Centuries

- Medieval Europe: 1300-1500 CE
  - decentralization of government
    - armed outlaws controlled parts of England, e.g. Bristol
    - unemployed mercenaries plundered and killed people all across France
The Black Death

Europe in the Fourteenth and Fifteenth Centuries

• by the late 1400’s, the unrest finally began to settle down
  - strong central governments — mostly monarchies — in France, England and Spain
  - Germany and Italy were, however, still mired in chaos, i.e. warring city-states
    • would not unite until very recently!

• by 1500, Europe looked very different
  - the Renaissance had taken hold
  - and there was a New World dawning
The Black Death

Europe before 1347 CE

- the expansion of the High Middle Ages had reached its limit by 1300 CE
  - good farmland was overworked
  - new lands were proving only marginally productive
  - all in all, the population had outgrown the capacity of the land to feed it
    - in other words, famine was on the horizon
The Black Death
Europe before 1347 CE

• worse yet, the climate was heading into a cooling phase, the “Little Ice Age”
  - for the last three centuries (1000-1300 CE), Europe had enjoyed a warm dry climate
  - but in 1307, there was a really cold winter, the first in 300 years!
    • polar and Alpine glaciers started advancing
  - only a one-degree drop in average temperature but enough to be significant
    • grain/cereal production abandoned in Scandinavia
    • likewise, viticulture (wine-making) in England
The Black Death
Europe before 1347 CE

• a wetter climate and greater rainfall led to other problems
  - e.g. the Arno River which runs through Florence flooded and swept away bridges

• the Famine of 1315-1317
  - heavy rain ruined crops in successive years
  - less sun > less evaporation > less salt > less preservation of meat
  - peasants ate their seed grain, then their farm animals, then their pets, then . . .
The Black Death

Europe before 1347 CE

• population begins to drop, e.g.
  - in Ypres (Flanders), one-tenth of the population died within six months
  - in Halesowen (England), 15% of the population died

• famine struck again in 1332 CE

• but the people of medieval Europe could not have foreseen the far greater disaster that was lurking in the East:

The Black Death
The Black Death
The Nature of Bubonic Plague

• the single most significant disease ever to strike Western Europe!
  - but 1347-1352 CE was not the first time bubonic plague devastated Europe
  - e.g. Cadwalader’s Plague in 664 CE (Britain)
    • but in that day (after the “Fall of Rome”) the Plague was slower to spread because there was less travel and trade
The Black Death
The Nature of Bubonic Plague

• *plague*: Greek word for “*stroke*,” because victims succumb so suddenly they look as if they’ve been “*struck*”
  - usually from septicemia since the disease attacks the circulatory system primarily
    • sometimes in only a matter of hours!
  - is this occasional high-level virulence part of the life cycle of the bacillus?
    • in other words, is it designed to ensure the disease’s survival by spreading it widely and quickly at times?
The Black Death
The nature of bubonic plague

- **bubonic plague** is not naturally a human disease
  - **endemic** among rodents, especially the *rats* of central Asia
    - also, Uganda, western Arabia, Kurdistan, northern India
  - does not survive long anywhere in the absence of rats
The Black Death

The nature of bubonic plague

- but rats are not the cause of Plague
- **pathogen**: the bacillus *Yersinia pestis* ("Yersin’s plague")
  - first isolated in 1894 by French bacteriologist Alexandre Yersin
- **vector**: rat flea (*Xenopsylla cheopis*)
  - transmits disease from rat to rat
The Black Death

The nature of bubonic plague

- normal course of Plague
  - flea bites infected rat, drinks in bacillus along with the rat’s blood
  - bacillus reproduces in flea’s gut and forms a solid mass blocking the flea’s digestion
  - flea becomes frantic with hunger
  - repeatedly bites rat after rat
  - regurgitating blood along with bacillus!
The Black Death
The Nature of Bubonic Plague

- only when rats are not available, does the rat flea feed on other hosts
  - e.g. other rodents, animals, humans
The Black Death
The Nature of Bubonic Plague

- the Plague in human populations is very virulent because humans usually have little-to-no resistance
  - thus, bubonic plague readily becomes an epidemic
  - normally, the victim dies in 4-7 days from the onset of symptoms
    - sometimes overnight!
The Black Death
The Nature of Bubonic Plague

- the usual course of the disease
  - early sign: the appearance of **buboes** (**bubo**)
    - swelling of lymph nodes in the neck, armpits and groin
    - thus, “bubonic” plague
      - cf. St. Roch
  - 3 days later: high fever, diarrhea, delirium, black splotches on the skin
    - hemorrhaging, necrosis of extremities
    - “Black” Death?
The Black Death
The Nature of Bubonic Plague

• the usual course of the disease
  - fifth day: buboes often burst
    • incredibly painful!
  - but the bursting of buboes is a good sign:
    • the patient is still alive; 60-90% of patients die before their buboes burst
    • helps clear the patient’s system of the bacillus
• **Pneumonic Plague**
  - a second type of Plague spread through particulate matter exhaled by the infected
  - the most virulent form of the Plague
    • on average, patients live only 1.8 days!
The Black Death
The nature of bubonic plague

- no cure for Plague in the Middle Ages
  - blame was placed on an astrological confluence of planets
  - also, “bad airs”
  - and witches
  - and Moslems (by Christians)
  - and Christians (by Moslems)
  - and the Jews (by everyone)
The Black Death

The Black Death (1347-1352 CE)

• began with death of rats in central Asia?
  - from migration because of weather change?
    • drought is recorded in China in 1333-34 CE

• then, the Plague spread to marmots as fleas moved to new hosts
  - woodchucks/rock chucks

• hunters find a wealth of dead marmots and think they’ve hit the jackpot!
The Black Death

The Black Death (1347-1352 CE)

- The dealers sold the marmot hides down the Silk Road leading to Europe
  - and ignored reports of disease among hunters
- Infected fleas traveled west in the hides
- To Kaffa (Crimea)
  - n.b. Xenopsylla cheopis can survive up to six months without feeding
The Black Death

The Black Death (1347-1352 CE)

- rats in Kaffa probably had no effective resistance to the Plague and died quickly
  - followed by animals, and eventually humans

- **1346 CE:** Moslems were the first to hear reports of a killer disease in Saray and Astrakhan.
**The Black Death**

**The Black Death (1347-1352 CE)**

- **1347 CE:** the Plague hits Constantinople, Genoa (Italy), Messina (Sicily)
  - the Moslem world was affected less
  - Byzantine Emperor *Cantacuzenus* recorded his son’s death
- in imitation of the classical Greek historian *Thucydides* and the plague that hit Athens in 430 BCE and killed Pericles
The Black Death

The Black Death (1347-1352 CE)

- when the people of Genoa realized these ships carried disease, they turned them away, spreading it to Marseilles and Pisa
- 1348 CE: it crossed France to the port of Bordeaux
  - from there it made its way to England on a ship carrying claret
The Black Death

The Black Death (1347-1352 CE)

- 1349 CE: an English ship exporting wool was discovered floating aimlessly off the coast of Sweden, the entire crew dead
  - greedy Swedes rowed out and stole the cargo and got Plague!
- 1350-52 CE: the Plague ravaged Denmark, Poland, Germany, Russia
  - but not Eastern Europe?
The Black Death

The Black Death (1347-1352 CE)

- thus, the Plague completed a five-year, clockwise circuit of flea-born devastation
The Black Death

The Results of the Black Death

- significant decrease in population
  - evidenced by mass burials
- the exact number of deaths is hard to determine: ca. 20 million (in five years!)
  - poor records because cities were hardest hit
  - ca. 25-35% of the population of Europe
  - e.g. the population of Paris was cut in half between 1348-1444 CE
- n.b. the Plague recurred several times over the next century
The Black Death

The negative results of the Black Death

- The population of Europe would not pass pre-Plague levels again until 1500 CE
- led to de-urbanization
  - many villages abandoned and never resettled
    - far worse than after the Fall of Rome
  - e.g. Boccaccio who wrote *The Decameron*
    - Shakespeare’s plays are based on plots from Boccaccio
The Black Death

The Negative Results of the Black Death

- art: macabre fascination with death
  - Death from The Book of Hours: St. Michael and a devil fight over a soul
The Black Death

The Negative Results of the Black Death

• art: macabre fascination with death
  - The Triumph of Death (the Grim Reaper)
The **Black Death**

**The Negative Results of the Black Death**

- art: macabre fascination with death
  - The Four Horsemen of the Apocalypse, by Albrecht Dürer
The Black Death

The Negative Results of the Black Death

- art: macabre fascination with death
  - Death at the Baptism
The Black Death

The negative results of the Black Death

- art: macabre fascination with death
  - The Dance of Death
The Black Death

The Negative Results of the Black Death

- art: macabre fascination with death
  - The Dance of Death
The Black Death

The negative results of the Black Death

- art: macabre fascination with death
  - The Dance of Death
The Black Death

The negative results of the Black Death

- art: macabre fascination with death
  - Death in the Printer’s Shop
    - one of our earliest depictions of printing in Western Europe
The Black Death
The negative results of the Black Death

- society: generally weird behavior
  - flagellants: wandering groups who scourged themselves to rid a town of sin — for a fee!
    - ultimately, outlawed by the Church
  - pseudo-flagellants: like flagellants, went from city to city but instead of scourging themselves, they performed sexual acts
    - the Church outlawed that, too!
The Black Death

The Negative Results of the Black Death

- religion: loss of esteem for the Church
  - the Church’s inability to stop or even forestall the Plague made it look ineffective
  - but with so many desperate for hope — and if not hope, salvation! — the Church’s coffers were filled with donations from the dying
  - so the Church grew rich but its spirituality was seriously challenged
The Black Death
The Positive Results of the Black Death

- positive consequences of the Black Death
  - increase in the value of manpower
    - drop in population > people became a rare commodity > increase in wages
  - in England during the 1350’s, wages doubled!
  - end of serfdom in the West
    - serfdom persisted much longer in the Eastern Europe and Russia
      - especially those areas not affected by the Black Death
    - serfdom was only finally outlawed in Russia in 1863 CE
The Black Death

The positive results of the Black Death

- positive consequences of the Black Death
  - when lords tried to force lower wages, workers organized and began fighting for their rights
  - though largely unsuccessful, these efforts were important early attempts to form labor unions
The Black Death
The Positive Results of the Black Death

- positive consequences of the Black Death
  - a series of peasant revolts
  - 1358 CE: The Jacquerie
  - 1378 CE: The Workers’ Revolt in Florence
  - 1381 CE: the Peasants’ Revolt in England
positive consequences of the Black Death
- the growth of *industry*
  - as the traditional Medieval manorial system slowly failed, cities repopulated faster than the communities in the countryside
  - led to the re-urbanization of post-Plague Europe and the industry-based lifestyle of most modern Europeans
The Black Death

The positive results of the Black Death

- the birth of modern medicine
- especially, the end of the humors theory of medicine
The Black Death
Recurrences of the Plague after 1347-1352 CE

- the Plague returned to Europe repeatedly after the Black Death
  - in 1369, 1374-5, 1379, 1390, 1407 and so until 1722
- but outbreaks were localized, never again as bad as the Black Death
The Black Death
Recurrences of the Plague after 1347-1352 CE

- why didn’t the Black Death happen again?
  - improved hygiene among Europeans?
    - No! humans may have gotten cleaner but rats didn’t!
  - displacement of black rats by brown rats
    - brown rats prefer to live away from humans, while black rats tend to cohabit with humans
    - but areas of high brown-rat density do not coincide with areas that experienced a reduction in the force of the Plague
    - also in general, rat populations tend to lose immunity to the Plague over time
The Black Death
Recurrences of the Plague after 1347-1352 CE

• why didn’t the Black Death happen again?
  - best theory to date: Colin McEvedy
    (*Scientific American*, February 1988) has suggested that a less virulent bacillus closely related to *Yersinia pestis* emerged
    • dictum of pathology: “A less virulent parasite will replace a more virulent one”
    • this new strain is *Yersinia pseudotuberculosis*
    • potential victims were exposed to the *Yersinia* strain without actually contracting the Plague
    • this explains why the Plague never swept Europe again: its momentum was stopped by resistance
The Black Death

The Long-term Consequences of the Black Death

• bubonic plague still persists in many parts of the world
  - even in the US, especially in the West among hunters of rock chucks
  - but it’s no longer a medical issue of the sort it was in the days of the Black Death, because it can be controlled with antibiotics
  - of course, if the bacillus mutates or becomes resistant to antibiotics, it could become a serious threat again
The Black Death
The Long-Term Consequences of the Black Death

- the greatest medical threats to human life today center around virus-born diseases, like AIDS, Ebola, avian flu, etc.

- bacterial infections seem less sinister, but it’s not as simple as that
  - medical historians have established that there is higher resistance to AIDS in those populations whose ancestors were exposed to the Black Death
  - so the Black Death may be helping certain communities today fight AIDS!