

MCDB 150 Global Problems of Population Growth Lecture 7 Notes

Last time we discussed the idea that in Europe, from roughly the 1200s to the 1700s there was a demographic ceiling and population could not rise above it.

There were many factors that repeatedly knocked population down.

We talked about the plague: it lasted 500 years from 1347 to 1850

SLIDE

Then there was violence.

One historian lists the Catholic-Protestant religious wars of the Reformation running from 1531 to 1667 as they rolled around Europe.

By the time they were over, about a quarter to a half of the German speaking peoples of central Europe had been killed. Norman Davies: Europe, A History p506

There were plenty of other factors that reduced population:
SANITATION

Until the 1800s, sanitation in Europe was atrocious:

First and foremost, there was no system for disposing of human waste.

Feces were basically everywhere.

In the 18th Century, there were ditches down the center of many city streets.

These were commonly used as latrines.

Feces from the households were simply dumped in the middle of the streets.

Some places had laws that you could only throw excrement out of your window at night - to avoid dumping it on a pedestrian's head.

Edinburgh rang bells at 10 pm, which was the time specified for the dumping of excrement.

It was not only the poor and uneducated who lived in such filth.

Neither the richest people, the Royalty, nor the most educated people,
had even the slightest idea about sanitation.

In 1665 there was a great plague in London.

Daniel Defoe wrote about it.

King, Charles II and his court took refuge in the Oxford University Colleges.

The Yale residential colleges are pretty much modeled after the Oxford ones,
so you have a pretty good idea of what they looked like.

The next year, the plague was over and they went back to London.

When the cleaning people came in - They found excrement in every corner –
in chimneys, in studies, in coal houses, in cellars.

Samuel Pepys, the great Diarist, was England's first secretary of the Admiralty, member of Parliament, and President of the Royal Scientific Society.

He didn't bother to go to the privy at night. He just deposited his feces in the fireplace. As President of the Royal Society, Pepys put his imprimatur on the title page Newton's great work: *Philosophiae Naturalis Principia Mathematica*),

DRINKING WATER

There was not much understanding that feces and drinking water should not be mixed. In many places latrine pits were dug close to wells for drinking water.

ANIMAL AND HUMAN CORPSES

In addition to feces, all the other kinds of waste were also dumped in the streets.

Butchers killed animals and threw the guts and the offal into the streets

Dead animals were left to decay and fester where they lay.

Not only were dead animals not disposed of in any sanitary way,

Dead people were not handled in a much better manner.

As the population grew, and people died, urban cemeteries became overcrowded. The poor people were not buried in cemeteries proper, but in "poor holes"

large pits in which piles of bodies were just laid out side by side, row upon row, and not closed until they were full. The stench of the decay was overwhelming.

The rich were buried in Church crypts. Because the decomposing bodies of the rich in the burial vaults, Churches were often unbearable – they often "stank out parson and congregation."

In 1742 Dr. Johnson (of Boswell's 'Life of Johnson fame) described London as a city "which abounds with such heaps of filth as a savage would look on with amazement. "

CITIES

Cities had such high death rates that their populations did not replace themselves. Cities were graveyards, demographic sinks. About 1/3 of the population had to be replenished in every generation.

Without a constant supply of migrants from the countryside, towns would not have been able to survive. By this means, surplus rural population was drawn off and made economic use of in the towns. (Woods PDR:29:29-30, 3/03)

This is an interesting variant on the Malthusian model. England had primogeniture. The oldest son inherited the land. Younger sons were pushed off the land, they had to go to the army or the cities. This kept the plots of land from getting too small. Hence, in England, the farmers rarely starved. Population did not rise in the countryside until a food crisis hit, at which time the population died off. Instead, there was a constant exodus of excess people from the relatively healthy countryside to the filthy, crowded cities – and it was there that people died. So there was a constant Malthusian bleeding. It wasn't a graph of time, but of place.

Not Only London, but smaller cities also: for instance Jerusalem

Now, all the great western religions claim that Jerusalem is central to their religion. They fight viciously over Jerusalem.

But until very recently, it was totally ignored by everyone.

In 1840 it was a tiny town of ~15,000 people

7,000 Jews, 5,000 Muslims, 3,000 Christians.

Sewage and Feces 50' deep since the destruction of the 2nd temple by the Romans.

Everyone had malaria.

When cholera came through, 75% of people would get it.

“The sanitary condition of the City of God ensured that any pilgrim who sought to spend his last days on earth there could look forward to fulfilling that ideal with dispatch.”

PERSONAL CLEANLINESS was also unknown.

Europeans didn't wash their bodies. One of our History Professors gives a wonderful lecture entitled “1,000 Years w/o a Bath”.

He describes how the Romans built big public baths and were very conscious of personal cleanliness. But after the fall of Rome, the Church wanted people to concentrate on their souls rather than their bodies.

Washing was considered as a sign of too much preoccupation with the body.

It was especially bad for women to pay so much attention to their bodies.

Europeans at the time boasted that they washed only three times in their lives: when they were born, when they got married and when they died.

The solution to stench was not cleanliness, but perfume, which became extraordinarily popular at this time.

Lice were so common, and the itching from them so unbearable –

that people took to shaving their heads and wearing wigs.

The wearing of wigs is another example of a seemingly arbitrary cultural practice that had a real purpose.

Note that the personal filth was not dictated by the low level of technology and the economy, but was a specifically cultural manifestation. Some cultures, most notably the Japanese, were more scrupulous about cleanliness. Macfarlane Savage Wars of Peace Ch9 & 14.

DISEASE

We talked about how the cause of the plague and its mechanism of transmission was totally unknown in 1348, when it first appeared.

By 1700, knowledge wasn't much better.

Learned people were generally very impressed with Astrology -

and believed that planetary influences had corrupted the air.

Most educated doctors believed that disease was caused by evil humors, bad fluids inside the body.

Medical practice consisted in getting rid of these humors

by lots of bloodletting and purgatives to cause continual vomiting and laxatives to cause continual diarrhea.

George Washington was apparently killed by an excess of bloodletting.

When he was quite sick –

his doctors bled 5 pints of blood out of him and then he died.

(we think 1 pint is the limit of safety for a healthy person)

King George III, the mad King George of American Revolutionary Days,

had Porphyria, a genetic blood disease which causes periods of insanity .

He was bled over and over again for years on end.

There's was a very popular movie about this.

The Madness of King George, 1995 Nominated for 4 Oscars, won 1 Oscar

One of the methods of bloodletting was to let leeches suck out the blood.

This was very popular – we know that the ancient Romans used it and, despite the fact that it has no good effects, the practice gained in popularity for 2,000 yrs. By the 1860's there were 7 MILLION leeches used in the hospitals just in London.

NYT 2/7/06 pF4

Some practitioners used herbal or "natural" medicine.

The famous author Wilkie Collins (Movies: Moonstone, Woman in White) had cruelly disabling gout. Protein metabolism problem.

Nitrogen forms Uric acid crystals in joints: sharp edges of crystals cut up joints.

AS LATE AS 1880S they treated his gout with a poultice of cabbage leaves covered in oiled silk. It was useless, so he turned to opium to dull the pain. Probably died partly of opium poisoning.

NYT Book Rev 2/13/00 p20 of Letters of Wilkie Collins, William Baker, ed

Also in 1880s President James Garfield was shot.

The bullet lodged in fat and really didn't do much harm.

He lived a year.

Some of his doctors were homeopaths and some were allopaths – these two sides had opposite theories of medicine, and both sides were nonsense.

But the they kept working on Garfield and eventually managed to kill him.

They stuck metal rods in to prod the bullet.

No sterilization.

They insisted that he be fed rectally – they fed him beef bouillon, egg yolks, milk whiskey and drops of opium.

The problem is that the rectum doesn't absorb any food.

The President lost over 100 pounds from July to September –

yet these homeopaths had their theories that they would not give up in the fact of the obvious evidence of their eyes.

They basically starved him to death. NYT 7/25/06 pF8.

CHANGE WAS RESISTED:

The first mention of a fork as an instrument for carrying food to the mouth describes its use by the wife of the Venetian Doge in the 11th Century.

The incident aroused the wrath of St. Peter Damian, the cardinal Bishop of Ostia.

He criticized the whole procedure in a passage entitled "Of the Venetian Doge's wife. Whose body, after her excessive delicacy, entirely rotted away. (Visser p189).

In northern Italy, it took a further 200 years before forks were commonly used for eating.

As usual, England lagged well behind Italy in culinary matters. It was not until the early 17th C that Thomas Coryate introduced the fork, following a visit to Italy (Clair, 1965). Once again the fork was condemned from the pulpit and repudiated by society. One irate preacher declared that "to touch meat with a fork was impiously to declare that God's creatures were not worth of being touched by human hands. (Clair 181)

NYT 11/18/05 Scott Liell Op Ed It was a widespread belief in the 18th century that lightning was God's instrument of choice when manifesting his displeasure. Actually, lightning was most likely to strike churches – with their tall steeples and pointed tops. Benjamin Franklin, invented the lightning rod and it was an extremely effective device. About then a huge earthquake struck just north of Boston. There was an outpouring of sermons preached and articles published on the quake's divine origin. One strain of faith-based explanation, was especially popular; it blamed Ben Franklin. A prominent Boston Minister explained: Lightning rods meddled with God's usual mode of reprimand, causing God to reach for another, more terrible weapon in his arsenal. "God shakes the earth because he is wroth." He warned his flock that the more lightning rods were erected around Boston, the more earthquakes would afflict the city as a result.

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INFANTICIDE

Infant abandonment exploded in the 18th & 19th Centuries. For example, In Milan, from the 1840s to the 1860s 1/3 of all children born to MARRIED parents were left at the foundling home. More than half of all children born to working class parents were left there. Almost all illegitimate children were abandoned. The death rates were staggering. Kertzer 150.

Rousseau Boswell, p3.

Jean-Jacques Rousseau, the great French Enlightenment Philosopher casually abandoned 5 children to foundling homes (Boswell fn p424).

"My third child was thus deposited in a foundling home, just like the first two, and I did the same with the two following: I had five in all. This arrangement seemed to me so good, so sensible, so appropriate, that if I did not boast of it publicly, it was solely out of regard for their mother."

Newborns were generally sent out to wet nurse, even though the death rate of those children sent out was enormously higher than those nursed by their mother.

The death rate of children reared by their parents was about 1 in 6.

In 18th C France, between 1/2 and 2/3 of the infants sent out to nurse died. Way beyond this were the 'baby farms' of the 19thC in Europe which took in large numbers of generally illegitimate infants, few of whom survived. Kertzer 2001 p194. All together, about 1/3 of children died in infancy.

CHILD LABOR

Those that survived, came back and then stayed at home for only a few years. Sometime between the ages of 7 and 14, the child was sent off to work in other people's houses as a servant or apprentice.

In 1646 The very rich and very progressive city of Leiden in the Netherlands

limited the working day for children to 14 hours. Cobb "Generation" p35.

Child labor continued as a major practice through the 19th Century.

Every one of Charles Dickens' novels describes the child labor of the time.

Dickens himself was sent out (I believe at age 7) to work in a shoe black factory.

And it continues today: NYT 11/16/07 also in poverty section of pop explosion

Official Indian figures say that there are 12 million child workers in India – opponents of child labor estimate the actual figure could be closer to 60 million. Child Labor Laws in India prohibit the employment of children under 14 in hazardous jobs – which includes work in the embroidery industry.

In factories that make GAP clothing children as young as ten work up to 16 hrs/day to embroider clothes.

CHILD REARING PRACTICES

Death came easily and often, so life itself was cheap.

Because they were so likely to die, it was imprudent to be particularly affectionate with, or emotionally entwined with any other human being.

In short, affective relationships were cool.

In this brutal context, child rearing practices were not always very loving.

The traditional Christian view, strongly reinforced by the Calvinist theology of the Protestant Reformation, was that children were born with original sin.

The only hope of holding sin in check was thought to be the most ruthless repression of the child's will and his total subordination to his parents, to schoolmasters and to others in authority over him.

Theologians and moralists insisted that parents ruthlessly crush the wills of young children by physical force.

This is an old practice going at least as far back as Saint Augustine (~400AD): "true education begins with physical abuse."

This training of children to be fully obedient to superiors

led to a thoroughly authoritarian and strictly hierarchical society (Stone p255).

The prime concern of American Puritans was in making children sin-free enough to merit an afterlife.

To heighten piety, they threatened healthy children by telling them that they would soon die.

Jonathan Edwards, the famous American preacher, President of Princeton and namesake for JE College, lectured a group of children:

"I know you will die in little time, some sooner than others.

Tis not likely you will all live to grow up." NYT 7/25/99

Children's story books reinforced this theme:

One of the popular children's books was "A Token for Children":

If other children die, why may not you be sick and die?" NYT 7/25/99 p15

This description is from Lawrence Stone's seminal book: *The Family Sex and Marriage in England 1500-1800*.

Of course, there were exceptions. Many families, indeed, behaved in a warm and supportive way to their children. But a cool distance within the family seems to have been the norm.

Obviously these attitudes towards children are diametrically opposite to the ones we now espouse. Now we try to make kids feel loved and secure and safe from harm. We encourage their creativity and independence.

As the number of children people had fell, individual children were valued more.

So, one aspect of the recent demographic revolution is that

our culture has done an about-face on our attitudes towards family and children.

SO LIFE WAS MISERABLE NOT ONLY IN A PHYSICAL SENSE, BUT ALSO IN AN EMOTIONAL or SPIRITUAL SENSE.

After centuries in this mode of largely stagnation in the physical well being of most Europeans, things started to change rapidly.

One of the most obvious changes was a dramatic fall in the death rate

The magnitude and the suddenness of the change is startling.

Look at just one measure: Life Expectancy

long term scale SLIDE 1

Looking in more detail at the period of decline, we can see that starting with the same 20-30% child death rate that we saw from Roman times, the death rate falls continuously. FALL IN CHILD MORTALITY:2

What changed?

As Davies puts it p507: "One thing was clear. 130 years of senseless bloodletting in the name of religion inevitably sparked off a reaction in the minds of intelligent people. The Wars of Religion offered fertile soil for the fragile seeds of reason and science."

People began to realize that religiosity was hostile to civilization.

European civilization was ready for a rational look at the world.

This time is what we generally call the Enlightenment.

THE CONQUEST OF DISEASE

In earlier times, disease was considered "Divine punishment upon mankind for its sins."

Medical research was considered sacrilegious: Dissection of cadavers was objected to because: "if you cut bodies into pieces, what's going to happen to them at the time of the resurrection?" NYT 5/29/05 Henry Fountain, "Does Science Trump all?"

Newton's Principia came out in 1687.

It was so successful as an explanation for the previously mysterious and supernatural working of heaven that it initiated a rational approach to all matters.

Within 25 years, disease came under scientific scrutiny.

As bubonic plague receded in 17th C Europe, smallpox became the leading cause of epidemic death.

In the 1710s, The Royal Scientific Society began a research program to gather information from any place in the world on how smallpox could be controlled or cured.

The result was the importation of the method of inoculation used in Turkey.

Pus from the sores of an infected person who was recovering from the disease was transferred to an uninfected person. PDR 29:715. Andrea Rusnock: Vital Accounts: Quantifying Health and Population in 18th C England and France Cambridge U Press 2002. The best account of how inoculation was discovered and imported into England in Peter Skold 1996 The Two Faces of Smallpox. Umea University Press.

This was a dangerous procedure since the healthy person was actually being infected w/ smallpox.

In 1720, James Jurin (fellow of the Royal Scientific Society and a supporter of Newton) inoculated several hundred people.

He collected data and showed that the risk of dying from smallpox induced by inoculation was approximately 6X less than for naturally contracted smallpox (pp. 54–55).

Intellectual revolutions never happen overnight. That observation and reason were they way to improve the world was not accepted by everyone.

Religious fatalists still believed that epidemic diseases were sent by God; inoculation was a blasphemous attempt to escape the operation of divine providence.

In the 1721 Boston Smallpox Epidemic Cotton Mather led an inoculation campaign. Physicians objected: they argued that Mather was playing God. NYT 5/29/05 Henry Fountain, "Does Science Trump all?"

People began emphasizing bodily hygiene and sanitation, and local governments instituted quarantine measures when diseases broke out.

In the 1750s local regulations for sewage disposal start being enacted.

In the 1790s the rich started using "water closets".

In 1796 Edward Jenner discovers "vaccination." Instead of using pus from a person with real smallpox virus, he uses pus from a person with cowpox, a related and very similar virus. The procedure is much, much safer.

Measures like these slowly reduce the incidence of the worst types of infectious diseases.

It was not formal medical knowledge, but a more generalized growth of an interest in this-worldly and non-spiritual causes of suffering

that slowly enabled people to vanquish infectious diseases.

Macfarlane: Savage Wars pp373

NEWTON AND THE SCIENTIFIC REVOLUTION

The enlightenment was really spurred by the great success of Newtonian Mechanics in Explaining the motions of the heavenly bodies.

Newton, Principia 1687.

1 century to revolutionize the world and usher in the Industrial Revolution:

The key inventions are

1711 Newcomen Engine to pump water out of mines.

1769 James Watt. Efficient Steam Engine w/ a condenser.

Newton's ideas not only initiated the industrial revolution,

they also played a very important role in the democratic revolutions.

The apple falling from the tree: apocryphal -

but the idea is that the heavenly bodies obey exactly the same laws as apples and stones on earth.

Before Newton explained how the heavens worked, God was the great controller.

The heavenly bodies moved according as God had set them into motion.

Newton said: There is No great controller.

All bodies equally obey the same laws.

The enormous Sun attracts the tiny earth exactly as much as the earth attracts the Sun.

The Harmony of the universe comes NOT from a grand design by the Maker

Nor thru control by some powerful King

- but from the individual and equal actions of each player.

Applied to politics, this means that the state might also not need someone to control it.

if the same laws are applied equally to all people - and everyone acts by his own lights, the polity might still act as a harmonious whole - just as the heavens do.

Democratic Revolutions followed rapidly:

1776 US

1789 France

In economic thought, Adam Smith expresses the same idea: if each individual pursues his own self-interest, the result will be better than the current mercantilism where the economy is controlled by the Royal Gov't.