

Agricultural Revolution: `

Not exciting, but vital: The art of growing more food on less land.

European realities before the Agricultural Revolution:

1. Harvests fail every eight or nine years, and there is famine.
2. Almost everyone lives on the land and works on farms. In the West the peasants are free. **(Great Britain, France, Netherlands, Belgium, Western Germany, Denmark, Sweden, Norway, Switzerland, Finland.** In the East they are serfs: **Eastern Germany (Prussia) Poland, Austria, Czech Republic, Slovakia, Hungary, Romania, Ukraine, Belarus, Russia., Estonia, Latvia, and Lithuania**

Spain and Italy are separate cases. They have very high rates of rent on their peasants-not quite serfdom, but close.

Why is this so important? Freedom to move away from land, or to find better job opportunities WITHOUT checking in with a landlord or a lord=ability to build this revolution in food production-and participation in the INDUSTRIAL REVOLUTION. Those countries that have a free peasantry get the benefits of this change, those countries that shackle their peasants to the land-with lots of people who are delegated to control their movements miss out on this revolution. This pattern can be tracked across this planet today.

When harvests fail peasants fall back on famine foods:

Chestnuts, bark from forests, and grass. YES THIS HAPPENED. Food realities in a northern climate are TOUGH. Resorting to these unfit foods resulted in dysentery (diarrhea), flu, and laid one open to all infectious disease. Famine years would cut populations down by a third. In Finland alone in a famine year about 28 percent of the population died between 1696 and 1697. Remember: this cut in population occurs every TEN years.

The traditional means of farming pursued since the Middle Ages was the OPEN FIELD SYSTEM. The fields were divided into strips; each strip was farmed by a specific peasant family. Fields were open. There was a common-where everyone grazed animals. Out of three fields, one would be farmed (in strips) one would be for grazing, and one field would lay fallow to let the soil rest. As the Middle Ages progressed, fertile fields would be allowed less rest time. That would mean one year of oats and beans would be grown, followed by wheat and rye. Only then would that field be given a year to rest. This pattern exhausted the soil more quickly. Growing enough food was the constant problem.

Generally speaking, everyone was trapped in poverty. In the East, more people were trapped through more thorough rules shackling them to lords and obligations, particularly the obligation to labor for another lord or for the state for a certain number of weeks a year, or in Russia, the

obligation to build St. Petersburg or to fight in the army.

In the West, the most prosperous free peasants by the 18th century were the English, Dutch, Belgian, West German and Scandinavian peasants.

The French peasants were free, but not free of a crushing tax burden and the corvee, which was forced labor for the state.

So this Revolution occurred first in Great Britain, the Netherlands, Scandinavia, and West Germany from the 17th -18th centuries, and gradually spread to France, and parts of Eastern Germany in the 19th century. Austria, and most of Eastern Europe and Russia did not have this revolution at all, and in Russia, in some ways this revolution has never occurred, even today. What is the Revolution? Eliminating the fallow or rest field, and growing food more efficiently on less land using technology.

What is the technology?

The first step is crop rotation: Crops are rotated to new fields continuously, letting some land rest EVERY year, but also leaving land on which to grow crops every year.

Who pioneers the technology? Big surprise: The Dutch- Here are the steps:

1. They cleared the water off 1/3 of their land in the late 15th-16th centuries.
2. They used the windmill to systematically clear the water off strip after strip of land (this process was slow but efficient) The windmill is a water pump powered by wind.
3. The land that was cleared was protected from water damage through dike building.
4. The sea lanes and ships were continuously used to import food and establish trade in the meantime.
5. Big windmills produced a more efficient means of grinding anything-and these ground products and oils generated more trade.
6. The precious land was used as an agricultural laboratory where early Dutch scientists experimented with hybrid plant creation and better seeds. The goal: to make sure that every seed sown would produce a viable plant.
7. Experimentation led to a plant product for trade: The Tulip

The exportable innovations-exported to Great Britain and Scandinavia were:

1. Drainage technology. Marshy land anywhere could now be turned into a field with the use of a windmill.

2. Cornelius Vermuyden directed two large drainage projects in Great Britain: He re-claimed forty thousand acres for farming. His project trained other farmers in the new techniques.

The grand master of agriculture in England was Jethro Tull. He wanted to:

1. replace oxen with horse in plowing
2. sow seeds with a drill that ensures that each seed is planted at a specific depth, and thus each seed has a chance of yielding a healthy plant.

The effect of even a little more food on population growth is staggering. The Dutch population spiked first: Amsterdam's population grew from 30,000 people to 200,000 people in the space of one hundred years.

In Great Britain, food production increased 300 percent between 1700 and 1870. Only fourteen percent more people were on the land growing food as the population spiked.

The big controversial movement in the middle of all this technology is the ENCLOSURE MOVEMENT that occurred in England at the same time.

In order to practice these new techniques on a large scale, English landowners closed land in behind fences. Land used in common by everyone disappeared between 1700 and 1870. The peasants either had to work for a landowner for wages, or move to the city. Historians have been debating the social justice of this development ever since. Those who support the Enclosure Movement argue that the big landowners were better at implementing all the latest agricultural techniques through this pattern, and that peasants did benefit in the long run since there was more food. Those who disagree argue that the peasants were painfully forced to go from living in poverty in the village to poverty in the city. Small farms do lose in any society that consolidates into bigger farms in an Enclosure Movement. This loss grows because the cost of technical innovation in agriculture can be borne better by larger farms. The question that must be solved is what to do with all the labor that now is free? New jobs were created only slowly for this newly free labor. The same process now goes on in our world as jobs that require physical labor decrease.

In England there were two ENCLOSURE MOVEMENTS: The first one was in the service of grazing animals from 1650-1700. The Second movement was in the interest of implementing the new food growing techniques: from 1700-1870.

The lives of the ordinary peasants were still VERY HARD. What changed is that everyone was better fed (in the West) Personal freedom did improve though. The big landowner paid the middle men tenant farmers who in turn engaged agricultural labor. Today this pattern occurs on

corporate farms. Native populations in industrialized countries do not want to do the back-breaking work of picking the harvests. So migrant laborers do this work, migrating in from the world's poorest countries. In the United States, Mexicans and Hispanic workers do this work today. In Europe, migrants from Africa, Turkey, or the Middle East do this work. The debate over worker rights is the same today. That is the legacy of the Agricultural Revolution. Poor workers still have the fewest rights working as factory labor in the city or as agricultural labor on the land. This new working class is called the PROLETARIAT in Marx's DAS KAPITAL. This new poor in France (who do not have the benefit of an Agricultural Revolution yet) drives the violence and social changes of the French Revolution in 1789. This new class fights for its social rights in every country in Europe in the 19th century. Ironically, the right NOT to work that these laborers won gradually, is why citizens in Europe and all modern industrialized countries tend to import labor from poorer countries today. Ordinary citizens do not want to go back to laboring as their ancestors once did.

What are the concrete results of the Agricultural Revolution?

Before the Agricultural Revolution, population growth stagnated. Birthrates barely replaced those who died. What produced all this death? The Black Death in the Late Middle Ages, war, and war, and more war, and the famine pattern outlined earlier.

The Agricultural Revolution reversed this pattern. The population began to grow. It grew and grew through the 18th and 19th centuries. Along with more food, the medical revolution's big breakthrough: The smallpox vaccine, helped lessen the European death rate.

There was a parallel development that was not powered by a machine, such as the windmill, but through a new way of organizing labor. This early new way of making cloth in England was known as the Cottage Industry:

This new industry is based on the Putting Out System: Rather than produce cloth (a VERY LENGTHY PROCESS) in one house, each step is farmed out to ONE COTTAGE that only completes that one step. Think of it as a large cloth producing factory-but one that is spread over entire villages or areas. What are the steps in cloth production? Assuming one is making cloth from wool, here are the steps:

1. Grow the sheep. Shear them.
2. Wash the wool, or clean it some manner. Separate it into soft tufts (little balls) This is called carding.
3. Each tuft must be spun. The spinning wheel spins the wool into thread.
4. One can either dye the thread, or dye the completed cloth. Either way, the dye process is long (this step either for cloth or thread, can take up to two weeks)
5. Thread the loom and weave the cloth.
6. Dye the completed cloth (assuming that dyed thread has not been used while weaving step 5)
7. Then one has cloth ready to cut into pieces and sew into clothing.

So in Cottage Industry, one is making one's own cloth for private use (all of the above steps) and also preparing lots of wool or cloth (ONLY ONE STEP) in bulk to be passed on to another owner for profit.

England and the Netherlands love this system and spread it. France and other Eastern European countries do not adopt it because again it takes the peasant away from his obligations to a lord in a feudal system.

Due to this pattern, England, the Netherlands, Belgium, and Scandinavia are ready for the next big development: The Industrial Revolution.