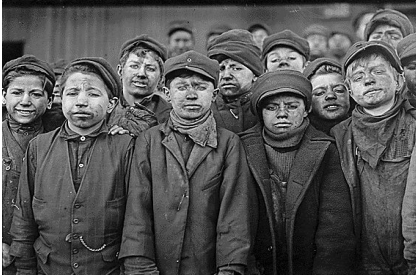


THE INDUSTRIAL REVOLUTION



[Lewis Hine. *Child labour in a coal mine.*](#)
1912.(Dominio público)



Case Study

[FaiQe Sumer. *Child labor in Pakistán*](#) (CC BY-SA)

How much have work conditions changed?

Is history repeating in new industrilised nations?

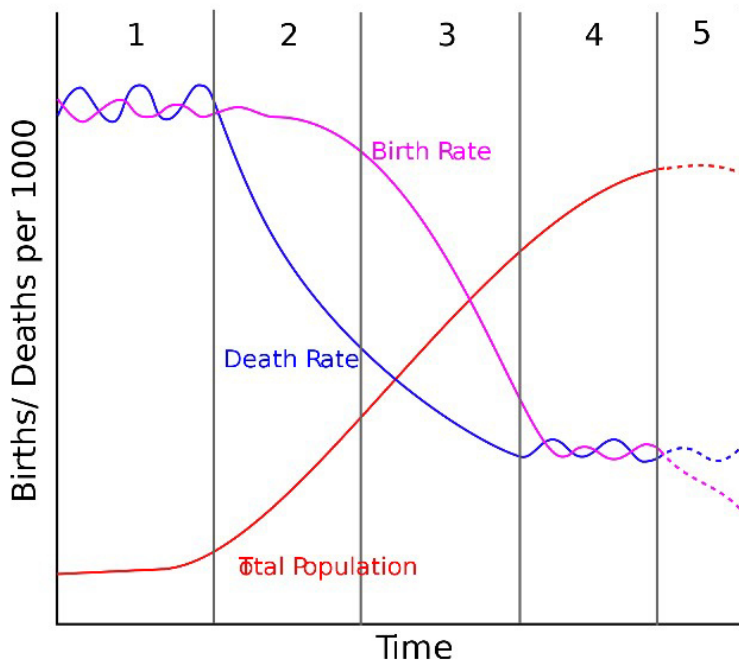
1 Demographic Revolution

During the 18th century the European population grew because advances in:

- Nutrition
- Hygiene
- Medicine

There were more people, so:

- They needed products that had to be produced by industries
- They could become industrial workforce



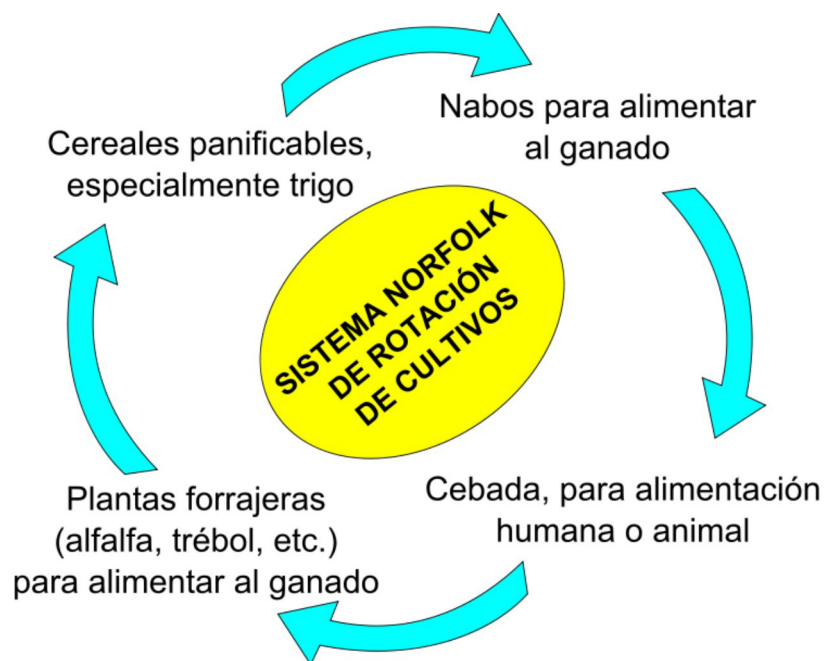
[NikNaks93](#)_Demographic transition Dominio público

2 The Agricultural Revolution

In the 18th century a series of Enclosure Acts were passed in Great Britain that enclosed open field and common lands. Therefore, larger and more profitable farms were created. This also meant a lot of public and communal land which the peasants had been cultivating as their own, was returned to the landowners. Many peasants were forced to emigrate to the industrial cities.

There were also some farming improvements:

- The three fields system was replaced by the Norfolk system which did not leave any field fallow New machinery was introduced
- Fertilisers began to be used.



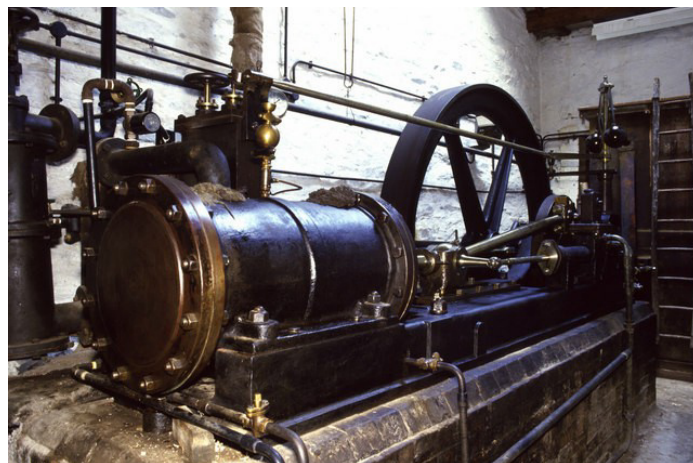
[Robot8A Norfolk System Diagram Dominio público](#)

3 Technological innovation

Technological progress meant: production increased, lower production costs, therefore lower prices. This led to more sales and greater benefits.

Machines were powered by human force until hydraulic power was introduced (like in watermills and fulling mills). But the real change came when James Watt invented the steam machine in 1769, it was fuelled by coal and it became the most visible symbol of the Industrialization.

The firsts steam machines brought about the existence of the factories and to a new way to produce goods, the factory system. The production took place in big industrial buildings with machines operated by workers who spent the journey at one task, this was called division of labour, **the artisan became worker and lost his connexion with the goods they produced.**



[Chris Allen Mill engine \(CC BY-NC\)](#)

4 The textile industry

It was the first production sector to be mechanised, especially among the cotton producers. In the 18th century Great Britain imported large quantities of cotton cloths from India. But when Britain decided to stimulate her domestic cotton industry, she banned imports of finished cotton from India.

First the spinning machines were created and then the mechanic looms. In order to increase production some innovations were introduced in textile production: The Flying shuttle was the first in 1733, this piece of machinery sped up the weaving process.

In the following years more machines appeared, the water frame (1769), and the spinning mule (1779) Finally the first power loom was invented by Edward Cartwright in 1785



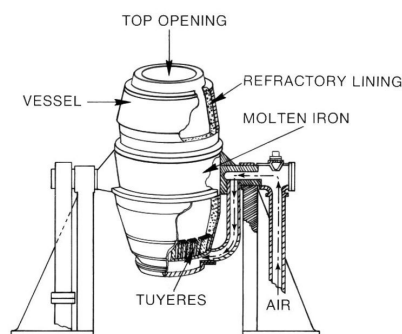
Image Gallery

All images can be found on [Wikipedia](#)

5 Iron and Steel

In pre-industrialization days iron was produced in small amounts to make small objects because the furnaces were not hot enough.

The first innovation was the use of coke, a new fuel made of coal created by Abraham Darby about 1709 who used it in his blast furnaces instead of charcoal. Later, in 1853, Henry Bessemer invented the Bessemer process which turns iron into steel.



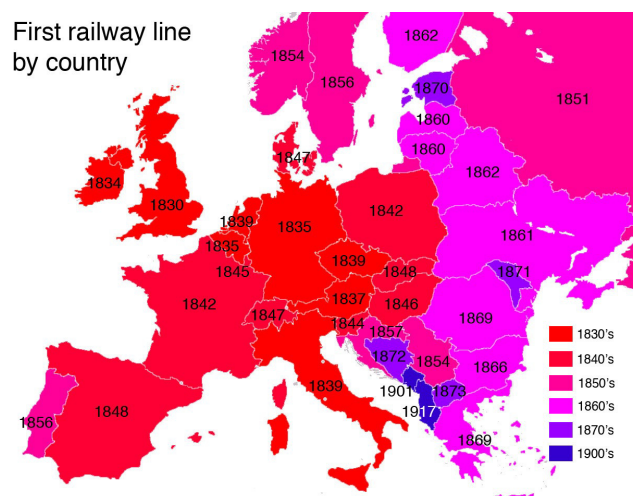
6 The Transport Revolution

At the end of the 18th century the first clippers appeared, the so called Baltimore Clippers. They were long and narrow ships that used sails to sail. They were fast and able to sail through the stormy passes of Magellan and Cape Hope. In 1869 the Suez Canal was opened to the traffic shortening the London-Bombay route a 40%. This constituted the final blow to clippers.

Railroad was the result of two main innovations of the industrialization combined: the steam engine and improved ironworks.

In 1814 an English engineer, George Stephenson, built the first locomotive, it was used to pull heavy loads between coal mines. In 1830 the first passenger railway was established between Liverpool and Manchester.

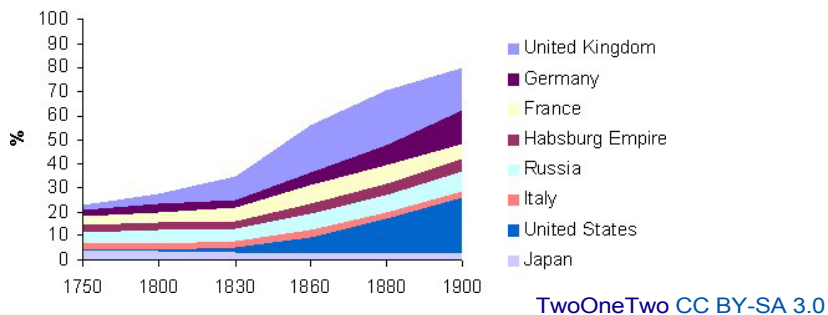
There was a big increase of trade due to the reduction on time and costs in transport. Railway needed huge amounts of money to be built so this led to an improvement of the financial system (banks and stock exchange)



[FDV First-railway-Europe-country \(CC BY-NC\)](#)

7 Expansion of industrial capitalism

Relative Share of World Manufacturing Output,
1750-1900



France industrialised in around the 1840s. Several reasons explain its backwardness:

- The French Revolution brought instability that did not allow for invest money in industry.
- There were many small landowners and that did not make people move to towns. Hence an industrial workforce was not created.

Germany developed quickly after the Zollverein (1834), which involved the end of the customs duties within the German Confederation.

That common-trade area had many more raw materials to supply industry, but it also increased imbalances among the German states. The different German states sponsored the industrial development and banking played an important role.

Italy developed thanks to the German industrial growth. Most of the industry settled in the north of the peninsula and the south remained backward.

Industrialisation in **Belgium** was strongly linked to Great Britain and became the main continental port for Britain's products.

The **USA** had a late but quick industrialisation process:

- They managed to compete with English products very early.
- Their main disadvantage was a lack of workforce since the west was being conquered at the same time. Production was highly mechanised due to this lack of people.
- The construction of the railway allowed the creation of a national market.
- Industry grew a lot after the American Civil War (1861-1865) since the agricultural areas lost their importance.

In **Southern Europe**, industrialised regions and areas that remained rural coexisted. Eastern Europe did not industrialise until well into the 20th century.

8 Economic liberalism

Adam Smith was the main figurehead of economic liberalism. His main ideas were:

- Self-interest and the pursuit of maximum profit must drive the economy.
- Prices must be set by supply and demand. This was called the "invisible hand"
- The estate must not intervene on economics (free trade), specially must not intervene on importations or exportations. His main work was "An Inquiry into the Nature and Causes of the Wealth of the Nations" (1776)

9 Industrial Capitalism

Industrial capitalism is built upon private property of production and means of production (Factories, machinery and stocks)

Production and means of production were owned by the bourgeoisie. Workers, on the other hand, did not own anything, they possessed only their labour power that was traded for a salary.

The Estate's lack of control over capitalism will produce cyclic crashes and depressions or recessions. These crisis are generally caused by a fast increase of the supply and a stop or decrease of the demand, that may lead to stock which the business can not sell, and, subsequently, lack of cash and bankruptcy.

Banking was essential for the development of capitalism. Banks were the connection between savers who deposited their money into them, and businessman who needed capital for their investments.

Enterprises demand huge amounts of money that could not be afforded by one businessman alone. Corporations bore this way, the capital of a business was divided into smaller parts called shares. These shares could be bought and sold by anyone. The place where the shares were traded is called stock exchange or stock market.

10 The Second Industrial Revolution

The second industrial revolution or the Technological Revolution was a phase of the Industrial Revolution from the second half of the 19th century until World War I. It began with Bessemer steel in the 1860s and culminated in mass production and the

assembly line. It happened in western Europe (Britain, Germany, France, the Low Countries, Denmark), the United States, and, after 1870, also in Japan.

New sources of energy:

- The petroleum industry (both production and refining) began during the second Industrial Revolution producing kerosene for lamps and heaters. The gasoline powered automobile was patented by Karl Benz in 1886. Henry Ford built his first car in 1896
- Thanks to the invention of electricity the assembly line and mass production developed. Electrification also allowed for the inexpensive production of electrochemicals like: aluminium, chlorine, magnesium...Electricity was used for street lighting in the early 1880s. Electric lighting in factories greatly improved working conditions. It was adapted to power street railways ...

Technological innovations

- The Bessemer process was an invention that allowed for the production of steel from molten iron. Its inventor was Henry Bessemer. He revolutionized steel manufacturing by decreasing costs, increasing the production and decreasing labour for steelmaking.
- Railroads and ships were built using steel instead of iron.
- Telegraph lines were installed along rail lines initially for communicating with trains, but later became a communications network. The telephone was patented in 1876 and like the early telegraph, it was used mainly to speed business transactions.

Organisational innovations

Besides the introduction of new industrial products, second Industrial Revolution also meant deep transformations in business and organization of the labour force. Production was improved by reducing processing time and lowering costs. This brand new way of working is known as Taylorism, scientific management or Fordism. Mass production was established, workers became part of assembly lines where they just did a simple task. This saved money and time but workers lost their relation with the final product.

New business structures

New corporation systems appeared as a result of business merging and growth. Most of businesses stopped being family businesses to turn into big corporations with anonymous shareholders. Bigger companies led to oligopolies, monopolies and other kinds of business concentrations.

Oligopoly. When just a few companies are the supplier of a good.

Monopoly. When a company is the only supplier of a good or a service.

Cartel. Agreement among competing companies to fix prices. It is an oligopoly

Holding company or holding. One company that owns or is the main holder of other companies and banks.

Corporate trust or trust. It is a large company which control all steps and stages in one good production (Standard Oil for instance, this company owned the oil wells, the refineries, and the gas stations, being the only company of this branch in U.S.). It is a kind of monopoly

By 1900, the leaders in industrial production were the US (24% of the world total), Britain (19%), Germany (13%), Russia (9%) and France (7%).

11 The New Industrial society

The Industrial Revolution provoked substantial changes in the social stratification, since there would no longer be strata , but social classes based on money. It was not such a closed society as before, since people's class could change if their personal situation changed (although it was extremely rare). **Theoretically** everybody was equal under the law, with no privileges for any group.

Although there were few in number, **the bourgeoisie** became the ruling class , especially the high bourgeoisie or grand bourgeoisie, they have the political and economic power. Their ideas were the ideas of the liberalism: commercial rights and ownership of property but also personal and civil liberties for everybody (even working classes but with some limits) and religious rights.

Bourgeoisie can be divided into three levels.

- High bourgeoisie or grande bourgeoisie. They are the owners of the big corporations and banks. They are very wealthy, they live in big townhouses or countryside palaces. Most of them are related to nobility by marriage.
- Upper middle class or moyenne bourgeoisie. They are less wealthy than the high bourgeoisie. They own little business, not big corporations.
- Middle class or petite bourgeoisie. More than owners they are professionals such as lawyers, doctors, small merchants, shop owners, and white collar workers as well. They share the political points of view of the other two groups however, they

are closer, economically speaking, to proletariat.

The proletariat or working class was another new group that appeared during the Industrial Revolution:

- It was composed of all those people who moved from the countryside to towns to work in the factories. Their living conditions were very hard, since they lived in buildings with no ventilation or hygienic conditions. They worked around 14 or 16 hours per day for a very low wage.
- There were no regulation concerning the dismissal of workers.
- They did not have any protection against illnesses and did not receive any wage when they retired. They did not have any right to strike or to protest.



- Women and children also worked, but their wage was even lower than men's

[Pyramid of Capitalist System](#) public domain

Activity

What is the message of this cartoon? How does it fit today?

12 The social movement

During the first two decades of 19th century workers fight against mechanisation by destroying machinery and setting fire to factories. They blamed mechanisation for the low salaries and unemployment. This movement was called **Luddism**.

In 1834 the **Great Trade Union** was created in England. It was a union formed by workers of various trades. They wanted to improve working conditions: reduction of working hours, wage improvements and child labour regulation.

Utopian, comunitarian socialism. This includes a great variety of utopian movements and thinkers. They want to change society by adopting egalitarian lifestyles and building cooperatives and communes to serve as an example for the rest of the world. For example, the Fourierists, Owen's new harmony... both in the 19th century.

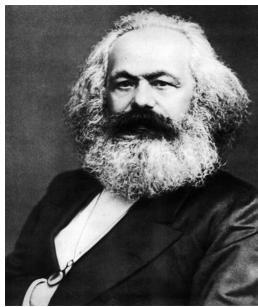
Communism, Marxism or Scientific socialism

It was created by Karl Marx with Friedrich Engels's help. Marx divided society into two groups:

- those who own and control the means of production
- and those who are exploited.

These classes fight for resources throughout history (class struggle) and when the economic base of the society changes, a new class develops to overthrow the previous ruling class. Marx developed in his main works (Das Kapital and Communist Manifest) his main ideas and concepts:

- Social Classes. He defined the social classes and their peculiar characteristics.
- Class struggle. Changes in history happens due to the confrontation between oppressors and oppressed (e.i Ancient Regimen : Nobility (oppressor) against bourgeoisie (oppressed) Surplus value. The wealth created by workers in excess of their labour cost and appropriated by the capitalist.
- Worker's Revolution. Marx believed that workers were tricked by bourgeoisie in all past revolutions, they were used as blunt force under the promise of future benefits that never came. Workers should fight for their rights, not for those of other class, and, after a revolution, establishing workers government. In this proletarian dictatorship there will not be private property, all classes join together until they reach the Socialist Paradise.



Karl Marx (Dominio público)

Anarchism

The term comes from the Greek “anarchos” (without rules). It is the political belief that society should have no government, state, laws, police, army, church or other authority, but should be a free association of all its members. They believe on education to redeem the people.

There are many types of anarchism. Some anarchists are against all forms of aggression or violence, while others support the use of violence to get an anarchist society. The French Pierre Joseph Proudon and the Russians Mikhail Bakunin and Peter Kropotkin were some of the most important anarchists.

The International Workers´ Association

The First International (IWA) was created in 1864 in order to unite the working classes around the world to fight against capitalism. The Association came to an end in 1876 due to the permanent differences between marxists and anarchist.

In 1889 the Second International was created. It was formed just by marxists parties. The workers's anthem and the Workers's Day were created by the Second International

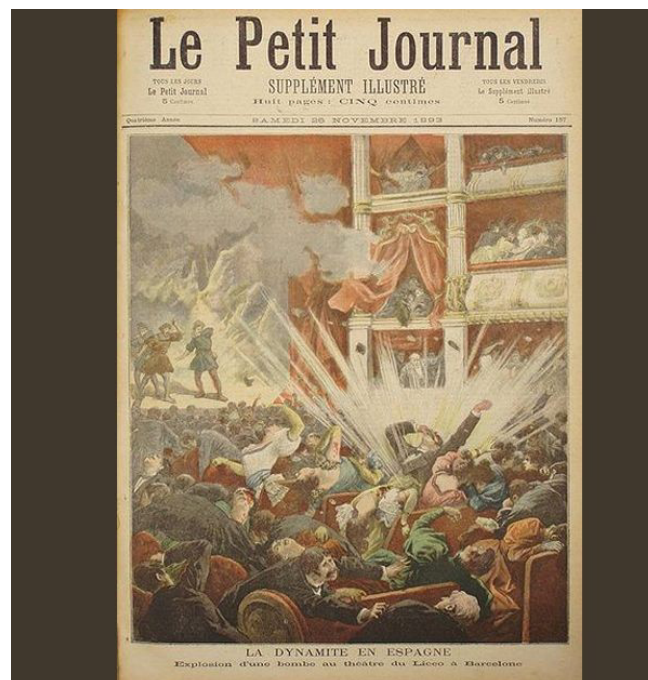
13 Industrialisation in Spain

During 19th century Spain's population increased 60%. Since 1860 farmers had begun to migrate to Madrid, Barcelona, Vizcaya and specially Latin America. Spain was industrialised later and more slowly in comparison with northern European countries. This can be explained by a lot of factors:

- Bad quality coal
- Poor technology
- Foreign countries ruled Spanish mines and railways. Very little bourgeoisie
- Weak and backward agriculture (large estates). Turbulent political evolution.

In the 19th century, there were only two types of important industries in Spain: cotton industry in Cataluña and metallurgical industry in Asturias and Vizcaya.

The workers's movement was slow to develop in Spain. The socialist party PSOE was created in 1879 and UGT was created in 1888. Spanish workers and peasants felt more attracted by anarchism. One faction of anarchism advocated direct violent action (Prim, Cánovas or Martínez Campos were murdered by anarchist). Another faction of anarchism opposed to violence (CNT)



[Bomba en el liceo. Dominio Público](#)

14 Art

Realism was the main artistic style between the 1830s and 1870s, its main field was painting. They portrayed the social situation as it was. Hence, some of them denounced the social injustice that some groups lived.

Most of the realistic painters were from France:

- Gustave Courbet. He was the most important French realistic painter and showed common daily aspects from peasants and people of the bourgeoisie. Some of his main pieces are Burial at Ornans or The artists's studio.
- François Millet. His pictures show the daily habits of the peasants and their daily work, as he did in The Angelus
- Honoré Daumier. He denounced the social injustice by portraying the conditions of the workers and their demonstrations. He was also a quite well-known caricaturist. The third-class carriage.



Image Gallery

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Webgrafía

“Prof.Rosa Liarte – 4 ESO”, , fecha de consulta 24 octubre 2016, en <http://leccionesdehistoria.com/4ESO/author/prof-rosa-liarte/>.

"Prof. Jorge E. de la Peña" "History I. From Enlightenment to WWI.pdf", *Google Docs*, fecha de consulta 18 octubre 2016, en https://drive.google.com/file/d/0Bwe1dU-54DkeZXRIVVl0X19xdkk/edit?pli=1&usp=embed_facebook.

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