UNIT 3

THE INDUSTRIAL REVOLUTION

UNIT 3

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Thanks to Rosa Liarte´s blog and CPI Tino Gandío
What are we about to learn?

The Industrial Revolution was the consequence of a series of economic and technology changes. It happened in Great Britain for the very first time in 18th century’s second half. It gave pass to a deep transformation on economy and society.
1.- The First Industrial Revolution.
1.1. Factors.

**Demographic revolution.**

- Population growth: European population grew from 140 millions in 1750 to 266 millions in 1850. Britain had the fastest growing.
- Reasons for the population growth:
  - Food production increased.
  - Better hygiene and medicine. Development of vaccines.
  - Well-fed people can stand better diseases. Plagues and outbreaks decreased.
- Consequences:
  - Mortality rates fell down and birth rates rose up.
  - Life expectancy rose to fifty from thirty eight.
  - More population meant more free hands to work, not only producing more food but in manufactures.
Agricultural revolution.

- When population grew the first necessity was food. That is why the first changes begun in the primary sector. (Farming)

- Farming improvements:
  - The three fields system was replaced by the Norfolk system which did not leave any field at fallow.
  - They started to use the iron plow instead of the wooden one.
  - Irrigation systems were improved.
  - More profitable crops were introduced, potatoes, corn and sugar beets.

- Livestock breeding was reformed.
  - Part of the fields were cultivated with fodder for the cattle.
  - Most of the livestock will be rise in barns and stables.
  - Meat became more popular and inexpensive.
TRIENNIAL ROTATION

FIRST YEAR

SECOND YEAR

Cereal
Legume
Fallow land

THIRD YEAR
NORFOLK SYSTEM

Año 1: TRIGO (Wheat) → Pan
Año 2: NABOS (Turnips) → Alimento para el ganado
Año 3: CEBADA (Barley) → Cerveza, harina y alimento para el ganado
Año 4: TRÉBOL (Clover) → Alimento para el ganado
Agricultural revolution. Consequences:

- Farmers got bigger profits from their yield. The begun to safe money and to create capital (money resources). Some of them invested their money surpluses on new business like industry or stock market.

- Rural flight or rural exodus.
  - New farming techniques and machines left a growing population without work. This excess in labour will be pour into the cities where former peasants begun to work as industrial workers.

- New Mentality.
  - These economic and social changes might happened thanks to the diffusion of the economic liberalism ideology. A new way of thinking and acting, more open to investment, innovation, business risks and the pursuit of monetary profits was established. Work, production and benefit became an individual virtue.
1.2. Factories and mechanization

1.2.1 Factories, machines and steam power

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

- First machines were worked 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 fueled by coal and it became the most visible symbol of the Industrialization.

- The firsts steam machines led to 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.

![James Watt Steam power engine](image.png)
1.2.2. Textile industry

- It was the first production sector to be mechanized, specially among the cotton producers. 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 the weaving process up. How that worked.
  - In the next years more machines appeared, the water frame\textsuperscript{(1)} (1769) and the spinning mule\textsuperscript{(2)} (1779)
  - Finally the first power loom\textsuperscript{(3)} was invented by Edward Cartwright in 1785.
1.2.2. Coal and steal. Ironworks.

- 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 in his blast furnaces instead of charcoal.

- Later, in 1853, Henry Bessemer invented the Bessemer process that turns iron into steel.

- Steel demand to make new farming tools, machines and railroads encouraged the invention of new ironworking processes: slag removal, metal rolling and bigger blast furnaces.
1.3. Changes in transportation.
1.3.1 The Age of navigation

- 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.

- The first boats actioned by steam engine were built in 1780s decade. They used paddles, that was of poor use at open sea but it fit at rivers and channels. They are called steamboats or steamers.

- In 1807 the American engineer Robert Fulton created the first steamboat service on the Hudson river.

- Around 1830 steamers were improved with iron hulls instead of the wood, and changed to propellers instead of paddle wheels. This last innovation allowed the steamers to sail on open sea and compete with the clippers.
1.3. Changes in transportation.
1.3.2 The Railroad.

- Although roads were improved thanks to the John McAdam process or macadam, land transport was still slow and unsafe. This changed thanks to railroad invention.

- 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 steam locomotive, it was used to pull heavy loads between coal mines.

- In 1830 the first passenger railway was established between Liverpool and Manchester.

- Between 1836 and 1847 British Parliament approved the laying of 8,000 miles of lines.
1.3. Changes in transportation.
1.3.3 Consequences of Transport Revolution.

- There was a high increase of trade due to the reduction on time and costs in transport.
- World economy became more specialized. Colonies sold raw materials and metropolis produced and sold manufactured goods.
- New foodstuff was introduced improving peoples diet.
- Thanks to the steamers crossing the seas became safer and cheaper so more people could migrate to another countries, specially to America.
- Thanks to the railroad less animals (horses and oxen) were necessary for transportation therefore they could be used as meat and some pastures became farming land. That meant more food for everyone.
- Railway needed huge amounts of money to be built so this led to an improvement of the financial system (banks and stock exchange)
2. Second Industrial revolution

- Second Industrial Revolution it is the name given to some changes and improvements that happened between the second half of the 19th century (1850) and the World War I. It is consider to begun with introduction of the Bessemer system in 1860 and culminate with factory electrification and mass production.

- There were also changes in labour force organization and companies organizations. The Second Industrial Revolution shaped the economy forever.
2.1. **New power sources and new industries.**

**Electrification.**

- The power of electricity was widely known since the 18th thanks to Franklin’s kite experiment but they did not know how to produce it.

- In 1867 Dr. Siemens designed the first “dynamo-electric machine” which he used in 1870 to power electric arc furnaces for the production of metals and other materials.

- Alternators and transformers allowed to transport electricity. By 1881 appeared the first hydraulic plant.
Benz (1879) and Diesel (1892) designed or improved previous designs of the firsts internal combustion engines that used oil derivates as fuel.

With internal combustions engines came the firsts automobiles (1885), diesel powered boats, and aviation (1903)

In 1908 Henry Ford made the Ford Model T, the first affordable automobile for the middle-classes.
Construction.
Thanks to the improvement in chemicals (concrete and cement) and ironworks the firsts skyscrapers were built in Chicago.

Metallurgy
- How to produce aluminium and stainless steel were discovered.

Chemical Industry.
- It has a great development, specially at Germany.
- They invented chemical fertilizers, pesticides, sulfuric acid, caustic soda, dynamite, synthetic rubber, dyes, and pharmaceutical products (aspirin, for example)
2.2 New industrial organization.

- Besides the introduction of new industrial products, second industrial revolution also meant deep transformations in business and labour force organization.

- 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.
2.3. New industrial organization.

- New corporation systems appeared as a result of business merging and growth. Most of business stopped being family business to turn into big corporation with anonymous share holders. Bigger companies led to **oligopolies, monopolies** and other kinds of business concentration.

- **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.
3. The new industrial society

- New industrial society was based in the liberal ideal of legal equality: men (not women) are judge by the same laws and courts. They have access to all public offices regarding their merits not their birth.

- However, society was still unequal:
  - Women were still subordinate to men. They had no rights but their husbands, fathers or brothers rights. They had no right to property but their personal belongings, no lands, manors nor factories.
  - There were slaves in some countries, like United States, and after their freedom they became second class citizens.
  - There was a huge economic gap between workers and factory owners, between who had all and who had not.
3.1. Social classes: bourgeoisie

- Society stopped being divided by estates to be divided by social classes regarding their income or economic level.

- There are three basic social classes: high, middle and low or working class. Although they could be divided into four different groups with different interests and needs at the end there were two main classes: bourgeoisie and proletariat.

- Bourgeoisie. They are the hegemonic social class, although the are few in numbers, specially 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.
3.2. Social classes: proletariat

- They are the majority of the population. They are factory workers, miners, domestic servants and peasants. Among them factory workers, industrial proletariat, were a whole new class.

- Factory workers.
  - They were peasant who moved to the city looking for a better life, thanks to the agriculture revolution countryside population had grown, and machines and innovations freed a lot of labour force from farming. This surplus was absorbed by the newborn factories. That was the birth of a new social class, proletariat.

- Because industry was a new activity there were no work regulations so every employer could established the working times, free days and minimum wages as they pleased.

- Firsts factory workers worked on twelve or fourteen hours shifts, they usually worked from dawn to dusk or later. They had no free days or holidays.

- Their salaries were very low, and they had to pay for every tool they broke or wore down by use.

- After these never-ending shifts they did not have any distractions, most of them were illiterate, but pubs or taverns where they drank cheap liquors till they passed out. Alcoholism was frequent among workers.

- Women and children also worked in factories and mines. Their conditions were even harder because they were less paid than men. Children who worked in mines often died of gas leaks or collapsing galleries or smashed by a machine in a factory.

- Life was hard for industrial workers.
Liberal governments in order to erase any limit to free trade banned medieval guilds (France, *Le Chapelier Law*, 1791; Britain, *Combination act*, 1799; Spain, *Abolición de Gremios*, 1813). Guilds were artisan associations that controlled production and distribution of goods since middle ages, they were too exclusive, anyone who wanted to produce or sell a good needed guild’s approval.

Guilds did also protect their workers so the moment they disappear workers were defenseless against any abuse from their employers.

Labour movement is the struggle to win workers rights and improve their lives.
Luddites. It was more an artisan movement than a workers one. They were against mechanization. Their targets were machines which they destroyed in several outbreaks in the early 1810s. They were not an actual labour movement but the echo of past times.

The firsts real attempts of organization were the friendly societies or provident societies. These associations collect money from their members to provide economic help in case of illness, widowhood or firing.

In 1825 a new Combination Act was passed. This new law allowed unions but their activities were severely restricted, specially strikes.

In 1834 Robert Owen set the Grand National Consolidated Trades Unions up trying to unify all trade unions.

Unions’ aims.

- Improve working conditions (safety and hygiene)
- Defend the right of association.
- Shorten working times.
- Wages improvement.
- Regulate children work.
In 1838, six Members of the Parliament (MP’s) and six working men from some working men’s associations, published the People’s Charter starting a new movement Chartism. Chartism demands were:

- 1.- Vote for every man twenty-one years old (man, not woman)
- 2.- Secret Ballot
- 3.- No property qualification for members of the Parliament.
- 4.- Payment of members of the Parliament.
- 5.- Equal Constituencies.
- 6.- Annual Parliaments. Elections were held every seven years.

Although chartism did not achieve any of their demands, at least in a short term, it was the necessary impulse to later reforms that built nowadays democracy.
4. LABOUR MOVEMENT
4.2. Socialism. Utopian Socialism.

- Utopian Socialist were the very first thinkers who, without any philosophical system, analyzed the adverse conditions of the working class and came to viable solutions. They inspired Karl Marx and Frederich Engels.

- The main characters of utopian socialism were:
  - **Henri de Saint-Simon.** He was the first French revolutionary who noticed the workers problems and sought for solutions.
  - **Charles Fourier.** He set up the idea of the phalanstère, sort of farm-factories where people lived together sharing almost everything.
  - **Robert Owen.** As well as Fourier he thought that the settlement of workers communities will be the solution to all their problems, back to the golden age, to the Arcadia. He also was a big supporter of unionism and Chartism.
4. LABOUR MOVEMENT
4.3. Scientific Socialism.

After the first non-systematic socialist theories a German philosopher, Karl Marx, applied philosophic methods to analyze working class problems and solutions. This was called Scientific Socialism by his follower Frederick Engels.

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 happen due to the confrontation between oppressors and oppressed (e.g., Acien Regimen (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 other class’s ones, and, after a revolution, establishing a workers government. In this proletariat’s dictatorship there will not be private property, all classes join together until they reach the Socialist Paradise.
Anarchism was less systematic than marxism, there was a Marx nor a Das Kapital in anarchism but its ideals are clear as well. The fathers of anarchism were *Proudhon, Bakunin* and *Kropotkin* among others like *Rousseau*.

Anarchists defended individual freedom above any law, collective property (property is theft! Proudhon said on “What is property?”), they were against any state power over the people, and that even included the marxist dictatorship of proletariat.

They are against any participation on politics, they never set a political party up, in opposition to marxism that believed in political action. They are centered in unionism.

They had more influence over peasants than urban proletariats because they support small countryside communes than a large industrial State.

They were on favor of revolution as a mean to get to an end, the end of any kind of state and the Socialist Paradise. Some of them were also in favor of violence and terrorism liking the movement to a violent image which it is not, actually anarchism is a pacifist movement.
4. LABOUR MOVEMENT
4.5. The International Workingmen’s Association

- Marxists and anarchist put away their differences and came to the idea of the necessity of joining against capitalist oppression. This was known as International Workingmen’s Association.

- In 1864 Karl Marx created the First International. But differences between marxists and anarchists took the First International to an end in 1872.

- In 1889 The Second International was founded. It was a socialist international. They set up the first social-democrat parties like SPD in Germany, PSF in France and PSOE in Spain for instance, they also established the symbols of socialism such as the Red Flag and their anthem, The Internationale.

- Thanks to the labour movement and their struggle against liberal governments, specially through strikes and demonstrations, some rights were conquered.
  - Infant labour was banned and maternity leave was set
  - Companies must paid an insurance preventing working accidents
  - The working time was reduced to an eight hour shift six days a week.
  - The rights of association, meeting, demonstration and strike.

- These social conquests were slowly won, with the blood of many workers and not at the same time in all the countries.
INTERNATIONAL WORKING MEN'S ASSOCIATION,
CENTRAL COUNCIL, 18, GREEK STREET, LONDON, W.

On the 28th of September and three following days,
A CONFERENCE
of Delegates from the principal branches of the Association
in FRANCE, GERMANY, SWITZERLAND, and BELGIUM,
will be held with the CENTRAL COUNCIL, when the
following programme will be discussed:—

1. Opening Meeting to the Congress
2. Review and Induction
3. Address to the Congress by the President
4. Address to the Congress by the Vice-President
5. Address to the Congress by the Secretary
6. Address to the Congress by the Treasurer
7. Address to the Congress by the General Secretary
8. Address to the Congress by the General Secretary
9. Address to the Congress by the General Secretary
10. Address to the Congress by the General Secretary

The Conference will adjourn on Tuesday evening at 8 o'clock at No. 1, Greek Street, London, where a SOIREE will be held in
ST. MARTIN'S HALL,
LONG ACRE.

The programme will consist of a Concert, Choruses by the German Working Men's Choral Society, Operatic and other selections by the Band of the Italian Working Men's Association, Dancing, etc.

Tickets to admit at half-past 7, including Tea, Concert, Addresses and Dancing, One Shilling.

Tickets to admit after Tea at half-past 8, to Concert, Addresses and Dancing, Six-pence.

DANCING AT HALF-PAST TEN.

Tickets can be had of the following Members of the Central Council:

Dr. Longford, 16, Greek Street, London, W.
Mr. Baines, 18, Greek Street, London, W.
Mr. Shearman, 20, Greek Street, London, W.
Mr. C. Cochrane, 22, Greek Street, London, W.
Mr. C. Cochrane, 24, Greek Street, London, W.
Mr. C. Cochrane, 26, Greek Street, London, W.
Mr. C. Cochrane, 28, Greek Street, London, W.
Mr. C. Cochrane, 30, Greek Street, London, W.
Mr. C. Cochrane, 32, Greek Street, London, W.
Mr. C. Cochrane, 34, Greek Street, London, W.

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