

The origins of the Industrial Revolution

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Pollution from copper factories in Cornwall, England, during the Industrial Revolution. Engraving from *History of England* by Rollins, 1887, private collection. Courtesy of Leemage/Corbis. Chart below taken from Cohen, Sharon.

Global changes do not happen overnight. They have many causes. The Industrial Revolution was a huge global change. We're still feeling its effects today.

Between 1750 and 1914, there was a huge shift in Europe, Asia, and the Americas. People used to make most things by hand. The Industrial Revolution brought factories. People used to travel by foot or by horse. The Industrial Revolution brought railroads and steamships.

Historians J. R. and William H. McNeill wrote about the Industrial Revolution in their book *The Human Web*. They say three factors made it possible:

First, fossil fuels such as coal provided huge amounts of energy. Second, some people were gathering more money. This allowed them to start large businesses. Finally, trade connections were growing stronger. New transportation technology like highways and steamships made trade easier.

Europe, the Americas, and Asia all had fossil fuels, money, and transportation.

Still, the Industrial Revolution began in Great Britain. Why there? And why did it begin in the 1700s?

Sugar plantations as a blueprint for industrialization

One change was how Europeans thought of labor. Labor is the work done and the workers who do it.

The sugar industry in the Caribbean islands and Brazil shows how work was changing.

The mills were large, complex organizations. Many people worked quickly in hot and noisy conditions. They had strict time schedules. The only goal was to produce as much sugar as possible. The workers, who were slaves, were viewed as parts of a machine. One could easily be replaced by another.

The mills became a blueprint for other factories around the world.

Cotton, coal, colonies, and cheap labor

Labor was changing. But what caused the Industrial Revolution? Why did it start in Great Britain?

Great Britain did not grow sugar cane. It didn't have many slaves, either. It did have three important things: raw materials, trade routes, and cheap labor.

This chart on global manufacturing output shows how much stuff each country was producing by 1750. Great Britain and Europe were producing far less than Asia.

One hundred years later, Great Britain was the leader in producing and trading goods. Britain must have made a huge jump forward to catch up with Asia.

This story starts with cotton. In Africa and Asia, people wore cotton and silk clothing. In Europe, they wore wool or flax clothing.

Great Britain wanted to compete in the global economy. It decided to get into the cotton business. Britain's colonies around the world had raw cotton and coal. Trade routes connected the colonies. Great Britain was at the center of a web of trade networks. It was able to ship manufactured cloth around the world. Britain began importing more raw cotton and exporting more finished cotton textiles (cotton cloth).

Coal was an important raw material. It was the fuel of the Industrial Revolution. With coal, the textile industry could use more machines. That led to more efficient production.

The information below shows how much coal Great Britain used during this period:

1700: 2.7 million tons

1750: 4.7 million tons

1800: 10 million tons

1850: 50 million tons

Manufacturing Output: 1750

China	32.8%
India	24.5%
Europe (not including Great Britain)	21.2%
Asia (not including China and India)	12.7%
America and Africa	6.8%
Great Britain	2.0%

Great Britain used more and more coal. Many factories and industries depended on coal at that time.

The third factor needed for the Industrial Revolution in Great Britain was a supply of cheap workers. Before the Industrial Revolution, most British people lived and worked on farms. Beginning in the late 1500s, England began to privatize, or "enclose," public lands. Enclosure meant that land was closed off to the public. It was taken over by individual people.

Historian John Merriman explains that making these lands private hurt the poor. They collected firewood, nuts, and berries on these lands. They grazed their animals there. Now, they no longer had land to live on. They became the factory workers of the Industrial Revolution.

Other factors needed for the Industrial Revolution

Two more factors brought the Industrial Revolution to Great Britain. They are innovation and mercantilism.

Innovation is inventing and creating new things. For example, Thomas Savery invented the steam engine in 1698. It was an innovation that allowed the Industrial Revolution to happen.

The steam engine was first used to pump water out of coal mines. Later, it was improved. It was then used in steamships (1814) and railroad engines (1825).

In the 1700s, steam-powered machines, like looms, could work faster than people. With steam power, textiles were being produced faster and cheaper than ever before.

Great Britain also benefited from something called mercantilism. That is the idea that trade should benefit your country. With mercantilism, a country should export (send out) more than it imports (brings in). This way a country could always keep money in the bank.

Mercantilism helped British factories. The country put high taxes on fabrics imported from India. This made them more expensive. Eventually, British factories could match the low price and quality of Indian fabrics. The Indian textile industry was hurt, but the British factories gained.

The Industrial Revolution goes global

Great Britain was the first country to industrialize. The Industrial Revolution led to innovations in transportation and communication. Ideas spread quickly during this time. Other countries began to copy what Great Britain was doing.

The Industrial Revolution spread to the United States, Europe, and parts of Asia. By the 1900s, the most powerful nations were the ones that could industrialize the fastest.

Quiz

1 Read this paragraph from the section "Other Factors Needed for an Industrial Revolution".

In the mid-1700s, a machine that could turn raw cotton into thread was created. It was called the steam-powered spinning jenny. This machine could produce as much thread in three hours as an expert spinner could produce by hand in 50 hours. It was also cheaper.

Which of the following questions is answered in the paragraph?

- (A) Which country made better cotton at first: Great Britain or India?
- (B) How much did it cost to make machines like the spinning jenny?
- (C) Which can spin thread faster: a spinning jenny or an actual person?
- (D) How did the popularity of cotton cloth affect the price of coal and cotton?

2 People who worked in factories were not respected.

Select the sentence from "Sugar Plantations as a Blueprint for Industrialization" that BEST illustrates this idea.

- (A) Labor is the work done and the workers who do it.
- (B) Making sugar was a hot, noisy process.
- (C) They argue that the mills were large, complex operations.
- (D) Workers were seen as parts of a machine.

3 Read the following paragraph from the article.

Before the Industrial Revolution, some regions of the world were famous for making certain items. Belgium was known for its woolen products in medieval Europe. India was known for producing high-quality cotton fabrics. China was known for making silk. How did the Industrial Revolution change things?

What type of organization is used in the paragraph?

- (A) pros and cons
- (B) chronological order
- (C) problem and solution
- (D) main idea and details

4 Which selection uses CAUSE AND EFFECT to explain part of the Industrial Revolution?

- (A) We can see how labor changed during the Industrial Revolution. Still, we have not answered some basic questions: How did the Industrial Revolution come about? Why did it start in Great Britain?
- (B) Merriman explained that making these lands private hurt the poor. They collected firewood, nuts and berries there. They grazed their animals. Now they no longer had land on which to live. They became the workers of the Industrial Revolution.
- (C) The main idea of mercantilism is to use trade to benefit your country. It means a nation should export more than it imports. It should sell more to other countries than it buys from them.
- (D) When the 1900s dawned, traditional agrarian (farming) civilizations had lost their power. They had ruled for thousands for years. Now the most powerful nations were the ones that could industrialize the fastest.