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WHY IS THAT T-SHIRT SO CHEAP?

The Origins of the Industrial Revolution

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A HISTORIAN'S JOURNAL ENTRY / BY SAUL STRAUSSMAN & BRIDGETTE BYRD O'CONNOR

Global changes don't just happen overnight.
There are usually many factors in place to make
a large change possible.



BIG HISTORY PROJECT



This was true for the Industrial Revolution. It was a huge change in the way things were made. The Industrial Revolution brought factories and production of goods in amounts never seen before. Now, hundreds of workers in a huge factory could produce thousands of items a day. Governments supported these factories and large businesses.

Humans have been making things for a long time. For most of that time, people made things by hand, often in their homes. The Industrial Revolution changed that, and changed the world.

Before the Industrial Revolution, some regions of the world had a reputation 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?

Between 1750 and 1914, there was a global shift. Things were now produced differently, and more efficiently. Many regions of the world saw changes during this time: Europe, the Americas, Asia. These regions became more industrialized: they built more factories and started to produce many more goods.

In their book *The Human Web*, historians J. R. and William H. McNeill argue that several factors made the Industrial Revolution possible.

First, fossil fuels like coal provided huge amounts of energy. Second, some people were gathering more capital — more money. This allowed them to start large businesses. Finally, trade connections were growing stronger. One reason was transportation innovations such as canals, turnpikes (like highways today), and steamships.

Fossil fuels, available money, and improved transportation were present in Europe, the Americas, and Asia.

Coal was mined in Europe, East Asia, and North America. According to the McNeills, “Song China had used [coal] on a large scale in its iron industry. London had burned coal for home heating since the thirteenth century.” (231) The northeastern United States and central China had many waterways that provided cheap transportation. Ships from South America to China brought raw materials and goods along those waterways. The shipments provided China with plenty of capital (cash).

Still, the Industrial Revolution began in Great Britain. Why? And why did it happen in the 1700s and 1800s? What changed in Europe — particularly in Great Britain —

that created the Goldilocks Conditions (ideal conditions) for such a huge change in how people produced goods and services?

SUGAR PLANTATIONS AS A BLUEPRINT FOR INDUSTRIALIZATION

One change was how Europeans thought of labor: the work done, and the workers who did it. The ways people worked were changing. This first happened in the Americas. Later, it spread all over the world.

The sugar industry in the Caribbean islands and Brazil is a good example of how work was changing. Making sugar was a hot, noisy process. It required many workers and tight deadlines. Setting up sugar production also took a lot of money. It was expensive to build sugar plantations and mills. It was important to find cheap workers as well.

Sugar mills were the first modern factories, according to historians Kenneth Pomerantz and Steven Topik. They believe the “scale, complexity, and social organization of the sugar mills,” made them a blueprint for other factories around the world. (227)

Two things made the sugar mills unique. The first was strict time schedules. Once sugar cane was cut, it had to be processed quickly, or else it would rot. To do this, workers in the mills had to work around the clock. The mill was designed around one goal: to produce as much sugar as possible.

The second was how workers were treated. The workers who made sugar were mostly slaves. They were looked at like parts of a machine. One could easily be replaced by another. This way of looking at workers would eventually be adapted to many industries around the world.

COTTON, COAL, COLONIES, AND CHEAP LABOR

I can see how labor changed during the Industrial Revolution. Still, I haven’t answered some basic questions: How did the Industrial Revolution come about? Why did it start in Great Britain?

Great Britain didn’t grow sugar cane. It didn’t have many slaves, either. Yet it did have three important things: raw materials, trade routes, and cheap labor. It just needed something more to bring these three factors together.

Look at the chart on global manufacturing output below. This chart shows how much stuff each country was producing by 1750. I can see that at this point, Great Britain (and all of Europe) was producing far less than Asia.

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%

Remember, from the late 1700s through the 1800s, Great Britain became the leader in producing and trading goods. Britain must have jumped forward in a big way to catch up with Asia.

Why was Europe behind Asia in the first place? One reason is that the Europeans did not wear cotton clothing. They usually wore either wool or cloth made from flax. In Africa and Asia, people preferred cotton and silk.

Great Britain wanted to compete in the global economy. It decided to get into the cotton business. That's not easy, but the British had some advantages. They had colonies around the world, trade routes connecting the colonies, and access to raw materials like cotton and coal.

Most of Great Britain's cotton came from the American South. Just before the American Civil War in 1861, Great Britain was buying more than half the cotton produced in the southern states of America. Still, the British bought cotton from Egypt and India, too. They knew the Civil War would disrupt the flow of cotton from the U.S. South. The mills in Britain needed raw cotton to keep working.

Date	Raw cotton consumption in Great Britain	Exports of cotton textiles from Great Britain
1760 to 1769	3.5 million pounds	£227
1820 to 1829	166.5 million pounds	£25,605

Date	British imports of cotton piece goods from India	British exports of cotton from textiles
1772 to 1774	£697	£221
1824 to 1826	£363	£17,375

Chart taken from Cohen, Sharon. "Landscape Teaching Unit 7.1 The Industrial Revolution as a World Event 1715 – 1840 CE." World History for Us All. PDF file, 11. See also Broadberry, Stephen and Bishnupriya Gupta. "Cotton Textiles and the Great Divergence: Lancashire, India, and Shifting Competitive Advantage, 1600-1850. The Rise, Organization, and Institutional Framework of Factor Markets: Center for Economic Policy Research, Utrecht, Netherlands, 23-25 June 2005. Discussion Paper, 32-33.

Great Britain was at the center of a web of exchange networks. It was able to ship manufactured cloth around the world. Look at the chart below. I can see that Britain began importing more raw cotton and exporting more finished cotton textiles (cotton cloth).

Look at these two charts. I can see that Great Britain went from being an importer of textiles to a major exporter of textiles in a very short time.

Coal was also an important raw material that fueled the Industrial Revolution. Coal allowed the textile industry to use machines much more widely. This ultimately allowed Great Britain to become the top manufacturer of textiles. To understand how important coal was to the Industrial Revolution, look at the information below. Here is how much coal Great Britain was mining during this period:

Coal mined in Great Britain (in tons)

1700	1750	1800	1850
2.7 million	4.7 million	10 million	50 million

Great Britain used more and more coal. It wasn't just cotton mills using this coal. Many industries did. Still, the textile industry used coal power to become very successful during the Industrial Revolution. Fifty million tons of coal were burned in 1850. This tells us that 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 labor — workers. During the 1700s, most British people lived and worked on farms. However, 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. Poorer farmers could no longer farm the land.

The enclosure movement gained steam during the 1700s. More than one-fourth of the farmland in England was enclosed between 1760 and 1815, according to historian John Merriman. “The poorest members of the rural community lost their age-old access to lands on which they had gleaned [collected] firewood, gathered nuts and berries, and grazed animals. Before enclosure, it was said, a ‘cottager’ was a laborer with land; after enclosure, he was a laborer without land.” (361)

These country people suddenly had no land to live off. Now they became the workers of the Industrial Revolution.

OTHER FACTORS NEEDED FOR AN INDUSTRIAL REVOLUTION

Coal and cotton were the raw materials that helped to create industry in Great Britain. The British also had colonies around the world. These colonies provided both raw materials for British goods. They also provided new markets for Britain to sell its goods to. The people in the colonies became buyers of Britain's goods. Finally, there was the enclosure movement of the late 1700s. It caused many people to move from the country to the city in search of jobs.

I've discussed many important factors that brought about the Industrial Revolution in Great Britain. Still, there are two more: innovation and mercantilism.

Thomas Savery invented the steam engine in 1698. It was an innovation that allowed the Industrial Revolution to happen. At first, the steam engine was used to pump water out of coal mines. Later it was improved. It was then used in tugboats (1736), paddleboats (1788), steamships (1814), and railroad engines (1825). I can see that the steam engine made transportation more efficient. It also helped to transform the textile industry.

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 in 50 hours by hand. It was cheaper, too.

In 1785, the first steam-powered loom was invented. At first, it made an uncomfortable fabric that people didn't want. That quickly changed. By 1797, there were more than 900 cotton mills operating in Great Britain. By 1835, there were more than 106,000 steam-powered looms.

What's the relationship between steam-powered labor and the price of goods and wages? Two pieces of information stand out.

First, the wages of hand-loom weavers dropped by 60 percent between 1800 and 1835. I know that many steam-powered looms were brought in during this time. I can guess that the steam-powered looms produced textiles much faster than a weaver working by hand.

Second, the price of fabric dropped from 40 shillings to 5 shillings during this time period. It meant textiles were being produced faster and cheaper than ever before. This was thanks to the revolution in fuel, machines, and labor.

This information supports the numbers in the charts. They show that Great Britain's exports increased during this time period. Its imports from Asia (mainly India) declined.

It wasn't just machines and workers. Great Britain also benefited from an economic philosophy. It was called mercantilism. The philosophy helped Britain win at economic competition with other countries. The main idea of mercantilism is to create a balance of trade that favors your country. It means a nation should export more than it imports. This way, there would always be enough gold and silver in the treasury — basically a nation's bank.

Mercantilism was an economic philosophy used mainly in Europe from the sixteenth to the late eighteenth century. Governments wanted to make as much money as they could through trade and therefore placed a lot of restrictions on foreign imports while also promoting domestic businesses. For example, the British Parliament promoted local businesses by establishing strict rules about what foreign goods could come into the country, and they did this by raising taxes on imported goods that might compete with local producers. They also put restrictions on their colonies, forcing them to only trade with British suppliers and thus creating a monopoly. These policies finally came to an end not long after the publication of Adam Smith's The Wealth of Nations in 1776. Smith opposed mercantilist policies and believed markets that operated on capitalist principles were more efficient and successful.

Great Britain used mercantilism in this way: it put high taxes (tariffs) on fabrics imported from India. These taxes made imported Indian fabrics more expensive. The taxes were kept in place until British factories could match the low price and quality of Indian fabrics. Once British factories achieved these goals, the taxes could be eliminated. But by then, the damage to the Indian textile industry was done.

THE INDUSTRIAL REVOLUTION GOES GLOBAL

As I talked about above, the conditions for the Industrial Revolution existed in a number of places. Still, they first came together in Britain. Great Britain had the Goldilocks Conditions that allowed it to transform to an industrial system. However, Britain's head start wouldn't last long. Other nations quickly followed its example.

The Industrial Revolution brought advances in transportation and communication. As a result, ideas spread quickly during this period. This allowed other countries to copy what Great Britain was doing. They began to transform their own economies.

In the United States, New England became the early center of the textile trade. Its advantages were its access to cheap energy, good transportation, and capital. The same was true for Germany and parts of Asia. Japan became one of the mightiest industrial powers.

By the dawn of the 1900s, the balance of power had shifted from the traditional agrarian civilizations that had ruled for thousands of years. Now the most powerful nations were the ones that could industrialize the fastest.

Working Bibliography & Notes

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Cover image: 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.

This short journal entry is an example of how historians go about exploring important questions and looking at new information. They use a mixture of historical documents and the writings of other historians to inform their thinking. All sources are listed in the working bibliography.