5.4

Industrialization Spreads

No exertions of the masters or workmen could have answered the demands of trade without the introduction of spinning machines.

—John Aiken, A Description of the Country . . . Around Manchester, 1795

Essential Question: How did different types and locations of production develop and change over time?

Although the Industrial Revolution began in Britain, it soon spread elsewhere. The British cottage industry system for the production of cotton, in which merchants provided raw cotton to be spun into cloth in workers' homes, was supplanted by the industrialization of cotton manufacture in factories. Cotton became an increasingly valuable commodity in the world economy as industrialized Britain, with higher productivity, was able to replace Indian and Middle Eastern goods. After Britain industrialized, Belgium and then France and Germany followed, and eventually Russia and Japan became industrialized. These countries possessed many of the characteristics that allowed Britain to industrialize, including capital, natural resources, and water transportation.

Spread of Industrialization

After Britain industrialized, Belgium, and then France and Germany followed. Like Britain, these countries possessed capital, natural resources, and water transportation. The United States, Japan, and Russia also transformed as industrialization spread.

France and Germany Despite some favorable factors for industrialization, France had sparsely populated urban centers, which limited the amount of labor available for factories. Also, the French Revolution (1789–1799) and subsequent wars involving France and its neighbors consumed both the attention and the capital of France's elites. These factors delayed the Industrial Revolution in France.

Germany was politically fragmented into numerous small states, which delayed its industrialization. However, once Germany unified in 1871, it quickly became a leading producer of steel and coal.

The United States The United States began its industrial revolution in the 19th century. By 1900, the United States was a leading industrial force in the world. **Human capital** (the workforce) was a key factor in U.S. success. Political upheaval and widespread poverty brought a large number of immigrants to the United States from Europe and East Asia. These immigrants, as well as migrants from rural areas in the United States, provided the labor force to work in the factories.

Agricultural Products for Trade in the Nineteenth Century		
Product	**Producers**	**Users (Finished Products)**
Wheat	Russia, Britain	Britain (food)
Rubber	Brazilian Amazon	Britain (tires, footwear, fabrics)
Palm Oil	West Africa, Indonesia	Britain (cooking oil, soap)
Sugar	Caribbean Islands, Brazil	Britain (refined sugar)
Cattle and Hogs	United States, Ireland, Argentina	Britain, United States (meat)
Cotton	United States	Britain (textiles)

Russia Russia also began to industrialize, focusing particularly on railroads and exports. By 1900, Russia had more than 36,000 miles of railroad connecting its commercial and industrial areas. The **Trans-Siberian Railroad** stretched from Moscow to the Pacific Ocean, allowing Russia to trade easily with countries in East Asia, such as China and Japan. The Russian coal, iron, and steel industries developed with the railroad, mostly in the 1890s. By 1900, Russia had become the fourth largest producer of steel in the world. However, the economy remained overwhelmingly agricultural until after the Communists seized power in 1917.

Japan The first country in Asia to industrialize was the one that had the least contact with Europe since the 17th century: Japan. In the mid-19th century, Japan went through a process of defensive modernization. That is, it consciously adapted technology and institutions developed in Europe and the United States in order protect its traditional culture. By learning from the West, Japan built up its military and economic strength so it could maintain its own domestic traditions. In the last four decades of the 19th century, Japan emerged as a leading world power. For more details on Japan, see Topic 5.6.

Shifts in Manufacturing

While Middle Eastern and Asian countries continued to produce manufactured goods, these regions' share in global manufacturing declined.

Shipbuilding in India and Southeast Asia Shipbuilding initially saw a resurgence in India at the end of the 17th century, largely due to the political alliances formed between India and western countries. However, Indian shipbuilding ultimately suffered as a result of British officials' mismanagement of resources and ineffective leadership during the period of British colonization in the late 17th and 18th centuries. In 1830, Britain designated ships of the British East India Company as the Indian Navy. The Indian Navy was disbanded by 1863, however, when Britain's Royal Navy took complete control of the Indian Ocean.

Iron Works in India British colonial rule in India also affected the country's mineral production. During the period of **company rule**—British East India Company control over parts of the Indian subcontinent from 1757 to 1858—steep British tariffs led to the decline of India's ability to mine and work metals. The British also began to close mines completely, especially after the Rebellion of 1857, because they perceived that the mines were being used to extract lead for ammunition.

The ongoing fear of another uprising led to the Arms Act of 1878, which restricted not only access to minerals, but also to the subsequent production of firearms. British colonizers limited India's ability to mine and work metals in areas such as the mineral-rich state of Rajasthan. By the early 19th century, most of the mines in Rajasthan were abandoned and the mining industry was extinct.

Even though British colonial rule ended in 1948, mining and metalworking remained practically nonexistent in India until the early 20th century. Lack of technological innovation after so many years of abandoned mines led to a relatively crude, labor-intensive method of mining, which created the false impression that India's mineral resources were inaccessible. (Connect: Identify the similarities in how Britain treated its colonies in South Asia and its colonies in the Americas. See Topic 4.8.)

Textile Production in India and Egypt India and Egypt were both among the first to engage in the production and trade of textiles. Just as it stifled the production of ships and iron, British colonization also affected textile production in India. As the textile industry flourished in India, it undermined the British textile mills in Britain, specifically in Lancaster. The owners of the Lancaster textile mills pressured the British government in India to impose an "equalizing" five percent tax on all textiles produced at the more than 80 mills operating in Bombay, thus undermining their profitability.

Egypt's textile industry, too, experienced difficulties as a result of Europe's worldwide economic reach. In the 18th century, Egypt exported carpets, silks, and other textiles to Europe. By the mid-19th century, however, the huge growth in European textile production had changed matters. Egypt had lost not only its export market in textiles, but much of its domestic market as well.

KEY TERMS BY THEME

ECONOMY: Railroads	**ECONOMY:** Manufacturing
Trans-Siberian Railroad	human capital company rule