

## Chapter 12: Industry and Services

Nike was founded in Oregon and is headquartered there. It employs 20,000 Oregonians, yet not a single shoe is made in Oregon. Instead, Oregon employs the designers, sales specialists, lawyers, etc. needed to make the company run; all their shoes, however, are made overseas. Less than a hundred years ago, it would have been unthinkable that we would be importing shoes. Economic forces, however, are always changing.

### **Where did the Industrial Revolution Begin, and How did it Diffuse?**

Industrial production began long before the Industrial Revolution. Production was mostly confined to cottage industries in China, Japan, and India. However, due to Europe's colonization, the British and Dutch were able gain access to large amounts of cheap raw materials such as cotton; once they learned how to mass produce items with these raw materials, the Europeans could underprice and out-produce the rest of the world.

The first steps in the **Industrial Revolution** were powered by water and foot energy. However, by the late 18<sup>th</sup> and early 19<sup>th</sup> centuries, inventions such as coal and steam power were able to power the rise of large industry, not only by powering looms in textile mills but also by powering the railroads and steamboats that would be increasingly transporting products. Wealth flowed into Europe from its colonies, allowing for investment into large new production schemes. New processes like that of making cast iron revolutionized the iron industry. Due to its colonial empire and technological savvy, by the mid-19<sup>th</sup> century Great Britain was the most powerful nation in the world. The earliest industrial centers in Britain were near coal fields and iron deposits, both necessary for the production of iron; the populations of centers such as Birmingham and Manchester in central England grew greatly as a result of this.

As industrial production of textiles and iron began to diffuse into Europe, a similar pattern of industrial centers arising near iron and coal deposits took place, particularly in the Ruhr Valley of Germany. Ports arose to handle the incoming raw materials and outgoing industrial products. The rise of railroads enabled other industrial centers to arise that were not necessarily close to raw materials but were close to large labor sources, such as London.

### **How do Location Theories Explain Industrial Location?**

Thanks to improvements in transportation and communication, secondary industries are much less dependent on resource location. **Location theory** predicts where business will or should be located. As profit is key to business, **variable costs**, those costs which can vary over time such as energy, transportation, and labor, have a large role in where businesses are located. **Friction of distance**, the increase in time and cost that comes with increasing distance, certainly plays a role; thus, it would make sense that factories would be near the location of raw materials. This is not always the case however.

Alfred Weber developed a model for the location of manufacturing plants similar to what von Thunen had done for agriculture. **Weber's least cost theory** accounts for the location of a manufacturing plant in terms of the owner's desire to minimize three categories of cost:

1. Transportation: the site needs to have low costs of moving raw materials to the factory and finished products to market.
2. Labor: higher labor costs reduce profit, so cheap labor is important.
3. **Agglomeration**: when numerous enterprises cluster in the same area, such as in an industrial city, they can provide assistance to each other. However, excessive agglomeration can lead to higher wages competition for materials. These kinds of problems related to too many industries in one area actually has led some companies to leave the urban centers of the eastern US megalopolis and move to other locations—a process known as **deglomeration**.

Another theory related to agglomeration is Harold Hotelling's theory relating to **locational interdependence**, where industries take into consideration what their competition is doing if they sell similar products. Used the example of ice cream vendors at the beach, and stated that the optimal location for buyer and seller are stands equidistant apart from one another.

The major industrial areas, also known as the four **primary industrial regions**, are as follows:

1. **Western and Central Europe**: Centered in Germany, particularly in the Ruhr Valley, but stretches into Poland, the Czech Republic, Belgium, and Northern Italy. Some of the resources necessary to produce heavy industry such as steel are present, but also an educated workforce allows for the production of finer products such as optical equipment, pharmaceuticals, and chemicals. Germany's industry enabled it to produce large amounts of weaponry during WWII; much of that industry was destroyed in said war. However, with the Allied rebuilding of Germany's industry after WWII, Germany again became a modern industrial power, and is still the most powerful economy in Europe.
2. **North America**: The industrial area of the northeastern US is in large part due to accessibility to Appalachian coal and iron ore from the Great Lakes region as well as imported through northeast ports. The **American Manufacturing Belt** is a wide swath that stretches from roughly St. Louis and Chicago on the west to Boston and Baltimore in the east, including numerous large cities such as Pittsburgh, Detroit, and Cleveland. New York City seems to be the epicenter in the growth of industrialization due to its port serving as a major **break-of-bulk point**, where cargo is transported from one mode of transportation (for example a ship) to another mode of transportation (truck or train). With American manufacturing in decline, many of the factories in this area have been shuttered and people have moved away; thus, this area is often known as the **Rust Belt**.
3. **Former Soviet Union**: Rich in natural resources, the former Soviet Union, made up in large part by Russia and the Ukraine, became an industrial power in the 20<sup>th</sup> century.
4. **Eastern Asia**: Japan and China were able to escape European colonization, and therefore were able to develop its own industry. Japan was the earlier industrial power; China has come on strong in the late 20<sup>th</sup> century, as has South Korea. What is unique about Japan's situation is its almost complete lack of raw materials, causing it to have to import virtually all of the materials needed to industrialize; indeed, Japan's starting WWII in the Pacific was an endeavor to gain resources. Japan's industrial center is located around the Tokyo-Yokohama metropolis, and it is known as the *kanto district*; however it is not the only district in Japan. Known for lower quality/cheap products after WWII, Japan has evolved and now focuses on higher quality production, such as electronics, automobiles, and batteries. China is currently the low quality/cheap product leader of the world; time will tell whether they stay that way or evolve to a higher quality production like Japan and South Korea.

### **How Has Industrial Production Changed?**

The mass production assembly line, perfected by Henry Ford in the early 1920's, has had such an important impact on modern industrial production that it became known as **Fordism**. Ford's model allowed for the production of items at a single site at a rapid pace. Now the world economy is in a **post-Fordist** system in which production is outsourced and spread around the world. Due to **time-space compression** (the notion that some places in the world are more connected through communication and transportation than ever before), goods and services from far-flung reaches of the globe can be here overnight. So whereas in the past goods were produced for the area around it, now they are produced for anywhere in the globe, using parts and labor from anywhere in the globe. Due to speed with which things can be transported, businesses count on **just-in-time** delivery, which means rather than keeping a large inventory of components or products, companies keep just what they need for short-term production and new parts are shipped quickly when needed. This rapidity of transportation has created a **global division of labor**, in which corporations can draw on laborers from different places to make different components of production. Since corporations are intended to make a profit for stockholders, they seek out the lowest cost providers no matter where they might be; thus, periphery countries with cheap labor and lax environmental regulations make labor-intensive items, whereas those items that require more skill or higher transport costs remain in the core countries. Research and development jobs also remain in the core. Most items made in the periphery countries end up going to core countries.

TVs are an example of how things have changed. Firms in the US such as Zenith were then dominant producers of TVs until the 1970s. Then in the 70's and 80's, some large Asian producers began to seize the market with high quality competitively priced TVs. By 1990 there was only one US TV maker (Zenith) and it had a small share of the market. Before their downfall, US TV makers were shipping production to the **maquiladora** of Mexico; even Japan moved assembly of TVs to Taiwan and South Korea, all trying to find low labor costs to do the relatively easy job of TV assembly. With plasma and other new, more complex TVs, production has moved back to Japan for the time being; eventually, those will again move to lower cost countries in the semi-periphery for assembly. As far as the component parts to the TV, those parts could be produced in any number of countries.

A major breakthrough in transportation in the last couple of decades is **intermodal connections**, that is where two or more modes of transportation meet (including air, road, rail, barge, and ship), in order to ease the flow of goods and reduce the costs of transportation. The invention of the **container system** has played a large role in this. Goods are packed in containers that look like trailers; these trailers can be put on a ship, then hoisted onto a truck, then hoisted onto a train, then hoisted onto a truck again for delivery without the items ever having to be removed; this saves time and labor, and thus money. In Europe, this has caused a boom for the ports of Rotterdam and Amsterdam, both in the Netherlands; 50% of all goods entering the European Union come through these ports, and numerous US companies have presences there.

Regional trade organizations such as North American Free Trade Agreement (NAFTA) and European Union (EU) have trade agreements that set up quotas for where imported goods (and components of goods) can be produced. More importantly, they prevent member countries from placing **tariffs**, or taxes on imports, on member countries' goods. This has enabled American companies to move to Mexico, a fellow member of NAFTA, to produce without fear of the US placing a high tariff on the products, thus making them less attractive to consumers. Many countries are also member of the World Trade Organization (WTO), a kind of economic United Nations. The WTO pushes for free trade between countries by discouraging quota systems and tariffs to protect domestic industry; if a country believes it has been unfairly treated as far as trade with another country goes, it can appeal to the WTO.

Energy consumption has a major effect on industrialization. The United States consumes 27% of the world's oil supplies and 37% of the world's natural gas supplies; even though the US is the third largest oil producer in the world, it is still dependent on oil imports. With the new technology of **fracking**, or cracking bedrock to allow oil to seep in before drilling it, the US is increasing its oil capacity and may surpass Saudi Arabia in oil production within the next ten years. Due to the great amounts of oil in the Middle East in nations like Saudi Arabia, Iraq, and Iran, the US and other Western powers are heavily involved in the affairs of the region; this has led to many difficulties in relations with several of the countries there.

### **Where are the Major Industrial Belts in the World Today and Why?**

Over the last 20 years, many manufacturing regions have experienced **deindustrialization**, a process by which companies move industrial jobs to other regions with cheaper labor, leaving the newly deindustrialized region to switch to a service economy (economy based on services such as call centers and government employees) and to work through a period of high unemployment. In the Great Britain, the industrial areas of Liverpool and Manchester lost many of its manufacturing base, as did the industrial zone in the US bordering the Great Lakes. The Rust Belt is what remains, as some cities such as Detroit have been unable to adjust and are losing population. Many of the industrial jobs have moved to **China, Japan, Singapore, and South Korea**; this region is known as the **Pacific Rim**, and these four particular countries are known as the **Four Tigers**.

China's growth in the last 20 years has been dramatic, and China has the fastest growing economy in the world. *The Northeast District* is the fastest growing industrial area. Most of the economic growth in China is due to foreign companies **outsourcing**—moving production from their home countries to China to benefit from abundant, low-cost labor. Companies also do not need to worry about expensive environmental or labor regulations in China, which is known for its lax concern for pollution. There is a cost to this growth however. In many Chinese cities, bulldozers are sweeping away the unique historic aspects of Chinese history and erecting bland, faceless apartment blocks. Pollution creates smog so bad that in some places the sun cannot be seen. Although concentrated in the coastal regions of China, there is now a push to locate more industry in the interior of the country, further away from the current economic centers of China. These interior areas that are dependent on larger economic centers are known as **hinterlands**.

### **What is the Service Economy, and Where are Services Located?**

Due to rapidly escalating energy and labor costs, it was difficult for the core countries to maintain an industrial advantage over the rest of the world. Thus, the service industry arose. **Service industries (aka tertiary industries)** do not generate an actual, tangible product; instead they include the range of services that are found in modern societies. As we saw in chapter 11, specialized aspects of the service economy were given their own designations: **quaternary industries** for the collections, processing, and manipulation of information and capital (finance, insurance, legal services) and **quinary industries** for activities that facilitate complex decision making and the advancement of human capacities (scientific research, higher education). In the global economic core, service industries employ more workers than the primary and secondary industries combined. This rapid rise of the service sector has led to the descriptive term **postindustrial economy**.

Deindustrialization and the growth of the service economy unfolded in the context of a world-economy that was already characterized by wide socioeconomic disparities. Much of the wealth generated by the deindustrialization has remained in the core countries. However, even in the core countries there are pockets of hardship due to the loss of jobs; northern Indiana, the British Midlands, southern Poland show us that not all deindustrialized regions are finding their way into the tertiary sector. The **Sunbelt**, particularly the South and southwestern US, has managed to pick up not only manufacturing jobs but also service jobs in the new economy.

High-technology corridors are areas designated by local or state governments to benefit from lower taxes and high technology infrastructure with the goal of providing high technology jobs to the local population; examples would be computers, semiconductors, telecommunications, etc. California's Silicon Valley is an example of this; with Stanford University and UC Berkeley as a research link, many companies such as Cisco, IBM, Apple, and Adobe have located in this area. This type of area is also called a **technopole**. There are several other technopoles in the US and Europe; they often compete to attract businesses looking to relocate. True to the modern times, even though the research and marketing to create a new gadget like the iphone may take place in Silicon Valley USA, components to make the iphone may be made in dozens of countries, then shipped to China where they are assembled and sold throughout the world.