

CHAPTER 16



Geographies of Production and Consumption

CHAPTER MODULES

- 16A** Growth of Mass Production and an Industrial World
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Up until two centuries ago, most manufactured items were costly and rare. Energy came from people and animals, with some wind and water power thrown in as needed. Tools were often beautifully crafted and quite intricate, but they could only make things one at a time. As a result, only the rich could afford to purchase a lot of items. The masses of people made do with only a few, well-worn possessions.

After about 1800, a new mode of production based around factories and fossil fuel power began to change the quantity of things that could be produced, increasing manufacturing productivity 100 times over by expanding the productivity of every worker. This system made

goods cheaper, provided a huge number of jobs in the new factories, and completely reoriented the way people lived. It also bestowed enormous advantages on those societies that were able to get there first. By 1839, Britain's position as an industrial powerhouse enabled it to defeat the Chinese Empire, with a population 20 times its size!

In more recent years, production and consumption have changed at a furious pace, and so have their geographies. The movement toward ever greater globalization, the development of high-technology industries, the creation of a predominantly service economy, and an increasing emphasis on consumer choice have transformed the world we live in.

16A Growth of Mass Production and an Industrial World

Production creates an object that is more valuable than the sum of the raw materials going into it. This is called **value added**: the difference between the price of the final product and the cost of raw materials, labor, and other inputs. For example, the actual value of many of the chief ingredients that go into a box of cereal—corn, rice, wheat, plus some sugar and other additives—may cost about 5 to 10 cents. Yet the value of the final product might be between 2 and 5 dollars! In this instance, there is a tremendous amount of value added in the production of cereal and allows such companies as Kellogg's, General Mills, and Post to employ many people and to make profits.

▼ **Figure 16A.1** Industrialization was associated with three major changes.

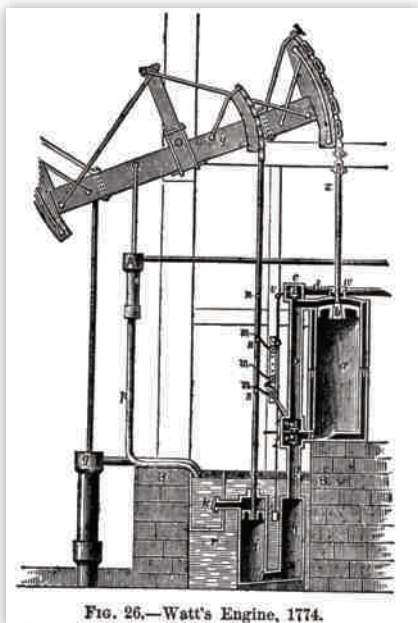
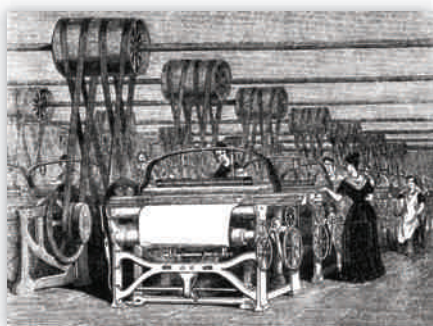


FIG. 26.—Watt's Engine, 1774.

(a) The steam engine had been around for many centuries but had not been useful as a source of power until improvements were made in the 1760s by James Watt and others. Basically, coal was burned to boil water on a controlled basis. The steam that was generated forced the movement of pistons, which could then power all kinds of machinery, 24 hours a day, in any kind of environment. The steam engine also shifted the main power sources away from wind, water, and firewood to coal. This began industry's reliance on fossil fuels.



(b) New machinery was developed that could enhance the productivity of the human operator many times over. Some of these machines initially used water power from fast-moving streams, but they later adapted well to the more reliable steam engine. A mechanized or

power loom enabled the age-old craft of weaving fibers into fabrics to be accelerated. It is because of power looms that textiles were the first craft to become industrialized.



(c) Early steam engines were bulky and expensive, and they required a lot of coal. It cost a great deal of money to purchase some of the power machinery as well. The tools of industrialization were incompatible with the old workshop system. The **factory system** emerged, in which several people worked under one roof, bringing together all the necessary machinery to be powered from belts by one steam engine. This also changed the nature of artisan labor, generally requiring much less skill and allowing newcomers (often fresh from the countryside) to pick up the needed proficiency in a day or so. The factory system brought about a **division of labor**, in which each worker specialized in a single, repeated task, after which production was turned over to another laborer, who specialized in another task. Because no single task took too long to learn, this helped make labor cheaper and interchangeable.

For most of human history, production occurred in small workshops. Artisans learned their craft over a period of many years, working as apprentices to a master craftsman before being allowed to strike out on their own. In Europe, most artisanal production was organized through guilds, associations of workshops that generally focused on a single industry, such as woolen textiles.

Mass production was the key outcome of **industrialization**, a process by which a greater proportion of a national economy is involved with manufacturing and that allowed more goods to be produced in greater quantity and at a lower price. While sometimes the term *Industrial Revolution* is used, industrialization was a long-term process that spanned a number of years, was associated with some major factors, and has taken decades to diffuse.

Industrialization opened the doors to the **mass production** of goods and helped spark demand for more goods as quantities rose and prices dropped. Industrial technologies required an enormous amount of financial capital, or money. Buying a steam engine, machinery, and a factory was more expensive and required deep pockets. Small artisans could not take advantage of the new technologies, so it was left to a new breed of entrepreneur, someone with a lot of extra money, to buy steam engines and put them to use. These needs also tended to favor particular places that had both the necessary capital and the human and raw material resources. Labor costs were also expensive, and many early industrialists did their utmost to squeeze every ounce of work out of their employees while paying as little as they could get away with.

Figure 16A.2 ► By 1800, Great Britain had about 11 million people, but it was poised to dominate the world economy in a manner that no other country had since the Roman Empire. Great Britain was able to capitalize on the following:

1. **Efficiency:** The demands of industrialization—ready resources and ready markets—required efficient economic systems. Great Britain was by far the most efficient economy around 1800. It had a compact area, no internal barriers, good turnpikes, and an excellent canal system. This allowed it to develop a domestic market and to reduce economic redundancies between regions. This also gave Britain and British merchants a huge amount of surplus financial capital, which could be invested in new modes of production.
2. **Wealth:** By 1800, Great Britain was also the richest and most global country. The American colonies played an important role as a source of raw materials for England and as a large market for British products. The British were successful in setting up the Britain→Africa→North America triangle with trade in slaves, sugar, and cotton. Merchants participating in this trading triangle, and other trading links, grew enormously wealthy.
3. **Raw materials:** Great Britain had started off as an outpost for wool. While it did not possess newer fibers, such as cotton, it did enjoy a big advantage in coal reserves, most of which were reasonably close to major population centers. As it was, most of the major industrial activity focused on areas near or on the coalfields. Cotton—the most essential fiber of the industrial era—was imported from places such as the American South. Later, Britain could also capitalize on an abundance of iron ore for making iron and later steel.

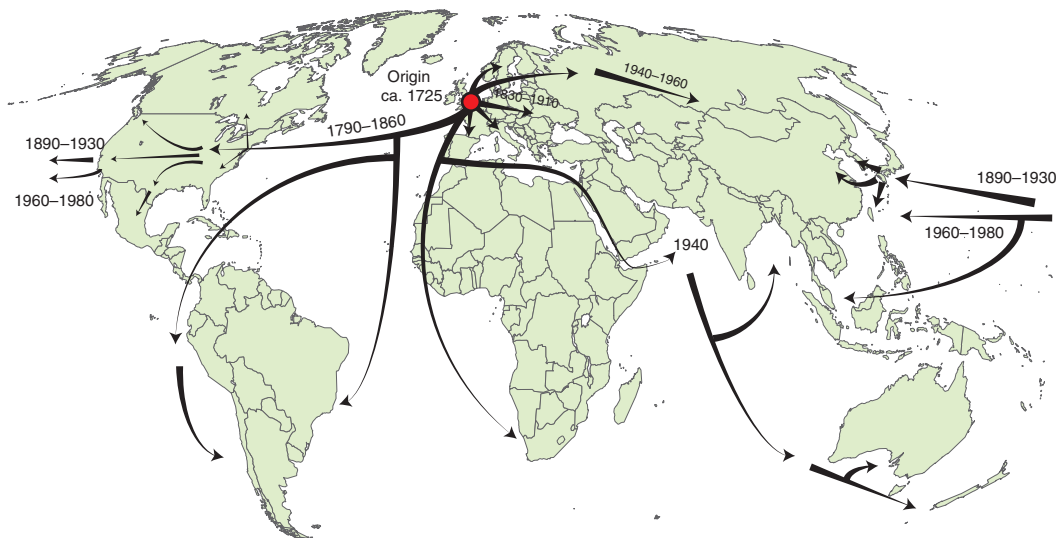
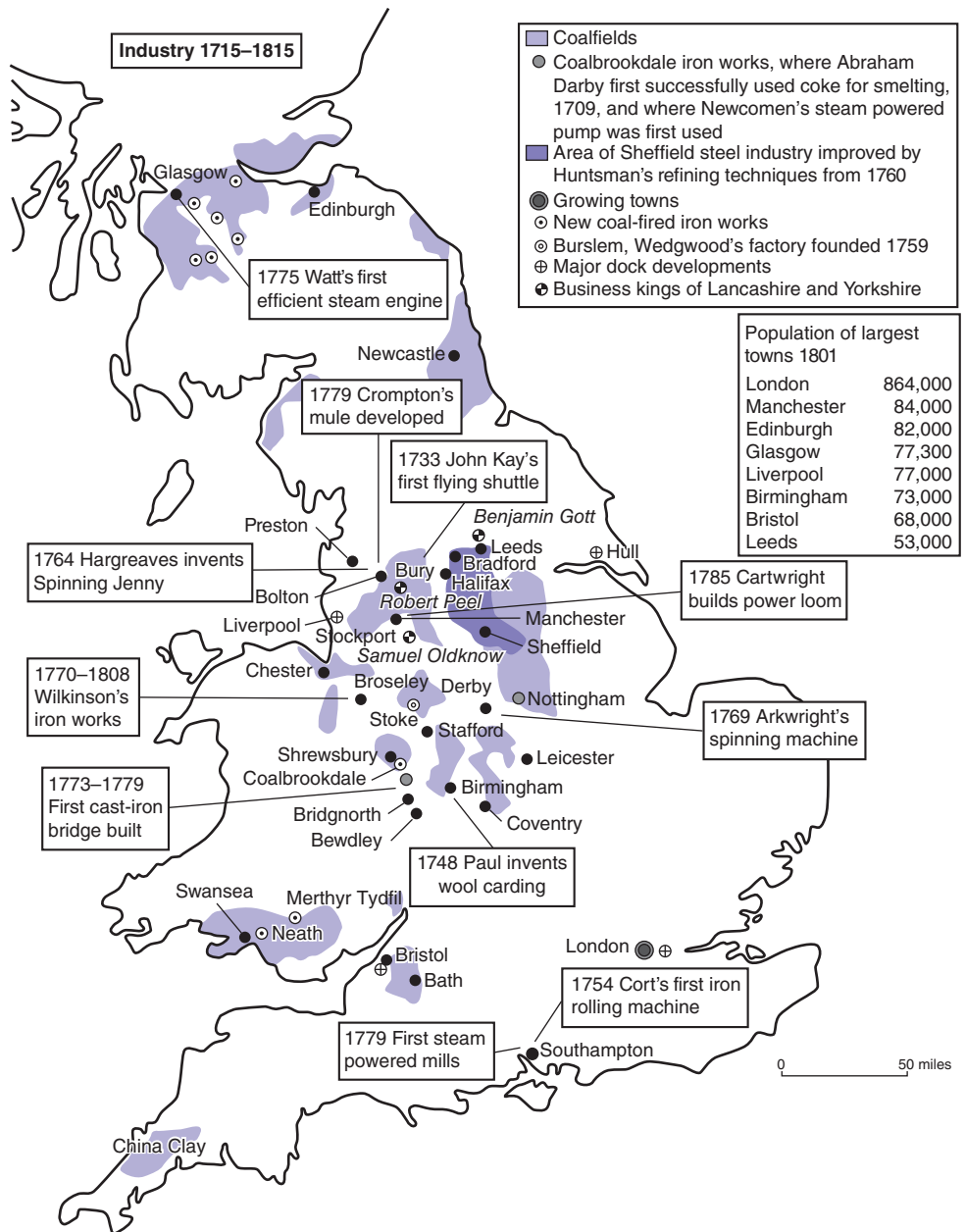


Figure 16A.3 Industrialization diffused slowly, mainly because Britain jealously guarded its new technologies. Other European countries, such as Belgium, France, and Germany, industrialized later (post-1850), followed by northern Italy and central Europe in 1880. The United States and Canada also industrialized in part during the middle nineteenth century. Around the turn of the twentieth century, Japan began to industrialize, followed by Russia and Eastern Europe. Industrialization in Latin America, China, India, and finally Africa occurred more in the mid to late twentieth century.

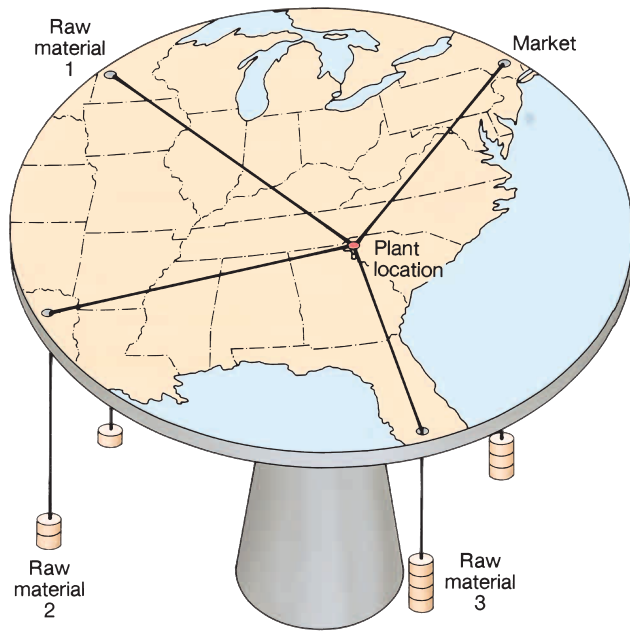
16B Factors of Production and Changing Geographies of Industrial Location

Manufacturing is a **production chain** that transforms raw materials into a finished product, then distributes that product for consumption by households, government, or other industries. While this process is fairly straightforward, it incorporates a number of direct and indirect **factors of production** considered in any industry (see also Module 17C on factors related to trading). Direct factors include the following:

- raw materials: the materials needed to make the product
- labor: the workers needed for the production process
- financial capital: the money needed to finance the production process
- markets: the households, firms, or government that will purchase the final product

Indirect factors, while important to any production process, are external to the actual production chain and include the following:

- technology: the nature of machinery in the production process
- infrastructure: logistic support in the form of communications, transportation, electricity, and water
- financial system: the availability of financing
- government role: government regulations, stability, tax policy, incentives, trade policies
- education/training: proximity to schools to create a trained labor force
- entrepreneurial climate: a number of intangible factors that foster entrepreneurship

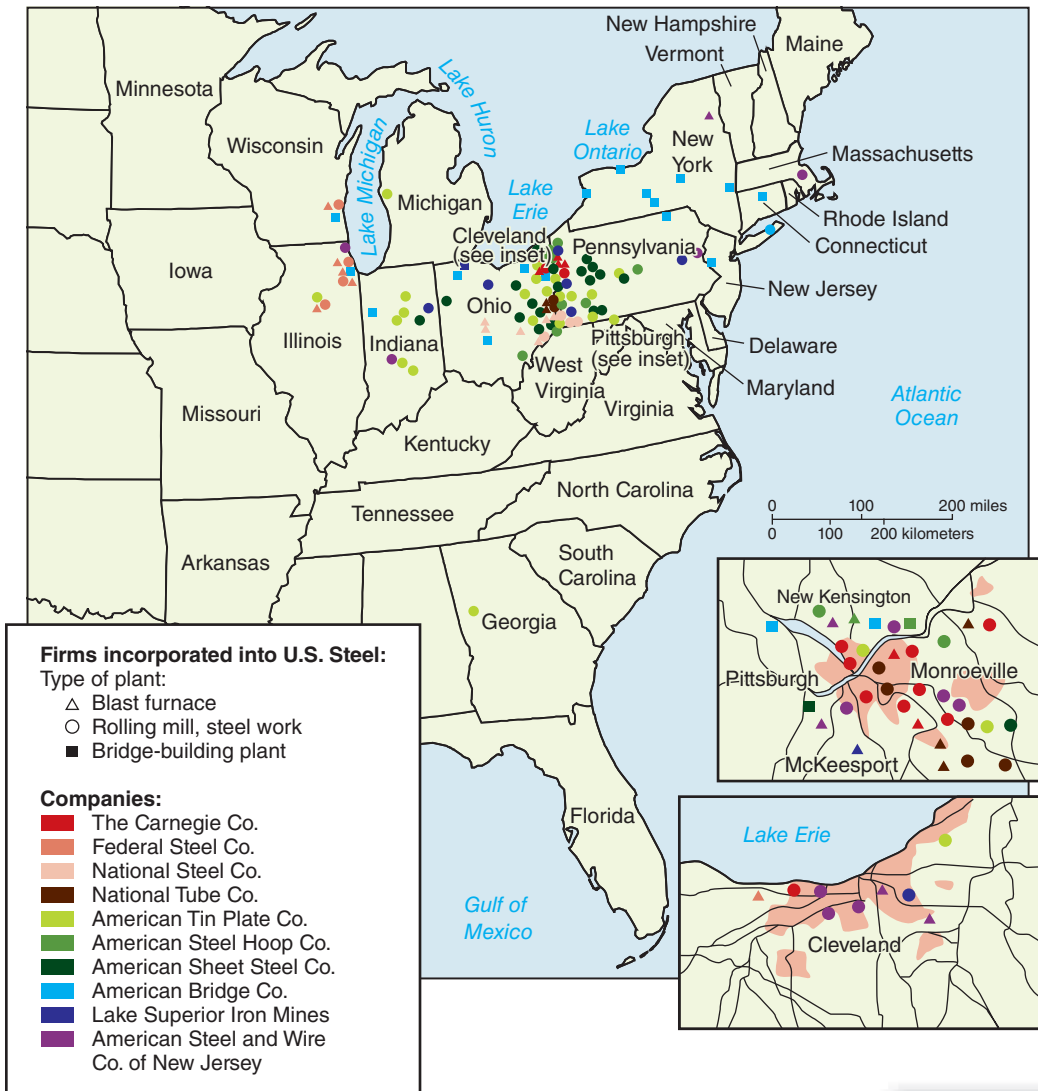


▲ **Figure 16B.1** In this example are three sources of raw materials and a single market. One raw material (Raw material 1) could be a power source, such as coal. Other raw materials (Raw material 2 and Raw material 3) might be important ingredients, such as iron and nickel. The market (Market) is located at some distance from all three. Where to locate the factory? It all depends on the cost of shipping each of the raw materials and the finished product. If the shipping costs are approximately equal for all three factors, then the factory will likely locate in the center of the triangle. However, if shipping costs are greater for one of the raw material sources, perhaps because the raw material was far heavier than the finished product, then the optimum location would be pulled toward the location of that material.

Each of these factors has a particular geography that must be considered, especially the factors of distance and transportation costs. Economist Alfred Weber developed a model of industrial location in 1909. He stated that the **optimum location** of a manufacturing plant is a balance between the locations of the various raw materials, the labor force, and the markets where the final products would be sold. Weber also distinguished between some raw materials, such as water, which are considered *ubiquitous* (available everywhere) and most raw materials, such as cotton or petroleum (as a source of power), which are *localized*. We need to consider how processing affects raw materials when discussing localized materials. Some raw materials, such as metallic ores, lose a great deal of weight in their processing. It does not make sense to transport these raw materials any great distance; rather, it is better to try to reduce the weight close to the source. Other raw materials gain a great deal of weight in processing, often through the addition of a ubiquitous material, such as water. This is true of many beverages, such as soft drinks and beer. Then, it is cheaper to process the raw material as close to the market as possible. Markets are generally localized as well, and they depend on who are the primary customers for the product. The labor force may or may not be localized, although in some instances labor, like capital, is more easily moved to where the factory is located.

These factors of production were undoubtedly important in determining industrial location in the past. But are they as significant today? There have been some big changes:

1. Transportation costs have steadily declined. This means that the costs of transporting raw materials and finished products are lower.
2. The costs and specialization of labor have increased. Most industries require a particular set of skills and they cannot rely



◀ **Figure 16B.2** At the turn of twentieth century, the US steel industry was focused on a narrow belt that extended from just west of Cleveland to Johnstown, Pennsylvania (with important outposts in Chicago and Indianapolis). This location was no accident. The steel industry relied on iron ore as its primary ingredient and required huge blast furnaces fueled by bituminous coal. Great Lakes shipping made it fairly cheap to obtain iron ore from northern Minnesota, and bituminous coal was available along the northern Appalachians, just to the east of this steel-producing region. Transporting these raw and finished goods often required several modes of transportation: cargo ships, canal boats, and trains. The transfer of cargo from one transportation source to another, which also entails breaking the cargo into smaller units, occurs at the **break-in-bulk point**. These points developed into important cities ringing the Great Lakes. The markets for steel were many, from the major cities on the East Coast and Great Lakes (see Module 16C) that required steel for their own production chain. Many of these industries are also located in this steel-producing region.

Figure 16B.3 ▶ The garment industry is split between those segments that design clothes and those that produce the clothes. The design and some initial preparation, such as cutting, require much more specialized and higher-cost labor. These may be performed in high-income countries where particular labels are headquartered. The actual production of garments—which requires far more labor—is then outsourced to low-wage countries. The stratification of clothing among high-fashion houses, specialty stores, mass retailers, and discount stores is also reflected in various outsourcing arrangements. The significance of government policy, particularly the North American Free Trade Agreement (NAFTA), is also apparent in the rise of Mexico as a key production center, which became the world's sixth leading exporter in 2004. Many factories locate right near the border, in the **maquiladora** zone. But increasingly, factory owners have sought even lower wages in central and southern Mexico.

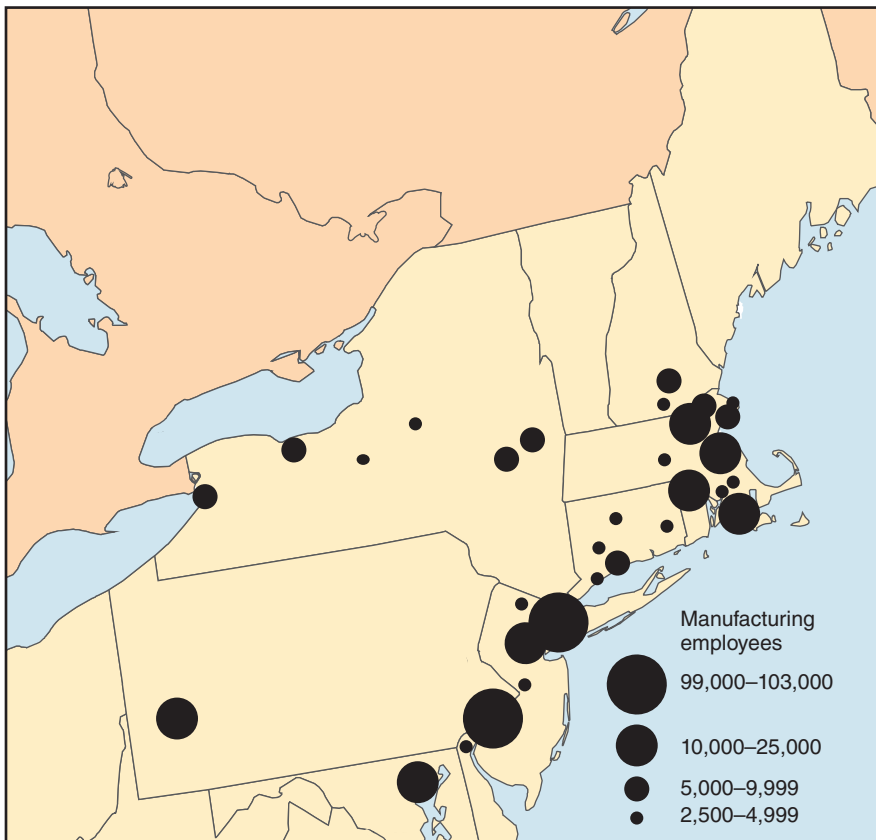


on the nearby labor force to possess those skills. As brainpower has replaced brawn power, there is an emphasis on educational facilities to train workers and the types of amenities that might keep workers at the site.

3. Most production is conducted transnationally, far beyond what existed before. If the primary cost factor for production is the cost of labor, then industries will locate factories in countries where labor is cheap.
4. Government also plays a bigger role as countries, states, and municipalities lure attractive industries with incentives and trade policies help channel outsourcing arrangements.
5. Production processes have changed to become more nimble, specialized, and flexible.



▲ **Figure 16C.1** Mills were built in New England towns such as Waltham, Lowell, Lawrence, Taunton, Fall River, and Providence. Many of the early mills relied first on water power, where streams and canals moved large water wheels and powered hydraulic turbines. New England capitalized on its early advantages as a mercantile region. Early industrialists, such as Francis Lowell (for whom Lowell was named) were the products of a prosperous Boston- and Newburyport-based merchant class that possessed the wealth needed to start new factories and were open to new innovations. Lowell himself helped establish the Boston Manufacturing Company in Waltham, which was responsible for a fifth of cotton textile production by 1850.

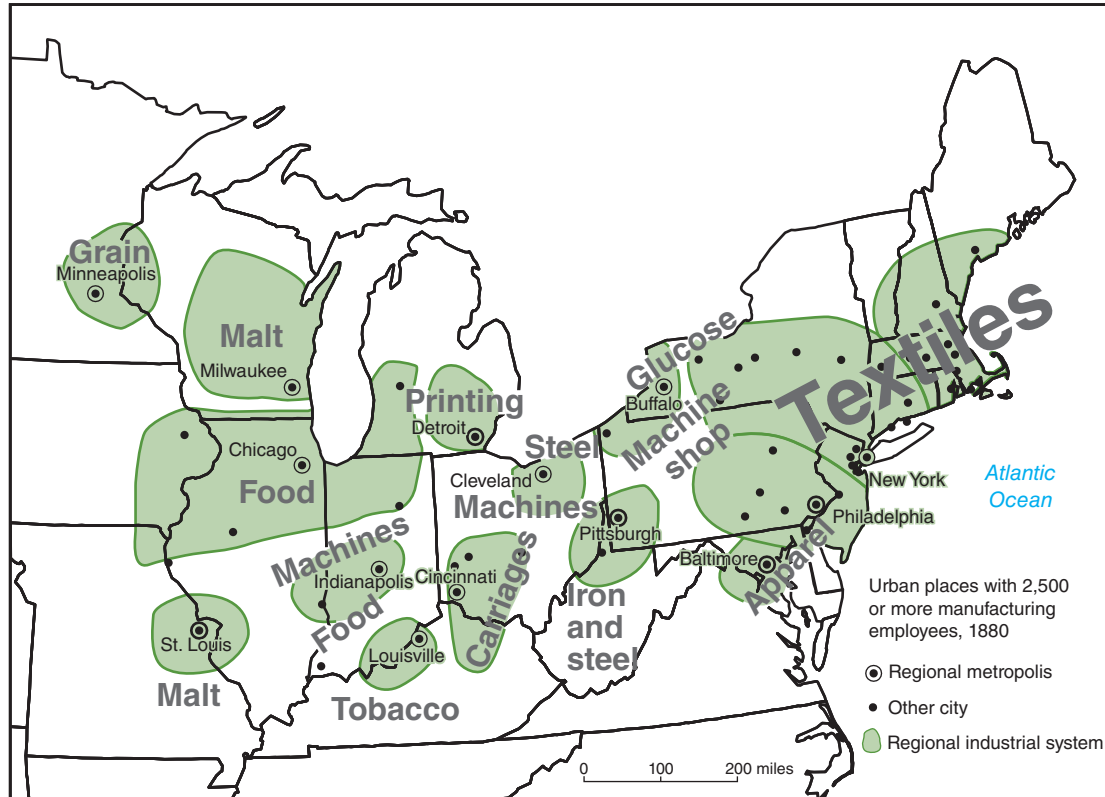


16C Industrialization and the Early Development of the US Space Economy

The United States was a late bloomer to the Industrial Revolution, mainly because it was a prosperous agricultural country and many people wanted to keep it that way. However, early textile factories gained a foothold in Rhode Island beginning in 1790. Textile factories were widespread in southern New England as early as 1830. Textiles were soon joined by other products, including housewares, tools, firearms, locks, and clocks. As the industrial economy deepened and spread, the early dependence on water power and charcoal gave way to coal. By 1860, 72% of all manufacturing employment and 68% of all the manufacturing profits originated in the Northeast. In Pennsylvania, huge blast furnaces were developed to produce all kinds of ironworks, and Philadelphia alone had 7% of all US manufacturing employment. New York City produced engineering works, iron products, and machinery—accounting for nearly 8% of manufacturing employment—as well as serving as the financial and commercial center of the country.

These manufacturing centers relied on raw materials from a number of places. Iron was procured from Minnesota, beef and wheat from the Great Plains, cotton from the American South, minerals such as copper from the far West. These outside regions were economically integrated into the American economy, but in a way that strengthened the economic position of the Anglo-American Manufacturing Belt. In this way, they might be considered economic peripheries (see Module 18C) in that they provided raw materials to the core region but had

◀ **Figure 16C.2** These early advantages persisted as northeastern cities became home to the vast majority of all US manufacturing. Beginning with textiles, the industrial base soon diversified through forward and backward linkages. The **forward linkages**—those types of items that might be produced with cotton textiles—lay in the production of garments such as shirts, pants, and other cotton goods. The **backward linkages**—what textile production required as inputs—stemmed from the demand for textile machinery, machine tools, metal working, and iron casting.



▲ **Figure 16C.3** By the late nineteenth century, an **Anglo-American Manufacturing Belt** formed a rough parallelogram, which extended to include important centers in Ohio, Indiana, Michigan, Illinois, and Wisconsin. These centers specialized in different industries. Textiles were still important to Philadelphia; clothing in Boston, New York, and Cincinnati; meatpacking in Chicago; and brewing in Milwaukee. Cleveland and Pittsburgh emphasized iron and steel production based on their factors of production (see Module 16D). By the turn of the twentieth century, several capital-intensive steel companies—Carnegie and U.S. Steel—had emerged as the largest in the world. Smaller cities, such as Johnstown, Pennsylvania; Youngstown, Ohio; and Gary, Indiana, also benefited. The development of petroleum refining, based on oil discoveries in Pennsylvania, Ohio, and Indiana, further consolidated the industrial prowess of Cleveland, Chicago, Philadelphia, and New York.

very little independent economic power. The South, for instance, was by far the poorest region of the United States, with average incomes only a third that of the Northeast.

In general, this core region was able to rely on several important aspects of comparative advantage (see Modules 15G and 17B) and a favorable relative location (see Module 1B):

- Railroads tied the area together, making it easy to go from one place to the other without too much difficulty. Distances between places in the core were short, and this helped facilitate commerce.
- The proximity between places also enhanced communication, which was vital to conducting business within and between cities. The idea of traveling for weeks to meet with a prospective business partner was just not feasible, so industries tended to locate close to other industries.
- Since money was such an important ingredient of commerce, being near the main banks was a benefit to industry.
- Natural advantages prevailed in this region. The eastern seaboard and the Great Lakes had several good ports, whereas the interior—with the exception of New England—contained plenty of prime farmland. Abundant coal in the area made it appealing to locate industries in this belt.
- The economic dynamism of the region attracted skilled and unskilled labor. Because of better schools and the presence of industry, skilled labor migrated here. Most of the immigrants also settled in the core cities, especially with the closing of the frontier in 1890.

16D Modern Shifts in US Manufacturing

By 1900, the United States was producing one-third of the world's industrial output, and nearly all of that capacity came out of the Anglo-American Manufacturing Belt. This region continued to enjoy economic dominance well into the middle of the twentieth century. But then things changed. Due to shifting factors of production (see Modules 16B and 17C), manufacturing moved from the northeastern and midwestern states to the South and West. At a smaller scale, manufacturing moved from the inner cities to the outer suburbs.

These changes profoundly affected the status of US regional economies. Any movement of manufacturing plants from one region to the other represented a movement of what had become fairly high-paying jobs. In 1950, manufacturing was a heavily unionized sector, and unions had been successful in raising wages and benefits to a fairly comfortable level. The dream of a house, a car (or two), vacations, and a college education for the children became attainable on a single income. The National Association of Manufacturers estimates that the average manufacturing compensation (including wages and benefits) was \$69,000 in 2006, or about \$12,000 more than US jobs as a whole. Furthermore, because manufacturing is a **base employment** sector, it supports a lot of jobs in the service sector and in other manufacturing industries. With the movement of all of these job opportunities, it makes sense that people will migrate as well.

What led to these broad regional changes? Much had to do with shifting comparative advantages. The comparative advantages of the Anglo-American Manufacturing Belt diminished and the region began to experience a number of distinct disadvantages relative to the rest of the country. We look at some of the principal factors behind this shift on the following pages.

▼ Figure 16D.1

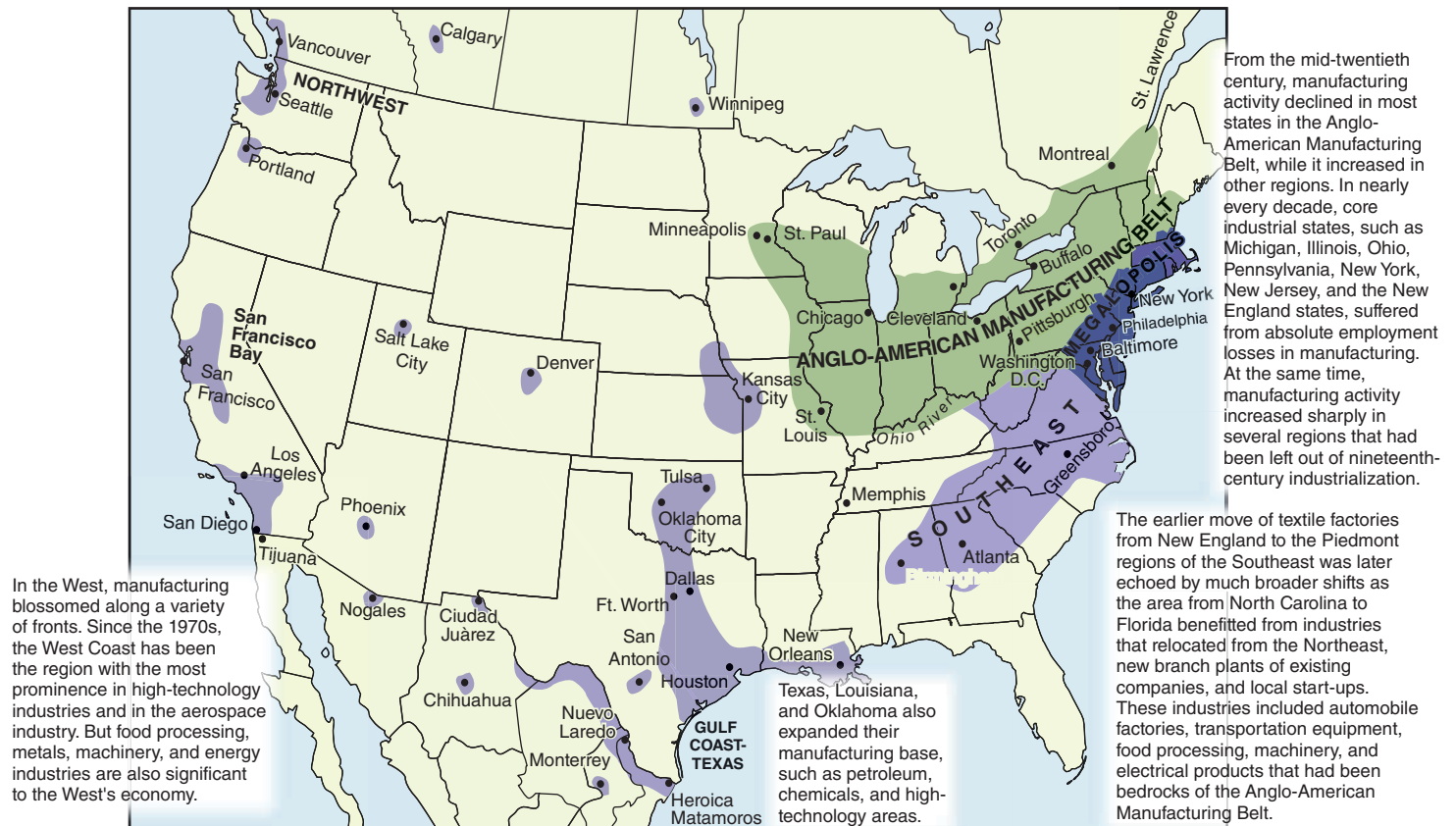
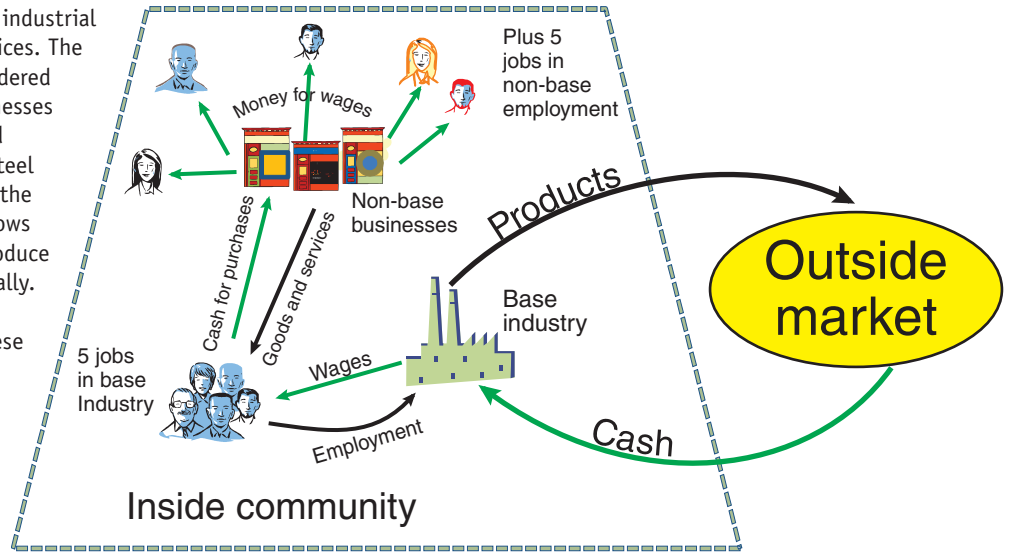
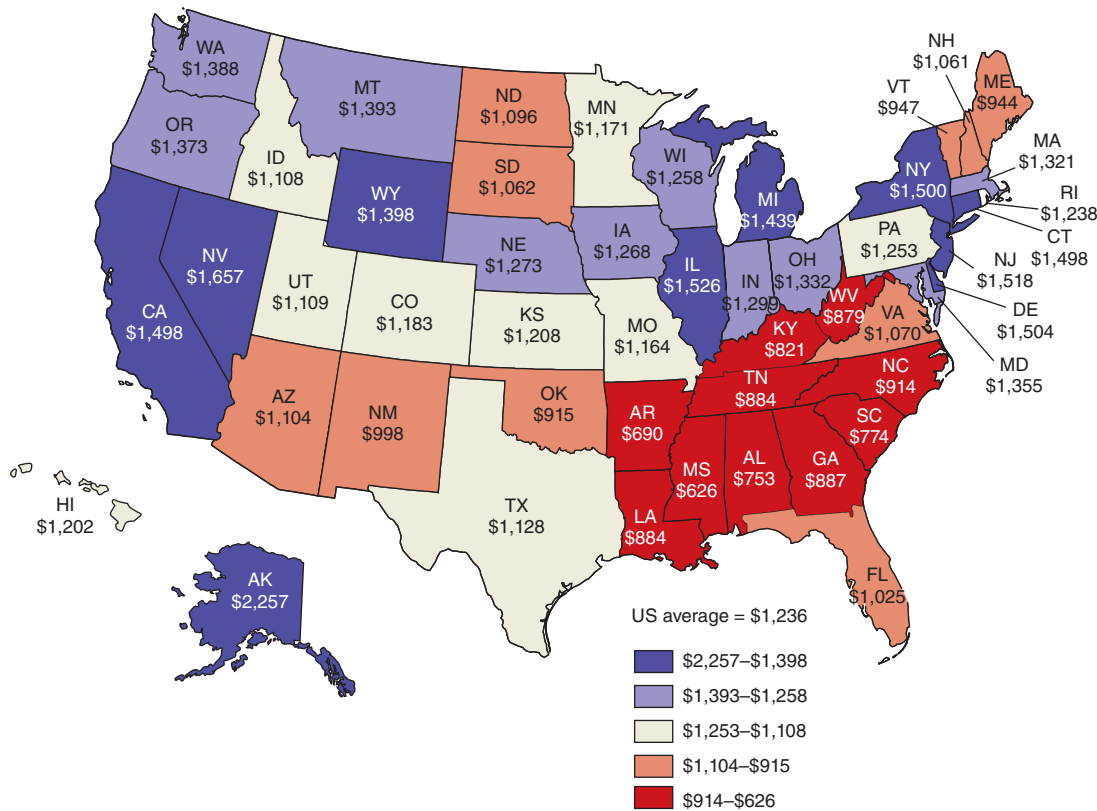


Figure 16D.2 ▶ Most communities love to have industrial jobs, far more so than jobs in retail and other services. The reason for this is that most manufacturing is considered economic “base” employment. Manufacturing businesses are those that sell to companies, governments, and households outside the community. For example, steel produced in a factory is sold to customers outside the city in which the factory is located. Money then flows into the community. In contrast, non-base jobs produce goods and (mostly) services that are consumed locally. The money coming into a community by virtue of industrial employment can be used to purchase these non-base items. In this way, each base job can be multiplied to account for the additional non-base jobs created by the presence of one base job. If a job in a particular industry has a multiplier of 2.0, that means that this one job actually results in two jobs in the economy: the original industrial job as well as an additional non-base job. This is termed the **multiplier effect**.



1. Shifting Labor Costs



▲ Figure 16D.3 Per Capita Earnings, 1950 One of the key factors involved in production is the cost of labor. If everything else—including the necessary skills, transportation costs, and availability of infrastructure—is equal, factories will relocate to where they can achieve lower labor costs. This map shows that, by 1950, there was a huge earnings disparity between states—approaching 2:1 in many cases. Most low-income states were located in the Southeast and most high-income states were in the Anglo-American Manufacturing Belt. Industries that were less reliant on highly skilled labor, such as textiles, were the first to make the move to low-wage states. Later, other industries followed. More industries brought in better earnings and many of the poor states in 1950 have dramatically improved their economic position. In addition, many of these states offered other advantages to business. They tended to assess lower state and local taxes. They imposed fewer regulations. They were generally far less unionized. Despite the many negative impacts, this added up to what industry perceived as a favorable business climate.



2. Car Ownership and Highways

◀ **Figure 16D.4** In 1920, 1 out of 13 Americans owned an auto. By 1930, that ratio had shifted to 1 in 5, and by 1980, it was 1 in 3. Today, we have more motor vehicles on the road than there are licensed drivers. This movement toward the car, truck, SUV, and motorcycle came at the expense of railroad, streetcar, and bus travel and undercut the Anglo-American Manufacturing Belt's advantages of proximity to a well-integrated railroad web. Once a good road system was established (discussed more fully in Module 17E), the nature of travel changed, for both people and goods. The trucking industry burgeoned as an easier method of transportation, since it offered more flexibility. The development of highways and auto travel began to spread more advantages to places outside the old industrial core.

Initially, the development of the automobile industry was a boon to Michigan and Ohio. In the early twentieth century, southern Michigan focused on automobiles and auto parts. Other places benefited as a result of the vast backward linkages: steel, plastic, lead, copper, chrome, glass, rubber, textiles, machine tools, and ball bearings. Places such as Akron, Ohio, were built on tires, becoming the fastest growing city in the 1920s.

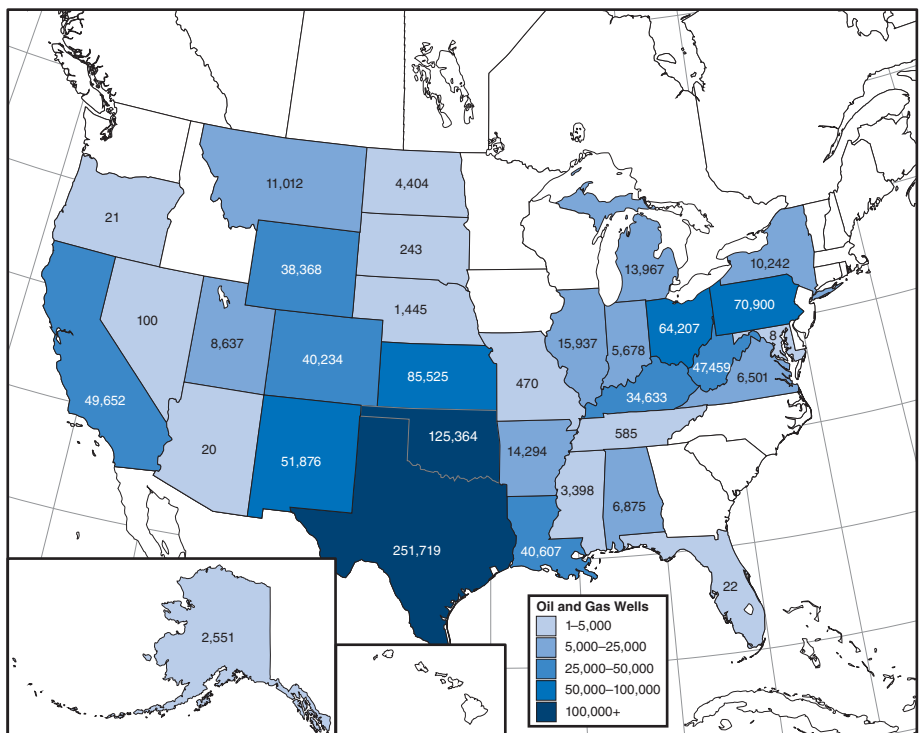
Detroit's early dominance was linked to the dominance of the Big Three auto makers: General Motors, Ford, and Chrysler. In 1949, the United States made three-quarters of all the automobiles in the world, and the Big Three accounted for 95% of all US production. Detroit accounted for 42% of total auto production jobs in the country. After the 1950s, Detroit lost much of its comparative advantage vis-à-vis other parts of the country, and the United States lost its automobile advantage compared to other parts of the world. Even in a fairly recent period, there has been a movement of production from the Midwest to southern states such as Alabama, South Carolina, and Mississippi. This is a photo from the BMW manufacturing plant in Spartanburg, South Carolina. The more profound change has been the shift in automobile production to other parts of the world. In the 1970s, Japanese makers introduced smaller, high-quality, fuel-efficient cars, and more recently, another gas price shock has left American auto producers stranded with a huge unsold inventory of gas-guzzling pickups and SUVs. Today, the United States makes about one-sixth of all vehicles in the world, surpassed by Japan. About 20% of these are produced in the Detroit region.

3. Petroleum

Figure 16D.5 ▶ **Producing Oil and Gas Wells in the United States, Including Offshore** The shift to motor vehicles as the primary mode of transportation also affected the demand for certain resources, particularly petroleum. Before, the main energy source was coal. Petroleum was used initially for kerosene lighting, but with the rise of automobiles, the demand for oil skyrocketed. Moreover, oil (and natural gas) became more favored for home heating than coal, since it burned a lot cleaner.

The petroleum industry is capital intensive and very profitable. Oil rapidly became vital to the global economy because of its use in so many things. The United States was soon producing a lot of petroleum and consuming even more. The first sources were found in the same basic regions where coal was found: western Pennsylvania, eastern Ohio, and parts of West Virginia. However, the focus of the petroleum industry would shift to Texas, Oklahoma, and Louisiana, which took off with the discovery of oil wells. Gushers made millionaires out of wildcatters and boom towns out of hamlets. This oil was so important that the government built a pipeline system to connect with the resource to the industrial core. Huge corporations were spawned. The increasing importance of oil also gave these regions certain advantages that enabled them to spin off other industries, particularly petrochemicals.

The geographic shifts in the petroleum industry have had a big effect on the economic fortunes of places. Today, Texas is the headquarters for more of the top 500 corporations than any other state, surpassing California and New York. Because the petroleum industry is fairly volatile, those places that rely on oil have experienced economic difficulty when the price goes down, as it did in the 1980s. When the price of oil is high, as it has been in the last several years, these economies prosper.





5. Role of Government



▲ **Figure 16D.7** The federal government played a much more active role in regional development during the twentieth century. Much of this had to do with its expanding size and reach, especially with the New Deal of the 1930s and after World War II. Federal redistribution of funds only occasionally had a specifically regional aim. The most significant redistributions of wealth from the Anglo-American Manufacturing Belt to the rest of the country took the form of big and small projects, including the following:

- Agricultural production in the Plains and the West was bolstered by the enactment of *farm price supports* in the 1930s. These were guarantees to purchase crops at a fixed price, and farmers were paid not to grow on their land. While the intent of support was to help poor family farmers, it enabled many of them to become quite well off. Many agribusinesses also took advantage of these supports to diversify into the food business.
- *Water policies*, such as the Tennessee Valley Authority (pictured above), provided irrigation and hydroelectric power to people in the South and West. This resulted in cheaper energy costs. After the oil embargo of 1973, for example, northeasterners paid 85% more for electricity and 50% more for natural gas than customers in western states.
- As the United States beefed up defense and overall military spending after World War II, *military bases* proliferated. Military bases are still an important economic engine because they bring federal dollars to an area. Bases are located disproportionately in the South, partly because of climate, perhaps partly because of a more military culture in the South, but also because most of the congressional leaders interested in defense hailed from the South and were able to use their longevity and clout to secure bases for their districts. In addition, government defense policy encouraged the dispersal of defense-related production from the core areas to “uncongested” areas, nearly all of these in the South and West.

4. High Technology

◀ **Figure 16D.6** The development of new technologies has also changed the geography of the US economy. High-technology industry is key in this development and is discussed in more detail in Module 16E. *High technology* is a loose term for a variety of sectors, including computers, semiconductors, biotechnology, pharmaceuticals, and scientific, photographic, and telecommunications equipment. High technology became a major star of US manufacturing, accounting for 70% of new manufacturing jobs from 1960 to 1990. Between 1990 and 2005, high technology continued to increase as a percentage of US manufacturing, from 14% to 24%.

High-technology industries are considered clean, high-paying, and immune from business cycles. The products are characterized by high value and low weight and, so, are less sensitive to transport costs and more reliant on research and development. While these industries began largely in the Northeast, they began to move west. Unlike other industries, high technology did not necessarily shift as a result of lower labor costs. In fact, many firms located in places where costs were high. Instead, there was a tendency for new high-technology enterprises to locate near universities and where there were a variety of amenities.

Table 16D.1 States That Receive the Most and States That Give the Most

Very few federal government policies have attempted to develop the economy of one region (the creation of the Appalachian Commission is one exception). But over the years, the flow of federal dollars has greatly favored states outside the manufacturing core. Taken as a whole, there has been a substantial outflow from the Northeast and Great Lakes states to states in the South and West. This table, based on 2005 data, shows the top states that have gained a great deal from federal tax revenues and the states that have provided far more tax revenue than they have received in federal funds.

Top Federal Recipients	Federal Benefits as Percent of Tax Revenues	Top Federal Providers	Federal Benefits as Percent of Tax Revenues
Mississippi	202%	New Jersey	65%
New Mexico	200%	Nevada	67%
Louisiana	185%	Minnesota	73%
Alaska	183%	Connecticut	73%
West Virginia	175%	New Hampshire	75%
North Dakota	165%	Illinois	78%
Alabama	163%	Delaware	80%
Kentucky	151%	California	80%
Virginia	151%	New York	82%
South Dakota	148%	Colorado	83%

Source: Data from www.nemw.org/images/taxburdrank.pdf.

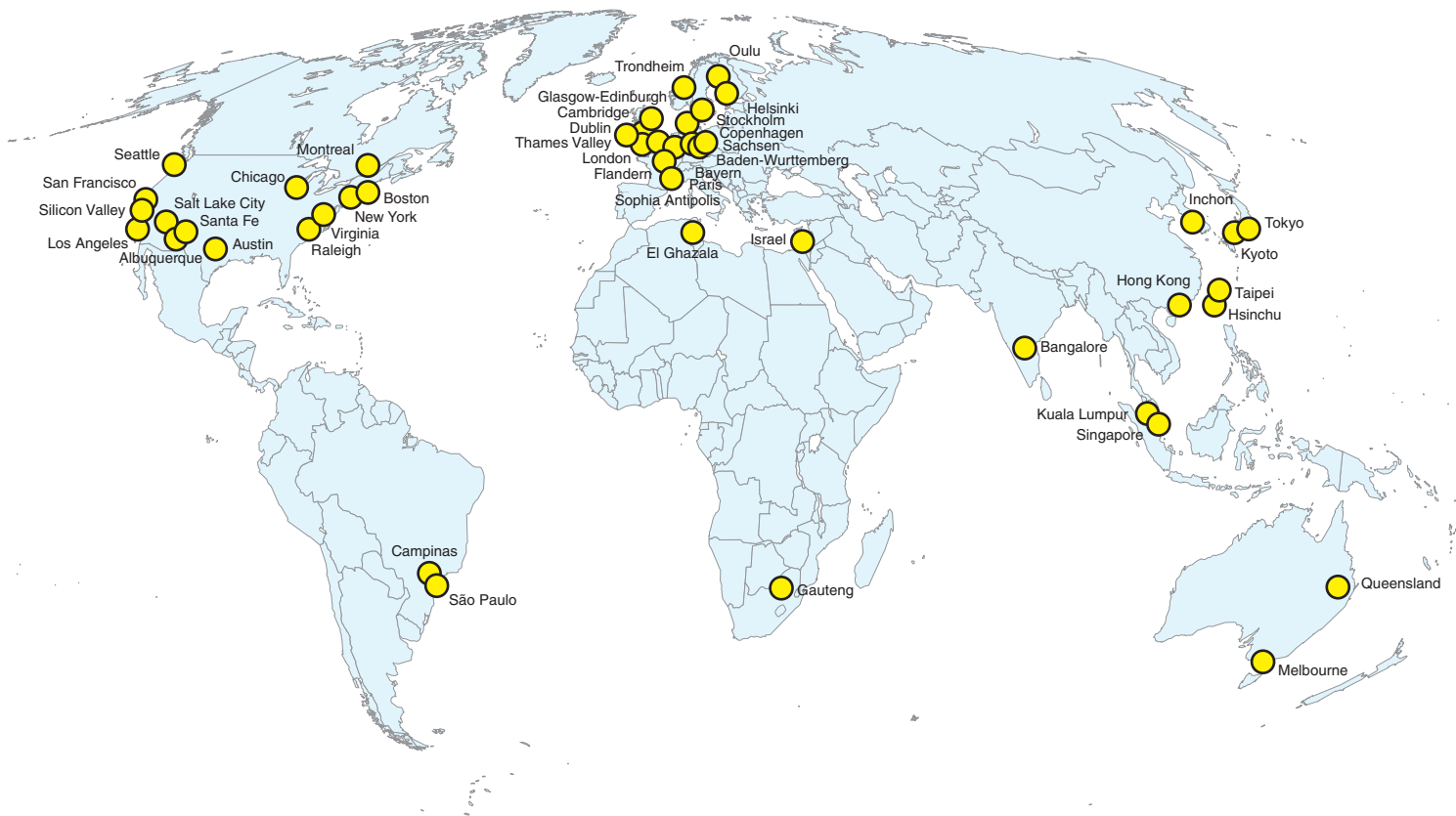
16E The Geography of High Technology

The growth of **high-technology industries** has a special effect on the economic structure and geography of many societies. High-technology companies such as Microsoft, eBay, Apple, and Google did not exist 30 years or even 15 years ago, yet now they represent the leading edge of the US economy. In other countries, high technology has transformed cities such as Bengaluru (Bangalore), India.

High technology can be defined in several ways. One definition considers it as a set of particular industries. One international group lists aerospace, computers and office communication equipment, semiconductors, electrical machinery, pharmaceuticals, and science instruments as high-technology products. Software and Internet companies are often included as well. Another definition might consider the processes involved in high technology production. In this view, high technology industries incorporate a lot of research and development, technically sophisticated labor, and high value added in manufacturing.

Generally speaking, the factors of production related to the location of high-technology firms differ from those that determine the location of the steel and garment industries. For many high-technology firms, important factors include the proximity to some major universities, an entrepreneurial climate that includes a number of **venture capitalists** (financiers who are willing to risk their money on a risky, initial idea in hopes of great gains), environmental amenities that can attract the needed highly skilled labor, and excellent transportation and communications.

High technology benefits from *agglomeration economies* (see Module 13G). This occurs when the presence of a few similar industries creates economic conditions that attract other related industries. This lowers the cost of doing business while it increases the likelihood for success. Some aspects of agglomeration economies include a specially trained labor pool, access to needed suppliers (backward linkages), access to nearby companies that wish to buy a firm's products (forward linkages), necessary infrastructure, and other items.



▲ **Figure 16E.1** This world map shows the location of global high-technology centers around 2000. Most of these centers still exist. While they share a common designator, they vary considerably in what they produce and in their labor requirements. Some centers correspond with the capital-intensive, highly skilled production most commonly associated with high technology. At the same time, other producers of high technology—for example, producers of semiconductors—continue to rely on cheap labor. Still other producers have managed to use the global assembly line (see Module 16F) to obtain highly skilled workers, but at lower prices.



◀ **Figure 16E.2** If you were to list some places where the cost of living is out of sight, the region between San Francisco and San Jose, California, would probably be at the top. Yet it is also there that we find probably the oldest, largest, and richest concentration of high-technology firms in the world. Since its early development, Silicon Valley has continued to foster new companies, such as Google, which benefit from agglomeration economies and the presence of a high-technology cluster. This means that firms in Silicon Valley benefit from their proximity to other firms, access to a highly skilled labor pool, access to needed suppliers and markets, and the necessary sort of infrastructure.

A similar concept is that of clusters, and **high-technology clusters** share the following attributes:

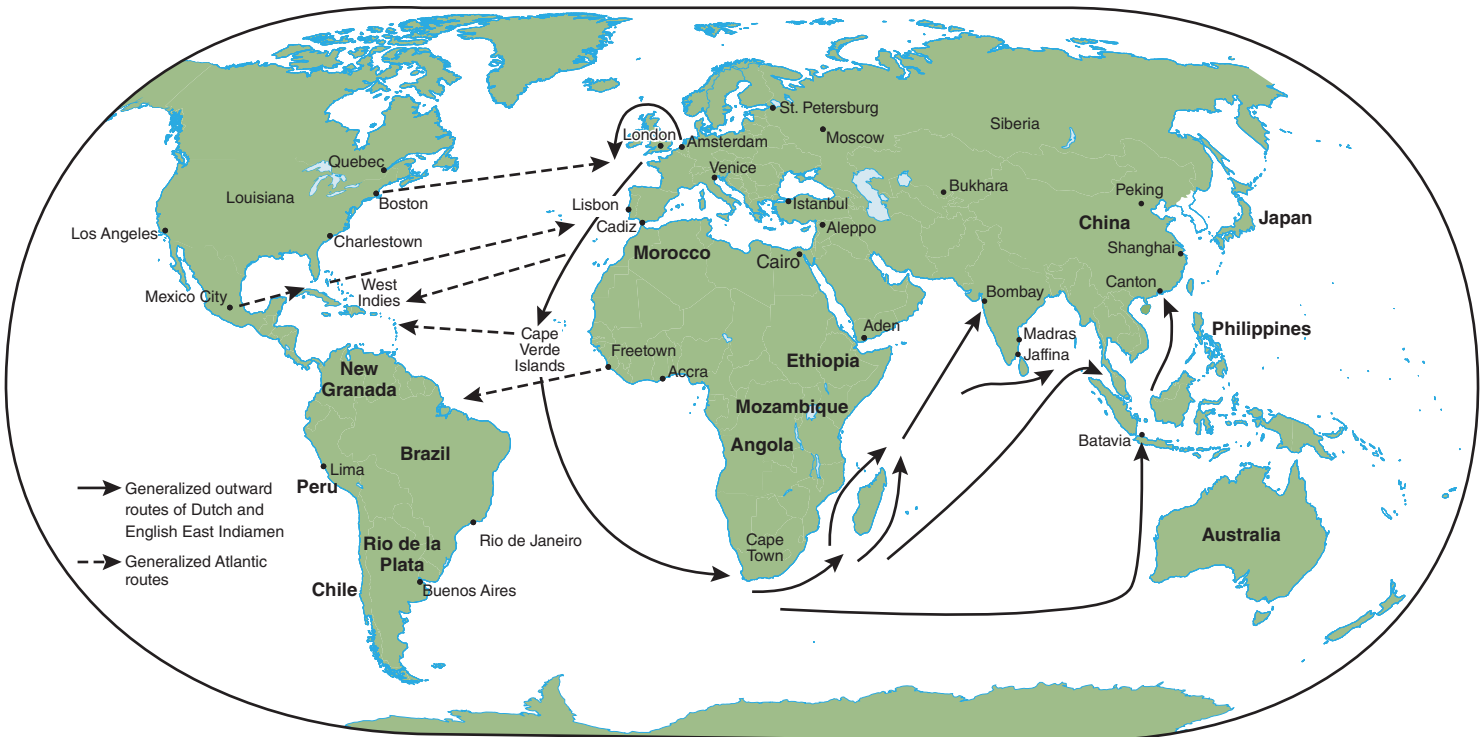
- specialized labor: expertise in computer design, software programming, networks, and other skills essential to the high-technology world
- specialized inputs: a large number of nearby firms that possess specialized equipment, research tools, or specific technologies
- knowledge spillovers: highly technical information exchanged through formal and informal channels, and especially with the presence of universities
- market/user accessibility: accessibility is important because it lowers the friction of distance, but more importantly, it makes it easier for firms to respond to changes in market demand

Figure 16E.3 ▶ Many less developed countries have been able to reap certain advantages from specializing in various high-technology industries. Malaysia, for example, has become a major center for the production of silicon chips. The economy in India provides many of the attributes that high-technology firms are looking for. While it is still a poor country with a population that is predominantly agrarian and rural, India also contains a large population of well-educated workers who are fluent in English. Within India, high-technology activity has focused on southern cities, such as Hyderabad and especially Bangalore, pictured here. In fact, Bangalore (recently renamed Bengaluru) accounts for one-fourth of India's information technology industry and has evolved from a source of cheap labor for high-technology transnational corporations to an incubator for Indian-owned and Indian-operated software firms. It is estimated that, every week, several branch plants or joint ventures are established in Bangalore. Bangalore benefits from several factors that have helped it emerge as the high-technology center of India. It is located in a pleasant climate, it includes a cosmopolitan English-speaking population, it is the home of the Indian Institute of Science, and it contains many public sector agencies specializing in high-technology industries.



16F Globalized Manufacturing and the Rise of Transnational Corporations

We cannot discuss modern economic activity without invoking the term **globalization**. This pertains to all aspects of economic activity, especially to the production of goods. The term *globalization* is of relatively recent use, but the process it describes has been around for a long time. Definitions can differ, but broadly speaking, globalization is the elimination of national boundaries through ever greater integration of people, companies, and governments across the world. It includes some of the following aspects:



▲ **Figure 16F.1 Global Colonial and Trade Activity, 1500–1800** There is some question as to whether globalization is qualitatively different from simple internationalism, since trade, labor movements, and other forms of economic interaction that have been with us for quite some time. Whether we consider it to be simply a continuation of past trends or a truly distinct phenomenon, globalization is expressed in myriad ways in our economic world.

Table 16F.1 Stages of Globalization

While the term *globalization* is new, the process it describes has been with us for some time, but at far different levels of intensity. The beginning stage occurred when Europeans discovered the Americas and began to exploit it for their own purposes. Multinational trading companies, such as the Hudson's Bay Company, procured minerals, furs, spices, and agricultural commodities that could be sold to European markets.

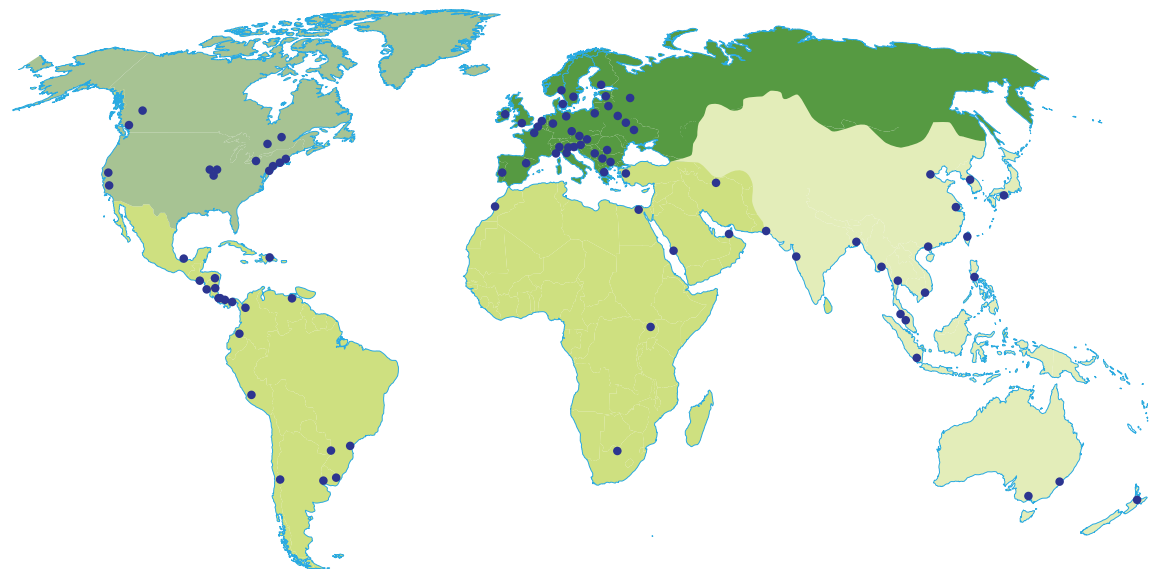
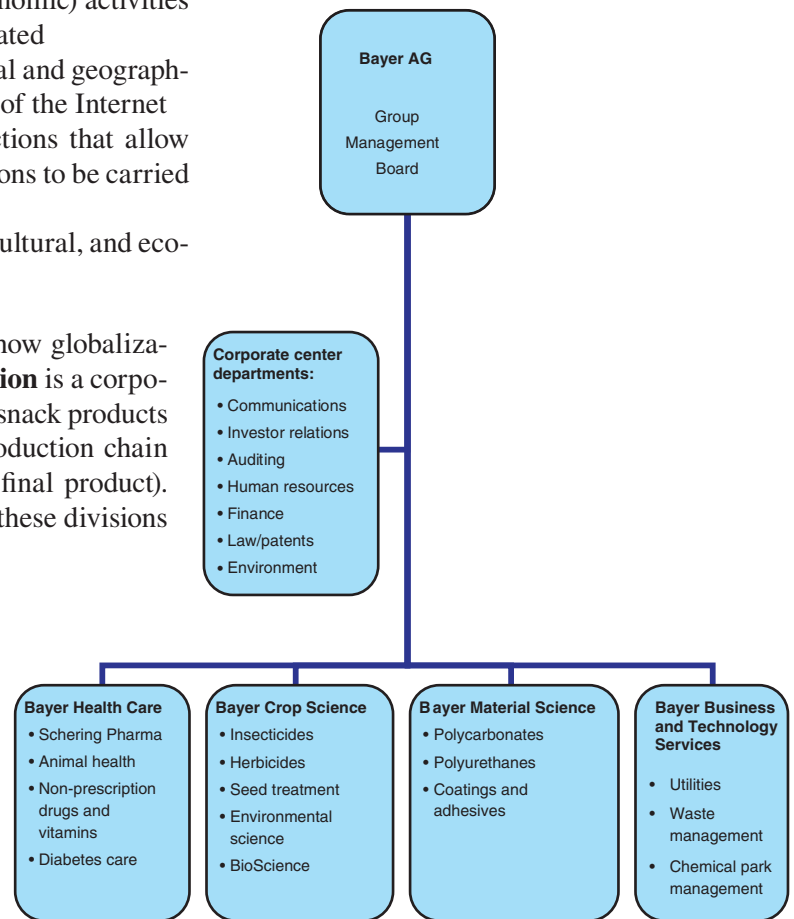
I	Early transcontinental trading era as Europeans discover Americas and increased contact with Africa and Asia	Sixteenth through eighteenth centuries	The extraction of raw materials, the transfer of agricultural products, and the establishment of transcontinental trading networks were key aspects of this era. This was the first time that the entire world was part of a single economic system.
II	Industrialization and need for global resources	Nineteenth century	Industrialization sparks a need for globally obtained resources. Trade in raw materials, such as cotton, iron, nickel, rubber, copper, and even opium, intensifies and provokes wars for economic advantage. Still, most production is kept within a single country.
III	Global integration with protectionism	1900–1945	Huge new transnational corporations seek the development of global markets and a global labor force. Protectionism is a popular economic strategy.
IV	Free trade and Postcolonialism	1945–?	American corporations—joined by European and Japanese firms—successfully sell products abroad, establishing foreign branch plants that manufacture many of these products, and spark an era of worldwide communication. As decolonization severs the political bonds between countries in the late twentieth century, free trading blocs, most exemplified by the European Union but evident in other regions as well, cut down the barriers between the international flows of goods, services, labor, and markets.
V	New Era of Globalization	1990–?	More flexible forms of global production emerge as companies outsource much of their production requirements to subcontractors around the world. Internet explosion allows individuals, many outside traditional economic centers, to spearhead new economies.

- **detritorialization**, which allows for social (and economic) activities to occur regardless of where people are physically located
- social and economic interconnectedness across political and geographical boundaries, facilitated especially through the use of the Internet
- the increasing speed of communications and transactions that allow goods to be bought, services to be rendered, and decisions to be carried out across the globe in a very short time
- a multipronged process that includes political, social, cultural, and economic movements

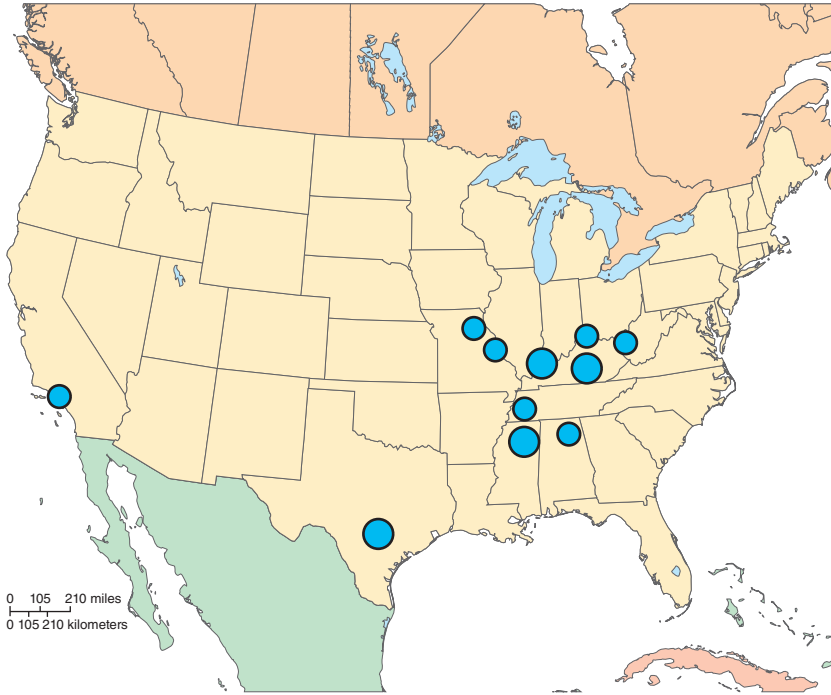
The transnational corporation is a prime example of how globalization has intensified with time. A **multidivisional corporation** is a corporation with many divisions based on product lines (such as snack products and cereal; scooters and motorcycles) or stages in the production chain (such as production of components and assembly into a final product). This becomes a **transnational corporation (TNC)** when these divisions cross international boundaries.



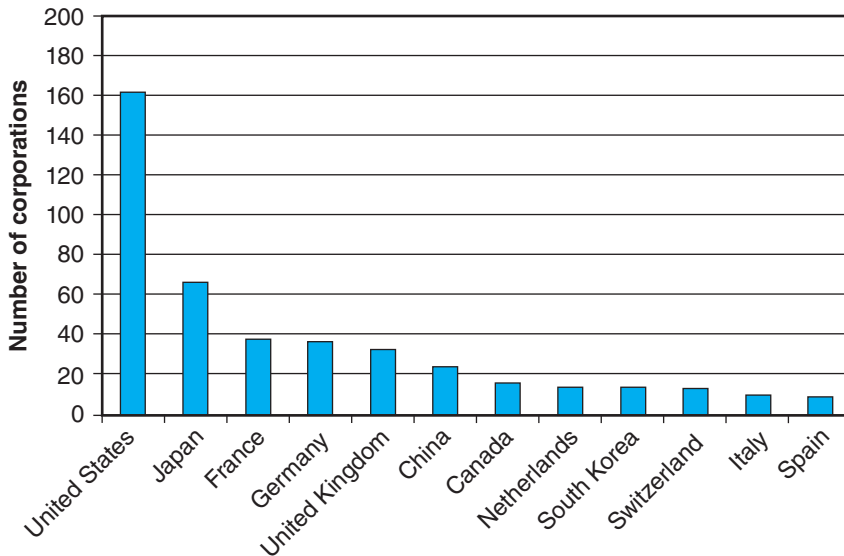
▲ **Figure 16F.2** One of the main hallmarks of a transnational corporation is a branch plant located outside of the country where the corporation is headquartered. Almost all of the largest corporations in the world are transnational. Even state-owned energy companies, such as PEMEX (headquartered in Mexico), develop international subsidiaries for the production or marketing of their products. Huge corporations, such as Ford Motor Company, IBM, or Intel, intentionally label foreign subsidiaries with their names: for instance, Ford Europe, IBM Japan (pictured), or Intel Malaysia. Other corporations may end up acquiring corporations that are located in another country. This is what happened when Daimler Benz acquired the Chrysler Corporation in 1998 to form Daimler-Chrysler (the corporation split apart in 2007).



▲ **Figure 16F.3** When you hear the name Bayer Corporation, you almost certainly think about aspirin. Yet Bayer, headquartered in Germany, is a diversified international corporation with a broad mix of product types. The organizational chart shows some of Bayer's key divisions and product groups. The map shows the location of Bayer's branch plants. Within each country, these plants are generally operated under chartered subsidiaries of the parent corporation. Many of the crop science production facilities, for example, are located in Brazil; the South African division includes animal health production facilities. Like all transnational corporations, Bayer figures out whether it makes economic sense to hold all of these different divisions. Some analysts have suggested that Bayer has suffered from diversifying beyond its core pharmaceutical operations into agricultural chemicals and plastics.



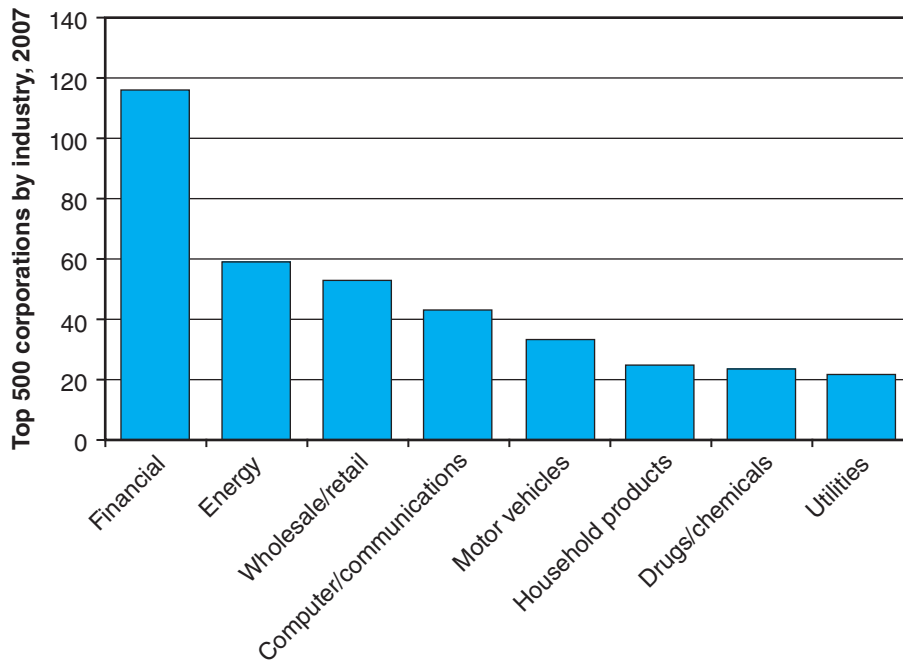
▲ **Figure 16F.4** Japanese automakers take great pains to point out that their cars are “made in America,” often in factories closest to home. Toyota, now one of the world’s top three automobile companies (closely tied with General Motors and Volkswagen), produced 1.5 million vehicles in North America in 2010, spent \$23 billion annually in the US economy, and employed 35,000 workers.



▲ **Figure 16F.5** While the world economy is shifting toward non-Western regions, the dominance of the West is still apparent here. Of the Global 500 (as compiled by *Fortune* magazine, 2007) the United States is headquarters for about one-third of all the top global corporations. When considered by region, North America and Western European countries are the headquarters for 358 of the top 500 corporations. Of the remainder, approximately half are headquartered in Japan. The newly emerging economies of China, India, Russia, and Brazil together contain 39 Fortune 500 corporations.

Geographers Philip Porter and Eric Sheppard demonstrate how the advantages of transnational corporations result in geographical expansion and geographical specialization. In regard to geographical expansion, TNCs might establish a subsidiary to ease their entry into a country’s market. Much of this has to do with the desire of corporations to increase their revenues (and their stock price) by increasing the size of their market. At a certain point, because of competing firms and simply the number of potential consumers in the country, the home market becomes saturated or more and more difficult to sell to. Corporations seek new customers in other countries, thereby expanding their potential market and even getting a jump on the competition. However, many countries put up tariffs or other forms of trade barriers to limit the number of imports into a country (see Module 17C). But if a corporation decides to produce goods from a foreign-owned subsidiary, those products are not exposed to tariffs. In addition, potential customers may be more broadly receptive to items produced domestically.

In regard to geographical specialization, TNCs can end up reducing overall costs by producing goods in certain countries. For example, Xerox Corporation produces high-end photocopy machines near its Rochester, New York, headquarters, whereas simpler machines are manufactured in plants in Southeast Asia or South America. In this way, corporations are utilizing **locational advantages** that may be found in one of the factors of production. Very often, these locational advantages have to do with cheaper labor costs. According to the Bureau of Labor Statistics, the hourly compensation costs for a production worker in 2006 was about \$24 an hour in the United States and \$34 an hour in Germany. Yet in Brazil (a middle-income country), hourly wages plus benefits could be had for less than \$5 an hour. In the Philippines, labor costs were about \$1 an hour. Other locational advantages result from the benefits of diversification in general. Having an array of similar companies under one transnational corporate roof can enhance economies of scale by reducing costs related to duplicating technical support, marketing, administration, and so on. In the case of TNCs, a presence in many countries makes a corporation less dependent on government regulations or on labor unrest. This also allows a company to effectively move products, labor, and capital among its various international operations.



◀ **Figure 16F.6** This chart shows the types of products in which most corporations are involved. Both corporations involved in production and those involved in services are represented here. In fact, the largest category represents those corporations involved in some form of financial services: banks, securities, or insurance. This is followed by energy companies that provide petroleum, natural gas, and power generation.

The largest corporations in the world are all transnational corporations. Their gross revenues exceed the GDP for most countries. The top three corporations exceed the GDP for all but 26 countries, with a bigger economy than Denmark, South Africa, Iran, Ireland, and Finland. The top 25 companies would all rank in the top quarter of national economies if they were considered alongside countries.

Production chains are no longer completed all in one place. One way this occurs is through the production and transportation of various components in sites around the world, with the assembly in final factory. This has been termed a **global assembly line**. The manufacture of an automobile is a great example, since cars require tires, electrical, belts, mufflers, brakes . . . the list goes on and on. Many of these components are purchased from suppliers—all motor vehicle companies get their tires from tire companies—but some components are also made by corporate divisions. AC Delco is a division of General Motors, and it provides components ranging from batteries to brakes.

While discussion of a global assembly line often points to production in poorer countries, many times these components are produced in richer locales. Most automobile makers still prefer developed countries for their components, although that may be changing. A second method of worldwide production lies in a **global production line**, another way to characterize a **new international division of labor** that transcends international boundaries. In this case, the product is moved from one place to another in order to take advantage of favorable costs (often labor costs) or specific expertise. Further refinements in the division of labor, as production is broken down into more minute and easier-to-learn tasks, can make this process more reasonable.

Figure 16F.7 ▶ This graphic demonstrates how the global production line may work for some clothing. The clothing is designed in New York, where fashion designers utilize knowledge of current trends. The cloth is then transferred to northeastern Italy, where small firms weave and print the cloth. The cloth is then sent to China, where low-wage workers cut and sew the fabric into garments. The final apparel is then shipped back to a retailer in New York for sale.

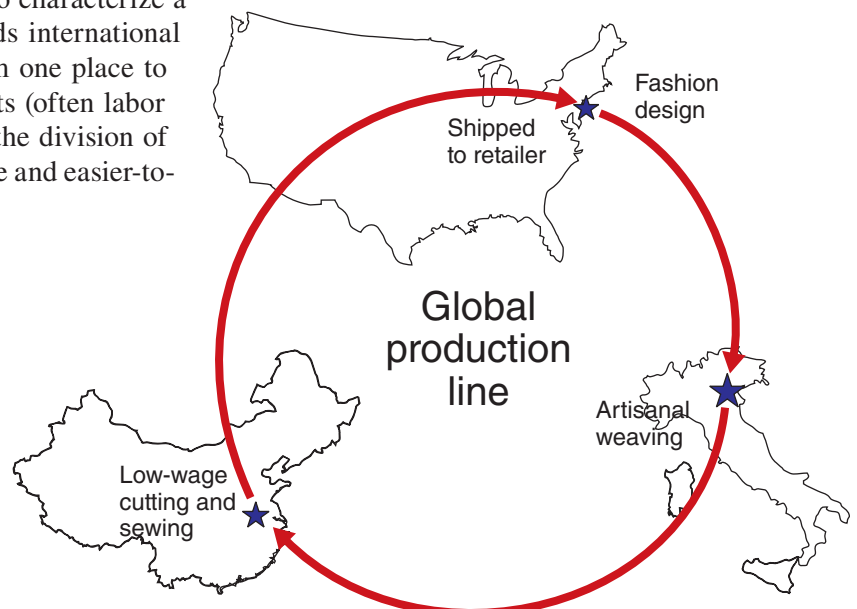


Table 16G.1 Medieval Consumption

Consumption levels differed markedly from society to society, even in the pre-industrial era. But some of these figures give an idea of how expenses may have operated in Medieval England in the fourteenth century. Of course, data were far less complete at this period but these estimates provide an idea of preindustrial consumption patterns. A percentage of the population—probably the two percent or less that belonged to the nobility or the successful merchant class—had amassed enough wealth to indulge in luxuries such as special foods, nice garments, spacious residences, and amusements. For the other 98 percent, necessities took up a huge portion of the budget. A year's worth of bread alone would make a significant dent. But there were opportunities to consume items such as alcohol, special clothing, or toys that went beyond the bare necessities. Alcohol, meat, perhaps a sword, and a nice tunic would have been an occasional expense.

Incomes	In Ducats*
Wealthy baron	785,000
Very rich knight	150,000
Wealthy esquire	66,000
Modest esquire	30,000
Annual "benefice" paid to support a parish priest	3,000–4,000
Annual income of building trades (masons and carpenters)	2,000–3,000
Annual cash income of yeoman farmer	1,000–3,000
Minimum annual income to sustain life for an individual	500–600
Expenses	In Ducats
Adult pig	150–200
Milk cow	300–400
Farmer's cart (iron fittings)	200–300
Mould board plow	30–40
Annual rent to feudal lord for an acre of land (varied considerably)	20–40
Axe	12–20
Cheap sword	15–20
Expensive sword (no jewels or precious metals)	100–200
Loom and treadle (for making cloth at home)	100–200
Shovel	10
Spinning wheel	30–40
Knife	5–10
Brass pot	50–100
Better-quality wool tunic, dyed various colors	250–350
Fur-lined wool tunic	300–400
Cheap cloth for peasant clothing (per yard)	20–60
Mattress cover (to be stuffed with hay)	5–10
Pair of leather shoes	15–40
Woman's chemise (linen undergarment)	20–25
Sheet for bed	10–20
Silk quilt	500–600
Chair	20–25
Bed covering (heavy blanket)	10–20
Stool	10–15
Table cloth	50–100
Hundred gallons of ale	75–125
Two-pound loaf of bread	1
Luxury townhouse with courtyard	20,000–60,000
Three-room peasant's house (600–900 square feet)	1,200–2,000
Two-story row house in a town	3,000–4,000
Two-story shop and living apartments in a town	6,000–10,000

*Each English pound is worth 600 ducats.

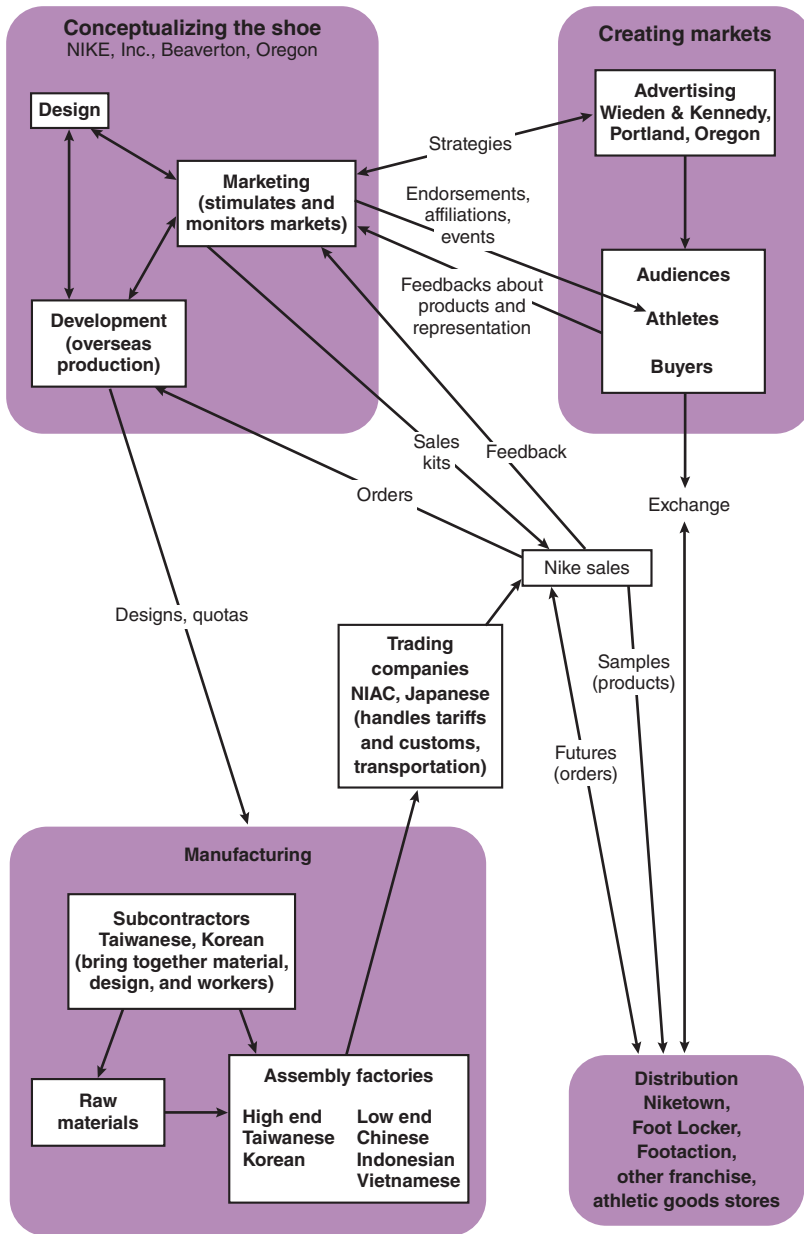
Source: Data from James Dunnigan and Albert Nofi, *Medieval Life and Hundred Years War*.
http://www.hyw.com/Books/History/1_help_c.htm

16G Geographies of Consumption

When discussing production, we must also consider **consumption**, since the two are so interlinked. Consumption is a necessary aspect of human existence, but it has evolved over the years. Consider what is meant by a **luxury**: something that provides enjoyment beyond the necessities of life. For most of human history (and prehistory), consumption was limited. Most individuals could only consume what they needed for their existence, living hand to mouth. This led to a very low level of overall consumption, since people “need” very little.

It was only during the eighteenth century and the advent of industrialization that consumption of large quantities by a substantial proportion of the population became the norm. Mass production required **mass consumption** and, of course, this meant that more and more people would be consuming “luxuries.” In fact, many Europeans had by then become enamored of such items as ceramics, coffee, chocolate, tea, and tobacco. As the twentieth century progressed, consumption became even more pronounced and a couple of things happened. First, wants became needs, as what were previously considered luxuries became necessities. Today, even poor people in developed countries require items that would almost certainly fit under luxuries: televisions, automobiles, CDs. Yet they have become engrained in our lives such that a “luxury” is now considered to be an item or a service of great cost—for instance, an automobile such as a Rolls-Royce or a Bentley.

The second thing that happened is that consumption became an end in itself. The sociologist Thorstein Veblen remarked on this 110 years ago with his idea of **conspicuous consumption**, in which people feel a need to display their status by ostentatiously consuming goods and services. More recently, terms such as *materialism* and *affluenza* have been used to describe an insatiable need to purchase. This drive to consume has been abetted by the demands of a modern economy. Businesses live and die by growth, which can only occur if more people consume more stuff. So it becomes important to entice people to buy more things, even if they did not know they wanted them. The Index of Consumer Confidence, used as a barometer of economic health in the United States, is based on a sample of household views of current conditions and future expectations of the economy. This general overview is used by businesses to gauge their own expectations for economic growth.



▲ **Figure 16G.1** Consumption exhibits geography at many different scales. As consumers, we are now far removed from seeing the origins of the items we routinely purchase. Yet every product is the end result of a **commodity chain** that is all but invisible to the consumer. Nike shoes offers a good example.

- **Design:** The design of a Nike shoe starts at the Nike Research Lab, where researchers take into account the specific market, biomechanics, and aesthetics of the prototyped shoe.
- **Production:** Nike subcontracts production to factories located especially in China, Indonesia, and Vietnam. The raw materials of rubber, leather, and plastic are obtained and sent to the factories, which have become notorious for offering low wages and harsh conditions.
- **Marketing:** Nike makes extensive use of sports stars such as Michael Jordan and Tiger Woods. The swoosh and the phrase “Just do it” are parts of American culture. In other countries, Nike makes sure to use stars in locally popular sports, such as soccer.
- **Retail:** Nike operates its own stores and a few larger Niketowns and, of course, has been successful in gaining a prominent place in all footwear stores.



▲ **Figure 16G.2** The consumption of a product often creates an idealized world. Nike ads routinely conjure up a variety of places emphasized by the “Just do it” catchphrase. Individuals are shown engaging in strenuous activity on the track, basketball court, and trails. Other products may grab an idealized aspect of their heritage in order to paint a picture. The image of Juan Valdez and Colombian coffee comes to mind.



▲ **Figure 16G.3** Beyond a question of simple retail (discussed in Chapter 17), modern society has created a mind-boggling number of places and spaces to consume. These are a lot more than just stores. Niketowns—found all over the world—are a great example of how consumption spaces are created and, in effect, become destinations beyond what they sell. As with modern malls, the intent is to sell goods, but also to make people feel as if they are engaging in an experience that transcends simple consumption.

16H Consuming Places: Geographies of Tourism

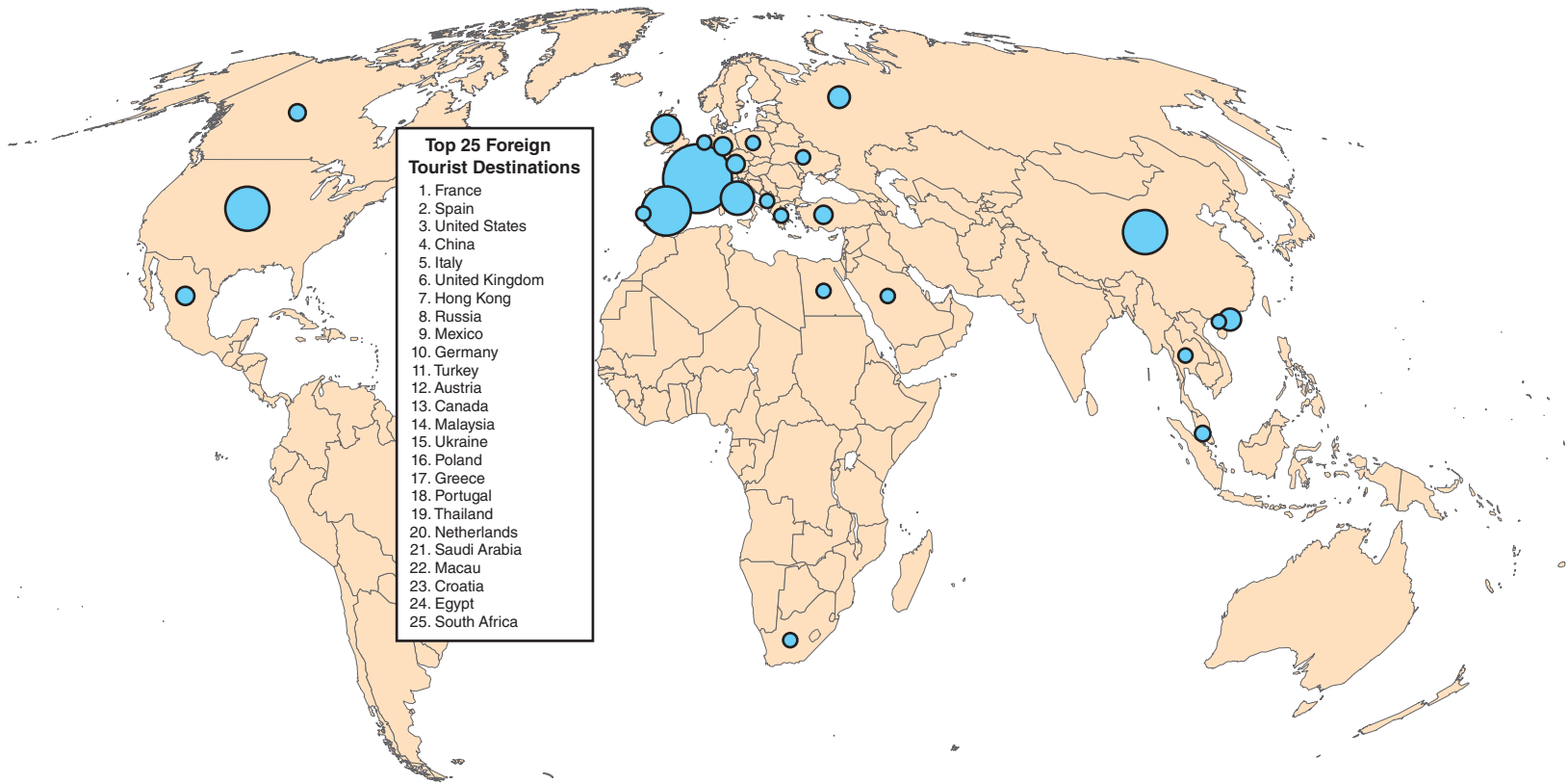
One of the most important features of modern consumption has been the ability to vacation by getting in a car or an airplane and traveling to another destination. The **tourism** industry has grown to cater to that desire. It is a huge and varied industry made up of travel agents (and travel websites), hotels, restaurants, attraction developers, cruise lines, tour guides, guidebooks, and local and regional officials who seek to market their own place. Tourism is something that many places rely on as the main engine of their economy. While tourism is a service, it is also a basic industry that brings money in from the outside. It also takes advantage of whatever attributes a place has that make it desirable for people to visit, whether it is natural beauty or historical significance. Places without a lot of intrinsic allure can help create their own attributes by developing a theme park, a casino, or a major shopping opportunity.



▲ **Figure 16H.1** Back in 1930, Las Vegas, Nevada, would seem to have almost no desirable attributes. Most historically interesting places were farther north in Nevada, there were few inspiring natural features, and the climate was that of a hot, dry desert. But today, Las Vegas is one of the biggest travel destinations in the world, as well as a major center for US travelers and timeshare owners. The development of Las Vegas is legendary—thought up by dreamers, helped along by gangsters, and initially propelled by Nevada’s permissive gambling laws. But the city has shed much of its seedy image by putting up spectacular hotels and providing entertainment that goes beyond just gambling. With its architecture, landscaping, and place-naming, Las Vegas pays tribute to other places, such as “New York, New York,” and Bellagio, Italy. Of course, this dependence on imagery and tourism can be risky, as Las Vegas suffered from some serious downturns during the last recession. This has affected nearly every aspect of the city’s economy.

Of all industries, tourism is probably the most geographically oriented. Even if a place is presented generically or is completely artificial, it is still the object of consumption. People travel to places because they seek something they cannot get at home. Tourism also operates at various scales. International tourism involves the most planning and expense, where people will often take two or more weeks to travel to another country or group of countries in a region. Domestic tourism can be especially important for many communities and for people who seek a particular attribute: a big cosmopolitan city, a historical landmark, a beach, or a mountain ski resort. Local tourism is also important. “One-tank trips” just a car ride away can lead people to nearby attractions where they will likely spend some money, buy souvenirs, and eat at a local restaurant. Downtowns in many less well-known cities have begun to market their tourist potential for the more local consumer. Cleveland, Ohio—not exactly a top draw nationally—has developed a series of downtown attractions, including a large Science Center and the Rock and Roll Hall of Fame, as a way to draw in more people.

What factors determine the tourist appeal of a place? Much of it has to do with what people seek to get out of travel. Some of the important motivators include a desire to escape a mundane environment, the pursuit of relaxation or recreational opportunities, the strengthening of family bonds, prestige, an opportunity for social interaction, educational opportunities, wish fulfillment, and shopping. Places need to be able to offer at least one of these amenities to be viable, and they must provide a measure of safety, accessibility, reliability, and reasonable value.



▲ **Figure 16H.2** With a few exceptions, such as North Korea, just about every country has a tourist industry. Many even have tourist ministries to promote and guide tourism. However, there is a great deal of unevenness in world tourist traffic. The countries of Western Europe enjoy very high tourist dollars per capita, despite the fact that these are expensive destinations. Many of the Caribbean islands are dependent on tourism for their economy and draw from North America and Europe. The United States, Canada, and Australia also have a great deal of international tourist traffic—and very robust domestic tourism. Most other countries have fairly low relative levels of tourism when measured on a per capita basis, although the absolute number of tourists to China, Russia, and Mexico is fairly high.



▲ **Figure 16H.3 Straw Market in Coco Cay, Bahamas** Cruise ships have emerged as a big growth segment in the tourist industry. They provide a safe, stable environment for travelers and are usually all-inclusive in price. During a typical cruise of 4–10 days, ships “call” on a series of ports. Cruise passengers who disembark enter a land of kitsch, where “place” is reduced to stereotypes and shopping opportunities abound. Finding the authentic place can be quite a challenge, and many travelers are not able or willing to take the time.

Key Terms

Anglo-American Manufacturing Belt (16C)	industrialization (16A)
backward linkages (16C)	locational advantages (16F)
base employment (16D)	luxury (16G)
break-in-bulk point (16B)	maquiladora (16B)
commodity chain (16G)	mass consumption (16G)
conspicuous consumption (16G)	mass production (16A)
consumption (16G)	multidivisional corporation (16F)
detritorialization (16F)	multiplier effect (16D)
division of labor (16A)	new international division of labor (16F)
factors of production (16B)	optimum location (16B)
factory system (16A)	production (16A)
forward linkages (16C)	production chain (16B)
global assembly line (16F)	tourism (16H)
global production line (16F)	transnational corporation (TNC) (16F)
globalization (16F)	value added (16A)
high-technology clusters (16E)	venture capitalists (16E)
high-technology industries (16E)	

Basic Review Questions

1. How does production create value added?
2. Describes the changes associated with industrialization.
3. Discuss the changes associated with the steam engine, new machinery, and the factory system. How did the factory system bring about a new division of labor?
4. Why was Great Britain the first country to become industrialized?
5. Why did industrialization diffuse slowly after it was adopted in Great Britain?
6. Where was industrialization first found in the United States? Why?
7. How might you consider forward linkages and backward linkages as explanations for why a region that initially industrialized continued to enjoy further industrialization?
8. Where was the Anglo-American Manufacturing Belt located, and what sorts of items did it produce? What were some of the comparative advantages of the Anglo-American Manufacturing Belt?
9. How did the US space economy change in the twentieth century?
10. What is the importance of base employment? How does this fit into a multiplier effect?
11. What were some of the comparative advantages that other parts of the United States could use to attract industry? What sorts of industries did they attract?
12. What is the role of government in promoting regional development in the twentieth century—specifically, the role of water policies and military bases?
13. Discuss some of the factors of production important in any industry. What are the direct factors and what are the indirect factors of production?
14. Explain the industrial location model produced by Alfred Weber. What is the difference between ubiquitous materials and localized materials, and how does this affect the model?
15. What changing factors of production help us understand the location of garment factories in Mexico?

16. What is meant by *high-technology industry*? What is the importance of venture capitalism and high technology?
17. What are some of the common attributes possessed by high-technology clusters?
18. How has high technology shifted to other parts of the world, such as Bangalore/Bengaluru?
19. What are some of the aspects of globalization in relation to industrial production? What is the difference between a multidivisional corporation and a transnational corporation?
20. How are transnational corporations able to take advantage of certain locational advantages in the factors of production?
21. What is the global assembly line, and how does this relate to the global production line? How might the development of clothing be a good example of a new global production line?
22. How have consumption and luxuries changed over the course of human history?
23. How does the growth in consumption, and even conspicuous consumption, affect production levels?
24. What is a commodity chain, and how does it fit into the development of a particular product?
25. How does the development of tourism fit into a new style of consumption?
26. How might tourism be considered a way of geographically consuming different places?

Advanced Review Questions (Essay Questions)

1. What are the major changes associated with the beginning of industrialization? Why do these changes represent a major break from past practices? Where did the Industrial Revolution first begin, and why there?
2. Precisely where is the United States' industrial core region? How did the industrial core lose much of its dominance in the second half of the twentieth century in terms of (a) the loss of specific advantages relative to the periphery and (b) new advantages gained by the periphery?
3. What major industries were able to establish a beachhead in different parts of the United States? Specifically, why were automobiles centered in Michigan and Ohio? Why was petroleum production centered in Texas, Louisiana, and Oklahoma? How do these locations relate to different factors of production?
4. Describe how the industrial location model works. How does this help explain the development of the steel industry around 1900? Why are some of the aspects of this model less relevant today? What factors help explain the growth of maquiladora factories?
5. How do you define high technology? Why is it valued compared to other types of technology? How does high technology benefit from agglomeration economies? Why have aspects of high-technology production moved from original clusters in the United States and other developed countries to a number of less developed countries?
6. What are some of the ways in which globalization has altered industrial production? How does a transnational corporation take advantage of the global assembly line to reduce its costs?

7. Describe how consumption has changed over human history. How do the luxuries of one era become the necessities for another? How does the commodity chain fit into the development of different products? Specifically, how would it affect the production of shoes?
8. How does tourism fit into the geography of consumption? What are some of the things that allow a place to market itself for tourist purposes?

Further Study Topics

- Traditional factors of production don't necessarily pertain to modern industrial processes. Select a modern industry and discuss some of the factors of production that are significant to the success of that industry.
- Some experts argue that government's role in the development of the American space economy has not been balanced but instead has tended to favor certain regions. Looking at certain levels of government investment—for example, military investment or transportation projects—discuss the patterns of government investment and whether certain regions are favored at the expense of other regions.
- Why are some regions of the country more prone to high-technology investment and other related types of economic activity than other regions? Identify a few areas that seem to have a high proportion of high-technology investment and see whether you can determine what factors they share. What would be some of the suggested attributes in a region seeking to be a center for high-technology investment?
- Looking at the impact of globalization on the world, particularly in terms of industrial processes, identify what you think are some of the major advantages of transnational corporations, as well as some of the major disadvantages. Do you think that transnational corporations are more likely to exploit peoples in less developed countries, or are such corporations ultimately beneficial?
- In the chapter, we used the example of shoes as a product in a commodity chain. Examine another type of product in terms of how design, production, marketing, and retail are all based around the production and marketing of the product.
- Looking at the geography of tourism, consider the way in which the consumption of beautiful places can harm these very places. Is it possible for something like ecotourism to both generate the financial benefits of tourism and still preserve many of the values, both human and natural, of these places?

Summary Activities

Base jobs are an important source of economic activity for every community. Using the information provided by your local county business patterns (www.census.gov/econ/cbp/), consider your county or metropolitan area. Determine how many of these jobs would be considered as “base” (mostly jobs in manufacturing) and non-base (mostly jobs in services). Do you see any patterns?

