CHAPTER EIGHTEEN

Revolutions of Industrialization

1750–1914

"Industrialization is, I am afraid, going to be a curse for mankind.... God forbid that India should ever take to industrialism after the manner of the West. The economic imperialism of a single tiny island kingdom (England) is today [1928] keeping the world in chains. If an entire nation of 300 millions took to similar economic exploitation, it would strip the world bare like locusts.... Industrialization on a mass scale will necessarily lead to passive or active exploitation of the villagers.... The machine produces much too fast."[1]

Such were the views of the famous Indian nationalist and spiritual leader Mahatma Gandhi, who subsequently led his country to independence from British colonial rule by 1947, only to be assassinated a few months later. However, few people anywhere have agreed with India's heroic figure. Since its beginning in Great Britain in the late eighteenth century, the idea of industrialization, if not always its reality, has been embraced in every kind of society, both for the wealth it generates and for the power it conveys. Even Gandhi's own country, once it achieved its independence, largely abandoned its founding father's vision of small-scale, village-based handicraft manufacturing in favor of modern industry. As the twenty-first century dawned, India was moving rapidly to develop a major high-technology industrial sector. At that time, across the river from the site in New Delhi where Gandhi was cremated in 1948 a large power plant belched black smoke.

FEW ELEMENTS OF EUROPE'S MODERN TRANSFORMATION HELD A GREATER SIGNIFICANCE for the history of humankind than the Industrial Revolution, which took place initially in the

Industrial Britain: The dirt, smoke, and pollution of early industrial societies are vividly conveyed in this nineteenth-century engraving of a copper foundry in Wales. (Bibliothèque des Arts Décoratifs Paris/Gianni Dagli Orti/The Art Archive)

century and a half between 1750 and 1900. It drew upon the Scientific Revolution and accompanied the unfolding legacy of the French Revolution to utterly transform European society and to propel Europe into a position of global dominance. Not since the breakthrough of the Agricultural Revolution some 12,000 years ago had human ways of life been so fundamentally altered. But the Industrial Revolution, unlike its agricultural predecessor, began independently in only one place, Western Europe, and more specifically Great Britain. From there, it spread far more rapidly than agriculture, though very unevenly, to achieve a worldwide presence in less than 250 years. Far more than Europe's Christian religion, its democratic political values, or its capitalist economic framework, the techniques of its Industrial Revolution have been intensely sought after virtually everywhere.

In any long-term reckoning, the history of industrialization is very much an unfinished story. It is hard to know whether we are at the beginning of a movement leading to worldwide industrialization, stuck in the middle of a world permanently divided into rich and poor countries, or approaching the end of an environmentally unsustainable industrial era. Whatever the future holds, this chapter focuses on the early stages of an immense transformation in the global condition of humankind.

Explaining the Industrial Revolution

The global context for this epochal economic transformation lies in a very substantial increase in human numbers from about 375 million people in 1400 to about 1 billion in the early nineteenth century. Accompanying this growth in population was an emerging energy crisis, most pronounced in Western Europe, China, and Japan, as wood and charcoal, the major industrial fuels, became more scarce and their prices rose. In short, "global energy demands began to push against the existing local and regional ecological limits."[2] In broad terms, the Industrial Revolution marks a human response to that dilemma as fossil fuels replaced the earlier reliance on wind, water, wood, and the muscle power of people and animals. All of those had derived from "recently captured solar energy," but now human ingenuity found the means to tap as well the anciently stored solar energy of coal, oil, and natural gas.[3] It was a breakthrough of unprecedented proportions that made available for human use immensely greater quantities of energy. It also wrought, of course, a mounting impact on the environment with which the world of the twenty-first century is increasingly occupied.

More immediately, however, that access to huge new sources of energy gave rise to an enormously increased output of goods and services. In Britain, where the Industrial Revolution began, industrial output increased some fiftyfold between 1750 and 1900. It was a wholly unprecedented and previously unimaginable jump in the capacity of human societies to produce wealth. Lying behind it was a great acceleration in the rate of technological innovation, not simply this or that invention—the spinning jenny, power loom, steam engine, or cotton gin—but a "culture of innovation," a widespread and almost obsessive belief that things could be endlessly improved.

Early signs of the technological creativity that spawned the Industrial Revolution appeared in eighteenth-century Britain, where a variety of innovations transformed cotton textile production. It was only in the nineteenth century, though, that Europeans in general and the British in particular more clearly forged ahead of the rest of the world. The great breakthrough was the coal-fired steam engine, which provided an inanimate and almost limitless source of power beyond that of wind, water, or muscle and could be used to drive any number of machines as well as locomotives and oceangoing ships. Soon the Industrial Revolution spread beyond the textile industry to iron and steel production, railroads and steamships, food processing, construction, chemicals, electricity, the telegraph and telephone, rubber, pottery, printing, and much more. Agriculture too was affected as mechanical reapers, chemical fertilizers, pesticides, and refrigeration transformed this most ancient of industries. Technical innovation occurred in more modest ways as well. Patents for horseshoes in the United States, for example, grew from fewer than five per year before 1840 to thirty to forty per year by the end of the century. Furthermore, industrialization spread beyond Britain to continental Western Europe and then in the second half of the century to the United States, Russia, and Japan.

In the twentieth century, the Industrial Revolution became global as a number of Asian, African, and Latin American countries developed substantial industrial sectors. Oil, natural gas, and nuclear reactions joined coal as widely available sources of energy, and new industries emerged in automobiles, airplanes, consumer durable goods, electronics, computers, and on and on. It was a cumulative process that, despite periodic ups and downs, accelerated over time. More than anything else, this continuous emergence of new techniques of production and the economic growth that they made possible mark the past 250 years as a distinct phase of human history.

Why Europe?

■ **Change**
In what respects did the roots of the Industrial Revolution lie within Europe? In what ways did that transformation have global roots?

The Industrial Revolution has long been a source of great controversy among scholars. Why did it occur first in Europe? Within Europe, why did it occur first in Great Britain? And why did it take place in the late eighteenth and nineteenth centuries? Earlier explanations that sought the answer in some unique and deeply rooted feature of European society, history, or culture have been challenged by world historians because such views seemed to suggest that Europe alone was destined to lead the way to modern economic life. This approach not only was Eurocentric and deterministic but also flew in the face of much recent research.

Historians now know that other areas of the world had experienced times of great technological and scientific flourishing. Between 750 and 1100 C.E., the Islamic world generated major advances in shipbuilding, the use of tides and falling water to generate power, papermaking, textile production, chemical technologies, water mills, clocks, and much more.[4] India had long been the world center of cotton textile production, the first place to turn sugarcane juice into crystallized sugar, and the source of many agricultural innovations and mathematical inventions. To the Arabs

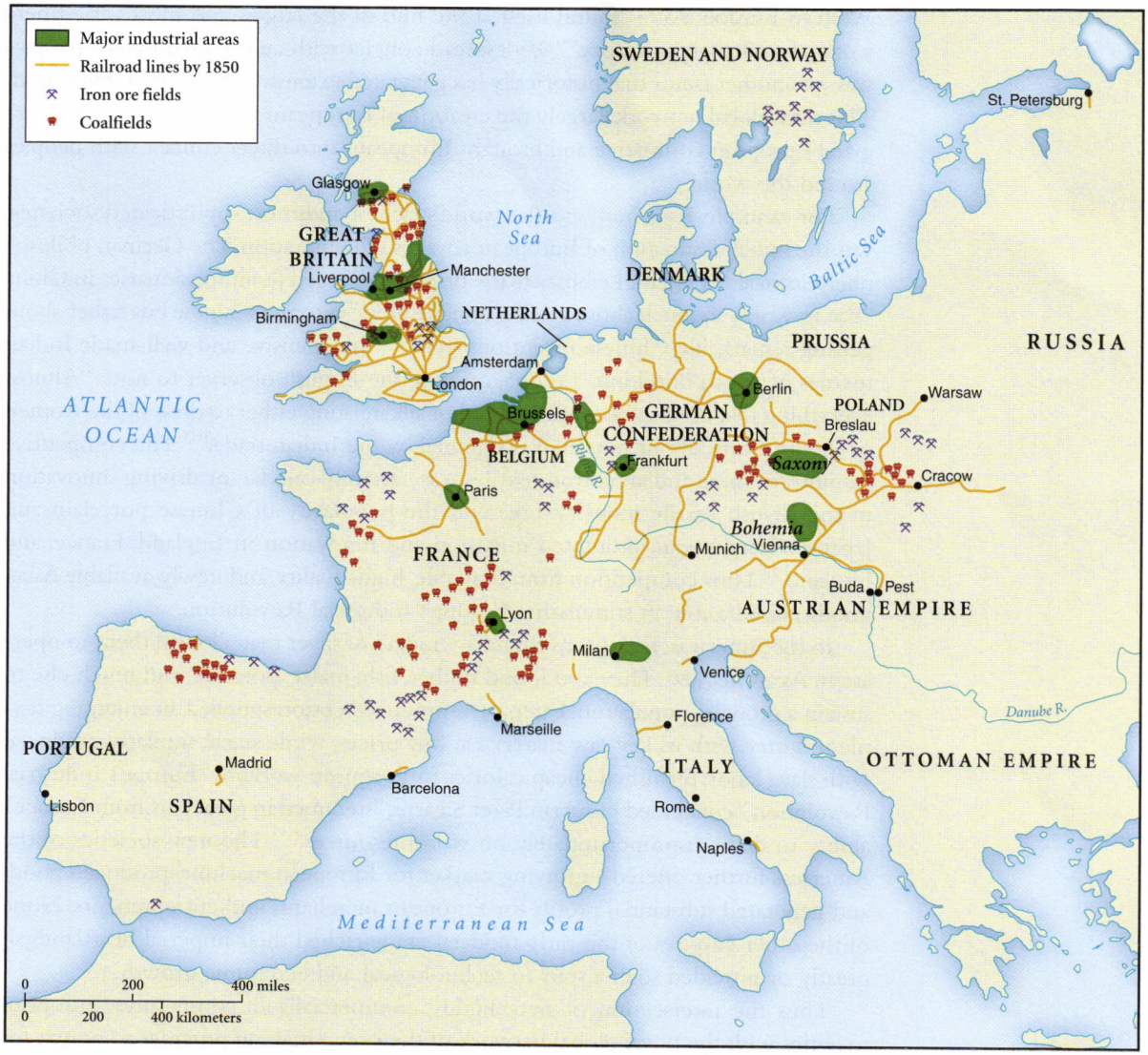
of the ninth century C.E., India was a "place of marvels."[5] More than either of these, China was clearly the world leader in technological innovation between 700 and 1400 C.E., prompting various scholars to suggest that China was on the edge of an industrial revolution by 1200 or so. For reasons much debated among historians, all of these flowerings of technological creativity had slowed down considerably or stagnated by the early modern era, when the pace of technological change in Europe began to pick up. But their earlier achievements certainly suggest that Europe was not alone in its capacity for technological innovation.

Nor did Europe enjoy any overall economic advantage as late as 1750. Over the past several decades, historians have carefully examined the economic conditions of various Eurasian societies in the eighteenth century and found them surprisingly alike. Economic indicators such as life expectancies, patterns of consumption and nutrition, wage levels, general living standards, widespread free markets, and prosperous merchant communities suggest broadly similar conditions across the major civilizations of Europe and Asia.[6] Thus Europe had no obvious economic lead, even on the eve of the Industrial Revolution. Rather, according to one leading scholar, "there existed something of a global economic parity between the most advanced regions in the world economy."[7]

A final reason for doubting any unique European capacity for industrial development lies in the relatively rapid spread of industrial techniques to many parts of the world over the past 250 years (a fairly short time by world history standards). Although the process has been highly uneven, industrialization has taken root, to one degree or another, in Japan, China, India, Brazil, Mexico, Indonesia, South Africa, Saudi Arabia, Thailand, South Korea, and elsewhere. Such a pattern weakens any suggestion that European culture or society was exceptionally compatible with industrial development.

Thus contemporary historians are inclined to see the Industrial Revolution erupting rather quickly and quite unexpectedly between 1750 and 1850 (see Map 18.1). Two intersecting factors help to explain why this process occurred in Europe rather than elsewhere. One lies in certain patterns of Europe's internal development that favored innovation. Its many small and highly competitive states, taking shape in the twelfth or thirteenth centuries, arguably provided an "insurance against economic and technological stagnation," which the larger Chinese, Ottoman, or Mughal empires perhaps lacked.[8] If so, then Western Europe's failure to re-create the earlier unity of the Roman Empire may have acted as a stimulus to innovation.

Furthermore, the relative newness of these European states and their monarchs' desperate need for revenue in the absence of an effective tax-collecting bureaucracy pushed European royals into an unusual alliance with their merchant classes. Small groups of merchant capitalists might be granted special privileges, monopolies, or even tax-collecting responsibilities in exchange for much-needed loans or payments to the state. It was therefore in the interest of governments to actively encourage commerce and innovation. Thus states granted charters and monopolies to private trading companies, and governments founded scientific societies and offered prizes to promote innovation. In this way, European merchants and other innovators from the fifteenth century onward gained an unusual degree of freedom from state control and in some



places a higher social status than their counterparts in more established civilizations. In Venice and Holland, merchants actually controlled the state. By the eighteenth century major Western European societies were highly commercialized and governed by states generally supportive of private commerce. In short, they were well on their way toward capitalist economies—where buying and selling on the market was a widely established practice—before they experienced industrialization. Such internally competitive economies, coupled with a highly competitive system of rival states, arguably fostered innovation in the new civilization taking shape in Western Europe.

Europe's societies, of course, were not alone in developing market-based economies by the eighteenth century. Japan, India, and especially China were likewise highly commercialized or market driven. However, in the several centuries after 1500,

Map 18.1 The Early Phase of Europe's Industrial Revolution
From its beginning in Great Britain, industrialization spread by 1850 across northwestern Europe to include parts of France, Germany, Belgium, Bohemia, and Italy.

Western Europe alone "found itself at the hub of the largest and most varied network of exchange in history."[9] Widespread contact with culturally different peoples was yet another factor that historically has generated extensive change and innovation. This new global network, largely the creation of Europeans themselves, greatly energized European commerce and brought Europeans into direct contact with peoples around the world.

For example, Asia, home to the world's richest and most sophisticated societies, was the initial destination of European voyages of exploration. The German philosopher Gottfried Wilhelm Leibniz (1646–1716) encouraged Jesuit missionaries in China "not to worry so much about getting things European to the Chinese but rather about getting remarkable Chinese inventions to us."[10] Inexpensive and well-made Indian textiles began to flood into Europe, causing one English observer to note: "Almost everything that used to be made of wool or silk, relating either to dress of the women or the furniture of our houses, was supplied by the Indian trade."[11] The competitive stimulus of these Indian cotton textiles was certainly one factor driving innovation in the British textile industry. Likewise, the popularity of Chinese porcelain and Japanese lacquerware prompted imitation and innovation in England, France, and Holland.[12] Thus competition from desirable, high-quality, and newly available Asian goods played a role in stimulating Europe's Industrial Revolution.

In the Americas, Europeans found a windfall of silver that allowed them to operate in Asian markets. They also found timber, fish, maize, potatoes, and much else to sustain a growing population. Later, slave-produced cotton supplied an emerging textile industry with its key raw material at low prices, while sugar, similarly produced with slave labor, furnished cheap calories to European workers. "Europe's Industrial Revolution," concluded historian Peter Stearns, "stemmed in great part from Europe's ability to draw disproportionately on world resources."[13] The new societies of the Americas further offered a growing market for European machine-produced goods and generated substantial profits for European merchants and entrepreneurs. None of the other empires of the early modern era enriched their imperial heartlands so greatly or provided such a spur to technological and economic growth.

Thus the intersection of new, highly commercialized, competitive European societies with the novel global network of their own making provides a context for understanding Europe's Industrial Revolution. Commerce and cross-cultural exchange, acting in tandem, provided the seedbed for the impressive technological changes of the first industrial societies.

Why Britain?

■ **Comparison**
What was distinctive about Britain that may help to explain its status as the breakthrough point of the Industrial Revolution?

If the Industrial Revolution was a Western European phenomenon generally, it clearly began in Britain in particular. The world's first Industrial Revolution unfolded spontaneously in a country that concentrated some of the more general features of European society. It was both unplanned and unexpected.

Britain was the most highly commercialized of Europe's larger countries. Its landlords had long ago "enclosed" much agricultural land, pushing out the small farmers

and producing for the market. A series of agricultural innovations—crop rotation, selective breeding of animals, lighter plows, higher-yielding seeds—increased agricultural output, kept food prices low, and freed up labor from the countryside. The guilds, which earlier had protected Britain's urban artisans, had largely disappeared by the eighteenth century, allowing employers to run their manufacturing enterprises as they saw fit. Coupled with a rapidly growing population, these processes ensured a ready supply of industrial workers who had few alternatives available to them. Furthermore, British aristocrats, unlike their counterparts in Europe, had long been interested in the world of business, and some took part in new mining and manufacturing enterprises. British commerce, moreover, extended around the world, its large merchant fleet protected by the Royal Navy. The wealth of empire and global commerce, however, were not themselves sufficient for spawning the Industrial Revolution, especially when we consider that Spain, the earliest beneficiary of American wealth, remained one of the more slowly industrializing European countries into the twentieth century.

British political life encouraged commercialization and economic innovation. Its policy of religious toleration, formally established in 1688, welcomed people with technical skills regardless of their faith, whereas France's persecution of its Protestant minority had chased out some of its most skilled workers. The British government favored men of business with tariffs to keep out cheap Indian textiles, with laws that made it easy to form companies and to forbid workers' unions, with roads and canals that helped create a unified internal market, and with patent laws that served to protect the interests of inventors. Checks on royal authority—trial by jury and the growing authority of parliament, for example—provided a freer arena for private enterprise than elsewhere in Europe.

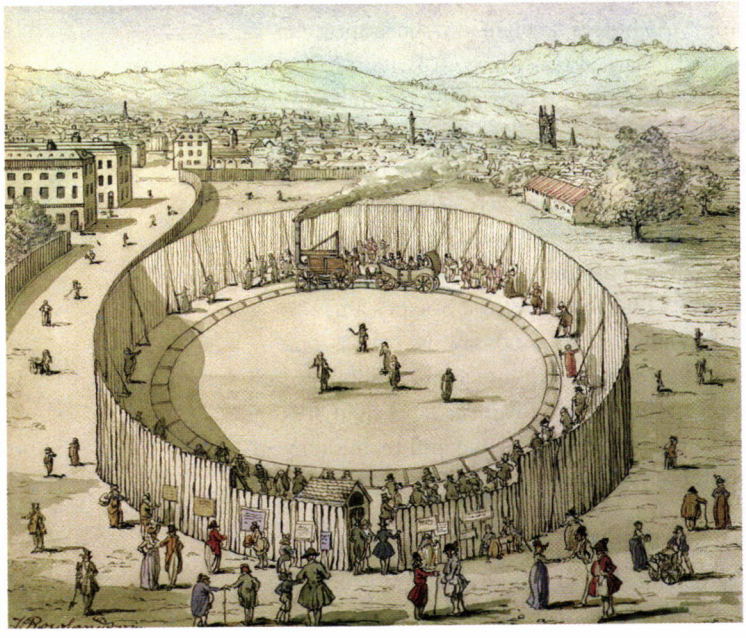
Europe's Scientific Revolution also took a distinctive form in Great Britain in ways that fostered technological innovation.[14] Whereas science on the continent was largely based on logic, deduction, and mathematical reasoning, in Britain it was much more concerned with observation, experiment, precise measurements, mechanical devices, and practical commercial applications. Discoveries about atmospheric pressure and vacuums, for example, played an important role in the invention and improvement of the steam engine. Even though most inventors were artisans or craftsmen rather than scientists, in eighteenth-century Britain they were in close contact with scientists, makers of scientific instruments, and entrepreneurs, whereas in continental Europe these groups were largely separate. The British Royal Society, an association of "natural philosophers" (scientists) established in 1660, saw its role as one of promoting "useful knowledge." To this end, it established "mechanics' libraries," published broadsheets and pamphlets on recent scientific advances, and held frequent public lectures and demonstrations. The integration of science and technology became widespread and permanent after 1850, but for a century before, it was largely a British phenomenon.

Finally, several accidents of geography and history contributed something to Britain's Industrial Revolution. The country had a ready supply of coal and iron ore, often located close to each other and within easy reach of major industrial centers.

Although Britain took part in the wars against Napoleon, the country's island location protected it from the kind of invasions that so many continental European states experienced during the era of the French Revolution. Moreover, Britain's relatively fluid society allowed for adjustments in the face of social changes without widespread revolution. By the time the dust settled from the immense disturbance of the French Revolution, Britain was well on its way to becoming the world's first industrial society.

The First Industrial Society

Wherever it took hold, the Industrial Revolution generated, within a century or less, an economic miracle, at least in comparison with earlier technologies. The British textile industry, which used 52 million pounds of cotton in 1800, consumed 588 million pounds in 1850. Britain's output of coal soared from 5.23 million tons in 1750 to 68.4 million tons a century later.[15] Railroads crisscrossed Britain and much of Europe like a giant spider web (see Map 18.1, p. 829). Most of this dramatic increase in production occurred in mining, manufacturing, and services. Thus agriculture, for millennia the overwhelmingly dominant economic sector in every civilization, shrank in relative importance. In Britain, for example, agriculture generated only 8 percent of national income in 1891 and employed fewer than 8 percent of working Britons in 1914. Accompanying this vast economic change was an epic transformation of social life. "In two centuries," wrote one prominent historian, "daily life changed more than it had in the 7,000 years before."[16] Nowhere were the revolutionary dimensions of industrialization more apparent than in Great Britain, the world's first industrial society.

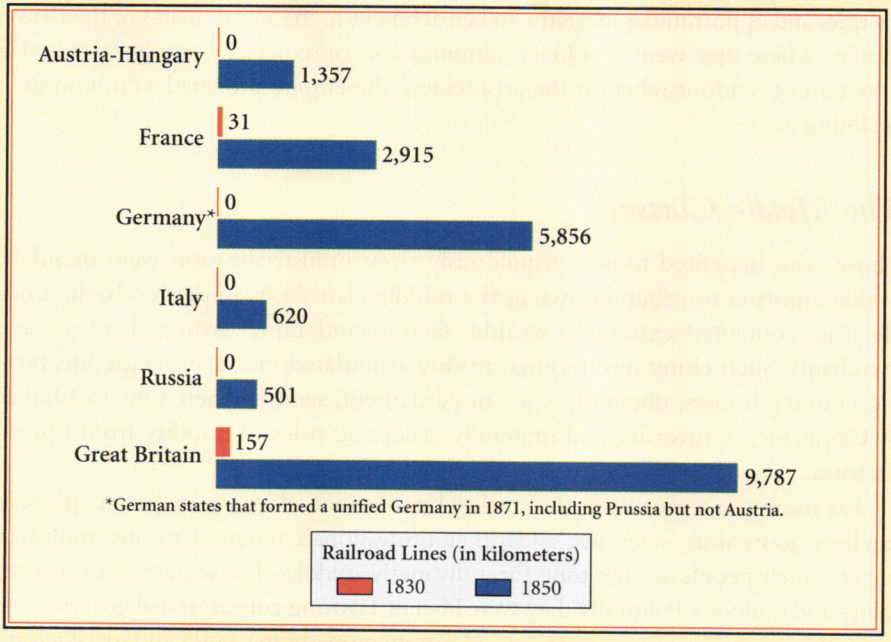


Railroads
The popularity of railroads, long a symbol of the Industrial Revolution, is illustrated in this early-nineteenth-century watercolor, which shows a miniature train offered as a paid amusement for enthusiasts in London's Euston Square. (Science Museum, London, UK/The Bridgeman Art Library)

The social transformation of the Industrial Revolution both destroyed and created. Referring to the impact of the Industrial Revolution on British society, historian Eric Hobsbawm said: "[I]n its initial stages it destroyed their old ways of living and left them free to discover or make for themselves new ones, if they could and knew how. But it rarely told them how to set about it."[17] For many people, it was an enormously painful, even traumatic process, full of social conflict, insecurity, and false starts as well as new opportunities, an eventually higher standard of living, and greater participation in public life. Scholars, politicians, journalists, and ordinary people have endlessly debated the gains and losses associated with the

Snapshot Measuring the Industrial Revolution[18]

Railroads are one useful measure of industrial development. This graph illustrates both Britain's head start and the beginning catch-up efforts of other countries.



Industrial Revolution. Amid the controversy, however, one thing is clear: not everyone was affected in the same way. (See Visual Sources: Art and the Industrial Revolution, pp. 867–74, for both celebratory and critical perspectives on industrialization.)

The British Aristocracy

■ Change
How did the Industrial Revolution transform British society?

Individual landowning aristocrats, long the dominant class in Britain, suffered little in material terms from the Industrial Revolution. In the mid-nineteenth century, a few thousand families still owned more than half of the cultivated land in Britain, most of it leased to tenant farmers, who in turn employed agricultural wage laborers to work it. Rapidly growing population and urbanization sustained a demand for food products grown on that land. For most of the nineteenth century, landowners continued to dominate the British parliament.

As a class, however, the British aristocracy, like large landowners in every industrial society, declined. As urban wealth became more important, landed aristocrats had to make way for the up-and-coming businessmen, manufacturers, and bankers who had been newly enriched by the Industrial Revolution. The aristocracy's declining political clout was demonstrated in the 1840s when high tariffs on foreign agricultural

imports, designed to protect the interests of British landlords, were finally abolished. By the end of the century, landownership had largely ceased to be the basis of great wealth, and businessmen, rather than aristocrats, led the major political parties. Even so, the titled nobility of dukes, earls, viscounts, and barons retained great social prestige and considerable personal wealth. Many among them found an outlet for their energies and opportunities for status and enrichment in the vast domains of the British Empire, where they went as colonial administrators or settlers. Famously described as a "system of outdoor relief for the aristocracy," the empire provided a cushion for a declining class.

The Middle Classes

Change
How did Britain's middle classes change during the nineteenth century?

Those who benefited most conspicuously from industrialization were members of that amorphous group known as the middle class. At its upper levels, the middle class contained extremely wealthy factory and mine owners, bankers, and merchants. Such rising businessmen readily assimilated into aristocratic life, buying country houses, obtaining seats in parliament, sending their sons to Oxford or Cambridge University, and gratefully accepting titles of nobility from Queen Victoria.

Far more numerous were the smaller businessmen, doctors, lawyers, engineers, teachers, journalists, scientists, and other professionals required in any industrial society. Such people set the tone for a distinctly middle-class society with its own values and outlooks. Politically they were liberals, favoring constitutional government, private property, free trade, and social reform within limits. Their agitation resulted in the Reform Bill of 1832, which broadened the right to vote to many men of the middle class, but not to middle-class women. Ideas of thrift and hard work, a rigid morality, and cleanliness characterized middle-class culture. The central value of that culture was "respectability," a term that combined notions of social status and virtuous behavior. Nowhere were these values more effectively displayed than in the Scotsman Samuel Smiles's famous book *Self-Help*, published in 1859. Individuals are responsible for their own destiny, Smiles argued. An hour a day devoted to self-improvement "would make an ignorant man wise in a few years." According to Smiles, this enterprising spirit was what distinguished the prosperous middle class from Britain's poor.

The Industrial Middle Class
This late-nineteenth-century painting shows a prosperous French middle-class family, attended by a servant. (Chateau de Versailles/SuperStock, Inc.)

The misery of the poorer classes was "voluntary and self-imposed—the results of idleness, thriftlessness, intemperance, and misconduct."[19]

Women in such middle-class families were increasingly cast as homemakers, wives, and mothers, charged with creating an emotional haven for their men and a refuge from a heartless and cutthroat capitalist world. They were also the moral center of family life and the educators of "respectability" as well as the managers of consumption as "shopping," a new concept in eighteenth-century Britain, became a central activity. An "ideology of domesticity" defined the home and charitable activities as the proper sphere for women, while paid employment and public life beckoned to men. The English poet Alfred, Lord Tennyson, aptly expressed this understanding in his poem "The Princess":

> Man for the field and woman for the hearth:
> Man for the sword and for the needle she:
> Man with the head and woman with the heart:
> Man to command and woman to obey.
> All else confusion.

Middle-class women played a very different role from women in the peasant farm or the artisan's shop, where wives, though clearly subordinate, worked productively alongside their husbands. By the late nineteenth century, however, some middle-class women began to enter the teaching, clerical, and nursing professions.

As Britain's industrial economy matured, it also gave rise to a sizable lower middle class, which included people employed in the growing service sector as clerks, salespeople, bank tellers, hotel staff, secretaries, telephone operators, police officers, and the like. By the end of the nineteenth century, this growing class represented about 20 percent of Britain's population and provided new employment opportunities for women as well as men. In just twenty years (1881–1901), the number of female secretaries in Britain rose from 7,000 to 90,000. Almost all were single and expected to return to the home after marriage. For both men and women, such employment represented a claim on membership in the larger middle class and a means of distinguishing themselves clearly from a working class tainted by manual labor.

The Laboring Classes

The overwhelming majority of Britain's nineteenth-century population—some 70 percent or more—were, of course, neither aristocrats nor members of the middle classes. They were manual workers in the mines, ports, factories, construction sites, workshops, and farms of an industrializing Britain. Although their conditions varied considerably and changed over time, the laboring classes were the people who suffered most and benefited least from the epic transformations of the Industrial Revolution. Their efforts to accommodate, resist, protest, and change those conditions contributed much to the texture of the first industrial society.

The Urban Poor of Industrial Britain
This 1866 political cartoon shows an impoverished urban family forced to draw its drinking water from a polluted public well, while a figure of Death operates the pump. (The Granger Collection, New York)

The lives of the laboring classes were shaped primarily by the new working conditions of the industrial era. Chief among those conditions was the rapid urbanization of British society. Liverpool's population alone grew from 77,000 to 400,000 in the first half of the nineteenth century. By 1851, a majority of Britain's population lived in towns and cities, an enormous change from the overwhelmingly rural life of almost all previous civilizations. By the end of the century, London was the world's largest city, with more than 6 million inhabitants.

These cities were vastly overcrowded and smoky, with wholly inadequate sanitation, periodic epidemics, endless row houses and warehouses, few public services or open spaces, and inadequate water supplies. This was the environment in which most urban workers lived in the first half of the nineteenth century. Nor was there much personal contact between the rich and the poor of industrial cities. Benjamin Disraeli's novel *Sybil*, published in 1845, described these two ends of the social spectrum as "two nations between whom there is no intercourse and no sympathy; who are ignorant of each other's habits, thoughts and feelings, as if they were dwellers in different zones or inhabitants of different planets."

The industrial factories to which growing numbers of desperate people looked for employment offered a work environment far different from the artisan's shop or the tenant's farm. Long hours, low wages, and child labor were nothing new for the poor, but the routine and monotony of work, dictated by the factory whistle and the needs of machines, imposed novel and highly unwelcome conditions of labor. Also objectionable were the direct and constant supervision and the rules and fines aimed at enforcing work discipline. The ups and downs of a capitalist economy made industrial work insecure as well as onerous. Unlike their middle-class sisters, many girls and young women of the laboring classes worked in mills or as domestic servants in order to supplement meager family incomes, but after marriage they too usually left outside paid employment because a man who could not support his wife was widely considered a failure. Within the home, however, many working-class women continued to earn money by taking in boarders, doing laundry, or sewing clothes.

Social Protest

For workers of the laboring classes, industrial life "was a stony desert, which they had to make habitable by their own efforts."[20] Such efforts took many forms. By 1815, about 1 million workers, mostly artisans, had created a variety of "friendly societies." With dues contributed by members, these working-class self-help groups provided insurance against sickness, a decent funeral, and an opportunity for social life in an otherwise bleak environment. Other skilled artisans, who had been displaced by machine-produced goods and forbidden to organize in legal unions, sometimes wrecked the offending machinery and burned the mills that had taken their jobs. The class consciousness of working people was such that one police informer reported that "most every creature of the lower order both in town and country are on their side."[21]

Others acted within the political arena by joining movements aimed at obtaining the vote for working-class men, a goal that was gradually achieved in the second half of the nineteenth century. When trade unions were legalized in 1824, growing numbers of factory workers joined these associations in their efforts to achieve better wages and working conditions. Initially their strikes, attempts at nationwide organization, and the threat of violence made them fearful indeed to the upper classes. One British newspaper in 1834 described unions as "the most dangerous institutions that were ever permitted to take root, under shelter of law, in any country,"[22] although they later became rather more "respectable" organizations.

Socialist ideas of various kinds gradually spread within the working class, challenging the assumptions of a capitalist society. Robert Owen (1771–1858), a wealthy British cotton textile manufacturer, urged the creation of small industrial communities where workers and their families would be well treated. He established one such community, with a ten-hour workday, spacious housing, decent wages, and education for children, at his mill in New Lanark in Scotland.

Of more lasting significance was the socialism of Karl Marx (1818–1883). German by birth, Marx spent much of his life in England, where he witnessed the brutal conditions of Britain's Industrial Revolution and wrote voluminously about history and economics. His probing analysis led him to the conclusion that industrial capitalism was an inherently unstable system, doomed to collapse in a revolutionary upheaval that would give birth to a classless socialist society, thus ending forever the ancient conflict between rich and poor. (See Document 18.1, pp. 856–59, for Marx's own understanding of industrial-era capitalism.)

■ Change
How did Karl Marx understand the Industrial Revolution? In what ways did his ideas have an impact in the industrializing world of the nineteenth century?

In these ideas, the impact of Europe's industrial, political, and scientific revolutions found expression. Industrialization created both the social conditions against which Marx protested so bitterly and the enormous wealth he felt would make socialism possible. The French Revolution, still a living memory in Marx's youth, provided evidence that grand upheavals, giving rise to new societies, had in fact taken place and could do so again. Moreover, Marx regarded himself as a scientist, discovering the laws of social development in much the same fashion as Newton discovered the laws of

motion. His was therefore a "scientific socialism," embedded in these laws of historical change; revolution was a certainty and the socialist future inevitable.

It was a grand, compelling, prophetic, utopian vision of human freedom and community—and it inspired socialist movements of workers and intellectuals amid the grim harshness of Europe's industrialization in the second half of the nineteenth century. Socialists established political parties in most European states and linked them together in international organizations as well. These parties recruited members, contested elections as they gained the right to vote, agitated for reforms, and in some cases plotted revolution. The so-called workers' hymn, the "Internationale," expressed the visionary possibilities of socialism and the threatening challenge it posed to the triumphant capitalism of industrial Europe (see Document 18.4, pp. 863–64).

In the later decades of the nineteenth century, such ideas echoed among more radical trade unionists and some middle-class intellectuals in Britain, and even more so in a rapidly industrializing Germany and elsewhere. By then, however, the British working-class movement was not overtly revolutionary. When a working-class political party, the Labour Party, was established in the 1890s, it advocated a reformist program and a peaceful democratic transition to socialism, largely rejecting the class struggle and revolutionary emphasis of classical Marxism. (See Document 18.2, pp. 859–61, for an argument favoring a democratic rather than a revolutionary path toward socialism.)

Improving material conditions during the second half of the nineteenth century helped to move the working-class movement in Britain and elsewhere away from a revolutionary posture. Marx had expected industrial capitalist societies to polarize into a small wealthy class and a huge and increasingly impoverished proletariat. However, standing between "the captains of industry" and the workers was a sizable middle and lower-middle class, constituting perhaps 30 percent of the population, most of whom were not really wealthy but were immensely proud that they were not manual laborers. Marx had not foreseen the development of this intermediate social group, nor had he imagined that workers could better their standard of living within a capitalist framework. But they did. Wages rose under pressure from unions; cheap imported food improved working-class diets; infant mortality rates fell; and shops and chain stores catering to working-class families multiplied. As English male workers gradually obtained the right to vote, politicians had an incentive to legislate in their favor, by abolishing child labor, regulating factory conditions, and even, in 1911, inaugurating a system of relief for the unemployed. Sanitary reform considerably cleaned up the "filth and stink" of early-nineteenth-century cities, and urban parks made a modest appearance. Contrary to Marx's expectations, capitalist societies demonstrated some capacity for reform.

Further eroding working-class radicalism was a growing sense of nationalism, which bound workers in particular countries to their middle-class employers and compatriots, offsetting to some extent the economic and social antagonism between them. When World War I broke out, the workers of the world, far from uniting against

their bourgeois enemies as Marx had urged them, instead set off to slaughter one another in enormous numbers on the battlefields of Europe. National loyalty had trumped class loyalty.

Nonetheless, as the twentieth century dawned, industrial Britain could hardly be described as a stable or contented society. Immense inequalities still separated the classes. Some 40 percent of the working class continued to live in conditions then described as "poverty." A mounting wave of strikes from 1910 to 1913 testified to the intensity of class conflict. The Labour Party was becoming a major force in parliament. Some socialists and some feminists were becoming radicalized. "Wisps of violence hung in the English air," wrote Eric Hobsbawm, "symptoms of a crisis in economy and society, which the [country's] self-confident opulence... could not quite conceal."[23] The world's first industrial society remained dissatisfied and conflicted.

It was also a society in economic decline relative to industrial newcomers such as Germany and the United States. Britain paid a price for its early lead, for its businessmen became committed to machinery that became obsolete as the century progressed. Latecomers invested in more modern equipment and in various ways had surpassed the British by the early twentieth century.

Socialist Protest
Socialism, a response to the injustices and inequalities of industrial capitalism, spread throughout Europe in the nineteenth and early twentieth centuries. Here a group of French socialists in 1908 are demonstrating in memory of an earlier uprising, the Paris commune of 1871. (Demonstration at Père-Lachaise for the commemoration of the Paris Commune, by Socialist party, French Section of the International Workingmen's Association, group of La Villette, 1st May 1908 [colored photo], Gondry, [19th–early 20th century]/ Private Collection/The Bridgeman Art Library)

Variations on a Theme: Comparing Industrialization in the United States and Russia

Not for long was the Industrial Revolution confined to Britain. It soon spread to continental Western Europe, and by the end of the nineteenth century, it was well under way in the United States, Russia, and Japan. The globalization of industrialization had begun. Everywhere it took hold, industrialization bore a range of outcomes broadly similar to those in Britain. New technologies and sources of energy generated vast increases in production and spawned an unprecedented urbanization as well. Class structures changed as aristocrats, artisans, and peasants declined as classes, while the middle classes and a factory working class grew in numbers and social prominence. Middle-class women generally withdrew from paid labor altogether, and their working-class counterparts sought to do so after marriage. Working women usually received lower wages than their male counterparts, had difficulty joining unions, and were subject to charges that they were taking jobs from men. Working-class frustration and anger gave rise to trade unions and socialist movements, injecting a new element of social conflict into industrial societies.

Nevertheless, different histories, cultures, and societies ensured that the Industrial Revolution unfolded variously in the diverse countries in which it became established. Differences in the pace and timing of industrialization, the size and shape of major industries, the role of the state, the political expression of social conflict, and many other factors have made this process rich in comparative possibilities. French industrialization, for example, occurred more slowly and perhaps less disruptively than did that of Britain. Germany focused initially on heavy industry—iron, steel, and coal—rather than on the textile industry with which Britain had begun. Moreover, German industrialization was far more highly concentrated in huge companies called cartels, and it generated a rather more militant and Marxist-oriented labor movement than in Britain.

Nowhere were the variations in the industrializing process more apparent than in those two vast countries that lay on the periphery of Europe. To the west across the Atlantic Ocean was the United States, a young, vigorous, democratic, expanding country, populated largely by people of European descent, along with a substantial number of slaves of African origin. To the east was Russia, with its Eastern Orthodox Christianity, an autocratic tsar, a huge population of serfs, and an empire stretching across all of northern Asia. In the early nineteenth century, the French observer Alexis de Tocqueville famously commented on these two emerging giants:

> The Anglo-American relies upon personal interest to accomplish his ends and gives free scope to the unguided strength and common sense of the people; the Russian centers all the authority of society in a single arm.... Their starting-point is different and their courses are not the same; yet each of them seems marked out by the will of Heaven to sway the destinies of half the globe.

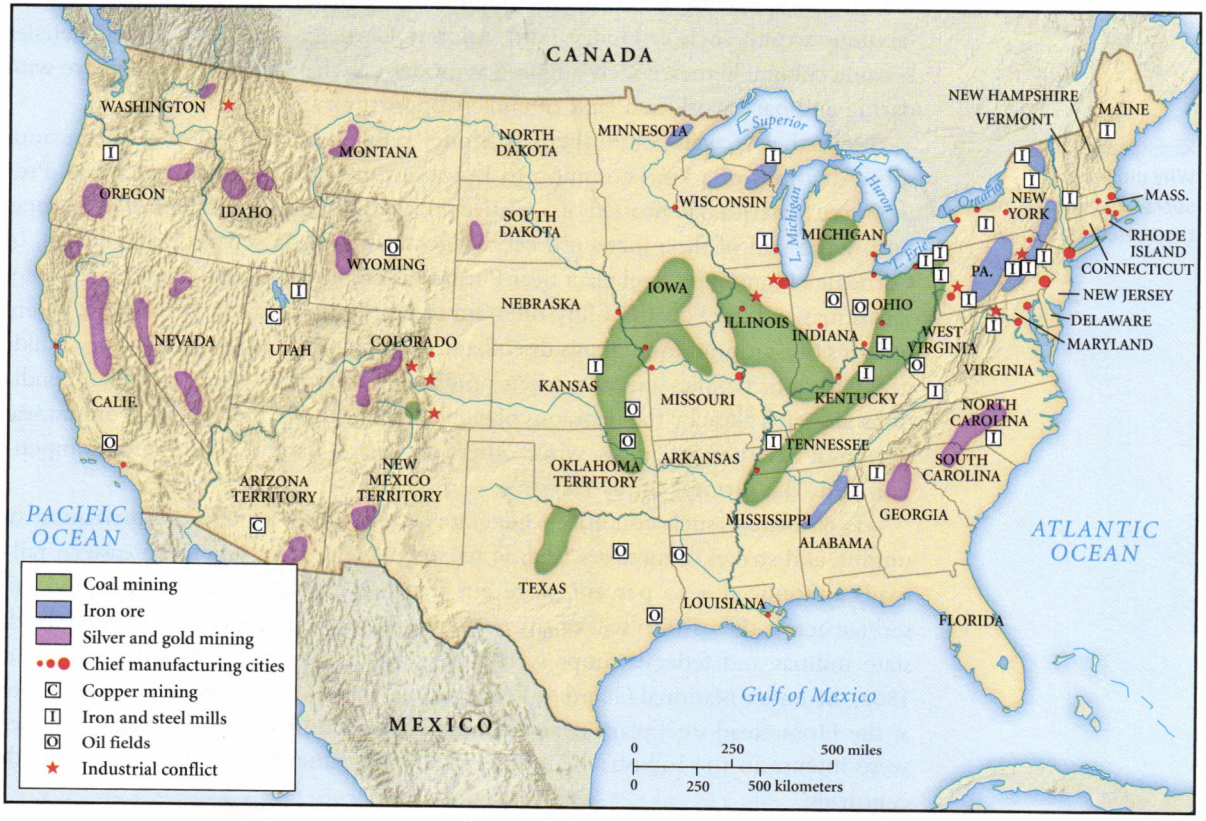
By the early twentieth century, his prediction seemed to be coming true. Industrialization had turned the United States into a major global power and in Russia had spawned an enormous revolutionary upheaval that made that country the first outpost of global communism.

The United States: Industrialization without Socialism

American industrialization began in the textile industry of New England during the 1820s but grew explosively in the half century following the Civil War (1861–1865) (see Map 18.2). The country's huge size, the ready availability of natural resources, its growing domestic market, and its relative political stability combined to make the United States the world's leading industrial power by 1914. At that time, it produced 36 percent of the world's manufactured goods, compared to 16 percent for Germany, 14 percent for Great Britain, and 6 percent for France. Furthermore, U.S. industrialization was closely linked to that of Europe. About one-third of the capital investment

■ Comparison
What were the differences between industrialization in the United States and that in Russia?

Map 18.2 The Industrial United States in 1900
By the early twentieth century, manufacturing industries were largely in the Northeast and Midwest, whereas mining operations were more widely scattered across the country.



that financed its remarkable growth came from British, French, and German capitalists. But unlike Latin America, which also received much foreign investment, the United States was able to use those funds to generate an independent Industrial Revolution of its own.

As in other second-wave industrializing countries, the U.S. government played an important role, though less directly than in Germany or Japan. Tax breaks, huge grants of public land to the railroad companies, laws enabling the easy formation of corporations, and the absence of much overt regulation of industry all fostered the rise of very large business enterprises. The U.S. Steel Corporation, for example, by 1901 had an annual budget three times the size of the federal government. In this respect, the United States followed the pattern of Germany but differed from that of France and Britain, where family businesses still predominated.

The United States also pioneered techniques of mass production, using interchangeable parts, the assembly line, and "scientific management" to produce for a mass market. The nation's advertising agencies, Sears Roebuck's and Montgomery Ward's mail-order catalogs, and urban department stores generated a middle-class "culture of consumption." When the industrialist Henry Ford in the early twentieth century began producing the Model T at a price that many ordinary people could afford, he famously declared: "I am going to democratize the automobile." More so than in Europe, with its aristocratic traditions, self-made American industrialists of fabulous wealth such as Henry Ford, Andrew Carnegie, and John D. Rockefeller became cultural heroes, widely admired as models of what anyone could achieve with daring and hard work in a land of endless opportunity.

■ Explanation
Why did Marxist socialism not take root in the United States?

Nevertheless, well before the first Model T rolled off the assembly line, serious social divisions of a kind common to European industrial societies mounted. Preindustrial America had boasted of a relative social equality, quite unlike that of Europe, but by the end of the nineteenth century, a widening gap separated the classes. In Carnegie's Homestead steel plant near Pittsburgh, employees worked every day except Christmas and the Fourth of July, often for twelve hours a day. In Manhattan, where millions of European immigrants disembarked, many lived in five- or six-story buildings with four families and two toilets on each floor. In every large city, such conditions prevailed close by the mansions of elite neighborhoods. To some, the contrast was a betrayal of American ideals, while others saw it as a natural outcome of competition and "the survival of the fittest."

As elsewhere, such conditions generated much labor protest, the formation of unions, and strikes, sometimes leading to violence. In 1877, when the eastern railroads announced a 10 percent wage cut for their workers, strikers disrupted rail service across the eastern half of the country, smashed equipment, and rioted. Both state militias and federal troops were called out to put down the movement. In 1892, the entire National Guard of Pennsylvania was sent to suppress a violent strike at the Homestead steel plant near Pittsburgh. Class consciousness and class conflict were intense in the industrial America of the late nineteenth and early twentieth centuries.

Unlike many European countries, however, no major political party emerged in the United States to represent the interests of the working class. Nor did the ideas of socialism, and especially Marxism, appeal to American workers nearly as much as they did in Europe. At its high point, the Socialist Party of America garnered just 6 percent of the vote for its presidential candidate in the 1912 election, whereas socialists at the time held more seats in Germany's parliament than any other party. Even in the depths of the Great Depression of the 1930s, no major socialist movement emerged to champion American workers. How might we explain this distinctive feature of American industrial development?

One answer lies in the relative conservatism of major American union organizations, especially the American Federation of Labor. Its focus on skilled workers excluded the more radical unskilled laborers, and its refusal to align with any party limited its influence in the political arena. Furthermore, the immense religious, ethnic, and racial divisions of American society contrasted sharply with the more homogeneous populations of many European countries. Catholics and Protestants; English, Irish, Germans, Slavs, Jews, and Italians; whites and blacks—such differences undermined the class solidarity of American workers, making it far more difficult to sustain class-oriented political parties and a socialist labor movement. Moreover, the country's remarkable economic growth generated on average a higher standard of living for American workers than their European counterparts experienced. Land was cheaper, and home ownership was more available. Workers with property generally found socialism less attractive than those without. By 1910, a particularly large group of white-collar workers in sales, services, and offices outnumbered factory laborers. Their middle-class aspirations further diluted impulses toward radicalism.

But political challenges to the abuses of capitalist industrialization did arise. Among small farmers in the U.S. South, West, and Midwest, "populists" railed against banks, industrialists, monopolies, the existing money system, and both major political parties, all of which they thought were dominated by the corporate interests of the eastern elites. More successful, especially in the early twentieth century, were the Progressives, who pushed for specific reforms, such as wages-and-hours legislation, better sanitation standards, antitrust laws, and greater governmental intervention in the economy. Socialism, however, came to be defined as fundamentally "un-American" in a country that so valued individualism and so feared "big government." It was a distinctive feature of the American response to industrialization.

Russia: Industrialization and Revolution

As a setting for the Industrial Revolution, it would be hard to imagine two more different environments than the United States and Russia. If the United States was the Western world's most exuberant democracy in the nineteenth century, Russia remained the sole outpost of absolute monarchy, in which the state exercised far greater control over individuals and society than anywhere in the Western world.

Russian Serfdom
This nineteenth-century cartoon by the French artist Gustave Doré shows Russian noblemen gambling with tied bundles of stiff serfs. Serfdom was not finally abolished in Russia until 1861. (The Granger Collection, New York)

At the beginning of the twentieth century, Russia still had no national parliament, no legal political parties, and no nationwide elections. The tsar, answerable to God alone, ruled unchecked. Furthermore, Russian society was dominated by a titled nobility of various ranks, whose upper levels included great landowners, who furnished the state with military officers and leading government officials. Until 1861, most Russians were peasant serfs, bound to the estates of their masters, subject to sale, greatly exploited, and largely at the mercy of their owners. In Russia at least, serfdom approximated slavery. A vast cultural gulf separated these two classes. Many nobles were highly Westernized, some speaking French better than Russian, whereas their serfs were steeped in a backwoods Orthodox Christianity that incorporated pre-Christian spirits, spells, curses, and magic.

A further difference between Russia and the United States lay in the source of social and economic change. In the United States, such change bubbled up from society as free farmers, workers, and businessmen sought new opportunities and operated in a political system that gave them varying degrees of expression. In autocratic Russia, change was far more often initiated by the state itself, in its continuing efforts to catch up with the more powerful and innovative states of Europe. This kind of "transformation from above" found an early expression in the reign of Peter the Great (reigned 1689–1725). His massive efforts included vast administrative changes, the enlargement and modernization of Russian military forces, a new educational system for the sons of noblemen, and dozens of manufacturing enterprises. Russian nobles were instructed to dress in European styles and to shave their sacred and much-revered beards. The newly created capital city of St. Petersburg was to be Russia's "window on the West." One of Peter's successors, Catherine the Great (reigned 1762–1796), followed up with further efforts to Europeanize Russian cultural and intellectual life, viewing herself as heir to the European Enlightenment.

Change
What factors contributed to the making of a revolutionary situation in Russia by the beginning of the twentieth century?

Such state-directed change continued in the nineteenth century with the freeing of the serfs in 1861, an action stimulated by military defeat at the hands of British and French forces in the Crimean War (1854–1856). To many thoughtful Russians, serfdom seemed incompatible with modern civilization and held back the country's overall development, as did its economic and industrial backwardness. Thus, beginning in the 1860s, Russia began a program of industrial development, which was more heavily directed by the state than was the case in Western Europe or the United States.

By the 1890s, Russia's Industrial Revolution was launched and growing rapidly. It focused particularly on railroads and heavy industry and was fueled by a substantial amount of foreign investment. By 1900, Russia ranked fourth in the world in

steel production and had major industries in coal, textiles, and oil. Its industrial enterprises, still modest in comparison to those of Europe, were concentrated in a few major cities—Moscow, St. Petersburg, and Kiev, for example—and took place in factories far larger than in most of Western Europe.

All of this contributed to the explosive social outcomes of Russian industrialization. A growing middle class of businessmen and professionals increasingly took shape. As modern and educated people, many in the middle class objected strongly to the deep conservatism of tsarist Russia and sought a greater role in political life, but they were also dependent on the state for contracts and jobs and for suppressing the growing radicalism of the workers, which they greatly feared. Although factory workers constituted only about 5 percent of Russia's total population, they quickly developed an unusually radical class consciousness, based on harsh conditions and the absence of any legal outlet for their grievances. Until 1897, a thirteen-hour working day was common. Ruthless discipline and overt disrespect from supervisors created resentment, while life in large and unsanitary barracks added to workers' sense of injustice. In the absence of legal unions or political parties, these grievances often erupted in the form of large-scale strikes.

In these conditions, a small but growing number of educated Russians found in Marxist socialism a way of understanding the changes they witnessed daily and hope for the future in a revolutionary upheaval of workers. In 1898, they created an illegal Russian Social-Democratic Labor Party and quickly became involved in workers' education, union organizing, and, eventually, revolutionary action. By the early twentieth century, the strains of rapid change and the state's continued intransigence had reached the bursting point, and in 1905, following its defeat in a naval war with Japan, Russia erupted in spontaneous insurrection. Workers in Moscow and St. Petersburg went on strike and created their own representative councils, called soviets. Peasant uprisings, student demonstrations, revolts of non-Russian nationalities, and mutinies in the military all contributed to the upheaval. Recently formed political parties, representing intellectuals of various persuasions, came out into the open.

The 1905 Revolution in Russia

The 1905 revolution, though brutally suppressed, forced the tsar's regime to make more substantial reforms than it had ever contemplated. It granted a constitution, legalized both trade unions and political parties, and permitted the election of a national assembly, called the Duma. Censorship was eased, and plans were under way for universal primary education. Industrial development likewise continued at a rapid rate, so that by 1914 Russia stood fifth in the world in terms of overall output. But in the first half of that year, some 1,250,000 workers, representing about 40 percent of the entire industrial workforce, went out on strike.

Thus the tsar's limited political reforms, which had been granted with great reluctance and were often reversed in practice, failed to tame working-class radicalism or to bring social stability to Russia. In 1906–1907, when a newly elected and radically inclined Duma refused to cooperate with the

tsar's new political system, Tsar Nicholas II twice dissolved that elected body and finally changed the electoral laws to favor the landed nobility. Consequently, in Russian political life, the people generally, and even the middle class, had only a limited voice. The representatives of even the privileged classes had become so alienated by the government's intransigence that many felt revolution was inevitable. Various revolutionary groups, many of them socialist, published pamphlets and newspapers, organized trade unions, and spread their messages among workers and peasants. Particularly in the cities, these revolutionary parties had an impact. They provided a language through which workers could express their grievances; they created links among workers from different factories; and they furnished leaders who were able to act when the revolutionary moment arrived.

World War I provided that moment. The enormous hardships of that war, coupled with the immense social tensions of industrialization within a still autocratic political system, sparked the Russian Revolution of 1917 (see Chapter 22). That massive upheaval quickly brought to power the most radical of the socialist groups operating in the country—the Bolsheviks, led by the charismatic Vladimir Ilyich Ulyanov, better known as Lenin. (See Document 18.5, pp. 864–65, for Lenin's view of revolution.) Only in Russia was industrialization associated with violent social revolution, and this was the most distinctive feature of Russia's modern historical development. And only in Russia was a socialist political party, inspired by the teachings of Karl Marx, able to seize power, thus launching the modern world's first socialist society, with enormous implications for the twentieth century.

The Industrial Revolution and Latin America in the Nineteenth Century

Beyond the world of Europe and North America, only Japan underwent a major industrial transformation during the nineteenth century, part of that country's overall response to the threat of European aggression. (See pp. 901–02 for a more detailed examination of Japan's industrialization.) Elsewhere—in colonial India, Egypt, the Ottoman Empire, China, and Latin America—very modest experiments in modern industry were undertaken, but nowhere did they drive the kind of major social transformation that had taken place in Britain, Europe, North America, and Japan. However, even in societies that did not experience their own Industrial Revolution, the profound impact of European and North American industrialization was hard to avoid. Such was the case in Latin America during the nineteenth century.

After Independence in Latin America

The struggle for independence in Latin America had lasted far longer and proved far more destructive than in North America. Decimated populations, diminished herds of livestock, flooded or closed silver mines, abandoned farms, shrinking international trade and investment capital, and empty national treasuries—these were

Snapshot The Industrial Revolution and the Global Divide[24]

During the nineteenth century, the Industrial Revolution generated an enormous and unprecedented economic division in the world, as measured by the share of manufacturing output. What patterns can you see in this table?

SHARE OF TOTAL WORLD MANUFACTURING OUTPUT (PERCENT)

	1750	1800	1860	1880	1900
Europe as a Whole	**23.2**	**28.1**	**53.2**	**61.3**	**62.0**
UNITED KINGDOM	1.9	4.3	19.9	22.9	18.5
FRANCE	4.0	4.2	7.9	7.8	6.8
GERMANY	2.9	3.5	4.9	8.5	13.2
RUSSIA	5.0	5.6	7.0	7.6	8.8
United States	**0.1**	**0.8**	**7.2**	**14.7**	**23.6**
Japan	**3.8**	**3.5**	**2.6**	**2.4**	**2.4**
The Rest of the World	**73.0**	**67.7**	**36.6**	**20.9**	**11.0**
CHINA	32.8	33.3	19.7	12.5	6.2
SOUTH ASIA (INDIA/PAKISTAN)	24.5	19.7	8.6	2.8	1.7

among the conditions under which Latin American countries greeted independence. Furthermore, the four major administrative units (vice-royalties) of Spanish America ultimately dissolved into eighteen separate countries, and regional revolts wracked Brazil in the early decades of its independent life. A number of international wars in the postindependence century likewise shook these new nations. Peru and Bolivia briefly united and then broke apart in a bitter conflict (1836–1839); Mexico lost huge territories to the United States (1846–1848); and an alliance of Argentina, Brazil, and Uruguay went to war with Paraguay (1864–1870) in a conflict that devastated Paraguay's small population.

Within these new countries, political life was turbulent and unstable. Conservatives favored centralized authority and sought to maintain the social status quo of the colonial era in alliance with the Catholic Church, which at independence owned perhaps half of all productive land. Their often bitter opponents were liberals, who attacked the Church in the name of Enlightenment values, sought at least modest social reforms, and preferred federalism. In many countries, conflicts between these factions, often violent, enabled military strongmen known as *caudillos* to achieve power as defenders of order and property, although they too succeeded one another with great frequency. One of them, Antonio López de Santa Anna of Mexico, was president of his country at least nine separate times between 1833 and 1855. Constitutions too replaced one

another with bewildering speed. Bolivia had ten constitutions during the nineteenth century, while Ecuador and Peru each had eight.

Social life did not change fundamentally in the aftermath of independence. Slavery, it is true, was abolished in most of Latin America by midcentury, although it persisted in both Brazil and Cuba until the late 1880s. Most of the legal distinctions among various racial categories also disappeared, and all free people were considered, at least officially, equal citizens. Nevertheless, productive economic resources such as businesses, ranches, and plantations remained overwhelmingly in the hands of creole whites, who were culturally oriented toward Europe. The military provided an avenue of mobility for a few skilled and ambitious mestizo men, some of whom subsequently became caudillos. Other mixed-race people found a place in a small middle class as teachers, shopkeepers, or artisans. The vast majority—blacks, Indians, and many mixed-race people—remained impoverished, working small subsistence farms or laboring in the mines or on the *haciendas* (plantations) of the well-to-do. Only rarely did the poor and dispossessed actively rebel against their social betters. One such case was the Caste War of Yucatán (1847–1901), a prolonged struggle of the Maya people of Mexico, aimed at cleansing their land of European and mestizo intruders.

Facing the World Economy

■ Connection
In what ways and with what impact was Latin America linked to the global economy of the nineteenth century?

During the second half of the nineteenth century, a measure of political consolidation took hold in Latin America, and countries such as Mexico, Peru, and Argentina entered periods of greater stability. At the same time, Latin America as a whole became more closely integrated into a world economy driven by the industrialization of Western Europe and North America. The new technology of the steamship cut the sailing time between Britain and Argentina almost in half, while the underwater telegraph instantly brought the latest news and fashions of Europe to Latin America.

The most significant economic outcome of this growing integration was a rapid growth of Latin American exports to the industrializing countries, which now needed the food products, raw materials, and markets of these new nations. Latin American landowners, businessmen, and governments proved eager to supply those needs, and in the sixty years or so after 1850, an export boom increased the value of Latin American goods sold abroad by a factor of ten.

Mexico continued to produce large amounts of silver, supplying more than half the world's new supply until 1860. Now added to the list of raw materials flowing out of Latin America were copper from Chile, a metal that the growing electrical industry required; tin from Bolivia, which met the mounting demand for tin cans; and nitrates from Chile and guano (bird droppings) from Peru, both of which were used for fertilizer. Wild rubber from the Amazon rain forest was in great demand for bicycle and automobile tires, as was sisal from Mexico, used to make binder twine for the proliferating mechanical harvesters of North America. Bananas from Central America, beef from Argentina, cacao from Ecuador, coffee from Brazil and Guatemala, and sugar from Cuba also found eager markets in the rapidly growing

and increasingly prosperous world of industrializing countries. In return for these primary products, Latin Americans imported the textiles, machinery, tools, weapons, and luxury goods of Europe and the United States (see Map 18.3).

Accompanying this burgeoning commerce was large-scale investment of European capital in Latin America, $10 billion alone between 1870 and 1919. Most of this capital came from Great Britain, which invested more in Argentina in the late nineteenth century than in its colony of India, although France, Germany, Italy, and the United States also contributed to this substantial financial transfer. By 1910, U.S. business interests controlled 40 percent of Mexican property and produced half of its oil. Much of this capital was used to build railroads, largely to funnel Latin American exports to the coast, where they were shipped to overseas markets. Mexico had only 390 miles of railroad in 1876; it had 15,000 miles in 1910. By 1915, Argentina, with 22,000 miles of railroad, had more track per person than the United States.

Becoming like Europe?

■ **Comparison**
Did Latin America follow or diverge from the historical path of Europe during the nineteenth century?

To the economic elites of Latin America, intent on making their countries resemble Europe or the United States, all of this was progress. In some respects, they were surely right. Economies were growing and producing more than ever before. The population also was burgeoning; it increased from about 30 million in 1850 to more than 77 million in 1912 as public health measures (such as safe drinking water, inoculations, sewers, and campaigns to eliminate mosquitoes that carried yellow fever) brought down death rates.

Urbanization also proceeded rapidly. By the early twentieth century, wrote one scholar, "Latin American cities lost their colonial cobblestones, white-plastered walls, and red-tiled roofs. They became modern metropolises, comparable to urban giants anywhere. Streetcars swayed, telephones jangled, and silent movies flickered from Montevideo and Santiago to Mexico City and Havana."[25] Buenos Aires, Argentina's metropolitan center, boasted 750,000 people in 1900 and billed itself the "Paris of South America." There the educated elite, just like the English, drank tea in the afternoon, while discussing European literature, philosophy, and fashion, usually in French.

To become more like Europe, Latin America sought to attract more Europeans. Because civilization, progress, and modernity apparently derived from Europe, many Latin American countries actively sought to increase their European populations by deliberately recruiting impoverished people with the promise, mostly unfulfilled, of a new and prosperous life in the New World. Argentina received the largest wave of European immigrants (some 2.5 million between 1870 and 1915), mostly from Spain and Italy. Brazil and Uruguay likewise attracted substantial numbers of European newcomers.

Only a quite modest segment of Latin American society saw any great benefits from the export boom and all that followed from it. Upper-class landowners certainly gained as exports flourished and their property values soared. Middle-class urban dwellers—merchants, office workers, lawyers, and other professionals—also

Map 18.3 Latin America and the World, 1825–1935

During the nineteenth and early twentieth centuries, Latin American countries interacted with the industrializing world via investment, trade, immigration, and military intervention from the United States.

grew in numbers and prosperity as their skills proved valuable in a modernizing society. As a percentage of the total population, however, these were narrow elites. In Mexico in the mid-1890s, for example, the landowning upper class made up no more than 1 percent and the middle classes perhaps 8 percent of the population. Everyone else was lower-class, and most of them were impoverished.[26]

A new but quite small segment of this vast lower class emerged among urban workers who labored in the railroads, ports, mines, and a few factories. They organized themselves initially in a variety of mutual aid societies, but by the end of the nineteenth century, they were creating unions and engaging in strikes. To authoritarian governments interested in stability and progress, such activity was highly provocative and threatening, and they acted harshly to crush or repress unions and strikes. In 1906, the Mexican dictator Porfirio Díaz invited the Arizona Rangers to suppress a strike at Cananea near the U.S. border, an action that resulted in dozens of deaths. The following year in the Chilean city of Iquique, more than 1,000 men, women, and children were slaughtered by police when nitrate miners protested their wages and working conditions.

The vast majority of the lower class lived in rural areas, where they suffered the most and benefited the least from the export boom. Government attacks on communal landholding and peasant indebtedness to wealthy landowners combined to push many farmers off their land or into remote and poor areas where they could barely make a living. Many wound up as dependent laborers or peons on the haciendas of the wealthy, where their wages were often too meager to support a family. Thus women and children, who had earlier remained at home to tend the family plot, were required to join their menfolk as field laborers. Many immigrant Italian farmworkers in Argentina and Brazil were unable to acquire their own farms, as they had expected, and so drifted into the growing cities or returned to Italy.

Although local protests and violence were frequent, only in Mexico did these vast inequalities erupt into a nationwide revolution. There, in the early twentieth century, middle-class reformers joined with workers and peasants to overthrow the long dictatorship of Porfirio Díaz (1876–1911). What followed was a decade of bloody conflict (1910–1920) that cost Mexico some 1 million lives, or roughly 10 percent of the population. Huge peasant armies under charismatic leaders such as Pancho Villa and Emiliano Zapata helped oust Díaz. Intent on seizing land and redistributing it to the peasants, they then went on to attack many of Mexico's large haciendas. But unlike the later Russian and Chinese revolutions, in which the most radical elements seized state power, Villa and Zapata proved unable to do so, in part because they were hobbled by factionalism and focused on local or regional issues. Despite this limitation and its own internal conflicts, the Mexican Revolution transformed the country. When the dust settled, Mexico had a new constitution (1917) that proclaimed universal suffrage; provided for the redistribution of land; stripped the Catholic Church of any role in public education and forbade it to own land; announced unheard-of rights for workers, such as a minimum wage and an eight-hour workday;

The Mexican Revolution
Women were active participants in the Mexican Revolution. They prepared food, nursed the wounded, washed clothes, and at times served as soldiers on the battlefield, as illustrated in this cover image from a French magazine in 1913.

and placed restrictions on foreign ownership of property. Much of Mexico's history in the twentieth century involved working out the implications of these nationalist and reformist changes. The revolution's direct influence, however, was largely limited to Mexico itself, without the wider international impact of the Russian and Chinese upheavals.

Perhaps the most significant outcome of the export boom lay in what did *not* happen, for nowhere in Latin America did it jump-start a thorough Industrial Revolution, despite a few factories that processed foods or manufactured textiles, clothing, and building materials. The reasons are many. A social structure that relegated some 90 percent of its population to an impoverished lower class generated only a very small market for manufactured goods. Moreover, economically powerful groups such as landowners and cattlemen benefited greatly from exporting agricultural products and had little incentive to invest in manufacturing. Domestic manufacturing enterprises could only have competed with cheaper and higher-quality foreign goods if they had been protected for a time by high tariffs. But Latin American political leaders had thoroughly embraced the popular European doctrine of prosperity through free trade, and many governments depended on taxing imports to fill their treasuries.

Instead of its own Industrial Revolution, Latin Americans developed a form of economic growth that was largely financed by capital from abroad and dependent on European and North American prosperity and decisions. Brazil experienced this kind of dependence when its booming rubber industry suddenly collapsed in 1910–1911, after seeds from the wild rubber tree had been illegally exported to Britain and were used to start competing and cheaper rubber plantations in Malaysia.

Later critics saw this "dependent development" as a new form of colonialism, expressed in the power exercised by foreign investors. The influence of the U.S.-owned United Fruit Company in Central America was a case in point. Allied with large landowners and compliant politicians, the company pressured the governments of these "banana republics" to maintain conditions favorable to U.S. business. This indirect or behind-the-scenes imperialism was supplemented by repeated U.S. military intervention in support of American corporate interests in Cuba, Haiti, the Dominican Republic, Nicaragua, and Mexico. The United States also controlled

the Panama Canal and acquired Puerto Rico as a territory in the aftermath of the Spanish-American War (see Map 18.3, p. 850).

Thus, despite its domination by people of European descent and its close ties to the industrializing countries of the Atlantic world, Latin America's historical trajectory in the nineteenth century diverged considerably from that of Europe and North America.

Reflections: History and Horse Races

Historians and students of history seem endlessly fascinated by "firsts"—the first breakthrough to agriculture, the first civilization, the first domestication of horses, the first use of gunpowder, the first printing press, and so on. Each of these firsts presents a problem of explanation: why did it occur in some particular time and place rather than somewhere else or at some other time? Such questions have assumed historical significance both because "first achievements" represent something new in the human journey and because many of them conveyed unusual power, wealth, status, or influence on their creators.

Nonetheless, the focus on firsts can be misleading as well. Those who accomplished something first may see themselves as generally superior to those who embraced that innovation later. Historians too can sometimes adopt a winners-and-losers mentality, inviting a view of history as a horse race toward some finish line of accomplishment. Most first achievements in history, however, were not the result of intentional efforts but rather were the unexpected outcome of converging circumstances.

The Industrial Revolution is a case in point. Understanding the European beginnings of this immense breakthrough is certainly justified by its pervasive global consequences and its global spread over the past several centuries. In terms of our ability to dominate the natural environment and to extract wealth from it, the Industrial Revolution marks a decisive turning point in human history. But Europeans' attempts to explain their Industrial Revolution have at times stated or implied their own unique genius. In the nineteenth century, many Europeans saw their technological mastery as a sure sign of their cultural and racial superiority as they came to use "machines as the measure of men."[27] In attempting to answer the "why Europe?" question, historians too have sometimes sought the answer in some distinct or even superior feature of European civilization.

In emphasizing the unexpectedness of the first Industrial Revolution, and the global context within which it occurred, world historians have attempted to avoid a "history as horse race" syndrome. Clearly the first industrial breakthrough in Britain was not a self-conscious effort to win a race; it was the surprising outcome of countless decisions by many people to further their own interests. Subsequently, however, other societies and their governments quite deliberately tried to catch up, seeking the wealth and power that the Industrial Revolution promised.

The rapid spread of industrialization across the planet, though highly uneven, promises to diminish the importance of the "why Europe?" issue. Just as no one views agriculture as a Middle Eastern phenomenon, even though it occurred first in that

region, it seems likely that industrialization will be seen increasingly as a global process rather than one uniquely associated with Europe. If industrial society proves to be a sustainable future for humankind—and this is presently an open question—historians of the future may well be more interested in the pattern of its global spread and in efforts to cope with its social and environmental consequences than with its origins in Western Europe.

Second Thoughts

What's the Significance?

To assess your mastery of the material in this chapter, visit the **Student Center** at bedfordstmartins.com/strayer.

steam engine
Indian cotton textiles
British Royal Society
middle-class values
lower middle class
Karl Marx
Labour Party
proletariat
socialism in the United States
Progressives
Russian Revolution of 1905
caudillos
Latin American export boom
Mexican Revolution
dependent development

Big Picture Questions

1. What was revolutionary about the Industrial Revolution?
2. What was common to the process of industrialization everywhere, and in what ways did that process vary from place to place?
3. What did humankind gain from the Industrial Revolution, and what did it lose?
4. In what ways might the Industrial Revolution be understood as a global rather than simply a European phenomenon?

Next Steps: For Further Study

For Web sites and additional documents related to this chapter, see **Make History** at bedfordstmartins.com/strayer.

John Charles Chasteen, *Born in Blood and Fire* (2006). A lively and well-written account of Latin America's turbulent history since the sixteenth century.

Jack Gladstone, *Why Europe? The Rise of the West in World History, 1500–1850* (2009). An original synthesis of recent research provided by a leading world historian.

David S. Landes, *The Wealth and Poverty of Nations* (1998). An argument that culture largely shapes the possibilities for industrialization and economic growth.

Robert B. Marks, *The Origins of the Modern World* (2007). An effective summary of new thinking about the origins of European industrialization.

Peter Stearns, *The Industrial Revolution in World History* (1998). A global and comparative perspective on the Industrial Revolution.

Peter Waldron, *The End of Imperial Russia, 1855–1917* (1997). A brief account of Russian history during its early industrialization.

Bridging World History, Units 18 and 19, http://www.learner.org/channel/courses/worldhistory. An innovative world history Web site that provides pictures, video, and text dealing with "Rethinking the Rise of the West" and "Global Industrialization."