

The Industrial Revolution / Manchester

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Along with the political changes initiated by the French Revolution, the Industrial Revolution shaped European history during the 19th and early 20th centuries. And Manchester provided a pattern for the development of the Industrial City.



In 1835, the French historian and social observer Alexis de Tocqueville journeyed to England and recorded in his diary his impression of a visit to the industrial city of Manchester.

“From this foul drain, the greatest stream of human industry flows out to fertilize the world. From this filthy sewer pure gold flows. Here humanity attains its most complete development and its most brutish; here civilization works its miracles, and here civilized man is turned back almost into a savage.” (107-108)

What Tocqueville identified are the two ever-present sides of the Industrial Revolution; one the one hand, it permitted the production of greater wealth than previously possible in history and it allowed that wealth to be spread to a larger number of people; on the other hand, it brought about a radical transformation in the domestic and work lives of men and women of the working classes, the thoughtless abuse of millions of men, women, and children, and the heedless destruction of the environment. **Along with the political changes initiated by the French Revolution, the Industrial Revolution shaped European history during the 19th and early 20th centuries.**

Explaining why this revolution in the way goods are produced and distributed is no easy task. But before doing so, it may be useful to summarize the fundamental characteristics of the Industrial Revolution. It, first and most important, brought about the substitution of machines for human skill and effort; secondly, it substituted inanimate for animate sources of power (especially engines that converted heat into work), allowing the production of an almost unlimited supply of power; it set off a search for new and more abundant raw materials; it introduced the factory system as a

method of organizing the productive process; it set in motion a self-sustaining process of innovation that is still with us; and it introduced a new value system, that of the "economic man" who is motivated primarily by the lure of profit. The Industrial Revolution allowed man for the first time in human history to control and truly manipulate the environment. It also, despite the hardships it brought to millions, offered material abundance to the many, rather than the fortunate few. And it brought about profound changes in man's ideas and assumptions, leading to the emergence of new ways of looking at oneself, society, and the natural world.

The Historical Context of the Industrial Revolution

Before 1760, England was a predominantly agricultural country with a relatively small population of less than 9 million. The standard of living for the majority of the population was low. There was virtually no industry, at least in the modern sense of the term. The social structure was traditional and hierarchical, and the possibility of upward social mobility was slight. And an aristocratic oligarchy ruled the country and controlled the political system established after the Glorious Revolution of 1688. By 1850, the entire economic, political, and social landscape of Great Britain had changed, largely because of the Industrial Revolution. An explanation of how this revolution came about must begin with the identification of the factors that made it possible but not inevitable.

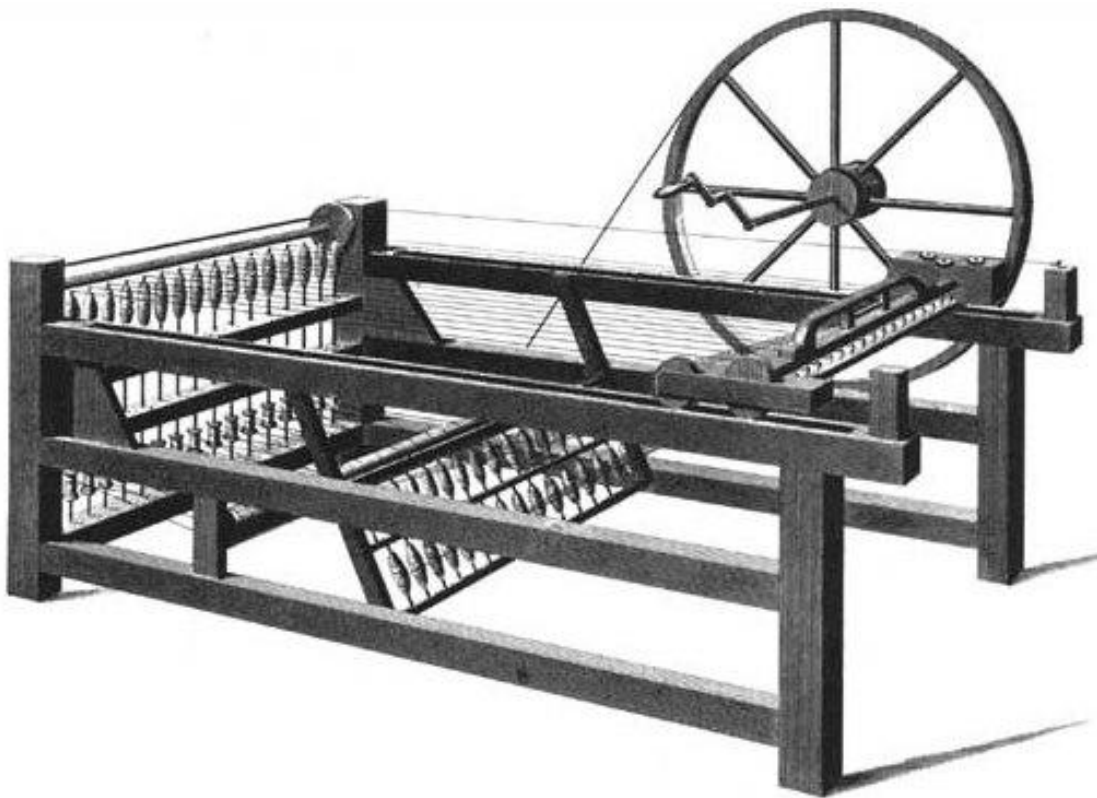
Demography comes first. Beginning about 1740, the population of Great Britain, as well as other European nations, started to grow, largely, historians think, because of a declining death rate that resulted from improved living standards and from a decline in infant mortality, and it continued to do so, with the population reaching 18 million by 1851. Such population growth brought about both an increased demand for food, goods, and services, as well as an enlarged labor supply.

Second comes the **Agricultural Revolution** of the 18th century. During the 18th century, large and powerful landlords sought to increase their income by supplying the marketplace with more food produced at lower cost. This entailed raising the productivity of their land by introducing new farming techniques, new crops, and new patterns of landholding. They also expanded sheep raising. To make these innovations possible, they gradually eliminated the open-field method of farming by enclosing the land, reducing at the same time the number of peasants allowed to live on their estates. Results of the enclosure movement were dramatic. Food production rose, which made possible the feeding of a growing urban population. Increased profits gave landowners capital to invest. And the unemployed farm laborers were available for employment as factory workers.

Other important factors which made possible the Industrial Revolution include a stable political system; a favorable climate of opinion toward work, especially among the affluent classes; the existence of a system of banking and credit; the presence of a transportation system, largely canals; and the availability of raw materials, especially coal and iron ore. But the mere presence of all these factors is not enough to bring about a revolution in production. Needed was a psychological stimulus, something that would set the revolution in motion. It can be argued that the "lure of profit" provided just such a stimulus. Just how this worked may be explained by examining innovations in the cotton industry during the first half of the 18th century.

Innovations in the Cotton Industry: the Self-Sustaining Process of Innovation

Early in the 18th century, demand for cotton cloth grew dramatically, because of both an internal and an overseas market. But existing methods of production, the so-called domestic or putting out system, were inadequate to meet this demand. Entrepreneurs took unfinished wool or cotton fiber to rural peasant homes, where it was spun into thread. The entrepreneur then took the thread to a weaver, and so on through a complex series of stages until a finished piece of cloth was ready for the market. The putting-out system was a social as well as an economic system, for the work was done in the home and all members of a family took part. But the cumbersome nature of this system of production limited the amount of cloth that could be produced.



The spinning Jenny

Men seeking to profit from the demand for cotton cloth soon realized that they had to increase production and reduce labor costs. The solution, obvious to us but much less so in the 18th century, was to mechanize production. And beginning in the 1730s, cotton manufacturers began the introduction of technological innovations, each one creating a new problem that was in turn solved by a new invention; what these entrepreneurs did without intending to do so was set off a self-sustaining process of innovation. In 1733, John Kay introduced the Flying Shuttle, which doubled the productivity of a weaver. This innovation increased the demand for thread, so James Hargreaves introduced the Spinning Jenny during the 1760s; one Jenny could spin 16 threads simultaneously in 1765 and 120 in 1800. In 1769, Richard Arkwright introduced the Water Frame, and a few years later he created the factory system; in 1781, Arkwright's factory employed 600 workers. Innovations continued, with Samuel

Crompton inventing the "mule", which combined the Water Frame with the Spinning Jenny, in 1779 and Edmond Cartwright introducing the Power Loom in the 1780s. By 1820, 14,000 power looms existed in England; by 1833 (about the time of Tocqueville's visit), there were 100,000. All of this innovation greatly increased the demand for cotton, and to help cotton producers in the American South meet that demand, Eli Whitney invented the cotton gin in 1793. Prior to its introduction, one man was able to clean between 1 and six pounds of cotton a day; using Whitney's gin, three men could clean about 50 pounds a day.

A few statistics will summarize the magnitude of this revolution. In 1795, England produced 40 million yards of cloth; 55 years later, 2,025 million yards were produced. In 1785, Great Britain imported 11 million pounds of raw cotton; by 1850, imports of raw cotton were 588 million pounds. And, between 1816 and 1848, cotton cloth made up between 40 and 50% of Great Britain's exports.



Cotton pickers. United States, XIX century

The more mechanized the production of cotton became, the more necessary became sources of power. At first water was used, and factories had to be located near sources of water, often in remote areas. Soon, however, water power was replaced by steam power, which gave manufacturers greater freedom in the location of their factories; most were located near sources of coal, and great cities like Manchester came into being. In 1773, Manchester had a population of about 25,000 and no mills; in 1802, it had 95,000 people and 52 mills. If coal powered the Industrial Revolution, the factory system organized it, and it transformed not only the way goods were produced but the way men and women worked and lived their lives. In the factory system, production was organized on a large scale and 100s of workers were brought to the work; the work was separated from the means of production and from the product produced, with the result being that the worker learned to value the wages earned not work performed or the product produced; a separation developed between the ownership of a factory and its

management; work was separated from the home and family; the worker had to learn industrial discipline; and industrial production took place in urban areas. While protest against the introduction of the factory system was not particularly widespread, it did take place, and Luddites and other such groups attempted to smash the new machinery.

The Factory Worker

With regard to labor, industrialists faced three major problems. Up to about the 1780s, there was a labor shortage in Great Britain, and it further stimulated the introduction of labor-saving devices. Second, workers were largely immobile, whether due to custom or law; hence some industrialists used child labor, occasionally getting their workers from orphanages until the practice was banned in 1816. Finally, the worker had to abandon traditional work habits and adapt to factory life and to adopt the values of economic man, a process which required almost three-quarters of a century. Learning to work by the clock and according to a pre-set regime, to work at the pace of a machine, to work out of the home, and to work for a supervisor all transformed the lifestyle of the working classes; and the idea of earning more than was necessary to support oneself and provide for one's family introduced a revolution in values.

Social Consequences of the Industrial Revolution



The immediate social consequences of the Industrial Revolution were increased hardship for the working classes, most of whom lived and worked under appalling conditions. Not only did England's population increase between 1750 (=140 million) and 1850 (=266 million), the location of that population changed significantly. In 1785, four cities in England and Scotland had populations of more than 50,000; and, the population of London in 1800 was about one million. By 1850, London's population had reached almost 2.4 million, and there were 9 cities with a population in excess of 100,000 and 18 with populations between 50,000 and 100,000. If inhabitants of towns under 50,000 are counted as urban dwellers, then 50% of the British population lived in towns and cities by mid-century. And as these new cities grew, inhabitants had to face tremendous political and social problems, the latter because living conditions in the

industrial cities were poor. Problems with water, sewage, and garbage disposal were widespread, while housing was poorly constructed, dark, and unhealthy; it was common for an entire family to live in one room. According to a contemporary parliamentary report: *“In the centre of this street there is a gutter into which potato parings, the refuse of vegetable and animal matter of all kinds, the dirty water from the washing of clothes and of the houses are all poured, and where they stagnate and putrify . . . all the lanes and alleys of the neighborhood pour their contents into the centre of the main street . . . Families live in the cellars and kitchens of these undrained houses.”* [Perry, *West Civ*, 4th ed, II, 490]

The middle and upper classes, needless to say, moved out of the city centers.

Working conditions were likewise poor in what one contemporary called the "dark, satanic mills" of industrial Britain; because wages were so low that a man could not support a family, women and children also worked in the factories. Workers worked 6 days a week, and the working day was often 14 hours in length, and there were virtually no holidays and no benefits of any sort.

Not only is there not a breath of sweet air in these truly infernal scenes, but . . . there is the abominable and pernicious stink of the gas to assist in the murderous effects of the heat. In addition to the noxious effluvia of the gas, mixed with the steam, there are the dust, and what is called cotton-flyings or fuz, which the unfortunate creatures have to inhale; and . . . the notorious fact is that well constituted men are rendered old and past labour at forty years of age, and that children are rendered decrepit and deformed, and thousands upon thousands of them slaughtered by consumptions, before they arrive at the age of sixteen. [Quoted from Pike, *Human Documents of the Industrial Revolution in Britain*, 60-61, by Duiker and Spielvogel, *World History*, 780.]

And, trade unions were illegal until 1825 and even after that year strikes were banned, so there was no way for the workers to organize and lobby on their own behalf. Despite the hardships of working class life, a unique working class culture developed. Social life centered on the pub, and Sunday was a day for drinking and frolicking; the hangovers resulting from these celebrations led to chronic absenteeism on Mondays, often called "holy Monday". Over time, workers developed an interest in sports and founded social organizations for their games.

The factory owners and managers who subjected their workers to the conditions just described were hard-working men who believed in laissez-faire economics and who wanted to be left alone to pursue their economic self-interest. According to Jedediah Strutt, a cotton manufacturer: "Getting of money . . . is the main business of the life of men." A Manchester manufacturer described Robert Southey of the benefits of child labor.

“You see these children, sir. They get their bread almost as soon as they can walk about, and by the time they are seven or eight years old bring in money. There is no idleness amongst us; they come at five in the morning, we allow them half an hour for breakfast, and an hour for dinner; they leave work at six, and another set relieves them for the night; the wheels never stand still. [Cited by Mark Girouard, *Cities and People*, p. 267; his note says the reference is mislaid]

Their prophets were men like Samuel Smiles, who published a best seller called Self-Help. Smiles believed that any one who worked hard, practiced thrift, and adopted the values of diligent self-culture, self-discipline, and self-control would succeed and become wealthy. Likewise, they also tended to believe that poverty and misfortune were the fault of the individual and that governments should not provide welfare and other assistance.

But the social consequences of the Industrial Revolution were so great that reformers stepped in, and the British Parliament began during the first half of the nineteenth century to abandon laissez-faire and to pass legislation that regulated working conditions. In the 1820s, scholars estimate that almost 30% of cotton mill workers were children under eighteen. **The Factory Act of 1833**, for example, banned work for children under the age of 9, limited children aged 9-12 to a 9 hour day, and children 13-18 to a 12 hour day. Women replaced the children; before 1870, women made up 50% of the labor force in cotton and woolen mills. And the **Mines Act (1842)** banned women and boys under 10 from working in the coal pits, while the **Ten Hours Act (1847)** limited the number of hours women and children could work. One consequence was to alter gender roles, with men leaving the home to work and women remaining home to raise children, perform domestic duties, and earn money by taking in washing or other work that could be done in the home. Parliament also sought to deal with the problem of the poor, and the **New Poor Law (1834)** treated the "deserving" and the "undeserving" poor differently; the able-bodied who received assistance were required to live in hated **workhouses**. These acts and the many which would follow throughout the 19th century, did much to reduce but not eliminate the worst excesses of the Industrial Revolution. Not until the late 19th century, as we will soon see, did the economic benefits of the Industrial Revolution begin to reach large numbers of the working classes.



England, Workhouse, Scene from the movie Oliver Twist, 2005, R. Polanski

By 1870, Manchester had evolved into a tamer place; many earlier problems had resulted from dramatic population growth and rapid urban expansion at a time when the

town had a government suitable for a village; by 1832, Manchester had two members of Parliament; in 1838, it acquired its own borough council; only in 1853, did it become an independent city, with aldermen and a lord mayor. The Manchester Statistical Society was founded in 1833, and it collected data that formed the basis for later reforms. There was also a Manchester Improvement Committee, which stated in 1844 that "the health and comfort of the working classes" [in the worst areas of Manchester as] a subject of vital importance . . . engrossing much of the attention, not only of scientific men, but also of the legislature of the country, and indeed of all classes of society." (Briggs, *Victorian Cities*, 111); The Borough Police Act of 1844; the Sanitary Improvement Act of 1845; three public parks opened in 1846; water supply improved over 1847; the Manchester Baths and Laundry Company provided facilities to wash clothes as well as the body; the Chorlton, Prestwich, and Crumpsall hospital-workhouse complex was built 1864-1867 on the pavilion plan and it was praised by Florence Nightingale; in 1870, a joint-stock company was founded to build decent working class housing.

Free Trade Hall, in Lombard Venetian style, built in 1856; cost £40,000; celebrated defeat of the Corn Laws and built on the site of the Peterloo Massacre of 1819 (building damaged in 1940 and rebuilt)

Behind these improvements was a growing group of philanthropic bankers, doctors, architects, clergymen, businessmen, and mill-owners. Meanwhile, the mills left town as property values rose. In the city were found free public libraries, a City Art Gallery (1825-1829), Owens College, later the University of Manchester (endowed by John Owens, who died in 1846), courts, the Free Trade Hall in which the Charles Hall's Orchestra and chorus performed; new and gothic grand town hall built by Alfred Waterhouse, 1868-1877, costing £1,000,000; its tower rises 281.5 feet, and it has murals by Ford Maddox Brown illustrating the history of Manchester

Manchester provided a pattern for the development of the Industrial City.

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