

CHAPTER 4

THE INDUSTRIAL REVOLUTION

In the late 19th century the English historian Arnold Toynbee began to refer to the period since 1750 as "The Industrial Revolution." The term was intended to describe a time of transition when machines began significantly to displace human and animal power in methods of producing and distributing goods.

These changes began slowly, almost imperceptibly, gaining momentum with each decade so that by the midpoint of the 19th century, industrialism had swept across Europe west to east, from England to eastern Europe. Few countries purposely avoided industrialization because of its promise of material improvement and national wealth.

The economic changes that constitute the "Industrial Revolution" have done more than any other movement in Western civilization to revolutionize Western life by imparting to our cultures a uniqueness which never before, or perhaps since, has been matched or duplicated.

4.1 ENGLAND BEGINS THE REVOLUTION IN ENERGY AND INDUSTRY

Essentially, the “Industrial Revolution” describes a process of economic change from an agricultural and commercial society into a modern industrial society. This was a gradual process, where economic, social and political changes nonetheless produced a veritable revolution which Arnold Toynbee was the first to identify. He placed the origins of this remarkable transition in England.

Roots of the Industrial Revolution could be found in the following:

- 1) the Commercial Revolution (1500 – 1700), which spurred the great economic growth of Europe brought about by the Age of Discovery and Exploration, which in turn helped to solidify the economic doctrines of mercantilism;
- 2) the effect of the Scientific Revolution, which produced the first wave of mechanical inventions and technological advances;
- 3) the increase in population in Europe from 140 million people in 1750 to 266 million people by the mid-part of the 19th century (more producers, more consumers); and
- 4) the political and social revolutions of the 19th century, which began the rise to power of the “middle class”, which provided leadership for the economic revolution.

England began the economic transformation by employing her unique assets:

- 1) a supply of cheap labor, as the result of the enclosure movement which created unemployment among the farmers (yeomen). Those former agricultural laborers were now available for hire in the new industrial towns;
- 2) a good supply of coal and iron, both indispensable for the technological and energy development of the "revolution";
- 3) the availability of large supplies of capital from profitable commercial activity in the preceding centuries ready to be invested in new enterprises;
- 4) a class of inventive people who possessed technological skill and whose independence and non-conformity allowed them to take risks;
- 5) as a colonial and maritime power, England had access to the raw materials needed for the development of many industries;
- 6) England had a government which was sympathetic to industrial development and well-established financial institutions ready to make loans available; and
- 7) after a long series of successful wars, England was undevastated and free to develop its new industries which prospered because of the economic dislocations caused by the Napoleonic Wars.

4.1.1 *Early Progress*

The revolution occurred first in the cotton and metallurgical industries, because those industries lent themselves to mechanization.

A series of mechanical inventions beginning in 1733 and lasting until 1793 would enable the cotton industry to mass-produce quality goods.

The need to replace wood as an energy source led to the use of coal which increased coal mining and resulted ultimately in the invention of the steam engine and the locomotive as inventions which sought to solve practical problems.

The development of steam power allowed the cotton industry to expand and transformed the iron industry. The factory system which had been created in response to the new energy sources and machinery was perfected to increase the amount of manufactured goods.

A transportation revolution ensued, in order to distribute the productivity of machinery as well as deliver raw materials to the eager factories. This led to the growth of canal systems, the construction of hard-surfaced "macadam" roads, the commercial use of the steamboat demonstrated by Robert Fulton, and the railway locomotive made commercially successful by George Stephenson.

Subsequent revolution in agriculture made it possible for fewer people to feed humankind, thus freeing people to work in factories or in the many new fields of communications, distribution of goods, or services like teaching, medicine and entertainment.

4.2 SPREAD OF INDUSTRIALIZATION TO EUROPE AND THE WORLD

During the first fifty years of the 19th century, industrialism swept across Europe west to east, from England to eastern Europe. In its wake all modes of life would be challenged and transformed.

4.2.1 *The Challenges to the Spread of Industrialism*

Continental economic growth had been retarded by the wars of the Napoleonic period.

Because England was so technically advanced European countries found it difficult to compete. However, catching up to England was made easy by avoiding the costly mistakes of early British experiments and using the power of strong central governments and banking systems to promote native industry. But on the continent there was no large labor supply in cities; iron and coal deposits were not as concentrated as in England.

4.2.2 *Route of Industrialization*

England was the undisputed economic and industrial leader until the mid-19th century. The industrialization of the continent occurred mostly in the latter half of the 19th century, and, in the southern and eastern regions, in the 20th century.

By 1830 industrialism had begun to spread from England to Belgium, France and other scattered areas of Europe. These successful industrial operations were due to the exportation from England of machines, management and capital. Germany was slower in following English methods until a tariff policy was established in 1834 (the *Zollverein*) which induced capital investment in German manufacturers.

4.3 GROWTH OF INDUSTRIAL SOCIETY

The undermining and eventual elimination of Western society's traditional social stratification model (i.e., clergy, nobility and the masses) would be the result of the Industrial Revolution.

4.3.1 *The Bourgeoisie: The New Aristocracy*

The middle class were the major contributors as well as the principal beneficiaries of early industrialism. They measured success in monetary terms and most tended to be indifferent to the human suffering of the new wage-earning class. The industrial bourgeoisie had two levels: 1) upper bourgeoisie, i.e., great bankers, merchants and industrialists who demanded free enterprise and high tariffs; and, 2) lower bourgeoisie, i.e., small industrialists, merchants and professional men who demanded stability and security from government.

4.3.2 *The Factory Worker: The New Wage-Earning Class*

The Industrial Revolution created a unique new category of people who were dependent on their job alone for income, a job from which they might be dismissed without cause. The factory worker had no land, no home, no source of income but his job. During the first century of the Industrial Revolution the factory worker was completely at the mercy of the law of supply and demand for labor.

Working in the factory meant more self-discipline and less personal freedom for workers. The system tended to depersonalize society and reduced workers to an impersonal status. The statistics with regard to wages, diet, and clothing suggest overall improvement for the workers, with some qualifications, since some industries were notoriously guilty of social injustices. Contemporary social critics complained that industrialism brought misery to the workers while others claimed life was improving. Until 1850 workers as a whole did not share in the general wealth produced by the Industrial Revolution. Conditions would improve as the century wore on, as union action combined with general prosperity and a developing social conscience to improve the working conditions, wages, and hours

first of skilled labor and later of unskilled labor.

4.4 SOCIAL EFFECTS OF INDUSTRIALIZATION

The most important sociological result of industrialism was the urbanization of the world. The new factories acted as a magnet pulling people away from their rural roots and beginning the most massive population transfer in history. Thus the birth of factory towns and cities that grew into large industrial centers.

The role of the city changed in the 19th century from governmental and cultural centers to industrial centers with all the problems of urbanization.

Workers in cities became aware of their numbers and their common problems, so cities made the working class a powerful force by raising their consciousness and enabling them to unite for political action to remedy their economic dissatisfaction.

It is in this urban setting that the century's great social and political dilemmas were framed: working class injustices, gender exploitation and standard-of-living issues.

Family structure and gender roles within the family were altered by the growth of industrialism. Families as an economic unit were no longer the chief unit of both production and consumption but rather consumption alone.

New wage economy meant that families were less closely bound together than in the past; the economic link was broken. Productive work was taken out of the home (cottage) and placed elsewhere. As factory wages for skilled adult males rose, women and children were separated from the workplace. A new pattern

of family life emerged.

Gender-determined roles in the home and domestic life emerged slowly. Married women came to be associated with domestic duties while the male tended to be the sole wage earner.

Single women and widows had much work available, but that work commanded low wages and low skills and provided no way to protect themselves from exploitation.

Marriage as an institution in the wage economy began to change. Women were now expected to create a nurturing environment to which the family members returned after work. Married women worked outside the home only when family needs, illness or death of a spouse required them to do so.

4.5 EVALUATION

The Industrial Revolution conquered and harnessed the forces of nature: water power, coal, oil, and electricity all provided power to replace human effort. The amount of wealth available for human consumption increased. Vast amounts of food, clothing and energy were produced and distributed to the workers of the world. Luxuries were made commonplace, life expectancy increased and leisure time made more enjoyable.

But the workers would not begin to share in this dramatic increase in the standard of living until the second half of the 19th century when all the evils associated with the factory system (low wages, poor working conditions, etc.) and early industrialism in general were corrected. In the first century of industrialism the wealth created went almost exclusively to the entrepreneur and the owner of capital—the middle class.