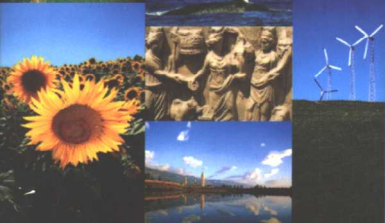




# Industrialization 工业化

David A. Hounshell (美) 著  
Joel A. Tarr (美)



外语教学与研究出版社  
FOREIGN LANGUAGE TEACHING AND RESEARCH PRESS



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World as Imagined 1880  
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# 序 言

英语学习，除了在课堂内下工夫外，课外的阅读也很重要。课外除了读文学类的文章，也要读一些非文学类的文章。这套“小书”就是非文学类的文章，涉及文学以外的许多领域和学科。每本书都由一两个相关的主题构成，图文并茂，融知识性和可读性于一体。这些“小书”谈到的很多东西都和我们的日常生活息息相关；更重要的是“小书”体现了人类要与自然和谐发展的思想，这与我们社会和时代的发展是吻合的。读一些这方面的书不仅有利于学生提高英语水平，拓宽自己的视野，也符合当今大学生要全面发展的要求。在“复合型”人才越来越受重视的今天，我很乐意向大学生朋友推荐这套“小书”。



(郑树棠)

《新视野大学英语》总主编  
首届“国家级教学名师奖”获得者

## Introduction

Society today is struggling to find alternative methods of industrial production to overcome the habit of widespread environmental degradation initiated in the sixteenth century when England first turned from timber to coal as a source of energy. Extraction of coal mars the physical environment and releases poisonous substances into groundwater and the atmosphere. The innovative industrial technologies of the past that brought such social progress have also had the unfortunate consequence of massively redistributing natural materials in unnatural and sometimes harmful ways and introducing artificial chemical substances into the environment with results that are little understood. Although numerous negative consequences associated with industrialization have been known for hundreds of years, individuals and governments find it difficult to resist the social benefits of industrial growth.

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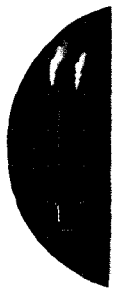
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# Industrialization

## 工业化

**I**ndustrialization is a process of transforming economies, societies, regions, and nations through the development and application of technology and the systematic use of energy sources. It is often considered to be the heart of modernization, a process that describes how today's nations and cultures developed into urbanized, energy-intensive, consuming, well-educated, and centrally governed

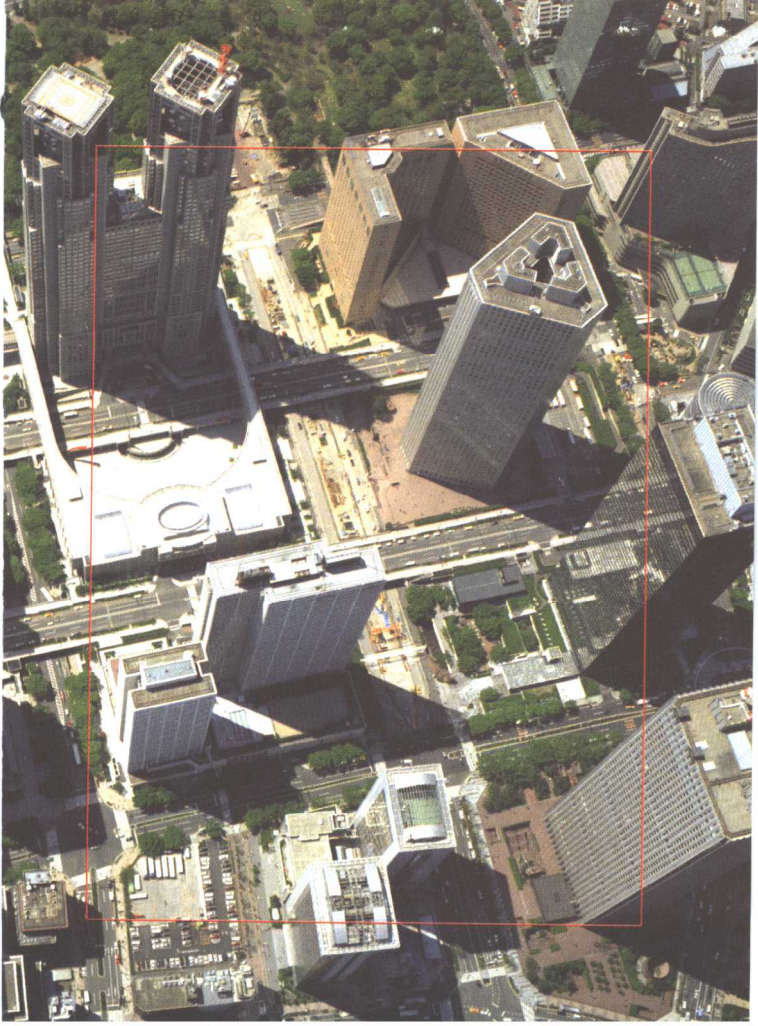







peoples. Industrialization, with its driving forces of technological and organizational change, has brought many societies an extraordinarily high standard of living. At the same time, however, it has also brought great costs, many of which have been environmental. Even water power, thought of as environmentally benign, causes extensive environmental damage when the flow of rivers is altered. These effects are best understood when viewed locally, regionally, and globally, even though they have not been distributed evenly, geographically, or temporally.

所谓工业化，即通过技术开发与应用以及对能源的系统利用来改造经济、社会、地区或者国家的过程。人们通常认为工业化是现代化的核心。现代化也是一个进程，用来描述现今的国家与文明





是如何实现城市化，发展成为能源密集型、消费型、教育程度良好以及中央集权的国家的。工业化受技术与组织变革驱动，已使很多国家步入了高生活水平社会的行列。然而同时，人们也付出了沉重的代价，其中许多都与环境有关。我们一般认为水利对环境没有太大负面影响，但事实上水力开发会改变河流的水道，进而对环境造成极大的破坏。这些破坏在地理与时间上的分布都不均匀，但当我们以地方、地区与全球的眼光来看时，它们就一目了然了。


**Industrialization is marked by fundamental shifts in the energy and material bases of economies and societies. Traditional societies have relied on a balance of renewable sources of**

energy and materials. When that balance has been disturbed and resources have become scarce, especially due to population increases, some societies have undergone tremendous instability. Others, however, have sought substitutes for diminished resources, thereby launching the processes leading to industrialization.

工业化以经济与社会中能源和物质基础的根本转变为标志。传统社会建立在可再生能源与物质资源平衡的基础之上。后来，这种平衡被打破，资源变得稀缺，尤其是在人口增长的情况下，某些社会因而陷入巨大动荡之中。与此同时，其他一些国家却在积极寻找替代品来取代日趋枯竭的资源，这也就是工业化的起源。

# The Early Stages of Industrialization


## 早期工业化



**T**he first industrialized nation was England. For centuries the English had depended on the land for most of their materials, but in the sixteenth century a growing demand for energy led to timber shortages, especially in large cities such as London. Timber was a vital resource, used as firewood, as a source of industrial chemicals such as

potash, and in construction and shipbuilding. Under the stress of depleted timber reserves the English looked for a substitution, turning to coal. The process of finding ways to substitute coal for timber unleashed a technological and organizational wave of innovation and invention that eventually transformed English society. It also greatly increased environmental stress as the nation moved toward full industrialization.

英国是最早实现工业化的国家。几个世纪以来，英国人都依赖土地获取他们需要的大多数资源。但在16世纪，人们对能源日益增长的需求造成了木材紧缺，这个问题在伦敦等大城市尤为严



重。木材在当时是一种极其重要的资源，它可以用作薪材，可以用来提取钾盐等工业化合物，也广泛用于建筑业与造船业。面临木材资源枯竭的压力，英国人开始寻找替代品，从而转向了煤。人们探寻如何用煤替代木材的过程引发了一场技术与组织创新和发明的浪潮，而这彻底改变了英国社会。同时，随着英国向全面工业化的发展，环境压力也大大增加。

Initially, the environmental effects of substituting coal for timber were felt only locally. Such effects included the heavy smoke palls that shrouded industrial towns and the depletion of nearby coal outcroppings. Increasing

population, decreasing timber supplies, and the growth of heat-using industries, however, demanded more coal and produced more extensive environmental effects. Coal mining shifted to deeper mines, causing flooding and water drainage problems. This led to the development of the steam engine, used to pump out the flooded mines, but that too had a negative environmental impact: it resulted in the pollution of local streams by acidic mine wastewater. Coal-burning locales grew into coal-burning industrial regions and air pollution spread farther afield. The English economy as a whole shifted from a low-energy to a high-energy base and from a society based on renewable energy and renewable resources to one



relying on nonrenewable fossil fuels and energy-intensive materials. These patterns were fully visible by the end of the eighteenth century.

最初，用煤替代木材对环境的影响仅限于小范围地区，如工

