# Conflicting Understandings of the Industrial Revolution and Its Consequences: The Founding Figures of British Management History

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**Abstract**

The Industrial Revolution is a seminal event in the emergence of modern systems of management. It is also central to the British tradition of management history. Accordingly, this chapter is concerned not with the ideas about management that emerged in Britain during the nineteenth century, but rather with the emergence of the discipline of management history in Britain. If the very concept of the Industrial Revolution is primarily due to the posthumous publication of the lectures of Arnold Toynbee the elder (1852–1883), shifting understandings about the nature of British management have been built around profound disagreements as to the causes, duration, and effects of the Industrial Revolution. In the opinion of the American historian, John Nef, the importance of the Industrial Revolution of the eighteenth and nineteenth centuries is altogether overstated, Nef arguing that the success of nineteenth-century British managers is attributable

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to an earlier industrial relation in the sixteenth and seventeenth century. For some, such as E.P. Thompson, R.H. Tawney, and both Arnold Toynbee the elder and Arnold Toynbee the younger (1889–1975), the managerial order created by the Industrial Revolution was economically advantageous but socially retrograde. For others, notably John Clapham, Sidney and Beatrice Webb and, above all, Sidney Pollard, the Industrial Revolution was a socially liberating force. Only by understanding these debates can we comprehend the seminal ideas that have informed management history in Britain.

**Keywords**

Industrial revolution · Alfred chandler · The Webbs · Arnold toynbee · E.P. Thompson · Inequality · Real wages · Sidney pollard

## Introduction

Management as an academic discipline and applied practice has long boasted a US flavor. In terms of management theory, there are few who have exerted a greater influence than citizens of the American republic (i.e., Frederick Taylor, Chester Barnard, Frank and Lillian Gilbreth, George Homans, Douglas McGregor, Peter Drucker, etc.) or citizens from elsewhere who plied their trade in the United States (i.e., Elton Mayo, Kurt Lewin). Among business historians, no one has been more influential than Alfred D. Chandler. In management history, the preeminent academic body, the Management History Division (MHD) of the Academy of Management, is not only a US institution, its leading office-bearers have until recently also traditionally been American. Of the people who have served as editor in chief of the re-established *Journal of Management History*, two (Patrick Murphy and Sean Carraher) have been American. The exceptions, David Lamond and myself, served as Chairs of the MHD, as did Murphy and Carraher.

If management history has long been a US-oriented discipline, it nevertheless remains the case that management's origins will always be associated in the popular and, indeed, the scholastic mind, with the British Industrial Revolution. In enunciating what has become well-established opinion, Arnold Toynbee (1976/1978, p. 565), for example, recorded that, "until the Industrial Revolution, the use of machinery … was still rare. It now became normal." Yet, despite its central importance to the modern world, few of us stop to think where the concept of the "Industrial Revolution" came from. Nor do we tend to reflect on why this epoch-shaping event is typically dated between 1760 and 1830, dates that correspond to the accession of George III and the death of George IV rather than to any profound technological or managerial change. Among those who lived through what we think of as the Industrial Revolution, there was certainly an appreciation that they were witnessing transformative economic and social experiences. However, few if any understood this experience as an "Industrial Revolution" with clear start and finish dates. In their *Communist Manifesto*, written in 1848, Karl Marx and Frederick

Engels (1848/1951, p. 36), for example, spoke not of an "Industrial Revolution" but rather of a "constant revolutionizing of production." To the extent that they put a date on this new economic order, Marx and Engels (1848/1951, p. 37) spoke of a bourgeois "rule of scarce one hundred years" (i.e., since c.1730). One also searches in vain within John Stuart Mill's (1848/2004) *Principles of Political Economy* for any discussion of the "Industrial Revolution" and its transformative effects. Rather than pondering the exact circumstances that created the new industrialized world economy, Marx, Engels, and Mill more or less took its existence for granted, being more concerned with its *effects* than its *origins*. Yet, as we shall discuss, the intellectual provenance of the "Industrial Revolution" is neither assured nor unquestioned, the American historian, John Nef (1943, p. 1) declaring, "There is scarcely a conception that rests on less secure foundations."

A decidedly British phenomenon, the concept of an "Industrial Revolution," owes a debt primarily to British historians. Such accounts have typically – although, as we shall note, not universally – portrayed the Industrial Revolution as economically progressive but spiritually retrograde. E.P. Thompson (1963/1968, p. 217), for example, described it as a "truly catastrophic" event for English working people, in which they supposedly found themselves "subjected simultaneously to two intolerable forms of relationship: those of economic exploitation and of political oppression." By contrast, for John Clapham (1926/1967, p. 567), the "family income" enjoyed by industrial workers in the 1830s was "not too hopelessly inadequate." In terms of living conditions, Clapham (1926/1967, p. 39) observed a tendency to conflate the "worst" housing conditions of the Industrial Revolution with the "average." While the conditions of the worst were, Clapham (1926/1967, p. 39) continued, "impossible to exaggerate," it was nevertheless the case that, "In London and out of it, the skilled man, like the Durham miner, generally had a tolerable house or section of a house, and tolerable furniture."

The purpose of this chapter is to comprehend how understandings of what has become known as the "Industrial Revolution" emerged and evolved around a number of "British" historians between the 1880s and the 1970s, scholars who constantly engaged with previously published studies in this peculiar field, supporting some arguments and contradicting others. It needs to be understood that this chapter is *not* concerned with the genealogy of managerial ideas during the Industrial Revolution (i.e., Owen, Babbage, Ure, etc.). This aspect of management's history is well covered by my co-editor, Jeff Muldoon (▶ Chap. 20, "Certain Victory, Uncertain Time: The Limitations of Nineteenth-Century Management Thought"), in his chapter in Part 5 (*The Classic Age of Management Thought)* of this *Palgrave Handbook*. Rather, we are looking at the way in which the *discipline* of management history emerged from debates about both the nature of the Industrial Revolution and the fundamental features of "modern management." It should also be noted that some of the historians that we consider "British" were "British" only by intellectual orientation or immigration, rather than by birth. John Nef (1890–1988), for example, was not only Chicago-born he also spent almost his entire career at the University of Chicago. Nef's long career was directed, however, toward mainly British lines of inquiry, where he argued in

favor of the transformative significance of an "early Industrial Revolution" between 1540 and 1640. Sidney Pollard (1925–1998), a management historian who, unlike Nef, did believe that *the* Industrial Revolution of the eighteenth and nineteenth centuries was a socially as well as economically progressive experience was an Austrian Jew, who anglicized his birth name (Siegfried Pollak) when he fled to Britain in 1938 to escape the Nazis.

Of the other historians whose ideas we highlight – Arnold Toynbee (1852–1883), John Clapham (1873–1946), R.H. Tawney (1880–1962), Arnold Toynbee (1889–1975), Beatrice Webb (1858–1943), Sidney Webb (1859–1947), and E.P. Thompson (1924–1993) – the reader faces evident confusion in our consideration of two Arnold Toynbees, the younger being the nephew of the first. Although the second Toynbee was not yet born when the first died at the age of 30, both were intellectually rooted in the reforming ethos of Victorian England, shocked by the contrast between the poverty and wealth around them. For both the older and younger Toynbee, as for Tawney and Thompson, the social consequences of the Industrial Revolution were altogether malevolent. As the older Toynbee (1884a/1894, p. 94) – who was largely responsible for the delineation of the Industrial Revolution as a unique historical event – expressed it, "The problem of pauperism" manifested itself "in its most terrible forms between 1795 and 1834." Prefiguring the subsequent rise of the environmental movement with its concerns as to climate change, the younger Toynbee (1976/1978, p. 17, 21) also believed that the Industrial Revolution led to a "wrecking" of the "biosphere," a process in which "demonic" greed and lust for material riches supposedly threatens to "liquidate" the entire planet. By contrast, Clapham and the Webbs viewed the effects of the Industrial Revolution more positively. The stance of Beatrice and Sidney Webb, the intellectual driving forces behind the British Fabian Society, is particularly significant. Whereas Thompson and other British socialists subsequently suggested that the Industrial Revolution led to a profound alienation of British workers from capitalist society, the Webbs argued that all most workers ever wanted was a greater share in capitalism's riches. Writing of the "New Model" unions that emerged during the 1850s, Sidney and Beatrice Webb (1894/1902, p. 223) accurately noted that their policy "was restricted to securing for every workmen those terms which the best employers were willing voluntarily to grant." In other words, they merely wanted less enlightened employers to grant the same wages and conditions as were already conceded by their "fair-minded" competitors. It was Pollard, however, who presented the most positive – if also most nuanced – account of the managers who shaped the Industrial Revolution. Yes, Pollard (1965, p. 258) agreed, the Industrial Revolution *did* take on the form of a "real class battle," a conflict in which managers struggled to transform an amorphous collection of ex-farmers and artisans into "the industrial proletariat of the large factories and mines." In waging this "battle," however, managers quickly discovered that the most important managerial attributes were "personal qualities," the "social skills" that allowed for the maintenance of "discipline without undue friction or severity" (Pollard 1965, p. 253). For, Pollard (1965, pp. 6–7) argued, the most significant characteristic "of the new capitalism" that emerged from the

Industrial Revolution, "underlying its ultimate power to create a more civilized society," was that it always dealt with legally free workers, ever capable of abandoning their post with all the attendant problems of staff turnover which that created for management.

Before turning to a discussion of the studies that have informed our understanding of Britain's Industrial Revolution, it must be conceded that the title chosen for this chapter, "The Founding Figures of British Management History," is in many ways a misnomer. Of those whom we consider, only Pollard would have regarded himself as a "management historian," a novel discipline that he himself did much to establish. Nef and Clapham would have considered themselves economic historians, a discipline that was also in its infancy when they wrote their seminal works. As for the Webbs, they are widely recognized as founding figures for yet another disciple: industrial relations. E.P. Thompson is arguably the most important labor historian who ever put pen to paper. The Toynbees, and R.H. Tawney, undoubtedly saw themselves simply as "historians." Despite this disciplinary diversity, however, all of the historians that we consider devoted their minds to the same basic problems. What was the Industrial Revolution? To what did it owe its origins? Were its effects positive or negative? Yes, it is true, that other scholars – Eric Hobsbawm, G.D.H. Cole, G.R. Porter, and William Cunningham – also sought answers to these questions. By tracing the debates and disagreements of the historians central to this chapter (the Toynbees, Tawney, the Webbs, Nef, Clapham, Thompson, Pollard), however, we can nevertheless comprehend how defining understandings as to the nature of "modern management" emerged from the historiography of the Industrial Revolution.

Finally, before proceeding, it is only fitting that I advise the reader as to my own prejudices and assessments as to the debates that we consider in this chapter. First, there is merit in Nef's (1932a, b, 1934, 1937, 1943) argument that *the* Industrial Revolution was only possible due to the achievements of an earlier English "Industrial Revolution" in the sixteenth and seventeenth centuries. As the subsequent research by Braudel (1986/1990), Cipolla (1981), and Allen (2011) has recognized, Nef's most important contribution is found in his demonstration of the significance of England's early exploitation of its coal reserves. In highlighting this point in his two-volume *The Rise of the British Coal Industry*, Nef (1932a, p. 322) recorded, "There was no parallel on the Continent for the remarkable growth in coal mining which occurred in Great Britain between 1550 and 1700 ... the coal industry provided a fertile field for the growth in capitalistic forms of industrial organization." Endorsing Nef's fundamental argument – that modern forms of industrial management are premised on the transition to a high-productivity, energy-intensive economy – Robert Allen (2011, p. 380) similarly concludes in his study, "Why the Industrial Revolution was British," that all:

> ... of the things that raised productivity in the nineteenth century depended on two things – the steam engine and cheap iron. Both of these ... were closely related to coal. The steam engine was invented to drain coal mines, and it burnt coal. Cheap iron required the substitution of coke for charcoal ... the railroad ... was [also] a spin-off of the coal industry.

If Nef was correct in pointing to the Industrial Revolution's prehistory in the sixteenth and seventeenth century, there is also value in his suggestion that *the* Industrial Revolution should be dated from 1790 rather than the conventional date of 1760. For, despite the advances that had occurred in ironmaking from the time of the Middle Ages, England in the early eighteenth century remained an economy built on wood rather than iron. Indeed, in the opening decade of eighteenth century, England's annual production of cast-iron amounted to a miniscule 25,000 tons per annum, a tonnage that was little different to that produced a century earlier. In Nef's estimation (1943, p. 240), it was only with the perfection of new smelting methods in 1780 – techniques trialed with mixed success between 1710 and 1750 – that a decisive "turning point" was reached. Once more, Nef's pioneering research has been endorsed by subsequent studies. As Fig. 1 indicates, which annual cast-iron output on a decade-by-decade basis as collated by Philip Riden (1977), English production moved forward in fits and starts between 1710 and 1790 as iron-makers experimented with new techniques which – when perfected – led to unprecedented increases in the 1790s.

Where this author differs from Nef is not in his assessment of the *technological* innovations that underpinned the Industrial Revolution of the eighteenth and nineteenth centuries, but rather in his underemphasis of the *managerial* advances that turned technological potential into profitable economic reality. For, as is the norm among economic historians, Nef paid much attention to the *economic* factors of production but little heed to the *human* factors. A similar failing, albeit one manifested in a different guise, is also evident in the discussions of the two Toynbees and Tawney, each of whom expressed much concern for the spiritual well-being of workers without the benefit of much discussion as to the lived experience of these workers in either the workplace or the home. In this latter regard, the work of Pollard and Thompson and, to a lesser degree that of Clapham and the Webbs, is much

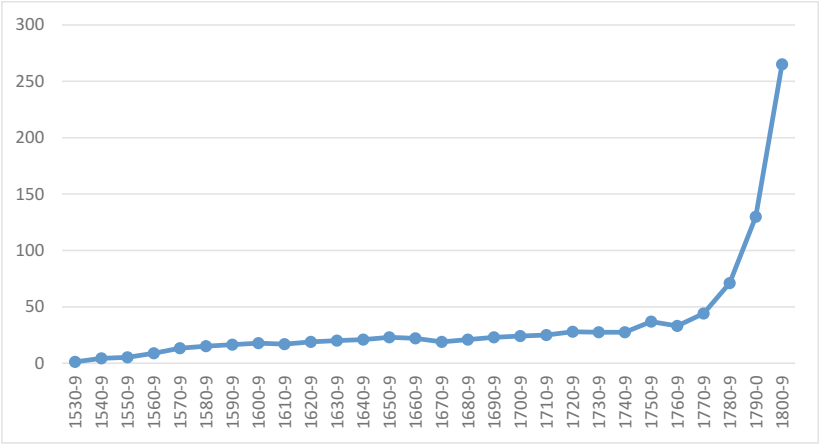


**Fig. 1** Annual English cast-iron production, by decade, 1530–1539 to 1810–19 (in thousands of tons). (Source: Riden, "The Output of the British Iron Industry before 1860," pp. 443, 448, 455)

superior to that of Nef, the Toynbees, and Tawney. In the case of Thompson, a general hostility to capitalism and management existed alongside some of the most penetrating and profound insights into the problems experienced by managers during the Industrial Revolution. Nowhere is Thompson's understanding of the problems of management more evident than in his oft overlooked study, "Time, Work-discipline, and Industrial Capitalism." In this study, Thompson (1967, p. 61) makes the pertinent point that only with the Industrial Revolution and the widespread use of clocks does work-time become a measurable commodity, causing employees to "experience a distinction between their employer's time and their 'own' time." Despite Thompson's profound insights into the transformed nature of work in the Industrial Revolution, it is Pollard who best captures the central importance of the human factors in managerial travails and successes during this historic period. Of all the problems that Pollard identifies, none was arguably more significant than the creation of an entirely new social class of professional managers. As Pollard (1965, p. 104) accurately noted, "The concept of a 'manager', not even very clear today, had no fixed meaning at the time [of the Industrial Revolution], nor had related terms such as 'supervisor' and 'superintendent'." It was, however, only through the creation of a new class of professional managers – people attentive to markets, costs, recruitment, staff motivation, and retention, the technical problems of production – that the technological potential of the Industrial Revolution was realized.

## "To Serve as Galley Slaves": The Toynbees and Tawney on the Industrial Revolution and Its Consequences

In concluding his final study into the Industrial Revolution and its consequences, published posthumously, the younger Arnold Toynbee (1976/1978, p. 578) argued that the uninterrupted advance of industrial civilization during the nineteenth and twentieth centuries had produced "increased productivity" at a terrible "spiritual price," causing workers "to serve as galley-slaves" at the behest of "the conveyor-belt and the assembly-line." In taking this stance, the younger Toynbee was not only following in his uncle's critical footsteps; he was also articulating the ethos of the Victorian middle class, a social cohort that Toynbee (1947a/1976, p. 29; Toynbee 1976/1978, p. 577) always considered to be the most significant force for social reform in the new industrial world. For, like all the historians that we are considering, other than Pollard and Thompson, the younger Toynbee was part of a generation that came of age before the First World War. Indeed, Toynbee (1947b/1976, pp. 15–16) noted in reflecting upon his own upbringing that, "my education was more old-fashioned than my mother's had been," his studies "at Oxford" based "almost entirely on the Greek and Roman classics." Convinced as to the moral superiority of the educated English middle class to which he belonged, Toynbee (1976/1978, p. 268) believed that the hope of humanity rested on the university-educated *intelligentsia* that imbibed its reforming values. It was "this Western middle-class – this tiny minority," Toynbee (1947a/1976) argued, which was the most important social force in the modern world, acting as "the leaven" that "leavened" the less

well-educated "lump" of humanity. This moral evangelizing is arguably even more evident in the studies of the older Toynbee (1884a/1894, p. 58), who declared that his research into the Industrial Revolution was driven by a need to "lay bare the injustices to which the humbler classes of the community have been exposed." R.H. Tawney, similarly born and raised in the values of Victorian England, also declared himself part of "a generation disillusioned with free competition, and disposed to demand some criterion of social expediency more cogent than the verdict of the market." In his best-selling book, *Equality*, Tawney poured scorn on the idea – argued by John Maynard Keynes in *The Economic Consequences of the Peace* – that any person "of capacity or character at all exceeding the average" was capable of joining "the middle and upper classes" (Keynes 1920, p. 9). In enunciating what he called his "Tadpole" principle, Tawney (1929/1964, p. 105) declared the acclaimed social mobility of capitalism to be a thinly disguised fraud. For, among tadpoles, Tawney (1929/1964, p. 105) cynically observed, the fact that some "will one day shed their tails . . . hop nimbly on to dry land, and croak addresses to their former friends on the virtues by which tadpoles of character and capacity can rise to be frogs," changes nothing for the great mass condemned to "live and die as tadpoles."

Typically, the intellectual reputation of a scholar rests on the words that they write. There are two notable exceptions to this rule: the Swiss linguist, Ferdinand de Saussure, whose ideas profoundly influenced Jacques Derrida and other postmodernist theorists, and the older Toynbee, a scholar whose intellectual frameworks defined "classical" understandings of the Industrial Revolution. In both cases, their claim to fame rests on the efforts of their former students, who reassembled and published their lectures from notes and shared memories. Of the written legacy of Toynbee the elder, his widow, Charlotte Toynbee (1884b/1894, p. xxix), recorded that, "nothing was left by my husband in a form intended for publication . . .he neither wrote his lectures or addresses before delivering them, nor used any notes in speaking." Given Toynbee's preference for talking over writing, the enduring influence of his ideas is largely attributable to two of his former students at Oxford's Balliol College, W.J. Ashley and Bolton King. Working with a number of Toynbee's other former students, Ashley and King unselfishly acted as the unacknowledged editors for Toynbee's famed study, *Lectures on the Industrial Revolution of the 18th century in England* (see Toynbee 1884b/1894, p. xxxi, for a discussion of Ashley and King's role).

Although as Nef (1943, p. 2) observes, the term "Industrial Revolution" had been occasionally bandied about prior to Toynbee's lectures, its most common usage was found among the French, puzzled and curious as the strange events occurring on the other side of the channel. Central to Toynbee's defining depiction of the circumstances surrounding the Industrial Revolution was the belief that 1760 represented a total rupture in the human experience, an historical dividing line that separated an agrarian and artisan past from a mechanized future. Prior "to 1760," Toynbee (1884a/1894, p. 32, 38) advised his students, "none of the great mechanical inventions had been introduced," while in much of the countryside, "the agrarian system of the middle ages still existed in full force." From the outset, Toynbee (1884a/1894, p. 31) made it clear that his study was as much concerned with "proper limits of

Government interference" in a capitalist economy as with the "Industrial Revolution," *per se*. For, in Toynbee's analysis (1884a/1894, p. 86) the social problems of the new industrial society stemmed as much from "competition" and the "brute struggle" that saw "the weak . . . trampled underfoot," as from life in the new factories. Enunciating opinions that have since become commonplace, Toynbee (1884a/1894, p. 84) argued that the Industrial Revolution produced a "disastrous and terrible" decline in real wages that existed, "side by side," with "a great increase of wealth." The "result of free competition," Toynbee (1884a/1894, p. 84) continued, was also "seen in an enormous increase of pauperism," the "rapid alienation" of one social class from another," and "the degradation of a large body of producers."

In many ways, it was the social and educational "degradation" of the lower classes that most concerned Toynbee, a concern that was to be subsequently reflected in the writings of both his nephew and Tawney. For, in its "degraded" state, the industrial proletariat was, Toynbee (1884a/1894, p. 114) argued, incapable of moving "towards that purer and higher condition of society for which we alone care to strive." Accordingly, any State-directed interventions in the economy had to redress more than the poverty and social dislocation that Toynbee identified as inevitable consequences of the Industrial Revolution. Instead, the working class had to be provided with "better education and better amusements," so that workers and their families could better appreciate middle-class values based upon "moral restraints." For the younger Toynbee (1976/1978, p. 568), as well, the hope of humanity lay not in the industrial proletariat in whom Marx, Engels, and other socialists invested their aspirations, but rather in the middle class, most particularly the educated professionals "enlisted or created by governments to serve these governments' purposes." Due to their key position in the State bureaucracy, the younger Toynbee (1976/1978, p. 569) argued, the professional *intelligentsia* could guide not only the lower classes beneath it but also government itself, implementing an "independent line" directed toward "an increase in Man's spiritual potentiality." Similarly, for Tawney (1922/1938, p. 280), a church-going, self-declared Christian socialist, the fundamental problem with industrial capitalism was found in an abandonment of ethics as guiding societal principles in favor of "the idolatry of wealth."

Many of the propositions put forward by the older Toynbee – and subsequently pursued with vigor by the younger Toynbee, Tawney, and a host of social theorists and reformers – were neither novel nor profound. Toynbee's accounts of working-class poverty are inferior to those found in Engels' classic study, *The Condition of the Working Class in England*, a work in which Engels (1845/2010, p. 41) directly linked the condition of the "destitute millions" to the "property-holding, merchant class" who "systematically plundered" the created wealth of the nation. As a critique of industrial capitalism, Toynbee's *Lectures on the Industrial Revolution of the 18th century in England* hardly bares comparison to Karl Marx's (1867/1954) *Capital*, a work published 17 years before the collation of Toynbee's lectures. His account of the process of British industrialization is inferior to that found in G.R. Porter's (1836/1970) *The Progress of the Nation*, a book published long before Toynbee was born. Toynbee's discussions of the mechanics of management were inferior to those undertaken in Charles Babbage's (1832/1846) *On the Economy of Machinery and*

*Manufactures*, another work that was published before Toynbee was born. Admittedly, Toynbee did critically analyze Adam Smith's well-known condemnation of professional managers, in which Smith (1776/1937, Book V, Chap. 1, Article 1, para. 18) declared that wherever such people are employed, their activities lead not to greater efficiencies but rather to waste and mismanagement. In countering this assertion, Toynbee argued two proposals, neither of which were particularly profound. First, Toynbee (1884a/1894, p. 75) suggested that managers could be motivated to work more efficiently and honestly, "by giving them a share in the results of the enterprise they direct." Secondly, Toynbee (1884a/1894, p. 75) made the hardly original observation "that a big company" can typically employ better managers than their smaller competitors because they "can buy the best brains."

Weak as Toynbee's account of management and the Industrial Revolution was in many individual areas, its just claim for originality is found in its linking of Britain's social problems with a specific historical event (i.e., the Industrial Revolution) and to solutions that eschewed both free market economics and socialism. Unlike Adam Smith, David Ricardo, and John Stuart Mill, Toynbee (1884a/1894, p. 87) argued that "competition" was "neither good nor evil in itself" but rather an elemental force that "has to be checked . . .studied and controlled." Unlike Marx, Engels, and the other socialists of his time, Toynbee (1884a/1894, p. 151) rejected any "Communistic solution," preferring instead a middle-class controlled program of municipal reform, directed toward improved education, housing, and consumer cooperatives. As such, Toynbee's lectures were a manifesto for a reform-minded professional middle class, a group of people that put much greater faith in the State and their own supposed intellectual brilliance than they did in either markets or private-sector entrepreneurs. In the course of the late nineteenth and early twentieth centuries, such sentiments obtained ever-increasing levels of support within the British Liberal Party and, more particularly, the Labour Party.

Matters relating to culture and spirit, and the ways in which culture and moral behavior were supposedly degraded by the effects of industrial work and – more particularly – competition, were central to the studies of Tawney and the two Toynbees. In describing what he felt were the profound failings of studies undertaken by "economists," the older Toynbee (1884a/1894, p. 28) complained that the worker was regarded "simply as a money-making animal," an analytic approach that disregarded "the influence of custom," the cultural practices and values that working people had long held dear. For the younger Toynbee (1947a/1976, p. 34), as well, the problem with studies that emphasized economic efficiencies and "technological innovations" was that they ignored the "moral ugliness" that advanced side by side with industrialization. It was, however, Tawney's most influential work, *Religion and the Rise of Capitalism*, that provided the best researched, most insightful, and, arguably, the most misguided assessment of the presumed link between culture, capitalism, and management. The published product of a series of lectures that Tawney delivered at King's College, London, in March–April 1922, Tawney explored the same problem that Max Weber considered in his *The Protestant Ethic and the Spirit of Capitalism*, namely, the relationship between religious belief and economic and managerial success. In Weber's study, however – which was

originally published in two parts (in German) in 1904–1905 but which only appeared in English translation after the completion of Tawney's work – both Protestantism and capitalism were perceived far more positively than they were in *Religion and the Rise of Capitalism*. In Weber's opinion, there was a clear and economically beneficial link between Protestantism – most particularly Calvinism – and individual and organizational success. In every Western European society, Weber (1905/1958, p. 40) argued, Protestants revealed "a special tendency to develop economic rationalism which cannot be observed to the same extent among Catholics." Among Protestants, Weber (1905/1958, p. 43) continued, Calvinists demonstrated "an extraordinary capitalistic business sense . . . combined . . .with the most intensive forms of piety which penetrates and dominates their whole lives." Together, Weber (1905/1958, p. 43) concluded, these attributes made "the Calvinist diaspora the seedbed of capitalistic economy."

By comparison with Weber's famed study, Tawney's *Religion and the Rise of Capitalism* is superior in terms of research and historical accuracy although not, it is arguable, analytic insight and justifiable conclusions. In terms of religious beliefs, Tawney (1922/1938, p. 139) correctly pours scorn on the idea that John Calvin and his immediate followers were admirers of capitalism, observing that Calvinism in its original form "distrusted wealth, as it distrusted all influences that distract the aim or relax the fibres of the soul." Tawney (1922/1938, pp. 92–93) also dismissed the idea that Catholics were unusual in lacking a "commercial spirit," noting that in the early modern world, "it was predominately Catholic cities which were the commercial capitals of Europe, and catholic bankers who were its leading financiers." Rather than it being the case that Calvinism helped create a new capitalist spirt, Tawney (1922/1938, p. 226) suggested the reverse was true. In other words, a capitalist spirit at odds with John Calvin's original preaching captured Calvinism. From such accurate historical observations, however, Tawney proceeded to some dubious conclusions. First and most significantly, Tawney (1922/1938, p. 271) argued that the intertwining of Protestantism and the new capitalist spirit was destructive "of ethical values," weaving "a perilous" emphasis on "pecuniary gain . . .into the very tissue of modern civilization." The result, Tawney (1922/1938, p. 280) added, was "the negation of any system of thought or morals which can . . .be described as Christian." That, in fact, the advance of capitalism was associated with political liberty, democracy, legal protection of both person and property, an extension of the franchise and mass literacy, is not acknowledged. Instead, Tawney harked back to a golden medieval age of dubious provenance, a world in which the Church regarded usury and other forms of lending and commercial activity as the domain of the morally bankrupt. Even though he acknowledged that attempts to restrain capitalist practices proved "impracticable" in the end, Tawney (1922/1938, p. 73) nevertheless held to the opinion that there was a "nobility" to medieval "moralizing" of "economic life." In short, one was supposedly better off in a society where the Inquisition suppressed dissident views than in a world where markets dictate economic outcomes.

If both the older Toynbee and Tawney regarded capitalism and its economic agents as morally bereft, the younger Tawney's condemnations arguably have the

greatest resonance in today's world, a society increasingly fixated by environmental and climate concerns. Central to Toynbee's final work, *Mankind and Mother Earth*, is the belief that humanity, "by making the Industrial Revolution," had created "a threat that had no precedent," its industrialized behavior placing the planet's "biosphere" in danger (Toynbee 1976/1978, p. 566). Whereas before "the Industrial Revolution," human activity "had devastated patches of the biosphere," in the wake of the Industrial Revolution forests were cut down "faster than they could be replaced" (Toynbee 1976/1978, p. 566). By placing unprecedented demands "on non-replaceable natural resources," humanity faced an inevitable economic and environmental tipping point, in which the needs of a growing population outstripped available food and energy stocks (Toynbee 1976/1978, p. 566). It is interesting to note that the younger Toynbee's environmental concerns – which existed side by side with the moral repugnance of capitalism that he shared with both his uncle and Tawney – predated concerns about "global warming" and "climate change." It is also interesting to note that, as with most predictions of inevitable catastrophe in human history, all of the environmental concerns that worried Toynbee – a reduction in the forests, an exhaustion of mineral deposits, and an imminent food shortfall – have been contradicted by subsequent events. As Fig. 2 indicates – which traces changes in world population, crop production, livestock production, and total food production between 1961 and 2014, as well as changes in forest cover since 1991 – food production has grown in recent decades at a far faster rate than the increase in world population. Significantly, this increase has had little effect on the percentage of the world's landmass under forest, which has remained almost constant at approximately

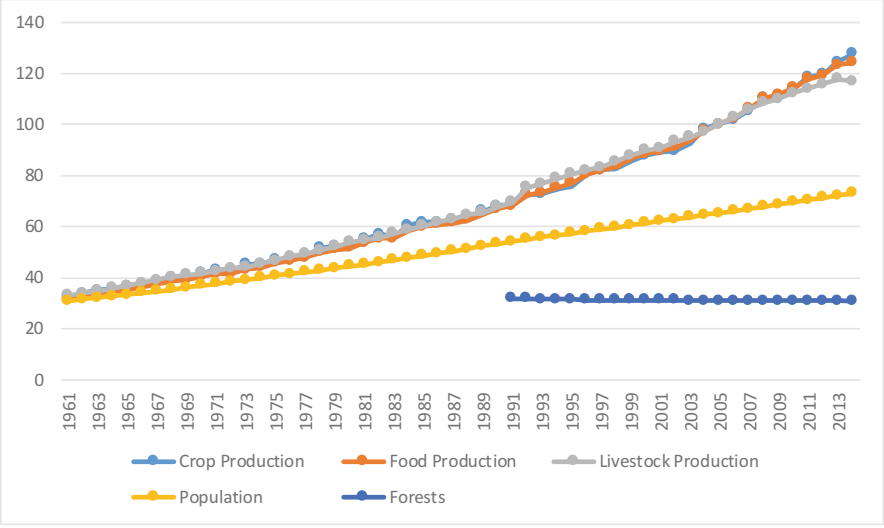


**Fig. 2** Increase in world population and crop, food, and livestock production, 1961–2014 (2004–2006 output is index of 100). (Source: Calculated from World Bank, On-line Database: Indicators – Agricultural and Rural Development)

31%. Nor should we conclude that the mammoth increase in food output is only a First World phenomenon. Thus, whereas total world crop output grew by 392.7% between 1961 and 2014, the volume of production in the poorest and most indebted nations (found mainly in Africa) expanded by 421.3% (World Bank 2017). Human and managerial ingenuity, largely exercised in the free market societies that Toynbee condemned, have belied his expressed concerns.

## "Learning and Public Life": The Contrary Intellectual Contribution of John Nef and John Clapham

A largely forgotten figure today, in 1941 John Nef was arguably the leading American economic historian of his generation. In the preceding decade, his articles in the British-based *Economic History Review*, as well as in his two-volume *The Rise of the British Coal Industry*, had punctured many of the assumptions that had prevailed since the publication of Toynbee's *Lectures on the Industrial Revolution of the 18th century in England*. Given his preeminent status, it is therefore not surprising that was chosen to deliver the keynote at the inaugural conference of the (American) Economic History Association in 1940, an address subsequently published in the first issue of the *Journal of Economic History*. In this address, Nef (1941, p. 5) made the pertinent observation that "learning and public life are locked together in a vicious circle," each informing and subverting the other in the contestation of ideas and policies. In this contestation, research only became meaningful when it managed "to guide the public on the basic and recurring issues of human existence." In order to meet this public obligation, Nef (1943, p. 4) reflected in a subsequent article, "The Industrial Revolution Reconsidered," it was "not enough" for the historian "to be in possession of a vast quantity of materials on some special aspect of history in some special period." Rather, historical research only becomes meaningful to the extent that specific historical events are comprehended in relation "to history as a whole." From Nef's perspective, there was no matter of greater historical and public importance than that relating to an understanding of the causes and effects of what we think of as the Industrial Revolution. In considering these issues, Nef consistently argued two propositions, both of which flew in the face of accepted wisdom. First, Nef (1943, p. 8) argued that "the conventional idea of the industrial revolution" had "interposed itself like a dense fog," blinding historians and the public alike to the fact that any economic and managerial transformation is only successful when it draws on established intellectual, technological, and institutionalized traditions. As noted in the introduction to this chapter, Nef believed that English industrial and economic success in *the* Industrial Revolution was only possible due to the effects of an earlier Industrial Revolution between 1540 and 1640. This was a period, Nef (1943, p. 11) successfully argued, when "the English nation," hitherto a European backwater, struck out "in new directions, economically, socially, philosophically, and artistically; directions different from those undertaken by most of the Continental peoples." Nef's second proposition – which shared commonalities with that of the two Toynbees and

Tawney – was that English society was a better place at the dawn of the (second) Industrial Revolution than at the end, identifying an "increasingly disharmony between very rapid industrial progress and the eighteenth-century civilization which made it possible." What Nef (1943, p. 27) admired most in eighteenth-century English society – a world he believed was destroyed by the very process of industrialization that it had fostered – were the norms of its aristocratic elite, values built around "ordered balance," "good taste," and a sense of moral and political restraint.

If Nef shared commonalities with the Toynbees and Tawney in his distrust of the social values of the new industrial world, on virtually every other point he was in profound disagreement. Whereas the older Toynbee (1884/1894, p. 84) associated the (second) Industrial Revolution with a "disastrous and terrible" fall in real wages – with the younger Toynbee (1976/1978, p. 564) similarly arguing that with the Industrial Revolution, factory workers "were barely able to subsist on their wages" – Nef argued a contrary position. Drawing on the work of the Australian economist, Colin Clark (1940), Nef concluded that as early as 1700, the "average" English citizen was enjoying unprecedented wealth, boasting a higher "command of economic goods" that obtained by the typical Italian, Russian, or Japanese citizen in the 1920s and 1930s (Nef 1943, p. 12). Even where wages did fall relative to food prices in the sixteenth century, Nef believed such costs were offset by new and cheaper consumables that stemmed from the "first" Industrial Revolution. In the mid- to late 1500s, for example, new techniques for making "small beer" (i.e., low-alcohol beer) brought a new source of "daily nourishment" into the household, at a time when drinking polluted water from wells and rivers risked disease and death (Nef 1937, p. 168). Implicit in Nef's analysis is the belief that that it is not industrialization that leads to an economic crunch where population outruns available resources, but rather the reverse: a failure to industrialize. For, as Nef (1937, p. 178) noted, pre-industrial societies boast little metal for ploughshares, hoes, axes, and other tools, an outcome that inevitably results in low levels of agricultural productivity.

On every one of the above points, recent research has endorsed Nef's findings. As Allen (2011, p. 364) notes, in the 1500s and 1600s it was only the commercial, industrializing societies of England, Belgium, and the Netherlands that avoided a "Malthusian" check, in which "real wages moved inversely to the population." By 1700, Allen's (2011, p. 362) research indicates real wages in London were probably the highest in the world, a finding that confirms Nef's earlier suspicion. Nef's belief that the "first" Industrial Revolution of the late sixteenth and early seventeenth century set England on a path to generalized prosperity that differentiated it from pre-industrial societies is also confirmed by the recent research of Broadberry and Gupta (2006). This is indicated in Fig. 3, which draws on Broadberry and Gupta's (2006, p. 6) collation of the daily grain wage – i.e., how many kilograms of wheat could a person buy if they spent all their wage on wheat or another grain equivalent – of unskilled workers in Southern England, Florence and Milan (treated together), and India between 1550–1599 and 1800–1849. Whereas real wages c.1600 were roughly the same in Southern England, Florence/Milan, and India – English wages

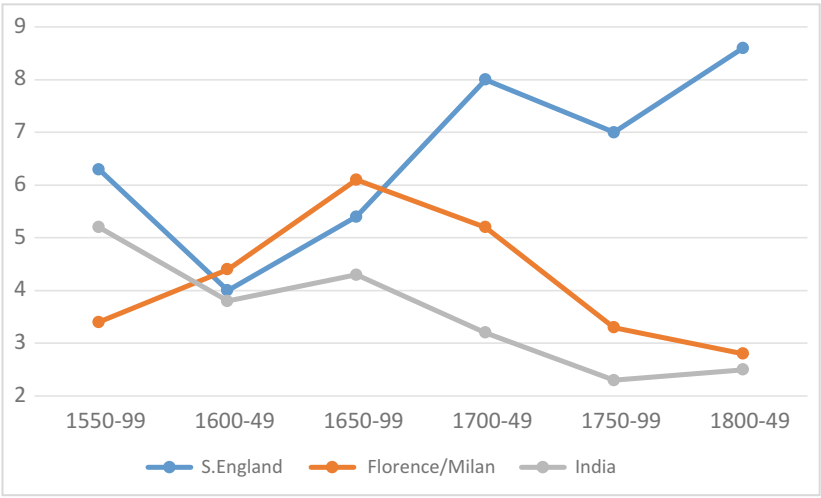


**Fig. 3** Daily grain wage (kilograms of wheat) of unskilled workers, Southern England, Florence/Milan, and India, 1550–1599 to 1800–1849. (Source: Broadberry and Gupta 2006, p. 6)

having fallen during the sixteenth century in the face of rising population – from c.1600 the economic condition of the unskilled English worker began to diverge from that found elsewhere. While unskilled workers in Florence and Milan also enjoyed increased real wages in the early seventeenth century, this period of benign conditions proved short-lived, an outcome that suggests that there was something fundamentally different to English circumstances. Yes, it is true that there *was* a decline in English real wages in the late 1700s. However, this decline needs to be understood in the context of generally rising real wages. It is also probable that the short-lived dip in English real wages owed as much to the Napoleonic wars as it did to the social dislocation wrought by the Industrial Revolution.

In seeking explanation as to why from c.1600 the economic and managerial trajectory of England diverged from that of other societies, Nef paid greatest heed to England's shift "from a wood-burning to a coal-burning economy" (Nef 1934, p. 24). In doing so, Nef undoubtedly made his important intellectual contribution to what has become management history, highlighting the profound differences that differentiate pre-modern and modern forms of management. Whereas the younger Toynbee (1976/1978, pp. 565–566) associated the destruction of forests with industrialization, Nef's research highlighted the fact that the most destructive pressure on forests comes from population expansion in pre-industrial societies. For, while it is true, as Toynbee (1976/1978, p. 565) pointed out, that wind power and water power are "clean" and "inexhaustible," they are also unreliable. Streams run dry or freeze over. The wind stops blowing. Moreover, although medieval water mills could drive machinery, they could not be used for heating, cooking, firing bricks and pottery, roasting grains, and fermenting beer and in smelting metal. In the absence of coal, or of the peat reserves exploited by the Dutch in the

early modern era, pre-industrial societies invariably place unsustainable demands on their forests; woodlands exploited not only for heating, cooking, and smelting but also for the construction of ships, bridges, workplaces, and homes. In China c.1100, for example, the use of wood-based charcoal in the manufacture of cast-iron placed such heavy demands on the forests that the Chinese rice region was turned into "a great clear-felled zone" (Jones 1987, p. 4). In Elizabethan England, when the English coal industry was still in its infancy, similar outcomes were apparent, Nef (1937, p. 180) recording that, "In county after county trees were felled in such profusion . . . that lands once thick with forests could be converted into runs for sheep and cattle." As forests were depleted, the cost of wood became prohibitive. Between 1510 and 1640, Nef (1937, p. 180) ascertained, the price of firewood rose 11-fold. During the same period, the cost of high-quality wood, used in naval ship construction, rose 15-fold. So expensive did wood become that by 1650 its price came to comprise around half of the costs involved in constructing a building or ship, far outweighing labor or capital costs (Nef 1937:179). Having stretched forest reserves to breaking point, England avoided a profound economic and demographic crisis only by exploiting the nation's cheap and plentiful coal reserves, Nef (1932a, pp. 19–20) estimating that England's coal production rose from a minuscule 200,000 tons per annum in 1560 to almost 3 million tons in 1681. By 1790, an incredible 10 million tons was mined annually. Increasingly, it was this transition to a coal-based, energy-intensive economy that differentiated England from other European societies. In comparing circumstances in England around 1710 with its great continental rival, France, Nef (1943, p. 18) observed that, "Compared with the high mounds besides the collieries in Durham and Northumberland . . . the piles of coal besides the chief French pits resembled anthills."

The rise of a large-scale commercial coal industry profoundly altered the conditions in which English managers operated as the effects of cheap coal rippled through the economy. As mines became larger and deeper, working beneath the water table, flooding became a problem. This demanded large-scale capital investment in pumps and machinery, driving out the small operator and turning the industry into a domain dominated by enterprises "conducted on scale which would have seemed incredible" to those born a generation or two earlier (Nef 1934, p. 10). The size of the coal mining workforces also had no precedent in English history, turning the coalfields of Durham and Northumberland into labor relations training schools. As Pollard (1965, p. 127) subsequently noted, in the (second) Industrial Revolution of the eighteenth and nineteenth centuries, it was the nation's "northern collieries" that were probably the largest suppliers of managers to Britain's expanding factories and mills. The English discovery of coke (i.e., a burnt residue of coal) as a substitute for charcoal also allowed for large-scale enterprises in a host of energy-intensive industries. For although, as we noted in our introduction, the use of coke in iron- and steelmaking was not perfected until the late eighteenth century, it soon became essential to the competitive advantage of English glassmakers, brickmakers, brewers, and potteries. Accordingly, Nef (1934, p. 22) estimated, by 1640 England boasted "hundreds of new, capitalistically owned enterprises," employing tens of thousands of high-wage workers.

In making his case for the importance of the "first" Industrial Revolution, it soon became apparent that Nef exaggerated the size of many sixteenth and seventeenth businesses, Pollard (1965, p. 273, n. 7) subsequently referring to "the many doubtful methods by which Nef succeeds in enlarging the scale of early industrial enterprises." Nevertheless, Nef's assumption that it was England's substitution of an economy based on wood for one built around coal that best explains its role as an industrial pioneer *is* one that has been confirmed by subsequent research. Fernand Braudel (1986/1990, p. 521, 523), in reflecting upon France's inability to follow the English industrial and managerial lead in the eighteenth and nineteenth centuries observed that, "The problem, not to say tragedy, was that there were not enough French coalmines, and those there were proved difficult and costly to operate." Similarly, Cipolla (1981, p. 246), writing of the "timber crisis" that curtailed economic growth in Italy, records that in Genoa, the price of wood used in ship building rose 12-fold between 1463 and 1468. Across the Lombard plains of northern Italy, only 9% of the region's woodlands survived in 1555, an outcome that caused Cipolla to conclude that, "The main bottleneck of preindustrial societies was the strictly limited supply of energy." Through its early use of coal, England not only avoided this energy crunch; it also laid the platform for something unique in human history: industries that boasted an international cost advantage despite suffering high-wage costs. The reason for this unusual outcome, Allen (2011) notes, was that England was able to offset high costs in one area (i.e., wages) with low costs in another (i.e., energy). Indeed, Allen (2011) argues, it was the combination of high-wage costs and low-energy costs, which drove England in the direction of energy and capital-intensive production methods in lieu of labor-intensive techniques. Although, according to Allen's (2011, p. 364) calculations, the disparity between high-wage costs and low-energy costs made the problems of production and management in London profoundly different to those found in virtually any continental European center; this disparity was even more marked in the English coal towns: Newcastle, Sheffield, Birmingham, etc. For even though wages in these towns were marginally lower than in London, coal prices were far less. As a result, the incentive to industrialize was far higher in these coal towns than it was in London, a fact subsequently reflected in the geography of English industrialization.

Given Nef's association of industrialization with cheaper energy, higher wages, larger business entities, and economic growth, his disquiet with the results of the (second) Industrial Revolution appears odd at first glance. Nef was certainly unconcerned by changes in wage levels or social inequality. In his opinion, rising wages offset any adverse effects stemming from social inequality. He was also unconcerned by the effects of the transition to an energy-intensive economy on the environment, for the use of coal protected rather than depleted forest reserves. Rather, as a US citizen with a special fondness for Great Britain, Nef feared the rise of totalitarianism, which by the 1930s was all too obvious in Italy, Germany, Spain, Portugal, and the Soviet Union. For, in Nef's (1943, p. 13, 30) opinion, the great economic strength of such societies was manifest in evil, in "the concentration camp and the firing squad." Writing in the 1930s and early 1940s, Nef's fears were well founded. In today's world, a number of authoritarian societies – China, North Korea, etc. –

still use the powers unleashed by industrialization for the purposes of surveillance and the State control of dissidents. However, if there is one lesson of the twentieth century, it is that democratic, free market societies survive and prosper, whereas ultimately totalitarian societies do not.

In many ways, the career and intellectual interests of Sir John Clapham mirrored those of his contemporary, John Nef. A one-time President of the (British) Economic History Society, Michael Postan (1946, p. 56) said of him at his death that he embodied "the intellectual and moral virtues of the Victorian middle classes at their best – a head which was shrewd and cool, an outlook which was wholly unsentimental and a rule of life disciplined to the point of being hard." Even more than Nef, Clapham – whose contribution to economic, labor, and management history largely rests on his three-volume study, *An Economic History of Modern Britain* – was a firm believer that the Industrial Revolution profoundly altered the human condition for the better. "That the industrial revolution, with the attendant changes in agriculture and transport," Clapham (1926/1967, p. 54) reflected, "rendered the maintenance of a rapidly growing British population possible, without resort to the cabin-and-potato standard of life, is beyond question." For all the sanitary and overcrowding problems of Britain's industrial towns and cities, Clapham (1926/1967) nevertheless accurately noted that they were safer and healthier than any other large urban centers in the human experience. The British population rose sharply, Clapham (1926/1967, p. 55) observed, not because – as Thomas Malthus (1798), John Stuart Mill (1848), and the elder Toynbee (1884/1894) had assumed – of working class immorality and a high birth rate, but rather because the death rate fell, most particularly for the newborn. Among the factors contributing to longevity were immunization against smallpox, improvements in obstetrics, the disappearance of scurvy due to improved food supplies, and better urban drainage. The ready availability of cheap, washable cottons – in lieu of the soiled woollen clothes that were the historic norm – also contributed to a marked improvement in personal hygiene (Clapham 1926/1967, p. 55). "London might be honey-combed with cesspools and rank with city graveyards," Clapham (1926/1967, pp. 55–56) thoughtfully concluded, "but it was better to be born a Londoner than a Parisian, better to be born a Londoner of 1820 than a Londoner of 1760." Clapham (1926/1967, p. 52) also dismissed as a misnomer the view that British working class of the Industrial Revolution was sunk in ignorance and moral degradation. In doing so, he cited a French visitor to Scotland who reported, "In all the workshops and manufactories that I visited, I found the workmen well informed, appreciating with sagacity the practice of their trade, and judging rationally of the power of their tools and the efficacy of their machinery" (Dupin 1825, p. 52).

Like Nef, Clapham (1926/1967, p. 15) also noted the positive effect of industrialization on the area of land under tree cover. Under relentless pressure from Britain's pre-industrial population, Britain was by the eighteenth century virtually devoid of woodland, left with nothing other than "sandy waste heath, fenland, rough mountain pasture." From the 1780s, however, under the auspices of a newly established forestry commission, a process of systematic reafforestation commenced. By the 1820s, Clapham (1926/1967, p. 12) recorded, in areas long devoid

of tree cover, the land was "sprinkled over with wood – coppice screen and clump of pine or larch or spruce."

If Clapham's research bares resemblance to Nef's in terms of macro-level conclusions, it differed in providing a far more nuanced and detailed picture of the process of British industrialization. Indeed, by paying far greater heed to the social consequences of industrialization, and to patterns of managerial organization, Clapham charted a fundamentally new course that placed management and workplace relations at the fore – rather than economic factors of production. This research direction, it appears, was not one much favored by other British economic historians. In the obituary to Clapham published in *The Economic History Review*, for example, the journal's editor, Michael Postan (1946, p. 58), declared Clapham's "third volume of the *Economic History of Modern Britain* is better than his first two." Presumably, what Postan did not like about Clapham's work was what he described as Clapham's propensity for "weed-killing" and for being "rooted too deeply in facts" (Postan 1946, p. 57). However, this attention to detail arguably made him Britain's first true "management historian." For Clapham was someone who looked beyond generalities about technology and steam power to explore circumstances at the firm level. In perusing the pages of Clapham's three-volume *Economic History of Modern Britain*, what stands out is how industrialization was continually advanced by innovations – typically involving a modest variation of past practices – at the firm level, adaptations that were then quickly seized upon by competitors. In Clapham's (1926/1967, p. 426) first volume, covering the period between 1820 and 1850, we thus read how in 1831 the small Scottish Calder ironworks ascertained that high-grade coal could be used in ironmaking without the need for coking. This discovery favored new firms over old-established rivals who had invested in now dated technology, a fact that led to a 20-year supremacy of Scottish iron smelters at the expense of their Welsh and English rivals. Similarly, in Clapham's second volume (1932/1967, p. 129) of his *Economic History of Modern Britain*, covering the period 1850–1886, we are taken through the process of subcontracting involved in English ship building in the 1870s. Elsewhere, Clapham (1926/1967, 1932/1967, 1938/1951) explores almost every aspect of agricultural, commercial, and industrial life: labor relations, home life, finance, technological change, transport, and communications.

Constantly, Clapham emphasizes the comparatively modest contribution of steam power and technology to economic growth during the first half century of the Industrial Revolution and, conversely, the importance of managerial endeavor and organization. As late as the mid-1830s, Clapham (1926/1967, p. 442) ascertained, the motive capacity of Britain's entire stock of steam engines amounted to a feeble 30,000 horsepower, almost all of which was found in three locations: Lancashire, Cheshire, and Glasgow. Although the vaunted cotton industry employed more workers than any other manufacturing sector, comparatively few employees were nevertheless found within the confines of a cotton mill. In 1830, Clapham (1926/1967, p. 54) calculated, the "cotton-mill population of Great Britain . . . was perhaps one-eightieth of the total population." Most British workers continued to work for small businesses and entrepreneurs, the "average" firm employing only 5.5 workers

according to the British census of 1851 (Clapham 1926/1967, p. 70). London in particular was "the home of small businesses," Clapham (1926/1967, p. 68, 70) observing that in 1831, it "had no thousand-man businesses to keep up the average and plenty of craftsman-shops to keep it down." Where large-scale, industrialized businesses were established they were invariably on or adjacent to active coalfields. For nothing, Clapham (1926/1967, p. 42) reflected, was "more essential" to the viability of a large industrial enterprise or town than "a supply of coal at reasonable prices."

Where Clapham's analysis profoundly differed from those who had previously reflected on the Industrial Revolution – the elder Toynbee, Tawney, the Webbs, and Nef – was in effectively dating its commencement not from the 1760s (as per Toynbee) or the 1790s (as per Nef) but rather from the 1830s and the advent of the railroads. Reflective of this emphasis is the subtitle, *The Early Railway Age 1820–1850*, to the first volume of Clapham's three-volume book on industrialization. Yes, Clapham recognized, the advent of the railways depended on the *preexistence* of a whole series of preconditions: steam power, large-scale coal and iron production, a skilled engineering workforce, and large pools of private savings eager for new sources of investment. Nevertheless, in Clapham's estimation, it was the railroad and the steamship that profoundly altered the human condition, destroying local market monopolies and shattering the pre-industrial sense of space and time. Although English railroad developers anticipated that the bulk of their revenues would come from freight, it soon became apparent that passenger transport was more valuable, comprising 64% of gross railroad revenue in 1845 (Clapham 1926/1967, p. 400). Whereas, previously, most people lived and died within sight of where they were born, the coming of the railroad transformed people's physical and intellectual horizons. Far more than the mechanization of textile production, the backward and forward linkages created by the railroads profoundly altered economic and managerial relations, creating the largest and most capital-intensive private-sector organizations in the human experience. "At once effect and cause," Clapham (1926/1967, p. 425) noted, "railway development coincided with a development of metallurgy and mining quite without precedent." In every field of metal production, engineering, and mining, the needs of the railroads drove large-scale increases in production. In 1847–1848 alone, British railroads placed orders for 400,000 tons of iron running rails (Clapham 1926/1967, p. 428). Locomotives and rolling stock also placed huge demands on iron smelters, as did a booming export trade. Not only British railroads relied on the output of the nation's smelters and iron works. In France and the United States during the 1840s, all of the iron rails laid down were British made (Clapham 1926/1967, p. 427).

In essence, Clapham's thesis as to the central importance of the railroads in the process of industrialization closely resembles that subsequently – and more famously – argued by Alfred D Chandler, Jr. In Chandler's (1965, 1977) estimation, as with Clapham, the modern industrial world was first and foremost a product of the railroads. As Chandler (1977, pp. 79–80) expressed it, not only were the railroads "the pioneers in the management of modern business enterprise"; they were also "essential to high-volume production and distribution – the hallmark of the large

modern manufacturing or marketing enterprises." Given the marked similarities between Clapham and Chandler's research, one would suspect that Chandler owed an intellectual debt to Clapham. This, however, does not appear to be the case. There is not a single reference to Clapham in either Chandler's (1965) original article on American railroads ("The Railroads: Pioneers in Modern Corporate Management") or Chandler's (1977) famed study, *The Visible Hand: The Managerial Revolution in American Business*. What explains Chandler's apparent ignorance of Clapham's work, given its close resemblance to his own? Part of the problem lies in the fact that, unlike Nef, Clapham rarely published in mainstream journals after World War I, a fact evident from the "Bibliography of Sir John Clapham's Work" appended to Postan's (1946, pp. 58–59) obituary piece. Instead, it appears, his massive three-volume *Economic History of Modern Britain* – and his (Clapham 1944/1966) two-volume study, *The Bank of England: A History* – consumed most of his time. Until their republication by Cambridge University Press in the mid-1960s, it would also appear that the readership of these books – originally published in the midst of economic depression and war – was small. The size of Clapham's books also probably deterred would-be readers. The first volume of his *Economic History of Modern Britain* goes to 623 pages. Volumes 2 and 3 comprise 554 pages and 577 pages, respectively. The greatest strength of Clapham's research – his capacity to explore in depth a variety of interrelated issues (labor relations, technology, firm size, managerial organization, technology, etc.) – was also a weakness. For, unlike Chandler's great study, *The Visible Hand*, where the theme and argument were relentlessly pursued, Clapham's books were – as Postan (1946, p. 57) remarked – "rooted too deeply in fact." One is easily drowned in the detail.

If Clapham's American readership appears to have been small, his work nevertheless remains seminal to our understanding of the Industrial Revolution and the transformative role that management played in this process of economic transformation. Certainly, one cannot fully understand the defining works in labor history by E.P. Thompson, and in management history by Sidney Pollard, without comprehending the ways in which they framed their arguments for and against Clapham. For if Chandler did not read Clapham, Thompson and Pollard certainly did.

## Capitalism and Management: Exploitation or Opportunity? The Intellectual Contribution of Webbs and E.P. Thompson

Among historians who came of age in the 1970s and 1980s, as I did, arguably no work was more influential in the fields of social history and labor history than E.P. Thompson's *The Making of the English Working Class*. A Marxist – who abandoned his membership of the Communist Party after the Soviet invasion of Hungary in 1956 – Thompson's defining work provided a fundamentally different way at looking at the Industrial Revolution, and, indeed, history as a whole. Rather than writing history in terms of dominant intellectual currents, economics, finance, or politics, Thompson aspired to write a history "from below," from the point of the

view of the supposed victims rather than the victors of the Industrial Revolution. In his brilliantly written six-page preface to *The Making of the English Working Class* – the only section of the book that one suspects most readers ever peruse in full – Thompson (1963/1968, p. 13) proclaimed, "I am seeking to rescue the poor stockinger, the Luddite cropper, the 'obsolete' hand-loom weaver, the 'utopian' artisan . . . from the enormous condescension of posterity." For Thompson, unlike Marx and Engels, the "working class" was not primarily the results of economics, but rather a cultural creation, the product of shared values and experiences. Accordingly, the English working class was, Thompson (1963/1968, p. 9) declared in the opening paragraph of his book, "present at its own creation." Rejecting the view that there were a multitude of "working classes" (domestic servants, farm laborers, factory workers, etc.), Thompson (1963/1968, p. 12) argued in favor of a single "English working class," who "came to feel an identity of interests as between themselves and as against their rulers and employers." Rather than highlighting the reforming instincts of the middle class, as the Toynbees and Tawney had done, Thompson argued that the British Industrial Revolution was a catastrophic experience for working people, imposed relentlessly and remorselessly. "The process of industrialization is necessarily painful," Thompson (1963/1968, p. 486) reflected, "But it was carried through with exceptional violence in Britain . . .Its ideology was that of the masters alone." Constantly detecting an undercurrent of revolution in English society, Thompson (1963/1968, p. 898) fancifully concluded that by "the autumn of 1831 . . . Britain was within an ace of a revolution." Although this revolt never eventuated, Thompson nevertheless argued that the Industrial Revolution created a host of "social evils" – workplace degradation, inequality, and power imbalances – "which we have yet to cure."

In many ways, Thompson's classic study suffered from the same strengths and weaknesses as Clapham's earlier three-volume *Economic History of Modern Britain*, a tendency to be drown the reader in detail. My Penguin copy of the 1968 edition, which differed from the initial print run only through the edition of a short "postscript," runs to 958 pages. Now, it is true that the political and social purpose of what is an aggressively Marxist analysis is self-evident in *The Making of The English Working Class*. As one early reviewer observed, "Mr. Thompson sticks very close to his theme" (Best 1965, p. 271). Nevertheless, its *intellectual* goal (i.e., the research opinions that it seeks to challenge and refute) is by no means readily apparent to the lay reader. Indeed, in my Penguin copy of *The Making of The English Working Class*, this is only articulated on pages 213–214, where Thompson (1963/1968, pp. 213–214) declares his work to be a "challenge" to "a new anti-catastrophic" historiography on the Industrial Revolution, an "orthodoxy" that emerged as a repudiation of the earlier "catastrophic" analysis of Marx and Arnold Toynbee. In taking aim of this "anti-catastrophic" viewpoint, Thompson (1963/1968, p. 214) lists "Sir John Clapham" in the first rank "among its most notable exponents." Thompson (1963/1968, pp. 226–227) took particular aim at Clapham's well-articulated argument that the Industrial Revolution – at least by the 1830s – was associated with a marked improvement in working-class living standards. Arguing in favor of the reverse proposition, Thompson (1963/1968, pp. 228–229) recorded that, "The

condition of the majority was bad in 1790; it remained bad in 1830 . . .even in the mid-40s the plight of very large groups of workers remains desperate."

Undoubtedly, this "catastrophic" view of the Industrial Revolution, and its associated systems of capitalism and management, does much to explain the enduring success of *The Making of The English Working Class*, a viewpoint that Thompson weaves into virtually every section of his book. The fact that few of Thompson's readers are probably familiar with the work of Clapham – or with the critical reviews (i.e., Best 1965; Chambers 1966) that emerged in the wake of the publication of *The Making of The English Working Class* – also no doubt adds to the continued prevalence of the "catastrophic" image of the Industrial Revolution. Alan McKinlay (2006, p. 95), for example, in an influential article in *Management & Organizational History*, declares the period of the Industrial Revolution to be "monstrous," associated as it was with "mechanization and the subjugation of labor." Now, of course, one *could* argue that the Industrial Revolution was associated with "subjugation" even though living standards rose. This was not, however, the path that Thompson chose to follow.

In retrospect, Thompson's decision to associate the Industrial Revolution with labor subjugation *and* falling living standards appears more than a little odd. For by the late 1950s, as we have noted in previous chapters, the findings of the International Scientific Committee on Price History – which ascertained the relationship between prices and wages since the early medieval period – were making their way into print. In Britain, the most significant result of this research was the so-called Phelps Brown and Hopkins Index, which traced the real wage of English building workers, both skilled and unskilled, between the thirteenth and twentieth centuries. While this Phelps Brown and Hopkins (1956) Index did identify the dip in real wages already noted in Fig. 3, it also identified 1800 as a fundamental turning point for real wages in Britain. After this date, as Fig. 4 indicates, living conditions for

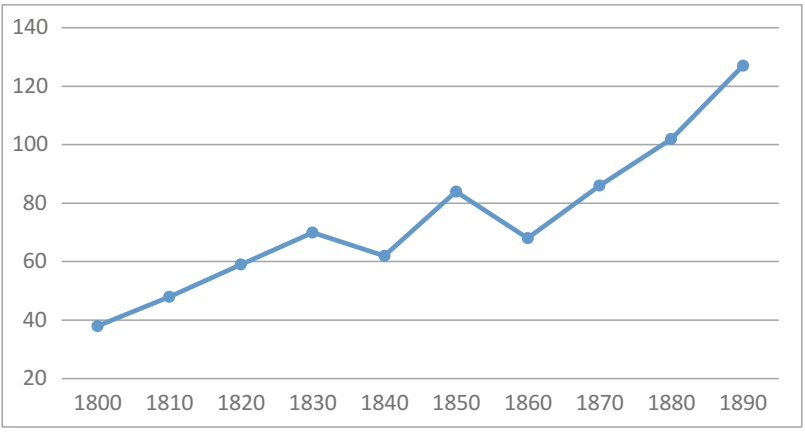


**Fig. 4** Real wage of skilled building worker, Southern England, 1800–1880 (1447 = 100). (Source: Phelps Brown and Hopkins: "Seven centuries of . . . builders' wage rates," Appendix B)

English workers were characterized by steady improvement, culminating in a level of mass prosperity without precedent in the human experience. It soon became apparent to Thompson himself that his arguments in favor of falling living standards were indefensible. In the "postscript" appended to the second edition of *The Making of The English Working Class*, Thompson (1963/1968, p. 917) chose to beat a retreat, declaring his chapter on "Standards and Experience" to be "clearly inadequate." Thompson (1963/1968, p. 917) also advised readers, in a confusing turn of phrase, to read instead "those economic historians whose assumptions are, in this chapter, under criticism." Presumably, this statement should be read as an acceptance as to the basic accuracy of John Clapham's earlier research, given that it was against Clapham that Thompson primarily directed his attacks. The problem with this concession – which was probably read by few people and understood by even fewer – is that Thompson's "catastrophic" viewpoint was not confined to a single chapter. Rather, it pervaded his whole book. A number of Thompson's other core assumptions are also without much merit. Of Thompson's constant identification of revolutionary tendencies among Britain's workers, Chambers (1966, p. 184) declares it "a really remarkable flight of fancy" as "there was not revolution to stop." Geoffrey Best (1965, p. 276) also declares Thompson's capacity to find a single united working class in industrializing England to be figment of the imagination.

Given the evident problems in Thompson's famed study, what makes it a foundation text for anyone attempting to understand management history? First and foremost – far more than Clapham or, indeed, any scholar before or since – Thompson forces the "human factor" constantly to the fore. Thompson constantly takes us into the workplaces and homes of English workers, some of whom enjoyed comparative prosperity and others undoubted misery. We get to know not only employers but also workers and their family members by name, to sit with them in their cottages and understand the detail of their work. For example, of the "heavy manual occupations at the base of industrial society" that were dominated by Irish immigrants (i.e., canal and railroad construction, tunneling, wharf laboring), Thompson (1963/1968, p. 473) observed that their work "required a spendthrift expense of pure physical energy . . . which belongs to pre-industrial labour-rhythms." In the case of the handloom weavers of "the Pennine uplands" whose historic mode of existence was being destroyed by the new industrial factories, we read how they lived on a diet composed almost entirely of "oatmeal and potatoes," supplemented with "old milk and treacle" (Thompson 1963/1968, p. 320). For all his Marxist sympathies, Thompson also showed an acute sense of the problems faced by managers. More often than not, Thompson willingly conceded, managerial demands for workplace discipline profoundly altered worker behavior for the better. Between 1780 and 1830, Thompson (1963/1968, p. 451) concluded, "The 'average' English working man became more disciplined, more subject to the productive tempo of the 'clock', more reserved and methodical, less violent and less spontaneous." Nowhere is this sympathy for the problems of management more apparent than in his article, "Time, Work-discipline, and Industrial Capitalism." As Thompson (1967, pp. 70–71) correctly noted, "accurate and representative time-budgets" – and hence any sense of workplace efficiency and cost-benefit

ratios – are virtually impossible in pre-industrial situations. There are simply too many variables. Bad weather, the shortage of one or more input of production, illness to a household member, drunkenness, and the slow pace of a particular worker in the production process all worked to destroy any sense of predictability. The absence of watches and clocks also meant that most worked to the natural rhythms of the day, rather than to any sense of predetermined start and finish points. In Thompson's estimation, a viewpoint with which this author concurs, no managerial task was more important to the future of industrial society than the effort to internalize a sense of time and work discipline among workers. Through a host of initiatives – "the division of labour; the supervision of labour; fines; bells and clocks; money incentives" – a new approach to work was forged, centered on "a new time-discipline" (Thompson 1967, p. 90). Thompson (1963, pp. 452–453 was also unusual in identifying the ways in which the new industrial capitalism opened up unprecedented opportunities for women as "independent wage-earners," free from "dependence" on male relatives. "Even the unmarried mother," hitherto a virtual social outcast, found in factory employment "an independence unknown before."

Arguably, the greatness of Thompson's work, for all its obvious flaws and inaccuracies, is found in his recognition that the Industrial Revolution was built around "paradoxes," in which – even by his estimates – the opportunities often outweighed the social disadvantages (Thompson 1963/1968, p. 453). This sense of paradox, of industrial capitalism's opportunities outweighing its exploitative tendencies, is even more apparent in the work of Beatrice and Sidney Webb. It is also the case that, even though Beatrice Webb (d.1943) and Sidney Webb (d.1947) both died long before *The Making of The English Working Class* was published, their work is in many ways more "modern" than Thompson's studies. It constantly speaks to contemporary concerns such as productivity, the enhancement of workplace skills, female participation in the workforce, and a fostering of cooperative relationships between workers and employers.

Although the Webbs are typically associated with collective bargaining and trade unions, their concerns were in truth far more catholic. The starting point for the Webbs – as expressed in the "Preface" to the original edition of *The History of Trade Unionism* – was that in a "democratic State," social and economic interests only become meaningful to the extent that they are expressed institutionally, in "the course of continuous organizations" (Webb and Webb 1894/1902, p. xxvii). The primary significance of trade unions was thus found in the fact that they were "a State within our State," speaking on behalf of a special interest group that represented a large section of the population. In granting trade unions an important role, the Webbs were, however, never uncritical supporters. Unlike Thompson, who was at best equivocal in his attitude toward the productivity-enhancing activities of management, the Webbs were enthusiasts for productivity maximization and workplace efficiency. Trade unions only succeeded – and only played a socially beneficial role, the Webbs argued in the Preface to the 1902 edition of *The History of Trade Unionism* – when they associated the interests of their members with "the utmost possible stimulus to speed and productivity" (Webb and Webb 1902, p. xix).

Conversely, they argued, any union "struggle against . . . maximising productivity . . . must necessarily fail" (Webb and Webb 1902, p. xviii). Like Adam Smith (1776/1937, Book I, Chap. VIII, para. 13), who argued against artificial restrictions on the supply of workers, the Webbs "unreservedly condemned" any union attempt to protect one class of worker by excluding others or by artificially inflating the number to be employed (Webb and Webb 1897/1920, p. 810). Such restrictive practices, the Webbs declared, were "hostile to the welfare of the community as a whole" (Webb and Webb 1897/1920, p. 810). The Webbs also strongly supported managerial prerogative when it came to recruitment and promotion, advising their readers that, "It is clear that the efficiency of industry is best promoted by every situation being filled by the best available candidate" (Webb and Webb 1897/1920, p. 717). No doubt to the chagrin of the union leaders with whom they rubbed shoulders, the Webbs were also deeply suspicious of union-endorsed apprenticeship schemes, supporting them when they genuinely served the needs of industry and opposing them when they sought to artificially restrict entry into a trade or occupation (Webb and Webb 1897/1920, pp. 456–457, 478). In general, the Webbs believed that the apprenticeship system long supported by unions was "Undemocratic in its scope, unscientific in its education methods, and fundamentally unsound in its financial aspects" (Webb and Webb 1897/1920, p. 481). The Webbs were also fervent opponents of trade union attempts to restrict female employment, devoting a whole section of their classic study, *Industrial Democracy* to "The Exclusion of Women."

Critical rather than uncritical supporters of trade unionism, the Webbs nevertheless argued that trade unionism was a *potentially* progressive force for two reasons. First, they argued, the educated trade union leader – more than the individual employer – dealt with the most fundamental problems of an industrial society in that they had to consider matters from the point of view of an entire occupation or industry, rather than from the narrow viewpoint of the individual firm. For the problem "in each trade," the Webbs declared, was how "to adjust all the technical conditions of the contract of service, so as to combine the utmost possible productivity, and the greatest possible improvement in processes, with the maintenance and progressive improvement of the manual worker's "standard of life" (Webb and Webb 1902, p. xi). In other words, the Webbs supported unions where they supported productivity and living standards and castigated them when they did not. The second socially progressively role that the Webbs associated with trade unionism was in the enforcement of a "Common Rule," which acted to take "wages out of competition" by setting wage rates, worker hours, and "prescribed conditions of Sanitation and Safety" that were common to all in any given industry (Webb and Webb 1897/1920, p, 716). In their well-reasoned estimation, not only workers and trade unions benefited from the enforcement of a "Common Rule." So too did the reputable employer, intent on paying his or her employees fairly for a fair day's work, who was protected from undercutting by unscrupulous rivals. The Webbs also believed that a "Common Rule" worked to the benefit of the overall society by forcing employers to focus on more productive work practices rather than lower labor costs. As Sidney and Beatrice Webb (1897/1920, pp. 716–717) explained it,

> If the employer cannot go below a minimum rate, and is unable to degrade the other conditions of employment down to the lowest level . . . he is economically impelled to do his utmost to raise the level of efficiency so as to get the best possible return for the fixed conditions.

For management historians, the work of the Webbs deserves a special place in our discipline due to the ways in which they perceived employment, management, living standards, worker and employer interests, productivity, and training as an integrated whole. The "human factor" was for them always at the forefront of their attention, prefiguring the subsequent work of the US "human relations movement" (i.e., Elton May, George Homans, etc.). As such, their work has a contemporary resonance that exceeds that of any of the other scholars we have considered so far. Certainly, in my own research, whenever I come to consider some employment or labor relations issue, I invariably thumb my way through my well-worn copies of *Industrial Democracy* and *The History of Trade Unionism* before putting pen to paper. For whatever problem I am considering, it is likely that the Webbs have already written on it. Despite their deep and genuine interest in productivity and efficiency, however, the Webbs were at heart – like the Toynbees and Tawney – well-meaning Victorian moralists, intent on raising workers from their perceived poverty and degradation. Thus, we read in the "Introduction to the 1920 Edition" of *Industrial Democracy*, that the Webbs believed that, "the gravest" social evil "in the opening decades of the twentieth century is the lack of physical vigour, moral self-control, and technical skill of the town-bred, manual-working boy" (Webb and Webb 1920, p. xii). This problem primarily stemmed, the Webbs continued, from the fact that "hundreds of thousands of youths" were "taken on by employers to do the unskilled and undisciplined work," paid "comparatively high wages," but "taught no trade" (Webb and Webb 1920, p. xii). Devoid of any sense of long-term purpose or career, such workers invariably became, in the Webbs opinion, a source of "hooliganism," "constant delinquency," and "physical degeneracy" (Webb and Webb 1920, p. xii).

Invariably, the Webbs saw the ultimate solution to nearly every workplace, managerial and social problem in regulation, imposed either through collective bargaining or, preferably, under the auspices of State control. Among the controls advocated in *Industrial Democracy* were compulsory vocational education at the employer's expense, compulsory conciliation and arbitration of industrial disputes, a minimum wage, and the exclusion of "boy-labour where economically inefficient" (Webb and Webb 1920, p. xiii, xv; Webb and Webb 1897/1920, p. 453, 484, 790).

While any one of the above recommendations has arguable merit, a willingness to put one's faith in government and State control at the expense of entrepreneurship has often led in unfortunate directions. The Webbs – whose early research remains core to our understandings of work and employment – provide proof of this maxim. After being lionized by the Stalinist regime during a visit to the Soviet Union in 1932, the Webbs published two accounts of their visit, a two-volume book that ran to 1,200 pages, *Soviet Communism*, and a shorter, 30-page pamphlet, *Is Soviet Communism a New Civilisation?* (Webb and Webb 1935, 1936). Neither did them much credit. As with many visitors to the Soviet Union, the Webbs chose to see and record

only those aspects of communism that coincided with their pre-existing beliefs and prejudices. Thus, we read how, "The highly organised trade unions of the USSR . . . are not only whole-heartedly in favour of increasing the productivity . . .but are also constantly pressing for the adoption of more and more labour-saving inventions" (Webb and Webb 1936, p. 8). Elsewhere, we read how "the habit of able-bodied persons living without work has become disgraceful" (Webb and Webb 1936, p. 7). In terms of the overall ethos of Soviet society, the Webbs reported that: "Husbands and wives, parents and children, teachers and scholars . . . managers and factory operates . . . live in an atmosphere of social equality" (Webb and Webb 1936, p. 11). In short, the Webbs claimed to detect almost everything that they had advocated in *Industrial Democracy*, although – in truth – two vital ingredients were missing, namely, democracy and managerial prerogative to direct production efforts toward market needs. Yes, it is true that Stalinist Russia did create a "new civilization," although it hardly resembled the one depicted by Sidney and Beatrice Webb. Instead, the reality of working life in the new Soviet "civilization" is well captured in Karl Schlögel's description of work on the Moscow-Volga canal between 1932 and 1938. "Working conditions were unimaginably harsh," Schlögel (2008/2012, pp. 283–284) records, "Everything hinged on finishing the canal in the shortest possible time . . . Workers went without lunch . . .They stood in water and swampy ground and were unable to warm themselves or dry their clothes." Perhaps there was in this a "Common Rule," a uniformity of working conditions such as that which the Webbs had advocated in *Industrial Democracy*. It was, however, a "Common Rue" set at the level of totalitarian barbarism.

## Sidney Pollard and the Origins of "Modern" Management

The genius of Pollard primarily rests in the fact that he gave much thought to definitions before blundering forth, as many do in either amassing a huge data set or in coming to some grandiose conclusion. This proclivity to pay much attention to definitions is evident in Pollard's thoughts on the two most significant questions in management history. What is modern management? What was the Industrial Revolution? To the first question, as I, a critical disciple of Pollard, have also argued consistently in this *Palgrave Handbook*, Pollard (1965, pp. 6–7) drew a clear distinction between "modern management" and pre-modern management – and, by implication, that found in modern totalitarian societies – in that modern management had the following distinguishing characteristics:

- Managers had "to control" large workforces, "but without powers of compulsion: indeed, the absence of legal enforcement of unfree work was not only one of the marked characteristics of the new capitalism, but one of its seminal ideas."
- Managers "had not only to show absolute results in terms of certain products of their efforts, but to relate them to costs, and to sell them competitively."

- Managers had to combine capital-intensive production "with labour," transforming both "into instruments of production embodying the latest achievements of a changing technology."
- Managers "had to transform . . . much of the rest of their environment, in the process of creating their industrial capitalism."

As to the nature of the Industrial Revolution, Pollard argued it was first and foremost a "managerial revolution" rather than a "technological revolution" and that modern management was both the creation and the creator of the Industrial Revolution. For the defining hallmark of the Industrial Revolution, Pollard (1965, p. 102) argued was not so much technological change as:

> . . . improvements in organization . . .involving better layout of factory space, division of labour, design of the product with the process of production in mind, interchangeability of parts, control of raw material stocking and supply.

Where Pollard differed from both Clapham and Chandler – both of whom associated the emergence of the modern managerial world with the advent of the railroads in the 1830s and 1840s – was in following the convention established by Toynbee the elder and dating the Industrial Revolution to the years between 1760 and 1830. Of little obvious importance, this difference in dates has profound significance for our understanding of both management and the Industrial Revolution. For – unlike the pre-1830 period – large firms, extremely high levels of capital intensity, and a need to draw on external sources of finance characterized the post-1830 era. By comparison, comparatively primitive machines that could be purchased and operated by entrepreneurs boasting little in the way of either capital or technical knowhow characterized the earlier period, most particularly the decisive years between 1760 and 1810. As Pollard (1989, p. 92) explained it, "In the early days of industrialization, the sums required for fixed capital in Britain were small, and could usually be raised locally or ploughed back by the firms themselves." In such circumstances, a firm's survival typically depended on superior managerial skills rather than the possession of a Boulton and Watt steam engine.

Certainly, for most successful firms in the early Industrial Revolution, ingenuity in the organization of work was typically more important than any productivity enhancement that resulted from new technologies. A case in point is found in the methods by which Josiah Wedgewood's revolutionized the English pottery industry, transforming it from a sector dominated by "small workshop-units" catering "for a narrow luxury demand" into the dominant force in the global market (Pollard 1965, p. 98). Yes, it was true, Pollard (1965, p. 98) conceded, that Wedgewood operated two steam engines at his pottery works "before the first Lancashire cotton mill had ordered one." Nevertheless, Pollard (1965, p. 99) concluded, the key to success was "a far reaching division of labour." In essence, Wedgewood targeted two distinct markets, a small luxury market catered for by "craftsmen of a high order" and a mass market that sold its wares on the reputation of the former. It was around this second production category, upon which the bulk of Wedgewood's fortune was built, that the "division

of labour" was pursued to the fullest. For this type of work, painted decoration was undertaken not by skilled craft workers but by newly recruited women, who transferred printed designs onto unglazed surfaces prior to firing. Even in the famed Soho engineering works in Birmingham – which made the Boulton and Watt steam engines that powered early factories – Pollard (1965, p. 81) noted that the key to the firm's success was not so much its utilization of its own steam engines as the "organizational advantages" that followed from the division of labor.

Among the industries central to the success of the Industrial Revolution – mining, smelting, engineering, civil construction, and textiles – Pollard argued that the highly mechanized process of cotton spinning was atypical in a number of regards. For, Pollard (1965, p. 90) observed, the fact that entrepreneurs and managers in the cotton mills organized production around machines, more or less common to all, created unusual problems as well as benefits. Standardized machinery meant that "organization and management techniques could be copied without thinking," an outcome that also meant there was "much less scope for individual design, skill or new solutions to new problems." In turn, the inability of most cotton producers – other than those in a few specialized areas such as lacemaking – to distinguish themselves from their rivals through superior methods resulted in high levels of competition around a range of standardized products. This did much to ensure the cotton mills status as the ugly face of the Industrial Revolution. "It was an environment," Pollard (1965, p. 91) reflected, that encouraged "ruthlessness, not only to one's competitors, but also to one's employees." Where enlightened employer attitudes prevailed, such as at Robert Owen's famed experiment at New Lanark – an experiment whose ultimate failure is well covered in ▶ Chap. 20, "Certain Victory, Uncertain Time: The Limitations of Nineteenth-Century Management Thought" by Muldoon's – better working conditions were conceded not because the business concerned necessarily believed a more progressive attitude would be more profitable. Rather, the reverse typically applied, i.e., a business was more generous because it already enjoyed unusual profits. As Pollard (1965, p. 246) noted of Owen's operation at New Lanark, it boasted "a monopolistic position at the fine end of the spinning industry," a circumstance that ensured "exceptionally high" profits no matter what labor relations policy was pursued.

It is certainly wrong to assume that all circumstances in the Industrial Revolution led in the direction of similar labor relation outcomes or that the employment circumstances that prevailed in the cotton mills were applicable elsewhere. For, as Pollard (1963) discussed in an article entitled, "Factory Discipline in the Industrial Revolution," in the cotton mills the only real concern was with discipline and vigilance in carrying out a narrow range of routinized jobs, many of which were performed by children and adolescents. In consequence, labor relations in the cotton mills revolved around fines, dismissals, and even corporal punishment (Pollard 1963, p. 263). Such managerial behavior would have been suicidal in industries such as engineering and metallurgy, built around skilled workers. At the Soho engineering works, Pollard (1963, p. 261) records, whenever the temperamental inventor, James Watt, demanded the sacking of a skilled worker, the manager, Mathew Boulton, "quietly moved them elsewhere until the storm had blown over."

In emphasizing the atypical nature of cotton manufacture, Pollard – like Nef and Clapham before him – downplayed its overall significance in the Industrial Revolution, emphasizing instead the importance of mining, smelting, and engineering. Primarily concerned as he was with the emergence of a new class of professional managers, Pollard (1965, p. 127) believed the largest, most technically qualified reservoir of managerial expertise – a group without whose skills the Industrial Revolution is almost inconceivable – were the "coal viewers," the independent consultants who provided advice to owners as to the safe and profitable operation of their mines. Recruited out of coal mining to work in a host of new mechanized industries, the "coal viewers" rubbed shoulders with another important group of technically trained professionals: the civil engineer. Of the managerial circumstances of civil engineers in the 1770s, Pollard (1965, p. 130) observed that, "Those of any standing were supervising several works at the same time." As a new class of professional managers slowly emerged during the late eighteenth and early nineteenth centuries, a defining characteristic of the new vocation was the pioneering of what we think of as "cost accounting." "In the most advanced works," such as Boulton and Watts's Soho engineering work, "departmental accounts would attempt to keep the returns of departments separate, down to elaborate schemes for allocating overheads fairly and proportionately" (Pollard 1965, p. 222). Although estimates of costs were typically led astray by the difficulties in accounting for various "overheads" (i.e., capital depreciation, administrative costs, etc.), the significance of these efforts cannot be underestimated. For mindfulness as to costs, and the need to sell competitively into constantly evolving markets, was, ultimately, the *raison d'être* of the new class of professional managers.

As a management historian – rather than a business or economic historian – Pollard was, as is the norm in our discipline, more concerned about the supply side of the economic equation than the demand side. This differentiated his ideas from those of Clapham and Chandler, both of whom put a greater emphasis on the ways in which the railroads and steam-powered shipping created new mass consumer markets after 1830. For Pollard, the most important driver "from the side of demand" was not the consumer, but rather the supply side needs of other industries. Consequently, for Pollard (1958, p. 217) – unlike the Toynbees, Marx, Nef, Clapham, and Chandler – the key event in the Industrial Revolution, around which everything else turned, was "the emergence of an engineering industry," capable of creating and maintaining "the new equipment and the motors or engines needed by the first industries to be mechanised." From this central and indispensable core, Pollard (1958, p. 217) identified a ripple effect that fueled industrial take-off as the engineering industry fostered increased coal and iron production, improved transport, and enhanced managerial and employee skills.

In arguing his case for "the unique features of the transformation which began in Britain about 1760," Pollard (1958, p. 215) poured scorn on what he considered the unfortunate tendency "to describe every major technical innovation as yet another 'industrial revolution'." In making this comment, Pollard clearly had John Nef mainly in mind. However, he was evidently also unsympathetic to the view, advocated by Clapham and (subsequently) Chandler that the most significant change in

managerial and human circumstances occurred after 1830 with the advent of the railways, telegraphs, and steam-powered shipping. Significantly, unlike all the other authors that we have considered in this chapter, Pollard was also little concerned with changes in real wages *during* the Industrial Revolution. For Pollard (1958, p. 221), "the substantial rise in real wages after about 1850" was an inevitable result of the new industrial, free-market capitalism, an economic order whose ascent would have been impossible without "forced savings" at the expense of labor during the 1760–1830 period. That many suffered was unfortunate but necessary, Pollard (1958, p. 221) concluding that,

> . . . those who battled for a larger share for the workers . . . were battling against the flood tide of a victorious economic development which needed, for a critical period, the greatest amount of output, and the lowest level of personal consumption, which could be imposed on the population.

How to assess Pollard's intellectual contribution, which stands in opposition to the other authors we have considered on a whole series of points, yet which nevertheless provides a theoretical bedrock for the subsequent development of management history? Pollard is certainly correct in emphasizing that the Industrial Revolution between 1760 and 1830 was unique by comparison with anything that had gone before it. Yes, it is true that the large-scale exploitation of coal during the early "Industrial Revolution" of the sixteenth and seventeenth centuries – and the transition from a wood-burning to a coal-burning economy – provided a *precondition* for the Industrial Revolution of the eighteenth and nineteenth centuries, setting England on a fundamentally different course to that of any other European society. However, we should not exaggerate either the scale or the nature of the "early" Industrial Revolution. For, while the exploitation of coal fueled the expansion of a range of industries (brickmaking, brewing, glassmaking, etc.), the performance of work still revolved around largely unaided manual labor. To the extent that mechanical means were utilized, they relied on either animal power or unreliable water and wind power. If we can conclude, nevertheless, that Pollard probably understated the importance of the "earlier" Industrial Revolution in emphasizing the uniqueness of the subsequent Industrial Revolution, his tendency to downplay post-1830 developments is less defensible. For, as his study, *Britain's Prime and Britain's Decline: The British Economy 1870–1914*, makes clear, Pollard saw the changes that characterized Britain during the latter half of the nineteenth century in largely negative terms, as a squandering of the hard-fought gains of the Industrial Revolution by "a small financial and commercial elite" (Pollard 1989, p. 259). Yet, as Clapman and Chandler emphasized, the movement to a different form of industrial capitalism – characterized by large firms, highly capitalized industries, and patterns of investment that only large financial institutions made possible – can also be seen as an inevitable result of the forces unleashed between 1760 and 1830. In consequence, as I have argued in ▶ Chap. 12, "Transformation: The First Global Economy, 1750–1914", the "Industrial Revolution" is best understood as a series of cascading revolutions, which had their pre-history in the "early" English "Industrial Revolution" of the

sixteenth and seventeenth centuries and which produced a fundamentally different society and economy after 1750.

In assessing Sidney Pollard's intellectual contribution, we must conclude that his most profound insight was his realization that the success of free-market industrial capitalism rests primarily on people rather than machines, and on the managers who organize production and exchange rather than impersonal economic forces. Accordingly, the (second) Industrial Revolution of the late eighteenth and early nineteenth centuries – which in truth boasted comparatively few machines and very little in the way of mechanized horsepower – is best conceived as a "managerial revolution" rather than anything else. If those steeped in the "catastrophic" accounts of the Toynbees, Tawney, and Thompson no doubt believe that Pollard erred in paying sufficient heed to the oppression of the poor, we can only note that oppression of the poor has been common to all societies. As Braudel (1963/1975, p. 725) observed, prior to the Industrial Revolution, "The price of progress" was always "social oppression," a process in which, "Only the poor gained nothing, could hope for nothing." With the Industrial Revolution, however, the poor could genuinely hope for a better life, and, invariably, if not immediately than within a generation, those hopes began to be fulfilled as ever-greater numbers enjoyed a material plenty that was unimaginable to the peoples of pre-industrial societies.

## Conclusion

In his study, *Memory, History, and Forgetting*, the French philosopher, Paul Ricoeur (2000/2004, p. 412), in countering the ideas of the American postmodernist, Hayden White, observed that "no one can make it to be that" the past "should not have been." In other words, the experiences of the past are not imaginings belonging to some mythical dreamtime, but actual occurrences that helped shape the present. The past is thus an ontologically real phenomenon, a process whereby real lived experiences create the present. Yet, it is also true that we can never experience the distant past directly through experience. Instead, we understand it through interpretation and historical reconstruction, a process that gives rise to intellectual debates and, ultimately, to academic disciplines that hold dear certain principles, methodologies, and understandings.

In management history, most particularly in Great Britain, the discipline largely owes its origins to the debates and controversies associated with the Industrial Revolution, debates that brought forth – as we have previously noted – two key questions. What was the Industrial Revolution? What is modern management? Ironically, defining understandings that still dominate much of the public consciousness are largely attributable to an Oxford scholar, Arnold Toynbee the elder, who died at the age of 30 without publishing a word of note. His ideas reconstructed from the lecture notes of some of his former students; it is to Toynbee (1884a/1894) that we owe the very concept of the "Industrial Revolution" as a unique historical event that occurred in Britain between 1760 and 1830. In Toynbee's estimation, the Industrial Revolution was not only a transformative event, it was also a catastrophic experience for most of the population, bursting with unexpected fury on a largely pre-industrial society. "The effects of the

Industrial Revolution," Toynbee (1884a/1894, p. 93) proclaimed, "prove that free competition may produce wealth without producing wellbeing. We all know the horrors that ensued in England before it was restrained by legislation and [trade union] combination." This "catastrophic" understanding of the Industrial Revolution, pioneered by Toynbee the elder, gave birth to a large and arguably still dominant historiography, boasting among its proponents three historians to whom we have paid special heed: R.H. Tawney, Toynbee the younger, and E.P. Thompson. For Tawney (1922/1938, p. 266), as for the first Toynbee, the Industrial Revolution was not only a source of suffering and inequality; it was also the product of a profound cultural shift, an alteration that saw Protestant religious beliefs and a "ruthless materialism" welded together in a dominant ideology "prepared to sacrifice every other consideration to their economic ambitions." In the opinion of Toynbee the younger (1976/1978, p. 564, 566), the industrialized world's propensity to burn coal, a "non-replaceable natural resource," instead of wood that could be "regenerated," posed dire threats to woodlands and the environment more generally. Among labor and social historians, the "catastrophic" historiography of the Industrial Revolution was reinforced by E.P. Thompson's *The Making of the English Working Class*, a work that depicted a "distinguished popular culture" at constant war with "the exploitative and oppressive relationships intrinsic to industrial capitalism."

On almost every point of substance, the "catastrophic" historiography of the Industrial Revolution has been in error. While it is true, as Toynbee the elder observed, that the Industrial Revolution of the late eighteenth and early nineteenth centuries *did* represent a profound transformation in the human condition its arrival was hardly unannounced. As the work of John Nef (1932a, b, 1934, 1937, 1941, 1943) demonstrated, due to an "early Industrial Revolution" between 1540 and 1640, England differed from other societies in making a transition from a wood-burning economy to a coal-burning society; a development that made pre-industrial Britain a leader in a range of energy-intensive industries. Contrary to the beliefs of the younger Toynbee (1947a/1976, 1976/1978), the burning of coal protected rather than diminished woodland and other nature reserves, leading to a gradual reafforestation of Britain. The work of John Clapham (1926/1967, 1932/1967) also exposed as myth the view that the Industrial Revolution caused a catastrophic fall in popular living standards, a point eventually (and begrudgingly) conceded by E.P. Thompson (1963/1968, p. 916). The idea that the English "working class" was united in their opposition to "industrial capitalism" was also shown to be a misnomer by Sidney and Beatrice Webb (1897/1920, 1902), who demonstrated that most workers and trade union members wanted to share in the benefits of capitalism, not overthrow it. In like fashion, Sidney Pollard (1958, 1963, 1965, 1989) revealed as spurious the understanding that the Industrial Revolution revolved around revolutionary new technologies, introduced *en masse* into the textile industry. In truth, as Pollard demonstrated, the "Industrial Revolution" was really a "managerial revolution," boasting the use of comparatively few machines.

If the "catastrophic" historiography of the Industrial Revolution was largely in error, it is nevertheless the case that the emergence of the discipline of management

history in Britain can only be understood in terms of the fundamental debate that this historiography produced. In doing so, it shifted the debate from a focus on machines to the "human factor," causing a fundamental reappraisal as to the nature of "modern management" and its role as a transformative economic and social agent. If we look beyond the standard definitions of "management" (planning, organizing, leading, controlling), we can also ascertain some additional defining characteristics in addition to those put forward by Pollard (1965, pp. 6–7) and which we enumerated at the beginning of our previous section, entitled "Sidney Pollard and the Origins of Modern Management." For "modern management" differs from pre-modern forms of management not only in dealing with legally free workforces, and in using capital-intensive production methods to sell into competitive markets, but also in having the following attributes: that it operates within a system of legal protections for person and property, that it exploits energy-intensive production systems in which manual labor is replaced in large measure by artificial forms of energy, that is metal dependent in that it requires smelted metals for durable capital goods and consumables, and that it results in material abundance and standards of living unimaginable in pre-industrial societies.

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