The Pre-modern World and Management: An Introduction

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Abstract

In this introduction to our section on pre-modern management, the central question that is addressed is the following: were ancient and feudal managerial systems comparable to those found in modern, liberal-democratic societies? The answer to this question is "no." For although pre-modern forms of management were characterized by the attributes described in most textbooks (i.e., planning, organizing, leading, controlling), they lacked other characteristic features of "modern management." Pre-modern production was rarely directed toward competitive markets. Mass markets were even more uncommon. Instead, the tyranny of distance, and a reliance on either muscle power or wind in terms of transport, restricted most production to local markets. An absence of competitive markets meant that pre-modern managers were little concerned with costs. Pre-modern managers also differed from their modern counterparts in that they typically operated with few of the protections of both property and person that are the norm in today's democratic societies. In the past, unfree forms of labor were also commonplace. Due to a lack for smelted metals, pre-modern managers and producers also lacked durable capital equipment. This weakness manifested itself in both low levels of capital intensity and energy usage. Such failings, in all

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pre-modern societies, resulted in living standards inferior to those of our own. Nevertheless, for all its failings, "modern management" owes its success to the travails of past managers. In looking to the past, therefore, we need to both acknowledge our debt to bygone eras and recognize the advances built on past sacrifices.

Keywords

Pyramids · Management · Antiquity · Ancient technology · Medieval technology · Inequality · Climate change

Introduction

In addition to being the Editor of this *Palgrave Handbook of Management History,* I also have the privilege of being the Editor of the *Journal of Management History.* Recently, the journal published a thoughtful and well-written article by Chris Proctor and Mark Kozak-Holland, entitled *The Giza Pyramid: Learning from this Mega-project.* In this article, Proctor and Kozak-Holland (2019: 366) made the following point that I believe most people would share: "The construction of the Great Pyramid of Giza still stands as a testament to effective project management." Later they extend this praise of the managerial expertise of ancient Egypt to the economy more widely, noting how the Egyptians "managed projects for the diversion and construction of water, building canals and irrigation ditches, flood water basins, water supply tunnels, water purification and even sanitation systems."

Before endorsing the view that Ancient Egypt and the other societies of antiquity (Mesopotamia, Athens, Sparta, Rome, etc.) boasted managerial systems comparable to our own, however, let us first ask ourselves a number of basic questions. First, did the Ancient Egyptians produce – as modern managers do – for a competitive market economy? The answer to this question must be "no." For although the Ancient Egyptians, like peasant farmers everywhere, would have exchanged local produce at a "farmer's market," the prices charged in this market would have reflected little more than the seasonal balance between supply and demand. Food prices would have been dearest immediately before the harvest and cheapest immediately after it. Handicraft items (clothes, beer, basic tools, etc.) would have been made either at home or by a small number of "artisans," who would have charged according to custom-and-practice. Yes, there would have been some long-distance trade. However, we should not exaggerate the scale of these exchanges, given that Ancient Egypt always suffered from a chronic shortage of base metals (tin, copper, iron, etc.) that were neither available locally nor imported in significant volumes. Similarly, the famed construction projects of Ancient Egypt (the Pyramids, the great temples, etc.) reflected no market-driven need. These were, instead, state-funded (and tax-financed) endeavors. The same principle applies to the other great projects antiquity, such as the Athenian Pantheon and the Roman aqueducts.

The second question that we need to ask ourselves, which follows from the first, is: Were the Ancient Egyptians (and the other societies of antiquity) cost-efficient, marshalling resources to achieve production outcomes at the lowest possible cost? The answer to this question must also be "no." Vanity projects such as the Great Pyramids were built *regardless* of the cost. That costs *should* have factored in their thinking was evident even in antiquity, the Greek historian, Herodotus (c. 446 BC/1954: 179), left wondering as to:

> . . . how much must have been spent . . . on bread and clothing for the labourers during all those years the building was going on – not to mention the time it took . . . to quarry and haul the stone, and to construct the underground chamber?

In Herodotus's opinion, the cost of the Great Pyramid must have been disproportionate to any benefit, Herodotus (c. 446 BC/1954: 178) concluding that its construction would have "brought the country into all sorts of misery." If for a rational Greek like Herodotus the construction of the Great Pyramids was an act of lunacy on a grand scale, it is nevertheless also true that the Greek and Roman understanding of costs never progressed beyond cash expenditures and measures of physical output. Perhaps the best insight into the thinking of arguably the most cost-obsessed producer of antiquity is found in Cato the Elder's *De Agricultura*, the oldest surviving text on farm management. In reflecting upon the operation of a slave-staffed *latifundia*, the basic unit of production in the western half of the Roman Empire, the most insightful observation in terms of cost-efficiency of Cato the Elder (c.160 BC/1913: 25) was found in his advice that *actual* farm output should be matched against *possible* output, given the number of days in which inclement weather restricted work. Beyond this, Cato's ideas on cost-efficiency involved curtailing cash expenditures to the bare bones, Cato (c. 160 BC/1913; 37) suggesting that slaves only be supplied with "a smock and a cloak every other year." There was little thought given to modern concepts such as capital depreciation, "good will," and the value of inventories. There were certainly none of the basic tools of modern cost management, such as double-entry bookkeeping.

A third question that demands our attention in comparing the managerial systems of Ancient Egypt, and those of antiquity more generally, with those that exist today in liberal, democratic societies is one relating to capital intensity, namely: did the societies of antiquity utilize labor-saving technologies in an economically significant way? Once more the answer must be "no." In addressing this question in relation to Ancient Egypt, I observe in the first chapter in this section, ▶ Chap. 7, "Management in Antiquity: Part 1 – The Binds of Geography," that "Even though Pharaonic Egypt's agricultural richness depended on its ability to channel water into irrigation ditches once the annual Nile flood had receded, there was little inventiveness shown in tackling this problem." Only under Hellenic kingdoms of the Ptolemies did the fields witness the use of high-capacity waterwheels and the "Archimedean" water screw. Prior to this Egypt relied on labor-intensive bucket and pulley systems to shift water from the Nile to the irrigation ditches (Wilson 2002). Even in the High Middle Ages (1100–1340), when the use of windmills and water mills

became commonplace, we should not exaggerate the extent to which machine power replaced human and animal muscle power. To the extent that people had a choice of work in the feudal world, it typically involved, as Braudel (1986/1990: 676) noted, a choice "between equally backbreaking kinds of work." The low level of capital intensity in both antiquity and the feudal era reflects, in large part, a dearth of metals, most particularly cast iron. None of the societies of antiquity boasted a capacity to work cast iron. In medieval Europe, the great herald of economic progress – the village blacksmith – only appeared in the villages of northern France around 1200 (Cipolla 1981: 170). Consequently, a large part of the reason that the ancients showed so little interest in production costs is found in the fact that most of their tools and equipment – ships, plows, spinning wheels, weaving frames, and waterwheels – were made of wood. As a result, "capital" investments seldom lasted. Marine borers ate wooden ship's hulls. Spinning wheels and waterwheels broke, requiring constant repair and replacement. Often, business operators concluded that they were more trouble than they were worth, Cato the Elder advising his readers to avoid rural properties with many tools and much equipment. For, Cato the Elder (c. 160 BC/1913: 22) concluded, "When you find few tools, it is not an expensive farm to operate."

One of the distinctive features of modern management systems is that they deal with legally free workers, Sidney Pollard (1965: 6) observing that management's commitment to a legally free workforce during the Industrial Revolution was "one of its most seminal ideas, underlying its ultimate power to create a more civilised society." Is it also the case that in looking to the construction of the Great Pyramids, and the other economic activities of antiquity, we witness the mobilization of free labor forces? On this front, our answer must be more nuanced and equivocal than was the case with our first three questions. In antiquity, most of the population were legally free peasant farmers and self-employed artisans. Slavery was, however, commonplace in much of the Middle East. In late Republican and Imperial Rome, it became the norm, Appian (c.120/1913: 7) observing how in Italy "the race of slaves multiplied throughout the country, while the Italian people dwindled in numbers and strength, being oppressed by penury, taxes, and military service." Although we (rightly) associate Periclean Athens and classical Greece with democracy, slavery was also normalized in these societies. When, for example, the city-state of Mytilene rebelled against Athens during the Peloponnesian War, the great Athenian democracy initially voted to massacre "the entire adult male population . . . and to make slaves of the women and children." Subsequently overcome by compassion for the Mytilenians, who shared in Athens's commitment to democracy, the Athenians relented in their sentence, only massacring 1000 adult males (Thucydides, c.411 BC/1954: 212, 223). Similarly, when the city-state of Plataea – whose soldiers had fought to the death alongside the 300 Spartans at Thermopylae – sided with Athens, the Spartans killed its males and sold its women into slavery when the city fell into its hands (Thucydides, c.411 BC/1954: 235). Across the world of antiquity, as a general rule of thumb, the larger the project, the more likely it was that it would be undertaken by unfree labor of one sort or another. The Egyptian peasants who built the Great Pyramids may not have been slaves, but nor were they truly free,

gifted the ability to choose whether to work on the pyramid's construction or not. In Imperial Rome, the roads, the aqueducts, and the Colosseum were all slave-built. In marshalling this unfree workforce, no doubt, a level of ruthless "managerial efficiency" was typically displayed. Cato the Elder (c. 160 BC/1913: 25), for example, advised that a properly run farm should sell off as soon as possible "the surplus wine and corn, the old cattle, the worn out oxen … [and] the old and sick slaves." Remunerative as such an approach may have appeared, is it one that has any resonance in modern management systems? I think not. Yes, it is true that modern businesses make staff redundant when there is no longer any economic need for their employment. However, this is very different to discarding one's slaves as if they were old wine or corn.

In looking at past management practices, there is a natural tendency to emphasize what we have in common with bygone systems of organization and work, rather than highlight the things that we possess but which they lacked. Among the things that the manager of early nineteenth-century Britain, Belgium, or the United States possessed, but which were totally absent in antiquity, we can include the following: cast iron, mechanical clocks, compasses, printed books and manuals, a largely literate workforce, steam power, and a host of mechanically powered machines. Also present in the Industrial Revolution (i.e., 1750–1830) were a range of legal protections and rights that either fully or partially absent in antiquity: protection of property from the arbitrary exertions of princely authority, freedom of expression, liberty of conscience, personal freedom to choose one's occupation, and employer. This is not to say that these technological, sociological, and legal attributes suddenly sprang, unannounced, from the soil in 1750. Rather, they represented the accretions of the centuries, a process of accumulation in which gains were sometimes sudden (i.e., the Gutenberg printing press of the 1450s, the first Newcomen steam engine in 1712), but more often the result of the reflection and/or tinkering by unknown artisans, peasants, and scholars. To the Mesopotamians of antiquity, we owe the foundations of Western principles of mathematics. To the people of the Middle East, we also owe the potter's wheel and wheeled transport. We are in debt to the Phoenicians when it comes to our traditions of phonetic writing. To classical Greece, and the Hellenistic kingdoms that emerged from Alexander's conquests, we derive geometry, philosophy, principles for logical deduction, medicine, and our understandings of democracy. To the Romans, we owe the understanding that economic and social relationships should be bound by legal principles that favor all citizens equally.

If we owe a debt to the past, it is nevertheless the case that we are not of the past. We are, instead, the people of a new modern and industrialized world that emerged from the pre-modern experience around 1750. Where the pre-modern world of management largely served local markets, the modern world of management tends the wants of national and global markets. Where the pre-modern manager had little need to worry about costs, the modern manager has every reason to concern themselves with expenses. Where the producer of antiquity and of the medieval era could typically marshal the resources of unfree and semi-free workforces, the modern manager can rarely avail themselves of such forms of labor.

The purpose of this section of this *Palgrave Handbook of Management History* is thus twofold. It cannot be content with merely acknowledging where we owe a debt to the past. It must also highlight where modern management differs from earlier systems of managerial endeavor and the reasons for this difference.

The Poverty and Promise of the Past

Writing of the working people of thirteenth- and fourteenth-century Europe, the economic historian, Carlo Cipolla (1981: 182), observed that they had "a mechanical outlook … an irresistible taste for mechanical achievements." Until 25–30 years ago, this was still arguably the case in most Western societies. Most people worked on a farm, in a factory or a mine, or in warehousing and transport. People did things with their hands. Successful managers and entrepreneurs were admired in part because they were inventive, coming up with either a new technology or a way of using an old technology more efficiently. For most working-class being people, life was hard. Mass unemployment, deprivation, and even famine were the remembered experience of most families. Accordingly, what people primarily wanted from work was a system of management that promised both job security and increased material wealth. Farmers could understand that productivity and managerial efficiency were a good thing if it gave them more potatoes to sell at less cost. In a factory, most could also understand that increased productivity was a good thing in that it made an increase in pay more rather than less likely. Given that most people worked in private sector employment – where their jobs were exposed to market competition – few could afford to be blissfully ignorant as to the mechanics of management, production, and work.

A direct relationship not only to the world of production but also to what Adam Smith (1776/1999); Book III, Chap. III, para. I) called the "higgling of the market" is something that increasingly few possess. In the United States, where manufacturing reached its absolute peak in 1953 (17.2 million employees), an estimated 50.2% of the nonagricultural workforce being was engaged in industrial, mining, or transport occupations at this date. By late 2017, only 17.5% of the American workforce worked in such jobs (Bowden 2018: 281). Similar trends can be ascertained in most other Western societies. This is not to say, of course, that Western societies have abandoned the accoutrements of an industrial society: steel, aluminum, plastics, automobiles, computers, etc. Rather, they have largely outsourced the production of such needs to less prosperous societies. In terms of primary steel production, for example, the Chinese share of global production has hovered around the 90% mark over the last decade (Cunningham et al. 2019: 31). Understandably, such outcomes lead to the common delusion that – because the West no longer produces the steel it uses – we now live in a "postindustrial" or "postmodern" society, a world where the manufactured and energy-intensive underpinnings of an industrial society are important only to the extent that they add to climate change and environmental degradation.

A lack of understanding as to the hard-fought existence of past generations finds expression, I believe, in two things, both of which impair an understanding of management history. First, there is a tendency to romanticize the rural, pre-industrial past. This is a problem that I address at length in ▶ Chap. 17, "Foundations: The Roots of Idealist and Romantic Opposition to Capitalism and Management," where I observe that many now share the view of the English poet, William Wordsworth (1800/2009: 142, 144), that human existence finds "a better soil" in a "rustic life." To hold such ideas leads to the inevitable conclusion that the primary managerial concerns of past generations – in clearing the forests, in taming the rivers, and in furthering new industrial techniques – were historically retrograde activities. In truth, as Thomas Hobbes (1651/2002: 62) famously observed, a pre-industrial existence was "solitary, poor, nasty, brutish, and short." In a pre-industrial world, most people lived and died in filth. Indeed, such were the circumstances in which most people once lived that they are almost beyond imagining. A picture of what life was like for most is well-captured in Richard Hellie's (2006: 289–290) description of the typical peasant home in nineteenth-century Russia, in which he records how "The smoke was so dense that it left a line around the wall about shoulder height, where the bottom of the smoke cloud hung. The air was so toxic that it disinfected the hut to the extent that not even cockroaches could survive." In addition to the romanticization of the pre-industrial past, the popular understanding of antiquity suffers from what I think of as the "Hollywoodization" of the past and the tendency to extrapolate from the preserved ruins of places like Pompey. What most seem to overlook was that places like Pompey were holiday resorts for the rich and famous, a tiny prosperous elite within Roman society being. Their experience in no way resembled that of the ordinary person. The gulf in living standards that separates our modern industrial world from that of antiquity, or even seventeenth century Europe, is indicated in Fig. 1. This compares the annual "grain" or "wheat" wage of lower-class Romans (i.e., the bottom 22%), middle-class Romans (i.e., the middle 60%), and the typical English artisan from c.1688, with the circumstances of someone working on the US basic wage in 2019 ($10.35 per hour) for a standard 40-hour week. Although we return to this comparison in ▶ Chap. 7, "Management in Antiquity: Part 1 – The Binds of Geography," a brief word of explanation is nevertheless required here. In essence, a "grain wage" is calculated on what a certain historical income would buy if every cent obtained were spent on nothing other than wheat. Schiedel and Freisen (2009) calculated the figures for ancient Rome and seventeenth-century Europe. The US figures are calculated by the author and are based on current US wholesale wheat prices. As can be ascertained, a US citizen on the basic wage – a person most would regard as someone in dire circumstances – enjoys a level of material wealth infinitely superior to that of previous generations.

The gulf between modern managerial systems and those of the pre-modern era is also indicated in Fig. 1, which traces estimates of European population from Roman times to the mid-nineteenth century. As is self-evident, the pre-modern world boasted few people. Towns and cities were rare. Those that did exist were typically small affairs. Prior to the seventeenth century, even the countryside was home to

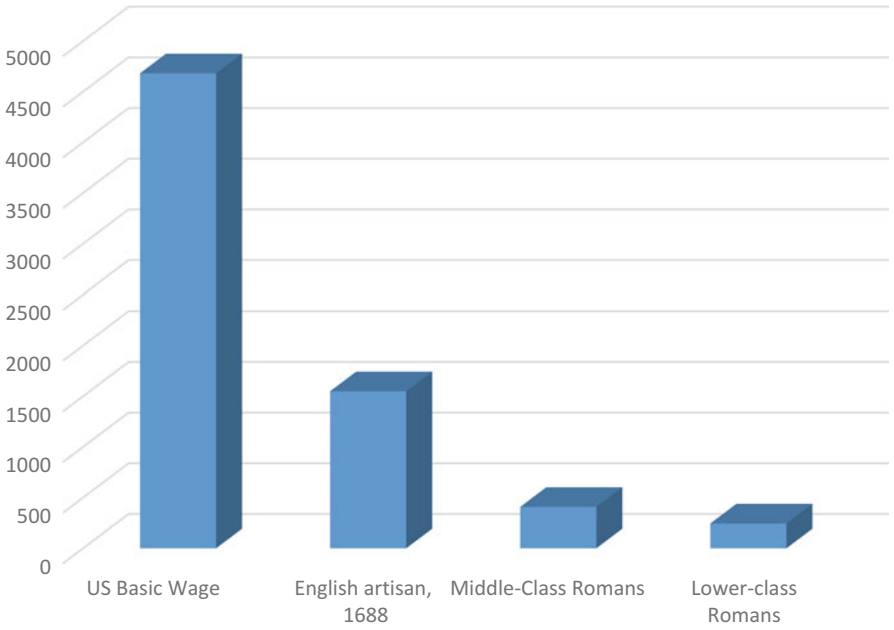

Fig. 1 Annual grain wage in kilograms. (Sources: Schiedel and Freisen, "The size of the economy and the distribution of income in the Roman Empire, p. 84; Bowden, Management in Antiquity, Part 1)

comparatively few people. As the French historian, Marc Bloch (1940/1962: 72), observed of medieval Europe, "The rural landscape … bore few traces of human influence … behind all social life there was a background of the primitive, of submission to uncontrollable forces, of unrelieved physical constraints." The less industrially developed the society, the more backward was the agricultural sector due to a shortage of metal tools and mechanical contrivances. A technologically undeveloped rural sector, in turn, required the work of a large number of farmers to support a comparatively small urban population. This tendency was evident not only in Europe but in other pre-modern societies as well. In nineteenth-century China, for example, it took the labor of 400 million peasants and small artisans to support a population of 7.5 million urban non-producers, i.e., scholars, bureaucrats, soldiers, etc. (Jones 1987: 4; Fig. 2).

If a lack of appreciation as to the economic gulf that separates our world from past societies can cause an underestimation of the difficulties confronted by earlier generations of administrators, overseers, and entrepreneurs, it is also the case that those largely devoid of the once-common "mechanical outlook" can easily overlook the managerial aspirations of bygone times. Among modern concerns about "carbon footprints" and global warming, I suspect that comparatively few readers would appreciate that coal is typically an essential ingredient in iron and steel production and that without steel there can be no bridges, hospitals, high-rise buildings, and

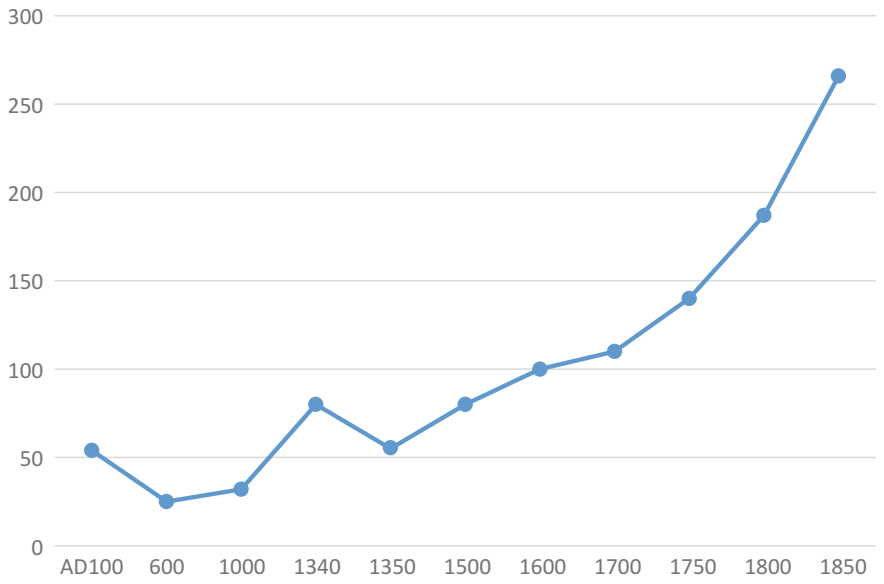

Fig. 2 Approximate Europe population, AD 100–1850∗. (Sources: de Ligt, Peasants, Citizens and Soldiers, pp. 6–8; Cipolla, Before the Industrial Revolution, p. 150; Braudel, Capitalism and Material Life, p.11) [∗Note: includes Russia]

factories. Yes, it is true that steel can be smelted by using large quantities of scrap-iron in lieu of coal. However, in developing societies such as China and India – as in pre-modern societies – this is rarely an option. It is this fact that does much to explain the enormous increase in world coal production and consumption during the last 30 years, even as many in the West decry problems of global warming, with global production rising from approximately 4,500 million tons in 1990 to over 7,500 million tons in 2018 (Cunningham et al. 2019: 31). It also does much to explain the obsession of past societies with base metals and mining, to the extent that we still describe civilizations and historical epochs in terms of their command of metals, i.e., Copper Age, Bronze Age, and Iron Age. For without an abundant supply of forged or smelted metal, it is impossible for a society to economically progress, given an absence or shortage of metal plows, axes, hoes, and the like. On this front, iron has a number of advantages over other alternatives. Although typically not as hard as bronze, it is easier and cheaper to produce. Iron ore is also more plentiful than copper and tin, the key ingredients in bronze. The problem with iron production stems from the fact that the smelting process requires the use of carbon-based material. Historically, pre-modern societies obtained this component from charcoal, i.e., burnt wood. As iron production increased, however, there can an inevitable point where the supply of wood wilted in the face of demand. In AD 1100, for example, it is estimated that China's per capita iron output exceeded the level that Europe obtained in 1700. By this stage, however, China's central rice region – the epicenter of iron production – had become "a great clear-felled zone" (Jones 1987: 4), an outcome

that led to a collapse in Chinese iron production. Similarly, in England, where iron cannon and other iron goods dominated exports in the sixteenth century, the price of timber rose fivefold between 1570–1589 and 1630–1649 (Cipolla 1981: 2467). In short, difficulties in acquiring sufficient carbon-based material for smelting acted as an almost universal cap on iron production, a limitation that restrained the development and use of durable, metal-based capital goods and hence the possibility of economic and managerial progress.

Often in discussions of economics, culture, and management, there is a tendency to discuss the performance of Western Europe, and the so-called West, as a unitary bloc that – due to some supposed innate characteristic – came to dominate the world (see, e.g., Jones 1987; Huntington Huntington 1996/2003; North and Thomas 1973). As Niall Ferguson (2011: 4–5) expressed it in his book, *Civilization: The West and the Rest*:

> . . . beginning in the late fifteenth century, the little states of Western Europe . . . produced a civilization capable of not only conquering the great Oriental empires and subjugating Africa, the Americas and Australasia, but also of converting peoples all over the world to the Western way of life.

When we study the success and failure of ancient and medieval Europe being in terms of managerial success (i.e., a capacity to generate gains in productivity, per capita output, per capita income), however, the idea that there was a single "West," advancing in more or less unison, quickly becomes unsustainable. As Fig. 3

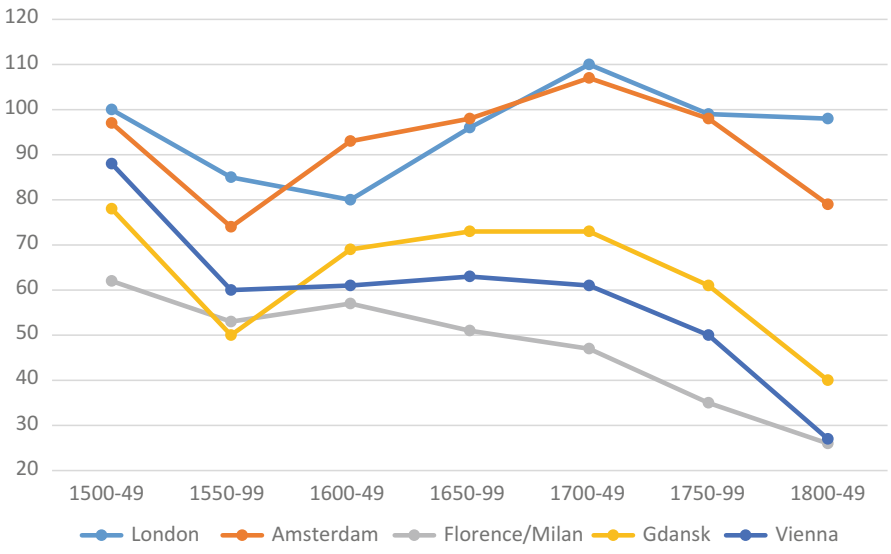

Fig. 3 Real consumption wage of unskilled European building workers, 1500–1549 to 1800–1849 (100 = London in 1500–1549). (Source: Palma and Reis, "From Convergence to Divergence," p. 500)

indicates, which traces the "real consumption wage" (i.e., the basket of goods and services a nominal wage will buy) of unskilled building workers in a number of Western and Central European cities – London, Amsterdam, Gdansk, Vienna, Florence, and Milan – two things are immediately apparent. The first is that during the seventeenth and eighteenth centuries, a marked divergence occurred between the circumstances that prevailed in England and the Netherlands, where comparative prosperity existed, and the situation in the other cities, where living standards steadily deteriorated. Significantly, the worst performers were Milan and Florence, cities associated with the glories of the Renaissance and a flourishing of cultural values that emphasized individualism and creativity. The second evident trend is that among the successful cities, even Amsterdam suffered a marked decline in living standards during the eighteenth century (Broadberry and Gupta 2006: 6). Evidence as to the declining circumstances of the Netherlands – a highly commercialized society that boasted the world's first stock market and Europe's most productive agricultural sector – is also indicated in Palma and Reis's (2019: 500) recent study, "From Convergence to Divergence," which points to a slow decline in the Netherlands's per capita output after 1650. The idea that by the eighteenth century, Europe – and most particularly Western Europe – had opened up a substantial gap in terms of living standards vis-à-vis the more prosperous regions of India, China, and Japan has also been shown to be a misnomer by recent research. As Allen et al. (2011: 30–31) note, "unskilled laborers in the major cities of China and Japan – poor as they were - had roughly the same standard of living as their counterparts in central and southern Europe for the greater part of the eighteenth century."

As management historians, we inevitably come to the key question in this section, if not the entire *Palgrave Handbook on Management History*, namely: what was it about England that caused it alone to break the technological and managerial bonds of the pre-modern world?

In search for an answer to this central question, it quickly becomes apparent that a society could excel in a number of managerial endeavors without a general transformation in managerial practices occurring across the whole economy. Indeed, the reverse is possible, i.e., progress in one area leading to developments that had an overall negative effect. The classical example of this is found in the experiences of Habsburg Spain during the sixteenth and seventeenth centuries. As Oliver Aho and Robert Lloyd note in ▶ Chap. 11, "The Origins of Robust Supply Chain Management and Logistics in the Caribbean: Spanish Silver and Gold in the New World (1492–1700)" of this section, *The Origins of Robust Supply Chain Management and Logistics in the Caribbean: Spanish Silver and Gold in the New World*, the exploration of the America's was primarily driven by "the search for metallic riches." The culmination of this search was found in the development and operation of the fabulously wealthy Potosi mine in Peru, a mine whose riches transformed monetary conditions in Europe under a cascade of silver. Of the "supply route the Spanish empire established during this time," Aho and Lloyd (▶ Chap. 11, "The Origins of Robust Supply Chain Management and Logistics in the Caribbean: Spanish Silver and Gold in the New World (1492–1700)") observe that it was "unlike any other seen in history," amounting to "the world's first supply chain that was maintained in

consistent quantities over a substantial period of time (centuries) in an environment where the risks were unknown and extreme." Spanish expertise in the mining and transport of silver – a commodity of much value but of little use in the manufacture of capital goods – had two profoundly negative consequences. First, the flood of American silver led to the so-called Great Inflation as goods became more expensive expressed in terms of (now common) silver. Nowhere was this inflationary effect felt more severely than in Spain itself. Over the course of the sixteenth century, hitherto stable Spanish prices rose by 340%, an outcome that made Spanish-made goods prohibitively expensive vis-à-vis imports (North and Thomas 1973: 106). Despite the imposition of protective tariffs, the nascent Spanish manufacturing sector collapsed in the face of massive smuggling operations, an outcome that saw Spanish silver covertly traded for largely Dutch-made imports. Rather than growing richer from Potosi's wealth, the average Spaniard was reduced to penury, Spain's population falling by 25% across the course of the seventeenth century. Real wages collapsed (North and Thomas 1973: 104). The second problem that Spanish silver acerbated rather than mitigated was the indebtedness of the Spanish dynastic state. Every year, the bounty of the Spanish silver fleet was spent before it arrived, pledged as security against new loans. The Genoese, in particular, enriched themselves by acting as bankers to the Spanish crown. The scale of this business can be ascertained by the fact that in 1562, the Spanish crown – supported by the revenues of Castile, Aragon, Catalonia, Southern Italy, Milan, the Low Countries, and a vast influx of American silver – was spending over 25% of its annual budget on interest (North and Thomas 1973: 129).

Why was it that, as Fig. 3 indicates, the Netherlands and more particularly England followed a different managerial and economic trajectory to other European societies, avoiding the problems that beset Spain amid a bounty of unexpected wealth? Part of the explanation is found in what North and Thomas (1973: 1) referred to as "the establishment of institutional arrangements and property rights that create an incentive to channel individual economic efforts" into productive endeavors. Both England and the Netherlands were highly commercialized societies by the seventeenth century. Each boasted a stock market, well-established systems of merchant banking and marine insurance, and a capacity to draw on the accumulated savings of a large number of small-scale investors who had made their money in commerce, agriculture, or manufacturing. The Netherlands also pioneered large-scale deposit banking and the sale of perpetual annuities, whereby the lender received payment of interest in perpetuity rather than obtaining the return of their initial investment. As a result of such mechanisms, the interest rate charged in the Netherlands fell from 20% in 1500 to 3% in the seventeenth century (North and Thomas: 142). The Netherlands also benefited from the availability of peat, which could be used for both domestic cooking and heating and industrial purposes. By 1650, the Netherlands was burning prodigious quantities of peat, equivalent to 6,000 million kilocalories per year (Cipolla 1981: 273). This equated to the energy expended in 2 million human workdays. Among the industrial uses to which this energy was utilized were glassmaking, beer-making, and, above all, brickmaking. Although, as we noted in Fig. 2, English and Dutch real wages moved more or less in

tandem between 1500 and 1750, it is nevertheless the case that "the Netherlands was the more developed economy" during this period, boasting a per capita output some 10–20% higher than England's (van Zanden 2002: 631–632). By 1850, however, the value of per capita output in Holland – the most prosperous Dutch province – was 13.5% lower than it had been 200 years before (Palma and Reis 2019: 500).

What was it that caused the economy of the Netherlands to falter after 1750 while England continued to prosper? We can only conclude that the "institutional arrangements and property rights" that North and Thomas (1973) identified were *necessary* but not *sufficient* conditions for success. We can also conclude that an emphasis on individual initiative and entrepreneurship – both of which Dutch society possessed in spades – were also necessary rather than sufficient conditions. To this list, we can also add a highly productive agricultural sector and legal protections that restrained arbitrary behavior by the state, both of which were present in the Netherlands to a marked degree.

If we are to think of the key attributes of managerial success in addition to those commonly provided by textbooks (planning, organizing, leading, controlling) – namely, the direction of production toward competitive markets, an awareness of costs and a desire to reduce them, legal protections of person and property, and a legally free workforce – what was missing in the Netherlands? Two attributes, we suggest, were absent in the Netherlands, neither of which appear in the previous sentence but which we have nevertheless discussed previously: capital intensity based on durable metal machinery and tools and the direction of production toward not only a competitive market but one based on mass consumption. In terms of the former, the Dutch suffered almost insurmountable problems due to an absence of both iron and, more particularly, coal deposits. For although an exploitation of its peat deposits allowed the Dutch a capacity to transition to an energy-intensive economy, peat was more or less useless when it came to iron smelting. As other Western European societies stripped their forests bare in order to obtain the charcoal necessary for smelting, England alone came up with a cheaper and easily obtained alternative that spared further forest denudation, namely, coke, i.e., the high-carbon residue left when coal is slowly burnt. When English metallurgists worked out how to use coal-derived coke in iron smelting, the demand for coal soared to new heights. As Fig. 4 indicates, British coal production rose inexorably from 1750, underpinning what we think of as the Industrial Revolution. By 1790, almost 10 million tons was being mined annually. Over the next 30 years, this doubled to slightly more than 20 million tons. In the next 20 years, it doubled again (Pollard 1980). Increased coal production did more than underpin an expansion in iron and steel production. Whereas the growth of other European cities was constrained by a shortage of wood for cooking and heating, English cities grew exponentially. Providing a home to 70,000 people in 1500, by 1700 London was "the largest, busiest, and wealthiest metropolis in the world" (Cipolla 1981; 293). As England's mines became progressively deeper, eventually operating beneath the water table, ever more radical innovations were demanded. Accordingly, in 1712 the world's first steam engine – the so-called Newcomen engine – began pumping water from a pit in the English Midlands. As coal production soared so too did the production of iron and hence a

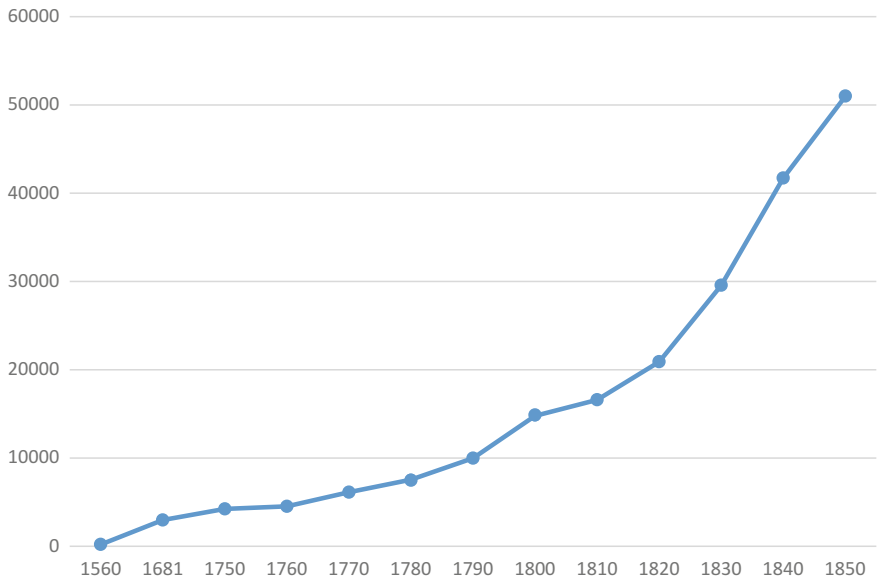

Fig. 4 British coal output, 1560–1850 (in thousands of tons). (Source: Pollard, "A New Estimate of British Coal Production," pp. 216, 229)

whole range of iron-based products: machinery, railroad locomotives, and iron-bottomed and steam-powered ships. By the mid-1860s, even though the tonnage of Britain's sailing ships still outnumbered that of the nation's iron-bottomed ships by more than five to one, it was the latter that carried most cargo (Clapham 1932/1967: 71). The surging demand for coal also indirectly contributed to the creation within England of the world's first mass market. In 1761, Britain's first canal (the Bridgewater Canal) was completed, linking Manchester to Lancashire's coalfields. By century's end a complex system of canals crisscrossed England's interior, allowing for the cheap importation of raw materials as well as ready access to urban consumer markets.

In returning to our original question as to whether or not ancient and feudal managerial systems were comparable to ours, the answer is "no." While both ancient and modern managerial systems were characterized by the classical textbook attributes (planning, organizing, leading, controlling), this section of this *Palgrave Handbook on Management History* nevertheless argues that "modern management" – as manifest in free-market, democratic societies – differs from pre-modern systems with regard to the following characteristics:

1. Production and services are directed toward competitive markets.
2. Production and services are directed toward mass markets.
3. Management is attentive to costs.
4. Management operates within a legal system that provides protection for both person and property.

5. Management operates within a system of institutional and economic arrangements that incentivize individual initiative and entrepreneurship.
6. Management works alongside a legally free workforce that must be motivated by management in order to achieve the most efficient outcomes.
7. Management utilizes high levels of capital intensity, associated with the use of durable metallic tools, implements, and machines.
8. Management exploits an energy-intensive production system, in which artificial forms of energy (coal, gas, wind, water, nuclear) are exploited to the full.

The Structure of This Section

This section is directed toward an understanding of the systems of management – and the ideas associated with those systems – that emerged in the Middle East, North Africa, and Western Europe from the time of the ancient Mesopotamians and Egyptians to the First World War (i.e., 1914). The circumstances that prevailed in the Balkans and Europe's Orthodox East, most particularly Russia, are dealt with separately in our section on European management.

In this section, four chapters deal with actual production and logistical management systems in the pre-modern era, namely:

- ▶ Chapter 7, "Management in Antiquity: Part 1 – The Binds of Geography"
- ▶ Chapter 8, "Management in Antiquity: Part 2 – Success and Failure in the Hellenic and Roman Worlds"
- ▶ Chapter 9, "From Feudalism to Modernity, Part I: Management, Technology, and Work, AD 450–1750"
- ▶ Chapter 11, "The Origins of Robust Supply Chain Management and Logistics in the Caribbean: Spanish Silver and Gold in the New World (1492–1700)"

A separate ▶ Chap. 10, "From Feudalism to Modernity, Part 2: The Revolution in Ideas, AD 450–1750" deals with the key intellectual underpinnings of managerial advance and regression between the fifth and seventeenth century, many of which were associated – both positively and negatively – with the Catholic Church and its Protestant rivals.

The final chapter in this section, *Transformation: The First Global Economy, 1750–1914*, looks at both the Industrial Revolution in Britain and the economic and managerial relationships that were established within the wider global economy. This final chapter, it should be noted, should be read and understood in conjunction with the chapters found in our sections on *Foundations of Modern Management* and *The Classical Age of Management Thought*, both of which deal with the key theoretical ideas associated with managerial and economic progress from the seventeenth century onward.

As readers will be aware, in this section all but one of the chapters is attributable to me. Where possible, most particular in the chapters dealing with antiquity and feudalism, I have attempted to use primary sources wherever possible (i.e.,

Thucydides, Livy, Polybius, Saint Augustine, Saint Thomas Aquinas, etc.). My ideas on management are *not* those found in the typical textbook as I draw a clear and definite distinction between both pre-modern and totalitarian forms of management and "modern management" as it is manifested in liberal, democratic societies. Atypical as my ideas of management are – which differ not only from that found in textbooks but also from the hostility expressed toward Western management by both Marxist and postmodernists of various ilk – they have no great claim to originality. My views on management are essentially those expressed by the great Austro-English historian, Sidney Pollard, as outlined in the opening pages of his classic study, *The Genesis of Modern Management*. My ideas differ from Pollard in only two regards, neither of them significant in greater scheme of things. First, I pay a greater heed to management's long historical heritage, a heritage that I am sure Pollard would also have willingly recognized. Second, I place a greater emphasis on the importance of capital intensity in the ascendancy of modern management, an emphasis that causes me to place a greater weight on metal production and energy usage. For whereas pre-modern societies were almost always economies of wood – with devastating effects for natural woodlands – modern economies are built around the harnessing of artificial forms of energy. Of these artificial forms of energy, carbon-based resources (coal, oil, gas) have always been – and remain – the most significant. For those concerned with climate change, this essential fact will no doubt be galling and unpleasant. However, essential fact it remains.

Cross-References

- ▶ Foundations: The Roots of Idealist and Romantic Opposition to Capitalism and Management
- ▶ From Feudalism to Modernity, Part I: Management, Technology, and Work, AD 450–1750
- ▶ Management in Antiquity: Part 1 – The Binds of Geography
- ▶ Management in Antiquity: Part 2 – Success and Failure in the Hellenic and Roman Worlds
- ▶ What Is Management?

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