

*Industrial Enlightenment: Science,
Technology and Culture in Birmingham
and the West Midlands, 1760-1820* by

Peter M. Jones

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In his 1992 work, *The Gift of Athena*, Joel Mokyr's explored the idea of *industrial enlightenment* as a model for explaining how practical science—technology—advanced so rapidly in the early nineteenth century. He argued that a transfer of knowledge between natural philosophers, termed *savants*, and industrial tradesmen, *fabricants*, propelled Europe into the Industrial Revolution. Despite being largely theoretical, this model is particularly attractive because it uncouples industrialisation from immediate market demand and instead attaches it to the Enlightenment. This establishes a smooth narrative of Europe's scientific history and answers nagging questions about the rapid growth of technology in the early decades of the nineteenth century.

In response this study, Peter M. Jones does exactly what his title suggests; he explores Joel Mokyr's model through a detailed case study of late eighteenth- and early nineteenth-century Birmingham. By exploring the partnership of Matthew Boulton and James Watt, Jones attempts to test the validity and applicability of Mokyr's theoretical framework to real historical problems. Rather than a single chronological narrative, however, Jones layers his discussion, working from the most basic description of

the growth of industry in Birmingham to the intricacies of human relationships, personal faith, and continental politics.

In his first chapter, Jones provides his readers with a sweeping introduction to the debates surrounding the ‘knowledge economy’ and the relationship between natural philosophy and technology. While expecting a certain level of familiarity with the major works he references, Jones’s introduction is generally accessible to outsiders through summaries of the key arguments and problematics of knowledge transfer in this period. Nevertheless, without some background knowledge of the relevant actors, historians and historical figures alike, it is easy to get lost in the sea of information he provides at the outset.

Perseverance, however, is richly rewarded as the book progresses. Having established his intention, Jones sets the scene by introducing readers to the West Midlands region, as it existed in the latter half of the eighteenth century, and to the town of Birmingham. The chapter begins with a description of the boundaries of the region, political and geographic, and its growing network of roads and canals. Having explained why the West Midlands could support a growing industrial town, he moves into the mechanics of Birmingham, its economic composition and eighteenth century history. Jones then delves further into the lives of two of its most notable residents, Boulton and Watt, and gives a brief overview of their economic rise. Lastly, it gives readers their first real taste of *industrial enlightenment* by demonstrating the cultural yearnings of the region’s provincial elite. Like the introduction, the first chapter

seems to rely on the reader having either a firm understanding of the men and places involved or a significant amount of faith that all will eventually be revealed. Names and events are alluded to casually and the narrative flits between earlier events and future occurrences in an effort to remain within the thematic mandate of each subsection. As the reader progresses, the chronology periodically resets and new thematic narratives appear. Each provides details which were previously excluded, but relies on the reader to reassemble the proper chronology themselves.

The second chapter moves from a simple narrative of the economic histories of Birmingham and Soho to the cultural and philosophical pursuits of Boulton and the Lunar Group, his natural philosophy society. It is at this point that readers can begin to see what Jones is attempting to do. Having explained the geographic and economic reasons for Birmingham's cultural isolation, he is able to explore Boulton's foray into the natural sciences, not as an anomaly, but as a response to his surroundings. He does this exceedingly well, considering the source material's stubborn refusal to grant him easy answers, and provides readers with a vivid picture of the Lunar Group and their connections to the Republic of Letters. Probably the most compelling of Jones's chapters, it provides clear evidence that at least some of Birmingham's industrial elite were philosophers in their own right.

His third chapter moves onto the core problem of knowledge transfer at the start of the industrial revolution: the diffusion of natural philosophy, of pure science, into

the workplace and its transformation into useful knowledge. It is here that Jones sees substantial flaws in Mokyr's framework. He explores several possible avenues for knowledge transfer, such as Birmingham numerous scientific lectures, the existence of skilled tradesmen and engineers interested in natural philosophy, and the use of the scientific method in developing and improving technology. Jones admirably avoids falling into the trap of relying too heavily upon Boulton and Watt and asks directly if they were not perhaps exceptional, "shooting stars in a late eighteenth-century firmament of unenlightened artisan empiricism" (p. 124). In the end, he finds the picture mixed at best. There were, at all levels, men working tirelessly in the pursuit of both scientific knowledge and technological advancement. There were also those focused on science merely as a form of entertainment or as an expression of elite culture. As in other chapters, Jones chooses thematic over chronological narrative. However, unlike his discussions of culture, religion, and politics, this chapter's heavy use of discrete examples leaves it without a strong sense of argument and the reader is often left wondering what Jones's final conclusion will be.

Jones's next section examines Weber's *Protestant Ethic*. Having generally explored the economic and social environment of the industrialising West Midlands, he is keen to reintroduce religion into a discussion that has become increasingly 'class-bound' (p. 163). While fully acknowledging the volume of criticism Weber's work has already engendered, he sets out to examine the relationship between religious dissent and the industrial elite; were

dissenters disproportionately successful in Birmingham's industrialisation or disproportionately involved in the philosophical pursuits of the Lunar Group? Much like his economic analysis, Jones finds little evidence that dissenters were particularly responsible for the rise of industry in the West Midlands and instead argues that it was religious toleration, or at least a polite disinterest in the religious beliefs of fellow members of the elite, that allowed Birmingham's scientific culture to flourish in the third quarter of the eighteenth century. Religious unrest, triggered, if not single-handedly caused, by Joseph Priestly, shattered this truce among dissenters and churchmen and severely impaired Birmingham's involvement in the pursuit of natural philosophy and knowledge transfer. By the time the wounds had healed, Boulton's generation had passed from the fore and with them the age of industrial enlightenment. Like chapter two, this section intimately links specific themes to the wider narrative and greatly nuances the *industrial enlightenment* model.

In his final chapter, the political dimension is discussed at length. Adding one more layer to the story of Birmingham and Soho, Jones explains the devastating impact that cultural isolation from France during the Revolutionary and Napoleonic Wars had on the philosopher-industrialists and the fundamental differences between these wars and those of the previous decades. He argues that as the threat of industrial espionage became more prominent and favours to fellow philosophers, often caught behind enemy lines, became more politically dangerous, Birmingham's connection to the Republic of

Letters became increasingly difficult to maintain. Unlike previous sections, here Jones is much more diligent in introducing historical figures to his readers and his argument is therefore more accessible and explicit.

Overall, Jones's work is a well-researched and rich analysis of the relationship of science and technology at the turn of the nineteenth century. Although his extensive and careful use of recently-deposited papers makes *Industrial Enlightenment* a worthwhile read, it is his multi-faceted approach of a crucial turning point in Britain's history that makes it worthy of note. In the end, its only major flaw is that its layered organisation requires a certain degree of patience from less knowledgeable readers and demands that the book be read in its entirety to be properly understood. Nonetheless, like a good novel, it also promises increasing insights upon subsequent readings and forces us to question our pre-conceived ideas about the importance of culture, society, faith and politics on the economics of industrialisation.