

# THE WEST MIDLANDS AND THE INDUSTRIAL ENLIGHTENMENT

Peter Jones

What was special about the West Midlands during the Enlightenment? Traditional views of the Enlightenment have ignored the English contribution and the significance of the West Midlands in particular. New research shows the importance of the region as a centre for the Industrial Enlightenment where scientific thinking was applied to the real world.

## What is Industrial Enlightenment?

**I**ndustrial Enlightenment is a term which historians use when trying to explain the progress of the countries of Western Europe towards modernity. It acknowledges the role played by science and technology, the build-up of useful knowledge and its application to wealth-generating processes in creating the world as we know it today. Although the chronology of Industrial Enlightenment varied from country to country, researchers broadly agree that the preconditions for the West's great acceleration were put in place in the course of the eighteenth century.

The economic historian Joel Mokyr has done most to convert the notion of Industrial Enlightenment into an effective tool for historical understanding. In his two books *The Gifts of Athena* and *The Enlightened Economy* he explains how he believes the 'eighteenth-century knowledge economy' helped to bring into being a modern, technologically literate society.

## Changing Perspectives

To grasp the significance of Industrial Enlightenment and its implications for West Midlands history, we need to take a step back. When exploring branches of the European Enlightenment, most historians have not ordinarily thought of Britain as particularly fertile territory for investigation. The Enlightenment, it was traditionally held, was owned by France whose philosophers led the way in mounting an intellectual critique of the *ancien régime*, while England pioneered, in the late seventeenth century, a Scientific Revolution, and in due course would present to the world the first example of a modern industrial society.

These ideas do not carry much conviction nowadays. The Enlightenment was not primarily French, nor was it a movement of ideas aimed at subverting the status quo. The Scientific Revolution was not a unique product of the genius of Isaac Newton (1642-1727), and it is scarcely safe, either, to conceive of the Industrial Revolution as simply a natural and inevitable outgrowth of British history.



Statue of Boulton, Watt and Murdoch in Broad Street, Birmingham by William Bloye, 1956.

This change in perspective has allowed new formulations to emerge. In particular, it no longer seems incongruous to suppose the existence of discrete national, even provincial ‘Enlightenments’ – especially if we widen the focus to embrace a more inclusive range of characteristically enlightened cultural practices.

The idea of Industrial Enlightenment could not have secured recognition without this preliminary calling into question of established categories of analysis.

### Daring to Know

The Industrial Enlightenment shares with the phenomenon of Enlightenment, however we might wish to define it, a preoccupation with the role of knowledge as the main source of human empowerment. Those historians who have embraced Mokyr’s vision of how Western societies were able to take a commanding lead in the drive to modernity, present Industrial Enlightenment as a transitional phase in which the discoveries of the Scientific Revolution were converted into the useable technologies and manufacturing processes which we associate with the advent of mechanisation and factory-scale industrialisation.

The key intellectual shift which the term Industrial Enlightenment enshrines can be identified as the willingness of increasing numbers of Europeans to think for themselves. This is what the Prussian philosopher Immanuel Kant (1724–1804) described as ‘daring to know’; in other words, the determination to employ human reasoning rather than divine precept as a guide to making sense of the world. The *Annual Register* drew attention to this shift when it attributed the new ‘age of humanity’, not to the ‘progressive effects of moral disquisitions and lectures’, but to the ‘intercourse of men with men, minds with minds [...] navigation, commerce, arts and sciences’.

Men and women were not only starting to think for themselves, they were also applying their mental faculties to the challenge of improving the environment in which they lived. ‘Useful’ knowledge was prized beyond all other forms of knowledge in the belief that human progress in the here-and-now world was, if not inevitable, at least within the bounds of possibility. As the century advanced so did confidence that knowledge, suitably customised, could be brought to bear on every productive activity which Europeans commonly indulged in, whether agriculture, manufacturing, extractive industry or commercial enterprise.

It follows from this scenario that the expansion of the ‘eighteenth-century knowledge economy’ can be said to have laid down foundations for modern industrial society. To put the argument more bluntly, the Industrial Revolution owed more to the spirit of inventiveness and innovation in a context of useful knowledge accumulation and transfer than to the economics of capital availability, labour supply and energy costs.

If we look more closely at this context, the significance of developments in England and more especially in the West Midlands starts to become apparent.

### The Special Case of England

Unlike the continental states of Europe, England benefited from a relatively free society and economy in the eighteenth century. Divine-right monarchy had lost its grip in the political sphere and so had Aristotle in the domain of science

and technology. Social status by inheritance no longer counted for very much, nor did the established church allow dogma and hierarchy to stand in the way of progress. On the contrary, churchmen and non-conformists alike found little to object to in the Newtonian view of the universe and much to admire. As a consequence they were often to be found in the van of scientific and technological research.

In such conditions knowledge generation was relatively unproblematic and, once generated, it

circulated to a degree that visitors to these shores found both confusing and inspiring. The secret, they concluded, lay in the extraordinary social fluidity and sociability of the English who gathered in clubs, coffee houses and masonic lodges, irrespective of rank, in order to trade in knowledge.

To give just one example, the French astronomer Jérôme Lalande (1732–1807) who visited London in 1763 marvelled at the spectacle of men of science sitting alongside skilled craftsmen in the Royal Society. In his own country intellectuals disdained contact with mere artisans, however skilled or knowledgeable they might be, on the ground that they belonged to a different social class.

There is an important clue to the operation of Industrial Enlightenment here and one which will help us understand



An Iron Forge by Joseph Wright of Derby, 1772.

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Advertisement for itinerant science lecturer,  
*Aris's Birmingham Gazette*, 1791.

*Among the many agents of knowledge diffusion, it is worth emphasising the activities of itinerant science lecturers. From the 1740s, or thereabouts, they were a regular presence in West Midlands towns – even in those towns with no apparent industrial vocation such as Lichfield or Worcester where the appeal of science tended to be couched in ‘polite’ rather than utilitarian language. Yet the evidence suggests that visiting lecturers also played a major role in equipping a broader section of the community with a grounding in Newtonian science, albeit dilute, and a taste for experimentation.*

why the West Midlands provides one of the best examples we have of this phenomenon. Scientific and technological knowledge possesses no intrinsic power to stimulate change unless it is exchanged and exploited in a productive and gainful fashion.

France generated at least as much scientific knowledge as did England and Scotland in the eighteenth century and the country was scarcely deficient in technologically capable craftsmen either. What it lacked, however, was a vigorous culture of diffusion and exploitation of knowledge discoveries. The monarchical Bourbon state intervened at intervals to kick-start the process, but with disappointing results until the entire edifice of the *ancien régime* was swept away by the French Revolution in 1789.

### The West Midlands: Industrial Enlightenment in Action

The West Midlands attracts attention because it provides the historian with a rare example of Industrial Enlightenment in action – in all its stages. We can trace the parameters of the intellectual communities responsible for generating and packaging scientific knowledge; we can reconstruct the distribution networks that came into being in the second half of the eighteenth century; and, most important of all, we can document the ‘take-up’ stage as scientific experiment and discovery were transformed into useful knowledge, which in turn was fed into new and improved technologies. In other words, a scrutiny of the West Midlands allows researchers to put to the test Joel Mokyr’s contention that accelerating industrial growth ought to be linked above all else to the habits and practices that we have come to associate with the English Enlightenment.

The part played by Birmingham’s Lunar Society in the generation of scientific knowledge is now well understood and scarcely requires further demonstration. Less well known is the human geography of the intellectual communities connecting the West Midlands to the Black Country and the industrial and port towns of the Severn river valley. Nevertheless, research is underway which will enable an integrated map of scientific knowledge accumulation to be drawn spanning this entire region – thus facilitating comparison with the East Midlands, the West Riding of Yorkshire and the cotton towns of the North West.

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With its high wage economy, Birmingham’s skilled artisan class can certainly be counted among these consumers. Science itinerants were mostly self-employed entrepreneurs and they had little choice but to adjust their lectures to the contours of the marketplace. If Birmingham craftworkers were in need of elementary instruction in mechanics, optics, the properties of metals or the chemistry of heat, then we can be confident that these needs were swiftly catered for. In such conditions it is not difficult to imagine how useful knowledge could be translated into commercially viable technologies (artificial alkalis, metal alloys, gilding, varnishing, enamelling and bleaching processes).

In a striking image, Joel Mokyr hypothesises Industrial Enlightenment as, at heart, a two-way process in which ‘*savants*’ (learned men) were enabled to communicate with ‘*fabricants*’ (makers and doers). He invokes the case of Josiah Wedgwood, the Stoke-on-Trent potter, as an example of the kind of interaction he has in mind (see article by Gaye Blake-Roberts).

In reality, it would be more accurate to depict the industrialists who laid the foundations of prosperity in the West Midlands as *savants* and *fabricants*. Matthew Boulton’s Soho Manufactory at Handsworth outside Birmingham was both a recognised site of scientific knowledge generation and a large-scale enterprise pioneering modern industrial technology. The same could be said of James Keir’s chemical works in Tipton.



Courtesy of VisitWorcester

Worcester was very different from Birmingham as an ecclesiastical centre and county town; nevertheless it was a location for scientific lectures in the West Midlands.

## Knowledge v Resources

Whether the ‘eighteenth-century knowledge economy’ can account on its own for the accelerating pace of industrialisation in Great Britain as opposed to France, the Low Countries, Silesia or the Rhineland is another matter, of course. On the evidence of the West Midlands, we need also to allow for the role played by the market.

Many economic historians would argue that Britain industrialised first, not because knowledge levels reached a critical threshold, but because energy was comparatively cheap and skilled labour forbiddingly expensive. To survive in the marketplace entrepreneurs had little choice but to innovate with the aid of labour-saving machinery, alternative technologies and creative marketing strategies.

Did Industrial Enlightenment in the West Midlands therefore depend more on the growth of a culture of applied science, or on the superabundance of low-cost coal brought in by barge from the Black Country? It is a nice question, but one which does not require an ‘either/or’ answer.

In any case, the underpinnings of the provincial Enlightenment which flourished in the West Midlands in the second half of the eighteenth century should not be reduced to a simple cost–benefit equation. In an age when men and women were ‘daring to know’, knowledge carried a unique value and was pursued for its own sake. As the *Annual Register* reminded its readers, access had never been easier or less fraught with risk. Scientific knowledge carried particular prestige. Its acquisition conferred status and gentility whilst extending a tantalising promise of material betterment. ●

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### Further Reading

Peter M. Jones, *Industrial Enlightenment: Science, Technology and Culture in Birmingham and the West Midlands, 1760-1820* (Manchester University Press, 2009, 2013).

Joel Mokyr, *The Gifts of Athena: Historical Origins of the Knowledge Economy* (Princeton University Press, 2002).

Joel Mokyr, *The Enlightened Economy: an Economic History of Britain 1700-1850* (Yale University Press, 2009).

Ken Quickenden, Sally Baggott and Malcolm Dick (eds), *Matthew Boulton, Pioneering Industrialist of the Enlightenment* (Ashgate, 2013).

Larry Stewart, *The Rise of Public Science: Rhetoric, Technology and Natural Philosophy in Newtonian Britain, 1600-1750* (Cambridge University Press, 1992).

