

EIGHTEENTH-CENTURY BRITAIN'S EXPERIMENTAL ENLIGHTENMENT

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Eighteenth-century Britain was experiencing a buzz of ideas, experiments and arguments, which together fuelled **Britain's Experimental Enlightenment**. The discussion refers to the whole of Great Britain, because the exciting ferment of ideas was fully shared in Irish cities like Belfast, Dublin and Cork - and especially in Edinburgh and in Glasgow, the great urban centres of Lowland Scotland, as much as in English cities like London, Manchester and Birmingham. (And lots of other places too.)

First of all, however, it's worth enquiring whether reasonably educated people in eighteenth-century Britain were aware that big intellectual and practical changes were afoot? And the answer is undoubtedly: Yes. Not everyone knew everything, of course. And some critics disapproved. But many authors in books, magazines and newspapers began routinely to record their awareness that inspiring new ideas were in circulation.

Common words of praise included: 'philosophy', 'science', 'reason', 'liberality', the 'march of mind', and, above all, 'light' or 'enlightenment'. Here are some examples. The eighteenth century was 'an Age of the greatest Light and Knowledge that has been, for above these twelve hundred Years', wrote a happy commentator in 1748 – meaning that British culture had been in darkness since the fall of Rome but was now improving.

Soon such references became standard. It was 'a happy era of experimental philosophy', decided another commentator in 1748. It was 'an Age, wherein every part of Science is advancing to perfection', echoed a third in 1772. People at this time were more 'enlightened and informed' than their ancestors ever were,

another added in 1777. And again: it was ‘an age of light and liberality’ as well as one of ‘science and free enquiry’, according to a political reformer in 1782.

There are many, many others, all offering these and similar verdicts with a happy confidence that their readers would instantly understand. Moreover, these references to ‘light’ and advancement all date from *before* 1784. It was then that Immanuel Kant added philosophical depth to the concept of Enlightenment, with his famous tract *Was Ist Aufklärung?* But his naming the age as one of reason and advancing knowledge did not come as a surprise to educated Britons.

And the numbers who could read these cheery accounts were expanding rapidly, it should be noted. Literacy skills were spreading fast among eighteenth-century Britons, including among women as well as men. And in Scotland, literacy rates were among the highest to be found anywhere in eighteenth-century Europe. That trend was boosted partly by staunch Protestant fundamentalists, who wanted all adults to read *The Bible* for themselves. But it was also being fuelled by workplace utility, and the expanding market of new jobs in commerce, industry and the professions - all factors encouraging individuals to gain literacy skills – and to ensure that their children did so too.

Ideas about Enlightenment were therefore spreading, not only among the elite and the middle class, but among literate artisans and journeymen too. It is hard, of course, to prove exactly what people knew in any detail. And individuals were entitled to change their views from day to day. Here are two extracts from the 1758 diary of an eighteenth-century shopkeeper, who lived in a small market town in Sussex. One day he heard news that a neighbour’s house had been criminally damaged. He was tragic. ‘Oh what a continuing proof is this of the predominancy of vice and wickedness in this irreligious age ...’. However, two days later his mood had switched. He was keen on self-improvement; and he noted cheerfully: ‘Oh what an unspeakable pleasure it is to be busied in one’s trade and at a leisure hour to unbend one’s mind by reading!’

In this case, the shopkeeper was relaxing with a good book on his own. Yet it was also a common eighteenth-century practice for literate people to read aloud to others: when they were taking tea, or relaxing in coffee houses, or toiling in quiet workplaces (for example, reading to weavers at the handloom though obviously not to blacksmiths shoeing horses in the smithy), or even in ale-houses and taverns, before the drinking and jollity became too noisy.

The result was that terms like ‘Light’ and ‘Reason’ were becoming common ‘buzz-words’, uttered in praise. I have spent lots of time searching eighteenth-century books for people’s verdicts on their own times. And I can confirm that phrases like ‘it is an age of light’ were commonplace in Britain by the end of the century. Here’s another verdict from 1793: Every ‘liberal and manly spirit’ must be pleased at the spread of philosophical enquiry and the dispersal of ‘so many clouds of prejudice and error’.

Yet there were always variants. Once I found a poem addressed to *The Age of Light* (1818) by an anonymous ‘Cornish Tinner’. Could this be a case of working-class Enlightenment, I wondered? Yet the poem, interestingly, was about spiritual renewal. It praised the divine light, emanating from God, the ‘Grand Creator of all Things’. These verses offer a reminder that this period was also a time of religious revivalism, as evangelists like John Wesley protested against the march of secularism and irreligion.

Nonetheless, the Tinner’s verses send another message too. The metaphor of ‘Light’ had a clear spiritual application. But in the course of the eighteenth century, it was gaining also a new and decidedly secular meaning as well. The ‘Light’ of new knowledge was now shining brightly in this world.

2/ A second theme that marks the ferment of ideas, in eighteenth-century Britain particularly, was the stress not just upon ‘Reason’ but also upon ‘Science’ and ‘Improvement’. Certainly, liberal British thinkers shared the same concerns that were expressed by their continental counterparts across Europe. They too

supported religious toleration, political rights, good access to education, economic advancement, social openness, and rational governance.

However, a very distinctive strand in Britain was a concern for inventions. And not inventions in the abstract, but in application to practical day-to-day affairs. In that spirit, a 1769 guidebook called *England Displayed* reported gleefully that: ‘the traces of the busy hand of improvement, guided by genius, and supported by industry, are visible in every corner of this flourishing Island’. An architect agreed in 1771: ‘A general spirit prevails for correcting ancient errors and establishing new improvements’. Even the crusty Dr Johnson confirmed the trend in 1783, though with less enthusiasm. ‘Sir!’ he growled: ‘the age is running MAD after innovation’. Where would it all end?

Well, the answer was an empirical scientific tradition, which combined theory with practice. Here are three remarkable examples. They show that Britain’s heavy-weight scientists not only had mighty intellects but were practical inventors too. The first is Isaac Newton. He became, of course, world-famous for his formulation of the laws of gravity and his work in mathematics and optics. Yet he also worked in his lab to build a path-breaking reflecting telescope. Its novel feature was the use of double mirrors to improve the vision. And this telescope, later known as the Newtonian Reflector, was a prototype for many improved versions to follow.

Similarly Edmond Halley, the astronomer, who famously worked out the timetable of the recurrent Halley’s Comet, was also a practical inventor. He devised the first model of a magnetic compass; and he built a pioneering diving bell, allowing divers to remain underwater for long periods. (During a practical trial, Halley stayed down too long; and, for his pains, surfaced with permanently damaged hearing).

Moreover, a third example followed with the work of Michael Faraday, at the end of the century. He was a rising meritocrat who rose on his merits from a very poor background. He got only limited formal education as a boy, being

largely self-taught. But he was given a self-help handbook, *The Improvement of the Mind*, which Faraday followed carefully. He was also inspired by a work of popular science called *Conversations on Chemistry*, written, incidentally, by a woman.

Faraday was thus aided by books that exemplified the Enlightenment faith in widening access to education; and, when he became a revered expert in chemistry and electro-magnetism, he returned the compliment. He often lectured publicly about his discoveries; he demonstrated his experiments publicly; and his regular Christmas Lectures, at London's Royal Institution, started a tradition that continues to this day.

During these events, Faraday often asked his audiences questions about the workings of the natural world. And then he would say: 'Think of that, *and philosophise!*' But Faraday wanted their thoughts to be rational. He sternly campaigned against traditional beliefs in magic, astrology, and séances where people hoped to get messages from the dead. Instead his Enlightenment message was: Forget magic! Think for yourself! Use your own Reason!

Many other examples could be cited to show the overlap between scientific theory and practice. To be sure, not every intellectual theorist was an inventor; and certainly not all inventors were intellectuals. Nonetheless, in Britain, their worlds inter-mingled. Enlightenment ideas were debated in gentlemen's clubs and societies – some of these clubs being open to women. New discoveries were also circulated via public lectures and scientific demonstrations, where men and women joined the audiences together. By the way, there were some important female scientists, working in fields like astronomy and mathematics. However, in this era they generally tended to stay out of the male-dominated world of the laboratories.

Specifically, too, new scientific ideas were discussed and practically tested in many craft workshops, especially in the industrial regions. Dean Tucker of Gloucester, a clergyman who travelled to study Britain's economy, praised the

spread of labour-saving inventions. England's industrial regions in the North and Midlands, he wrote in 1757: 'exhibit a Specimen of practical Mechanics scarce to be paralleled in any Part of the World'. Every worker had a new pattern to propose, or a new way of working to suggest. Clearly, Tucker's enthusiasm ran away with him here. Yet the general point remained, that in Britain, Enlightenment faith in 'reason' and 'science' was closely linked with a culture of practical invention and innovation, shared in workshops and scientific laboratories alike.

To add one more example: James Watt, the Scottish inventor of the steam-engine, was an ultra-practical man. He did not write theoretical studies. Yet his friends praised his deep scientific understanding and his particular genius for spotting how theory could be turned into practice. Moreover, Watt regularly attended the monthly meetings of Birmingham's Lunar Society. There he rubbed shoulders with the region's leading industrialists, scientists and political thinkers. The development of the steam-engine thus did not come out of the blue. It sprang from the conscious welding of theory and practice. 'O, rare invention!' rhapsodised a poet in 1806: 'To thy skill we owe,/ Refinements, our rough fathers did not know'. So the advent of steam-power, with its eventually epic consequences for the global economy *and* climate, was then seen as an intrinsic part of an Enlightenment story of triumphant Reason-in-application.

3/ So here follows my third theme: The culture of scientific and technical experimentation gave a mighty boost to the British tradition of empiricism. Indeed, it both sprang from that heritage and further engrained it – very deeply.

'Empiricism' became a British cultural mantra. The concept was taken at once to signify the avoidance of dogmatic extremes and, equally, a willingness to apply *ad hoc* measures. Down with dogma! Experimentation entailed 'trial and error' (a phrase first recorded in 1806). Mistakes and the correction of

mistakes were integral to the process. The challenge was to weld creativity with realism. And *vice versa*: to combine practicality with true innovation. And in fact, not every new scientific theory proposed in the eighteenth century was proved right in the long term; and, undoubtedly, lots of experiments failed, at least the first time they were run.

Politically, the mantra of empiricism encouraged the arts of compromise. Many people looked back with horror at the turmoil and bloodshed of the seventeenth-century civil wars. Fighting over rival religious and political principles seemed absurd. ‘For forms of government, let fools contest/’, wrote Alexander Pope lyrically in 1733, ‘Whate’er is best administered, is best’. That attitude did not stop all civil conflict. The American colonists in 1776 were certainly sure that it was worth fighting to escape British control. But, still, many Britons preferred to avoid all ‘extremes’: conservatives being happy to leave things as they stood; and most reformers committed to gradual not revolutionary change.

Philosophically, the empirical tradition fostered a stress upon rational debate. John Locke, the influential Whig theorist and educationalist, paved the way, by arguing that knowledge comes not from innate pre-formed ideas but from human experience, as interpreted by human reason. Rational enquiry and debates were seen as central to all forms of learning. Hence the British contributions to the intellectual ferment known as ‘the Enlightenment’ were typically undogmatic and experimental.

Scientists, as already noted, especially stressed the need for rational testing. (No waiting for miracles or thunderbolts from a remote deity on high). In 1661 the physicist Robert Boyle explained that: ‘I look upon experimental truths as matters of ... great concernment to mankind’. Some theologians did indeed express worries that new scientific speculations might clash with

established religious certainties. Boyle responded by funding the annual Boyle's Lectures (which still continue) to explore the question of whether scientific enquiry is incompatible with Christian faith. But most eighteenth-century experimenters sidestepped any such confrontation. They assumed instead that human reason was divinely bestowed, to be used in full. Thus the devout, if unorthodox, Isaac Newton declared his confidence not in hypotheses but in 'Reason and Experiments'.

Interestingly, too, a great cultural innovator like the visionary poet and artist William Blake was supremely unimpressed by the stress upon rationalism. 'I turn my eyes to the Schools & Universities of Europe', he wrote in *Jerusalem* (1804): 'And there behold the loom of Locke, whose Woof rages dire/ Washed by the Water-Wheels of Newton'. It was magnificent poetry, even if his critique was not easily understood ... However, Blake's own maxim was actually very Newtonian. '*The True Method of Knowledge is Experiment*', he agreed, as he developed his own creative mix of radical religion, cabalistic theories and a naturalistic lifestyle.

At the same time, the rationalist cleric-cum-social-demographer Thomas Malthus – unlike William Blake in every other way – upheld the need to test and retest in order to confirm. '*It is an acknowledged truth in philosophy that a just theory will always be proved by experiment*', he stated firmly in 1798.

Intriguingly, there is an echo of Malthus in the opening salvo of Jane Austen's *Pride and Prejudice* (1813). The novel starts with the resounding assertion that: '*It is a truth universally acknowledged ...*'; and then tests the proposition that a wealthy young bachelor must be in search of a wife. It's a tale of trial and error in love. Solid evidence eventually wins through, being more reliable than judging by people's looks, or sexiness, or their behaviour on first meeting, or their wealth, parentage, lands or titles.

Needless to say, individual actions and attitudes in eighteenth-century Britain were far more emotionally diverse and less coolly intellectual than a pure rationalist might demand. Cultural frameworks, after all, provide only frameworks. But such structures are insidiously powerful. The need to test everything was becoming axiomatic. As you might say in Portuguese: *Experimente e veja!* One example from 1811 shows the sort of thing that worried conservative thinkers in Britain. Shelley, the young Romantic poet, wrote a tract called *The Necessity of Atheism*. And, in it, he stated that: ‘God is an hypothesis, and, as such, stands in need of proof’. Everything seemed open to challenge.

4/ Lastly, then, there is not time to explore all aspects of this great theme. I’ve argued that people in eighteenth-century Britain were aware of the advent of new ideas. Those who approved called this development the triumph of ‘Light’. The new thinking, especially among scientists, was strongly experimental. And it encouraged the cultivation of a growing British tradition of empiricism.

Free experimentation would unleash change. Optimistic hopes for the future were encouraged. Joseph Priestley, the experimental chemist who was one of the first to identify oxygen, was confident in the coming both of political reform *and* social improvement. It was already an ‘enlightened age’, he declared in 1790. Hence the future must be sublimely better still. Tyrants would fall. (Alas, not yet!) And the human species would advance to true perfection, in ways that were unimaginable in the eighteenth century. (Also, not yet!)

Early feminists also applauded the betterment narrative. Mary Wollstonecraft, author of *The Rights of Woman*, explained in 1796 that the future would advance ‘the grand causes which combine to carry mankind forward, and diminish the sum of human misery’. Implicit in her stance was her hope for the true liberation of women. (To an extent, though not entirely, Yes!)

Above all, too, the narrative of progressive change was warmly welcomed by the activists who campaigned firstly to stop Britain's role in the trade taking enslaved Africans to the Americas, and then to end the institution of slavery itself. One abolitionist tract was reproachful: 'We, in an enlightened age, have greatly surpassed in brutality and injustice the most ignorant and barbarous ages: and while we are pretending to the finest feelings of humanity, we are exercising unprecedented cruelty.' People should live up to the promise of the times, the author argued pointedly. The African abolitionist, Olaudah Equiano, himself a former slave, also added his voice. Freedom for 'the sable people', he declared in 1789, was essential in this era of 'light, liberty, and science'. Note how 'liberty' was sandwiched between the other key Enlightenment buzz-words 'Light' and 'Science'.

Well, it's enough to conclude that much progressive change has indeed ensued. But the world, both in the eighteenth century and now, was and is still full of problems, from wars to climate change. Much needs to be reformed. (And not all changes are good ones), Nonetheless, Britain's Experimental Enlightenment would urge: Keep trying! Learn from errors! Try again! Indeed, the optimistic mantra of the scientist Michael Faraday conveyed this Enlightenment faith in a nutshell: *'But still try, for who knows what is possible? Ainda tentar, para quem sabe o que é possível?'*

Note1: Penelope J. Corfield is author of *The Georgians: The Deeds & Misdeeds of Eighteenth-Century Britain* (Yale University Press, 2022). She has also compiled a website with leads to evidence of Georgian lifestyles: see www.thegeorgiansdeedsandmisdeeds.com.

Note2: A very slightly adapted version of this text has been translated into Portuguese and will be published in 2024 in the Brazilian journal *Luzes*.