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Professor Roy Porter delivered this paper as the Royal Historical Society's Colin Matthew Memorial Lecture at St Anthony's Church, Holborn, on the evening of 8 November 2000. In it he drew out of his larger study of the Enlightenment those aspects of it which he thought particularly significant. Professor Porter died on 4 March 2002. We are proud to publish this essay as a tribute to his memory.

MATRIX OF MODERNITY?

The Colin Matthew Memorial Lecture

By Roy Porter

READ 8 NOVEMBER 2000

THIS new millennium year has led historians to address moments in the past which represent epochs in human affairs. The Enlightenment comprised such a turning-point, since it secularised the world-view and trained eyes and attention towards the future. British thinkers played an influential part in this intellectual revolution – though, as I have maintained in a recent book, *Enlightenment: Britain and the Creation of the Modern World* (2000), that is a contribution widely ignored or played down, by contrast to that of France. In that book I tried to explain that neglect, and I shall not bore you by repeating myself now. Rather my aim this evening is to set before you some key innovations in theories and thinking which emerged from eighteenth-century Britain, in particular ones specially pertinent to Sir Thomas Gresham and his College, and to the Royal Historical Society. I shall be focusing, in other words, on enlightened ideas about wealth and economics, science and history.

Thanks to ideas and attitudes developed in Britain during the long eighteenth century, attention became focused, perhaps for the first time ever, on the future rather than the past, and the drive to create a better future generated a belief in progress. The achievements of scientists like Isaac Newton and philosophers like John Locke bred new faith in man's right and power to achieve knowledge of himself and the natural world, and encouraged practical action in such fields as overseas exploration, technology, manufactures, social science and legal reform. Philosophers also became committed to the ending of religious strife, bigotry, ignorance, prejudice and poverty, and the creation of polite new social environments and lifestyles.

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History is progressive, proclaimed enlightened activists in ever-swelling chorus. 'Rousseau exerts himself to prove that all *was* right originally', commented Mary Wollstonecraft, 'a crowd of authors that all *is* now right: and I, that all *will be* right'. Sights became trained on the future – not the Apocalypse of orthodox Christian eschatology but one continuous with the here-and-now. Indeed, the Enlightenment brought the birth of science fiction – Samuel Madden's futurological *Memoirs of the Twentieth Century* (1733), for instance, or the anonymous and not too chronologically inaccurate *The Reign of George VI, 1900-1925* (1763).

The scent of progress was in the air. The Anglican Edmund Law professed his faith in the 'continual Improvement of the World in general', while the Glasgow Professor John Millar taught that how 'one of the most remarkable differences between man and other animals consists in that wonderful capacity for the improvement of his faculties'. Improvement seemed so visible and tangible. 'Who even at the beginning of this century', asked Richard Price, fired by rational Dissent:

> would have thought, that, in a few years, mankind would acquire the power of subjecting to their wills the dreadful force of lightning, and of flying in aerostatic machines? … Many similar discoveries may remain to be made … and it may not be too extravagant to expect that (should civil governments throw no obstacles in the way) the progress of improvement will not cease till it has excluded from the earth most of its worst evils, and restored that Paradisiacal state which, according to the Mosaic History, preceded the present state.

Even 'Parson' Malthus set off his demographic gloom against scientific glory, celebrating 'the great and unlooked for discoveries that have taken place of late years in natural philosophy … the ardent and unshackled spirit of inquiry that prevails'.

Late Enlightenment belief in progress was, to be sure, a secular theodicy – progress, you could say, was the opium of the Enlightenment – but, as a piece of mythologising, Mary Wollstonecraft's 'all *will be* right' was not complacent in precisely the same way as earlier Leibnizian all-is-for-the-best optimism. The world, as she explained, was not perfect *yet*: rather it was mankind's duty to perfect it, through criticism, reform, education, knowledge, science, industry and sheer energy. The stunning information revolution then in train – compare the World-Wide-Web today – would make all the difference: the dynamo of advancement, proclaimed the psychologist David Hartley, was 'the diffusion of knowledge to all ranks and orders of men, to all nations, kindred, tongues, and peoples', a progress which 'cannot now be stopped, but proceeds ever with an accelerated velocity'. And all this optimism about the future, this overcoming of dark ancestral fears

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about 'forbidden knowledge', was buoyed up by the conviction, in the thinking of the likes of Hartley, Price and Priestley, that Divine Providence guaranteed such developments, or, as suggested by the Deist, Erasmus Darwin, that social progress was underwritten by the surge of biological evolution at large.

Progress was the abstract form of 'improvement', that ultimate Georgian buzz-word. The idea of novelty was catching. Landscapes, gardens, manufactures, manners, taste, art and literature – all were constantly talked up as 'improving', while advertisers puffed 'modern methods' in manufactures, or the 'latest' in sartorial or culinary elegance, and literary classics were modernised and Englished for the masses.

Traditional historical pessimism was addressed and allayed by Gibbon, a man constitutionally sceptical of facile credos. Would not, as many believed, the calamities which had destroyed Imperial Rome recur in 'this enlightened age'? No: the great 'source of comfort and hope', explained the *Decline and Fall*, was the permanency of improvement. From savagery mankind had 'gradually arisen to command the animals, to fertilise the earth, to traverse the ocean, and to measure the heavens'. Such betterment had no doubt been 'irregular', with 'vicissitudes of light and darkness'. Yet the 'experience of four thousand years should enlarge our hopes', soothed Gibbon, and since technical skills could never be lost, no people 'will relapse into their original barbarism'. At bottom, therefore, mankind could 'acquiesce in the pleasing conclusion that every age of the world has increased, and still increases, the real wealth, the happiness, the knowledge, and perhaps the virtue, of the human race'. Moreover, progress had no foreseeable limits, for once made, gains were irreversible. 'Observations on the Fall of the Empire in the West', the long essay rounding off the first half of Gibbon's history, explained that any new 'Gothic' invaders could succeed only by first assimilating modern achievements, not least military technology: 'before they can conquer they must cease to be barbarians'.

In short, by 1800, progress was the big idea, set to turn into the great panacea, or *ignis fatuus*, of nineteenth-century Whiggery, Macaulay-style – and as such to be sent up by that last of the enlightened, Thomas Love Peacock.

Crucial to the birth of the modern was a rethinking of economics, bringing to a head a remarkable series of long-term transformations in attitudes towards work and wealth. Though for different reasons, Greek philosophy and Christian theology had condemned the love of money. The Churches had deemed lucre filthy, greed evil, profit without labour usurious. The Christian duty to conduct personal economic dealings in a just manner had been mirrored in Tudor commonwealth thinking at large. 'Mercantilism' – the economic outlook which dominated the

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Stuart century and beyond – took good housekeeping as its model, projecting the practices of domestic prudence on to the nation at large. Advocates like Sir Thomas Mun, a director of the East India Company and author of *England's Treasure by Forraign Trade* (1664), measured economic well-being principally in terms of a favourable balance of trade generated by export surpluses: being in pocket. Associating wealth with money or gold and silver, mercantilism's advocates approved the hoarding of reserves, the promotion of exports, the limitation of imports and the management of vital national monopolies.

Enlightened thinking mounted a sustained attack on such policies for being unscientific and hence futile. David Hume's essay 'Of the Balance of Trade' thus argued that a nation never need be apprehensive of losing its money so long as it preserved its people and its industry, because an automatic self-adjusting mechanism operated which 'must for ever, in all neighbouring countries, preserve money nearly all proportionable to the art and industry of each nation'. Mercantilist doctrines were thus shortsighted. In place of regulation, labour and consumption – that is, at bottom, desire – were to be set at the heart of the new thinking.

Mercantilism's faith in interference, critics now argued, was superficial, opportunistic and often poisonous. Regulation had made bad worse, especially when that 'insidious and crafty animal, vulgarly called a statesman or politician' – the phrase is Adam Smith's – was pulling the strings. What was needed instead was an informed grasp of the macro-economics of cash transfers, the relations between wealth and bullion, money and commodities, the short and the long term. Economic policy must be grounded on empirical realities not on rulers' wish-lists, and certainly not on the machinations of monopolists.

A profound revaluation of economic activity itself was under way. The old 'moral economy' was coming under fire from a new 'political economy' which laid claim to a scientific grasp of wealth creation and want satisfaction – a purported analysis of actualities rather than aspirations, what really happened and not what statesmen airily decreed.

Distancing themselves from pious precepts, privileges and practices, enlightened analysts insisted that, like it or not, economic activity was inexorably governed by fundamental laws of its own. Ideals such as the just price, the proper reward for labour and other aspects of what E. P. Thompson called the moral economy might all be very admirable, but they were fatally flawed. They did not, for one thing, reflect human nature. Man was, if not nakedly rapacious *à la* Hobbes, at least an accumulating creature, and therein lay the motivation for economic activity, rooted as it was in the constant human desire for self-improvement. To ignore or expect to override such omnipresent motives was pie-in-the-sky.

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The moral economy was thus self-defeating, whereas the new political economy prided itself upon being grounded on a proper grasp of motives, ends and means, individual and system, self and social – natural science, in particular, Newtonian physics, often being invoked to prove how economic forces 'gravitated' to an equilibrium: prices were 'continually gravitating, if one may say so', wrote Smith, 'towards the natural price'. Like water, economic activity would find its own level, and regulation was thus futile, indeed utterly counter-productive. 'Trade is in its Nature free, finds its own Channel, and best directeth its own Course', dogmatised Charles Davenant in the 1690s in impeccably liberal hydrostatic tones. Since profit-seeking was only human nature, it was best to leave trade free and let the economic players get on with it. 'The main spur to Trade, or rather to Industry and Ingenuity', opined Davenant's contemporary Dudley North, 'is the exorbitant Appetites of Men, which they will take pains to gratifie, and so be disposed to work, when nothing else will incline them to it; for did Men content themselves with bare Necessaries, we should have a poor World'. Here, as so often, enlightened thinking appealed to 'Nature' against the cobwebbed wisdom of cloistered scholars and pontificating divines.

The pioneering figure amongst the liberal theorists of this school was, predictably, John Locke. Not only private property but exchange and money too were, in his scheme, pre-established in the state of Nature, subject to the laws of Nature and human rationality and industry. Value itself was determined by labour. Hence economic regulation formed no part of the state's day-to-day remit. The new political economy thus repudiated moral or statesmanly policing of wealth. Christian commandments against greed were sidelined, and the pursuit of gain secularised, privatised and valorised.

It was Adam Smith who systematised the new political economy, grounding it in a science of human appetite, 'the desire of bettering our condition'. Given the ceaseless urge to 'self-improvement', 'every man', it followed, 'lives by exchanging … and the society itself grows to be what is properly a commercial society'. Selfishness made the world go round: 'It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest.' His formula – let demand decide – expresses the enlightened inclination to trust in Nature and its resultant play of wants and needs. In so doing, Smith was forced to confront the old civic humanist warnings and worries about private wealth and greed. Could *enrichissez-vous* prove compatible with socio-political stability? Would not the pursuit of affluence compromise virtue, and 'luxury' subvert liberty, set class against class, and corrupt the commonwealth?

Smith was no narrow 'economist' and his *Inquiry into the Wealth of*

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Nations (1776) must be assessed in terms of its wider contribution to enlightened discussions about freedom, justice, subject/state relations and the quality of life in commercial society.

In his early student lectures at Glasgow University, Smith proposed 'opulence and freedom' as 'the two greatest blessings men can possess'. That was a pairing which packed some shock value. Two contrasting concepts of liberty had been in circulation since Antiquity. In the Stoic view, freedom was a state of tranquillity in which the cravings of the flesh were curbed by the rational will. There was also the 'civic' view, proposed by Cicero and Livy, for whom liberty lay in political activity and public service. Rejecting both the political passivity of the former and the 'direct action' of the latter, Smith held that the true key to freedom was commerce. Classical thinkers would have condemned modern commercial society as inglorious, but for Smith it chimed with that basic 'propensity to truck, barter and exchange', which achieved its full expression only in a nation of shopkeepers.

Whereas Stoicism disparaged economic activity, Smith read 'selfishness' as everyone's laudable desire to get on. Like Hume, he held that the proper stage for human energies was not honour and glory in the Senate, but private, self-regarding pursuits. For Graeco-Roman thinkers, time spent meeting household needs was beneath the dignity of the true male citizen – was indeed, fit only for inferiors, peasants, artisans, women and slaves; for Smith, by contrast, it was the natural business of humanity. Indeed, it was a public benefit, for economic exchange forged supportive social networks: in a 'civilized and thriving country', even the 'very meanest person' could not be provided with even the shirt on his back without the 'joint labour of a great multitude of workmen'. From such interdependency commercial society derived its unique strength.

For Smith, dependency was of course corrupting – a view central to the influential civic humanist equation of freedom with independence. According to such neo-Harringtonians, however, the chief source of corruption and threat to independence lay in the growth of commerce, paper money, the credit nexus and the public debt. Smith rejected this thinking. While never denying that dependency spelt corruption, he counter-insisted that 'commerce is one great preventive' of its occurrence. Economic activity was thus not pathological but prophylactic, preservative of a sound constitution. For the civic humanists, history had been a descent into decadence; for Smith it was more a path to progress.

Science too was a mighty generator of optimism. In the wake of the great age of Newton, the culture of science spread, percolating through society via popularising institutions such as Gresham College and rippling out into the provinces. While the Royal Society remained the

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nation's senior scientific society, further bodies were added in the capital, notably the Linnean Society of London (1788) and the Royal Institution (1799). The Royal Society of Edinburgh was set up in 1783, and its counterpart, the Royal Irish Academy, in 1785, while science, Dissent and political reformism joined forces from the 1760s in Literary and Philosophical Societies in Manchester, Newcastle and other industrial centres and ports. Science was acclaimed as vital not just to utility but to the civilising process, the leading light in Manchester, Thomas Henry, pronouncing the pursuit of natural philosophy preferable to 'the tavern, the gaming table, or the brothel'.

The most energetic of such gatherings embodying enlightened faith in science was the Lunar Society. Though still a small market town at the beginning of the century, Birmingham grew rapidly; by 1760, with 30,000 inhabitants, it had already become considerable, and in Matthew Boulton's Soho factory it gained a machine-tool works famed internationally. Born in Derby, William Hutton found there an ethos he had not encountered elsewhere: 'I had been among dreamers, but now I saw men awake.'

From about 1765 a group of friends – leading industrialists, scientists, educators, dissenting ministers and physicians – began to meet at Boulton's home, once a month at full moon, to help light them home, discussing innovations in science and technology and the new industrial order they were helping to create. Through such associations, Paul Langford tells us, 'a nation of Newtons and Lockes became a nation of Boultons and Watts'.

Scientific improvement was a label often applied to the land, serving as a code-word for capitalist farming, notably enclosure. The improving spirit in agriculture was increasingly associated with the application of science. In the 'Introduction' to his 600-page *Phytologia* (1800), Erasmus Darwin for instance expressed his regret that 'AGRICULTURE and GARDENING ... continue to be only Arts, consisting of numerous detached facts and vague opinions, without a true theory to connect them.' This had to change. Agriculture had to be made rational and businesslike, through the teachings of political economy: 'for the invention of arts, and production of tools necessary to agriculture, some must think, and others labour; and as the efforts of some will be crowned with greater success than that of others, an inequality of the ranks of society must succeed'.

Farming became regarded as a form of manufacturing, with Robert Bakewell's fat sheep serving, rather like Newton's prism, as icons of Enlightenment. That distinguished Leicestershire stockrearer explicitly bred sheep, cattle and pigs as meat-producing engines, selected so as to maximise expensive cuts and minimise bones and waste: animals were thus turned into machines.

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As this example hints, if agriculture was celebrated as, in Arthur Young's phrase, 'the greatest of all manufactures', it was another field of progress which now received the warmest accolades: manufacturing as such. Progressives had long expressed their fascination with industry in the traditional meaning of skilled work, praising *homo faber*. Remember Daniel Defoe's portrait of his castaway. Overcome with despair, Robinson Crusoe surveyed his predicament: 'I was wet, had no clothes to shift me, nor anything either to eat or drink, to comfort me; neither did I see any prospect before me, but that of perishing with hunger, or being devoured by wild beasts.' Salvation came for Defoe's hero, however, in the implements and weapons he fished out from the wreck: knives and forks, a spade and pickaxe, needles and thread, muskets, gunpowder and shot. Implements formed the basis of civilisation reborn: 'I had never handled a tool in my life; and yet, in time, by labour, application, and contrivance I found at last that I wanted nothing but I could have made, especially if I had the tools.'

Technological innovation was advancing on a broad front. Waterwheel design became a model of experimental efficiency, and the engineer John Smeaton perfected the lighthouse. In 1758 the 'Improved Birmingham Coach' had blazoned on its side, a touch over-optimistically, 'FRICTION ANNIHILATED', and by 1801 Richard Trevithick had put a steam carriage on the road. Above all, textiles technology was transformed and the steam engine revolutionised power.

At the dawn of this stunning transformation, a poem on Whitehaven (1755) carried a telling 'Preface'. It opened with a paean to agriculture:

> When we behold rich improvements of a wild and uncultivated soil, in their state of maturity, without having observed their rise and progress, we are struck with wonder and astonishment, to see the face of Nature totally changed.

and then significantly changed tack:

> But how great and rational soever the pleasure of such a sight may be, it is still surpassed by that arising from the extraordinary increase of a trading Town, and new plantations of Houses and Men. Such was the satisfaction the author felt at the appearance of the town and harbour of Whitehaven, after an absence of somewhat less than thirty years.

Manufacturing's appeal to enlightened minds was potent and many-sided. Technology was in, as the cutting-edge of novelty. 'The people in London, Manchester and Birmingham are *steam mill mad*', Matthew Boulton assured James Watt.

Industry also was a prime instance of disciplined rationality. An experimentalist in his own right, Josiah Wedgwood the potter aimed to

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'make such *machines* of *Men* as cannot err', introducing clocking-on to ensure punctuality among his workforce. Surveying the progress so visible across the West Midlands, he declared, 'Industry and the machine have been the parent of this happy change. A well directed and long continued series of industrious exertions, has so changed, for the better, the face of our country, its buildings, lands, roads and the manners and deportment of its inhabitants, too'. Business, in other words, promoted not just wealth but well-being.

Manufacturing, moreover, seemed to be producing a new breed of heroes, principally the 'captain of industry', the self-made man, raising capital for factories, forges and foundries, ploughing back profits, organising productive capacity, recruiting, training and deploying the workforce, calculating market opportunities. The industrialist was trumpeted as a national hero. One of the children's tales in Anna Barbauld's primly improving *Evenings at Home: Or the Juvenile Budget Opened* (1794) celebrated Sir Richard Arkwright's rise to fame and fortune. 'This is what manufacturers can do', explained papa to his children, in an enlightened idiom approaching profanity: 'here man is a kind of creator, and like the great Creator, he may please himself with his work and say it is good.' Showing his youngsters round a factory, the fictional father insisted what fun it all was: there was 'more entertainment to a cultivated mind in seeing a pin made, than in many a fashionable diversion'.

The entrepreneur was thus applauded as the exemplar of modern energy. 'I shall never forget Mr Boulton's expression to me', recalled James Boswell of a visit to the Soho works: ' "I sell here, Sir, what all the world desires to have, – POWER". He had about seven hundred people at work … he seemed to be a father to this tribe.'

Like Boulton, his friend Josiah Wedgwood was one of a remarkable new breed of men conspicuous for applying enlightened thinking to business. Though of meagre formal education, he displayed a consummate faith in reason, and a passion for measuring, weighing, observing, recording and experimenting: all problems would 'yield to experiment'. His rational outlook extended beyond business to Unitarianism in religion and radicalism in politics – he was hostile to slavery, and a warm supporter of the American colonists and later the French Revolution. He thought big: 'I shall ASTONISH THE WORLD ALL AT ONCE', he declared to his partner, Thomas Bentley, 'for I hate piddling you know.' Becoming 'vase-maker general to the universe', he died worth half a million.

It is Robert Owen, however, who offers the perfect illustration of the application of enlightened ideas to the empire of industry. Born in mid-Wales, Owen got his first employment as an errand-boy; then he moved into drapery, rising to a partnership in a Manchester firm,

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before, at the turn of the century, becoming partner and manager of the New Lanark Mills on Clydeside. For the next two decades he combined entrepreneurship with social reform. In his *A New View of Society* (1813) – today we would call it his 'mission statement' – Owen urged rational social rebuilding on the basis of universal education. Manufacturing would provide the foundation for happiness, but only once divested of the arbitrariness of the dog-eats-dog market and reorganised according to social utility. Character could be moulded by correct environmental influence. If the labouring classes were ignorant, brutalised and criminal, they were victims and it was society that must shoulder the blame.

Owen gloried in the changes he was helping to bring about. 'Those who were engaged in the trade, manufactures, and commerce of this country thirty or forty years ago formed but a very insignificant portion of the knowledge, wealth, influence or population of the Empire', he explained:

> Prior to that period, Britain was essentially agricultural. But, from that time to the present, the home and foreign trade have increased in a manner so rapid and extraordinary as to have raised commerce to an importance, which it never previously attained in any country possessing so much political power and influence.

But Owen was no Smithian. *Laissez-faire* was useless for ensuring long-term prosperity and welfare – market forces would 'produce the most lamentable and permanent evils', unless there were 'legislative interference and direction'. Though industrialisation held out the promise of untold human benefit, under the competitive system some grew fabulously rich while others were pauperised. Cooperation was needed to effect industry's potential social advantages. Since people were products of circumstances, education would make all the difference, according to Owen's plan for 'a national, well digested, unexclusive system for the formation of character, and general amelioration of the lower orders'. In his New Lanark factory village, the provision of schooling, along with such amenities as a museum, would programme workers for happiness. Here was a veritable social experiment in action, one which

> cannot fail to prove the certain means of renovating the moral and religious principles of the world, by showing whence arise the various opinions, manners, vices and virtues of mankind, and how the best or the worst of them may, with mathematical precision, be taught to the rising generation.

An unbeliever, Owen secularised Christian aspirations in envisaging 'the foretold millennium … when the slave and the prisoner, the bond-

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man and the bond-woman, and the child and the servant, shall be set free for ever, and oppression of body and mind shall be known no more'.

Owen was thus a logical *terminus ad quem* of certain strands of Enlightenment thought, envisaging comprehensive benevolent control within a scheme of industrialisation, and showing a Helvétius-like concern with education and discipline over his 'human machines'.

Many penned anthems to improvement, uniting science and imagination, poetry and social theory. Working on the model of Lucretius's *De rerum natura*, Richard Payne Knight's *Progress of Civil Society* (1796) was divided into six books whose very titles – 'Of Hunting'; 'Of Pasturage'; 'Of Agriculture'; 'Of Arts, Manufactures, and Commerce'; 'Of Climate and Soil'; and 'Of Government and Conquest' – clearly show that he was setting Enlightenment speculative anthropology to verse, giving a poetic rendition of the lessons of Adam Smith's progressive stages of society.

The most notable and prominent poetic prophet of progress, however, was Erasmus Darwin. Born near Nottingham in 1731, Darwin was the son of an 'honest and industrious' lawyer with a taste for antiquities. In 1750 he went up to St John's College, Cambridge, then crossing the Tweed (like so many others) to complete his medical training in Edinburgh. He set up in medical practice in Lichfield, which proved his home for twenty-five years.

Though, like his friend, Joseph Priestley, a stammerer, the energetic and ebullient Darwin was a domineering talker, becoming noted for his raillery directed against Christianity. From the 1760s he grew familiar with the circle of 'learned insane' which developed into the Lunar Society, already mentioned.

A physician first and foremost, Darwin practised for some forty years, and his *magnum opus*, *Zoonomia* (1794-6), was essentially a work of medical theory, heavily influenced by David Hartley's materialist physiological psychology. Despite his busy medical practice, he poured his boundless energies into many channels. In 1771 he was dabbling with a speaking-machine or mechanical voicebox; in the next year he had long discussions with Wedgwood and the engineer James Brindley about extending the Grand Trunk Canal; with his friend Brooke Boothby, he founded the Lichfield Botanic Society, which in time brought out translations of Linnaeus's classification system. His gardening interests also blossomed on a site west of Lichfield, where in 1778 he established a botanic garden, the inspiration of his later poem of the same name.

Uniting arts and sciences, medicine, physics and technology, the brisk, business-like and corpulent Darwin was not only a man of the broadest improving interests but the very embodiment of enlightened

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values. 'All those who knew him will allow that sympathy and benevolence were the most striking features', wrote Keir: 'He despised the monkish abstinences and the hypocritical pretensions which so often impose on the world. The communication of happiness and the relief of misery were by him held as the only standard of moral merit.'

Darwin embraced a humanitarian benevolence hostile to Christian values and judgements. From early years, he rejected Christianity in favour of Deism. Indeed, he found the Christian Almighty quite repellent: how could a truly loving Father visit terrible diseases upon innocent children? The notion of a jealous Lord was quite perverse; he loathed the Churches' fixation upon punishment, guilt and suffering; and his *Zoonomia* pathologised religious enthusiasm and superstition, diagnosing such religiosity as symptomatic of madness.

Championing Hartley's philosophy, Darwin was a materialist through and through. 'Dr Darwin often used to say', remembered the pious Quaker, Mrs Schimmelpenninck:

> Man is an eating animal, a drinking animal, and a sleeping animal, and one placed in a material world, which alone furnishes all the human animal can desire. He is gifted besides with knowing faculties, practically to explore and to apply the resources of this world to his use. These are realities. All else is nothing; conscience and sentiment are mere figments of the imagination.

(One suspects that, in front of his male cronies, Darwin used a saltier phrase than 'a sleeping animal'.)

Anti-Christian materialism shaped his humanitarianism: while bigots blamed, men of reason would inquire and sympathise. Hearing of an infanticidal mother, he wrote a commiserating letter to his correspondent:

> The Women that have committed this most unnatural Crime, are real Objects of our greatest Pity; their education has produced in them so much Modesty, or Sense of Shame, that this artificial Passion overturns the very Instincts of Nature! – what Struggles must there be in their Minds, what agonies! …
>
> Hence the Cause of this most horrid Crime is an excess of what is really a Virtue, of the Sense of Shame, or Modesty. Such is the Condition of human Nature!

Politically Darwin was a dyed in the wool liberal. His books and letters echo with condemnations of despotism, slavery and bloodshed: 'I hate war.' 'I have just heard', he raged on one occasion to Josiah Wedgwood, 'that there are muzzles or gags made at Birmingham for the slaves in our island. If this be true, and such an instrument could be exhibited by a speaker in the House of Commons, it might have a great effect.'

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From its outset he supported the French Revolution, and after the 1791 Birmingham riots he wrote to Joseph Priestley deploring his victimisation by fanatics – while also politely advising him to quit his theological maunderings and get on with something more useful, namely scientific experiments. Darwin's politics were, however, never revolutionary. Law, order and property were essential ingredients for the social progress which would be achieved within the framework of free-market capitalism and industrialisation.

As the summation of his myriad ideas, Darwin developed the first comprehensive theory of biological evolution: 'would it be too bold to imagine, that all warm-blooded animals have arisen from one living filament, which THE GREAT FIRST CAUSE endued with animality?' The endless mutual competition of burgeoning organic forms within the terraqueous globe also resulted in death, destruction and even extinction:

> From Hunger's arm the shafts of Death are hurl'd,
> And one great Slaughter-house the warring world!.

Nevertheless, rather as for Adam Smith, though not for Owen, the law of competition brought about net improvement, and the aggregate rise of population spelt not Malthusian misery but an augmentation of happiness according to a cosmic felicific calculus.

> Shout round the globe, how Reproduction strives
> With vanquish'd Death – and Happiness survives;
> How Life increasing peoples every clime,
> And young renascent Nature conquers Time.

Darwin's evolutionism provided the British Enlightenment's clinching theory of boundless improvement.

The epic of progress, implicit or explicit in most late Enlightenment opinion and given a scientific grounding by Darwin, stands in stark contrast to such earlier visions of the human condition as *Paradise Lost* and Pope's *Essay on Man*. For Milton, what was fundamental was the relationship between God and man: Adam's offence lay in violation of God's command; man's destiny was couched in a transcendental revelation. Pope for his part presented a view of the human amphibian as fixed on a divinely ordained scale:

> Plac'd on this isthmus of a middle state,
> A being darkly wise, and rudely great;

With a static 'Chain of Being' in mind, Pope viewed beings suspended between the divine and the animal, a predicament at once laughable and lamentable,

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Created half to rise, and half to fall;
Great lord of all things, yet a prey to all.

Darwin, by contrast, painted a wholly optimistic, naturalistic and this-worldly picture, grounded on evolution, biological and social. Human capacities were the products of biological and physiological development which extended to 'the progress of the Mind'. Not only was there no Miltonic Lucifer and Fall, but neither was there, as for Pope, an irreconcilable conflict between mind and body, man and Nature. Addressing humanity from Nature's viewpoint not God's, Darwin granted a far more elevated position to mankind: man alone had consciousness of the natural order. Whereas Pope scorned pride as hubristic, for Darwin, as for Hume before him, pride and its triumphs had their legitimate basis in Nature. The *homo sapiens* satirised by Pope was celebrated by Darwin.

Progress proved the ultimate Enlightenment gospel. It kindled optimism and pointed to a programme: the promise of a better future would expose and highlight whatever remained wrong in the present. It was a vision of hope, a doctrine of change. If *Paradise Lost* told mankind's tale in terms of disobedience, sin and punishment – and perhaps redemption – so as to justify the ways of God to man; and if the *Essay on Man* offered an enigmatic view of man as a riddle, even if in principle, at least capable of improvement through self-knowledge, Darwin and his peers presented a man-centred view of man making himself – a Promethean vision of infinite possibilities. God had become a distant cause of causes; what counted was man acting in Nature. The theodicy, the master-narrative had become naturalised, even secularised.

Of course, as we know very well, Erasmus Darwin's evolutionary theories were not accepted in his own day – far from it. Evolutionary thinking long lay under a cloud, being condemned as materialistic, brutalising and atheistic and associated with that great abomination, the French Revolution. Therein lay one of the reasons why his grandson, Charles, was so terribly hesitant about publishing his own evolutionary theory, and why, when the *Origin of Species* finally saw the light of day in 1859, it still created such a storm.

Something similar happened with many of the key ideas of the Enlightenment. Original and challenging, they had never met with universal acceptance, and there always remained throughout Georgian England powerful groupings of High-Flying Churchmen, Jacobites, Tories, traditionalists, Methodists and so forth for whom the enlightened accent on critical reason was an absurdity or an obscenity.

Undergoing socio-political growing pains and tensions, and in particular when confronted by the French Revolution, the Revolutionary and Napoleonic Wars, and their backlashes, liberal ideologies began to

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shiver into fragments. For some libertarian rhetoric led to Jacobin radicalism – witness Tom Paine's very titles: *Common Sense*, *The Age of Reason* and *The Rights of Man*. Bourgeois liberalism, as endorsed by the Whiggish *Edinburgh Review*, founded in 1802, for its part put a different face upon enlightened ideology: individualism was to obey the iron laws of political economy; social progress demanded time-and-work discipline, penology and scientific poor laws; while humanitarian impulses bled into proto-Victorian sentimentality. Meanwhile, establishment apologists began to draw conclusions of their own from enlightened premises. Malthus in particular put a new gloss on desire, recruiting science to prove how legislative action could not, after all, relieve suffering and starvation. More dramatically, French Revolutionary turmoil led many to change sides: Wordsworth, Southey and Coleridge, for instance.

Yet, in the long run, enlightened ideologies were not discarded: they had bored too deep into the bones. By providing secular legitimation for capitalism, they continued to inform Victorian self-help liberalism and free-market ideology – the road from Smith to Smiles. By touting rational self-help, they promised a meliorist, moralised future which immunised native radicals against Marxist creeds of class war or communitarian socialism. Phrenology, secularism and Fabianism were all, in their own ways, enlightenment legacies. John Stuart Mill could declare at the beginning of the Victorian age that every Englishmen was by implication 'a Benthamite or a Coleridgian': the former were evidently children of the Enlightenment. The famous Halévy thesis perhaps needs modifying: perhaps it was not Methodism but rather the Enlightenment which inoculated the English against the French, indeed, against all subsequent, revolutions.

None of these developments was without the most profound tensions. Enlightened activism always involved clashing interests, and its elastic ideological resources could be deployed for radical ends or equally by sections of the propertied, plutocratic and polite against those they sought to discredit, convert or marginalise. If I have argued that the Enlightenment generated the idea of progress, mine has been no simple tale of 'progress', but of the ongoing war of ideas against ideas.

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