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1066 and a wave of gadgets: the achievements of British growth

Deirdre
~~Donald~~ N. McCloskey

The American question and the unpredictability of creative achievement

In his strange little dialogue *Ion*, Plato presents a dilemma: either the ability to sing Homer and comment elegantly is a routine art, a *techne*, which can then be written down and taught to others; or else it is not, in which case its origin is mysterious. He makes a similar claim here and elsewhere about all human skills, from music to entrepreneurship. Either the skills can be made routine or they cannot (e.g. *Gorgias*, 449D). Almost anyone can be taught to sing, if 'singing' is taken as following notes on a page. Up, down, down, up, up. But between the routinely skilful singer struggling in the church choir and Luciano Pavarotti is a creative gap.

The man Ion is a masterful rhapsode, a singer and expositor of the Homeric epics. But he cannot explain his technique, and is bored by other poets. Socrates concludes that 'not by *techne* do the poets and their rhapsodes sing, but by power divine, since if it were by *techne* that they knew how to treat one subject finely, they would know how to deal with all the others too' (*Ion*, 534C). That is, if Ion's mastery came from a routine skill he could apply it indifferently to other subjects, as one can type on all keyboards if on one. Driving a car is routine, and so can be applied mechanically to all cars. But the skill of Sterling Moss racing at Monte Carlo is creative, not routine. It cannot be routinely transmitted from one person to another.

The rhapsode singing Homer is not exercising an 'art' (this is not the European word after the Romantics, Art with a capital A, but plain

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Greek *techne*, the craft of performing routine readings of Homer or routine medical cures with known, write-downable rules). On the contrary, like the poet the rhapsode is possessed by God, transmitting divine madness like one ring in a chain of rings dangling from a magnet – that is, he is if he is not merely a trickster, a flatterer of men, an entertainer, a sophist. Knowledge on Plato's account is a craft that can be written down and taught to others, a justified true belief like the technique for making shoes or for making truth tables or for making predictions from large-scale econometric models.

Plato was not pleased by creativity. The trouble with creativity is that it does not follow rules that a philosopher can come to know. If a philosopher or an economist or an engineer cannot know the rules then he cannot control the achievements. Plato's utopia was rule-governed.

The unpredictability of achievement has been irritating also to many intellectuals after Plato. Francis Bacon, who in aid of certitude put Nature and the enemies of the King upon the rack, sought 'not pretty and probable conjectures, but certain and demonstrable knowledge'.[1] He sought the justified belief that has no need of tacit knowledge or creativity. Like Plato he detested the idols of the market-place, the unpredictable talk in which 'words plainly force and overrule the understanding'.[2] 'You attempt to refute me', says Socrates in the *Gorgias*, 'in a rhetorical fashion, as they understand refuting in the law courts. ... But this sort of refutation is quite useless for getting at the truth', since it is merely pretty and probable conjecture exercised in the agora among men.[3] Bacon envisaged the new sciences as avoiding the frailty of human argument, producing certitude mechanically: 'the mind itself [must] from the very outset not [be] left to take its own course, but guided at every step, and the business done as if by machinery'.[4] It has ever been the programme of philosophy, whether natural or metaphysical, political or moral, to have the business done as if by machinery. Knowledge is said by Plato and his heirs to be mechanical, coming from the justifications of experimental method or clear and distinct ideas.

But the programme of reducing creativity to a *techne* faces a decisive difficulty, of an economic character. The difficulty is that *profitable* creativity, the creativity that results in substantial, non-routine achievements, cannot possibly be mechanical. It cannot possibly be because if it were then everyone would buy the machine and use it. The new

[1] *New Organon* (1620), Preface, in *Francis Bacon: A Selection of his Works*, ed. S. Warhaft, Indianapolis, 1965, p. 329.

[2] Ibid., xliii, p. 337.

[3] *Gorgias*, 471E; cf. idem, 473e–474A; *Phaedrus*, 260A, 261C–D, 262C, 267A–B, 272D.

[4] *New Organon*, Preface (n. 1 above), p. 327.

technique would then become routine and unprofitable, contrary to the premiss.

Understand that 'profitability' is a metaphor. The gains to creativity need not be literally financial. The problem with reducing creativity to *techne* will be found in routines for science and for art as much as in routines for becoming a millionaire. But the financial case provides a check on reasoning about creativity and achievement. If the creativity of a William Lever or a Henry Ford cannot be mechanized, to produce such achievements whenever desired, it must *a fortiori* be true also of Picasso and Dante.

The main argument against a routinized theory of creativity can be summarized in what may be called the American Question: 'If you're so smart why ain't you rich?' The question cuts deeper than most philosophers care to admit. The test of riches is a fair one if the theory claims to deliver the riches, in gold or in glory. The Question embarrasses anyone claiming profitable expertise who cannot show a profit, the historian second-guessing generals or the critic propounding a formula for art. He who is so smart claims a Faustian knowledge, 'Whose deepness doth entice such forward wits / To practise more than heavenly power permits'.

The contradiction in predicting creativity is best seen in divination. Is prediction a *techne*? If the future were routinely predictable by a seer, who for a modest fee would reveal his prediction to you and me, we could prepare, profitably. The predictions would be valuable, at least until the rest of the crowd learnt about them. Socrates attacked the other sophists for charging for their advice, to which the other sophists retorted that at least their advice was worth something.[5] It was said that the philosopher Thales of Miletus made a fortune buying up the olive crop in his district, 'in order to show that even a philosopher if he sees fit is able to make money'.[6]

And yet most of these philosophers and seers, like modern professors of economics, were not rich. An economist who claims to know what is going to happen to the price of corn is claiming to know how to make money. Many models printed for free in the journals of agricultural economics imply foreknowledge of the price of corn. But then one might ask the American Question. With a little borrowing on the equity of his home or his reputation for sobriety the agricultural economist can make enormous sums. If an agricultural economist could predict the price of corn better than the futures market he would be rich. Yet he

[5] Isocrates, *Against the Sophists*, cited in W. Jaeger, *Paedeia: The Ideals of Greek Culture*, III, trans. G. Highet, New York, 1944 (1971), p. 57.

[6] Cicero, *On Divination*, I.xlix.111.

does not put his money where his mouth is. He is not rich. It follows that he is not so smart. The same holds for all diviners, macro-economists, astrologers, urban economists, and technical elves. Auden sings, 'No, Virgil, no: / Not even the first of Romans can learn / His Roman history in the future tense, / Not even to serve your political turn; / Hindsight as foresight makes no sense'.[7]

The postmodern economist is modest about profit-worthy detail, the detail from which she could buy low and sell high. She must be modest especially about the proud claim of economics in the 1960s, the claim to fine-tune the economy by making detailed adjustments to money and taxes in order to offset a depression just around the corner. As economists realize now after much tragedy sprung from hubris, if an economist could see around the corner she would be rich. Fine-tuning violates the ancient and justified jibe at predictors: why ain't you rich? The Roman poet Ennius was only one among many to sneer at predictors, 'who for themselves the path do not know, yet for others show the way'.[8] A fine-tuner would see dozens of paths for personal enrichment. The economists go on relating impossibly detailed scenarios into the microphones of television reporters, but in their hearts they know they are wrong.

The American Question puts fundamental limits on what we can say about ourselves. It puts a limit on mechanical models of human creativity. In 1943 Picasso noticed that a bicycle seat put together with handlebars made a *Bull's Head* (Galerie Louise Leiris, Paris). If we were so smart we would have spotted the bull's head long before, and Picasso's achievement would have been a mere reproduction. And, incidentally, Picasso would not have been rich.

The American Question does not make mechanical models useless for interesting history or routine prediction, the sun coming up tomorrow, or the size of the sixth form predicted from the numbers in the fifth. It merely makes them useless for gaining an edge about the future. 'Prescience' is an oxymoron, like cheap fortunes: prescience, knowing before one knows. Prescience is required for central planning of scientific as much as economic creativity. Karl Popper and Alasdair MacIntyre among others have pointed out that knowing the future of science requires knowing the science of the future. It is not to be done. MacIntyre notes that the unpredictability of mathematical innovation is a rigorous case, resting on theorems concerning the incompleteness of arithmetic and the incalculability of certain expressions, proven by Gödel, Church, and

[7] W. H. Auden, 'Secondary Epic', in *W. H Auden Collected Poems*, ed. E. Mendelson, New York, 1976, pp. 455–6 (lines 1–5).

[8] Cicero, *On Divination*, I.lviii.132.

Turing in the 1930s. And 'if the future of mathematics is unpredictable, so is a great deal else'.[9] If someone claims to know the method that yields good science, why isn't he scientifically rich?

Socrates uses the example of prescience in the *Ion*. Allan Bloom once remarked of the passage:

> If divining is to be considered an art, it is strange in that it must profess to know the intentions of the gods; as an art, it would, in a sense, seem to presuppose that the free, elusive gods are shackled down by the bonds of intelligible necessity. Divining partakes of the rational dignity of the arts while supposing a world ruled by divine beings who are beyond the grasp of the arts.[10]

As the sceptic about prediction would say, the claim of divining to be an art, Greek *techne*, mere bookable craft, is absurd. It claims to fill with routine the creative gap.

An economist examining the business world is like a critic examining the art world. Economists and other human scientists can reflect intelligently on present conditions and can tell useful stories about the past. These produce wisdom, which permits broad, conditional 'predictions'. Some are obvious; some require an economist. But none is a machine for achieving fame or riches. None is a creative achievement, unless it, too, is lit by the unpredictable.

The argument concerns the margin, where supernormal profits and reputations for genius are being made. It says that the routine observer's knowledge is not the same as the creative doer's, the critic is no improvement as artist over the artist, the model of the future is no substitute for the entrepreneur's god-possessed hunch. The critics become ridiculous only when they confuse speaking well about the past with doing well in the future. Critics of art and literature stopped being ridiculous this way a long time ago. It would be a fine thing if critics of society would join them in their modest and sober sophistication.

And so a theory of creativity and achievement has a dilemma at its core: either creativity is routine (in which case it is not creativity, but ordinary *techne*); or else it is not routine (in which case there had better not be a theory about it). Theory X would assume that free, elusive creativity is shackled by the bonds of intelligible necessity. The theory of creativity and achievement, in other words, is bound up with the theory of liberty. The particular way it is bound up, I would claim, is that

[9] A. MacIntyre, *After Virtue*, Notre Dame, 1981, p. 90.

[10] A. Bloom, 'An Interpretation of Plato's Ion', *Interpretation*, 1, 1970, pp. 43–62 (57); repr. in *Roots of Political Philosophy: Ten Forgotten Socratic Dialogues*, ed. T. Pangle, Ithaca, 1987, pp. 271–95.

creativity and achievement can only take place in free parts of a society. As David Hume said, 'It is impossible for the arts and sciences to arise, at first, among any people, unless that people enjoy the blessings of a free government'.[11] He emphasized the 'at first': copying the routine is something any tyranny can do, but the creative moment, especially he said in commerce, depends on freedom. To the extent that creativity is reduced to *techne* the possibility of genuine achievement is eliminated, since *techne* is routine. And in the free parts the achievement is necessarily unpredictable.

The assertion runs counter to the notions of Plato and Bacon and other central planners of the intellect, providing us with machines for achievement. In modern times it runs counter to Weber's notion that creativity will be bureaucratized. Schumpeter, for example, argued in 1942 that innovation in advanced capitalism would take place henceforth in great industrial laboratories, by routinized, authoritarian, technical creativity.[12] The Manhattan Project was supposed on all sides to be an example: give us the bureaucrats and we will finish the job. Again the modern notion is mistaken. Weber's prediction that modern business will come to be run like an army shows a clerkly lack of experience in both businesses and armies. It was in the free and unrationalized parts of the Manhattan Project that its engineering creativity worked. The rationalized parts provided necessary but routine sustenance. When the bureaucrats constrained the freedom of the scientists they slowed the project – as in the requirement that each scientist lock up his results each night in a personal safe (they would regularly forget their combinations, and call on Richard Feynman to crack the safes each morning). Likewise, on the British side, the Enigma Project, in which Alan Turing and company outwitted the German codemakers, depended on freedom, or so Turing passionately believed.

The bureaucracies, to be sure, provide the system of incentives within which the freely creative operate. The bureaucrat is therefore in the position of a banker facing entrepreneurs. He can refuse the loan or agree to it. He is a professional audience for the persuasive powers of the entrepreneurs. Think of a university administrator listening to proposals to change the curriculum. The role of the professional audience is not to be disdained. That society will not achieve much in which the entrepreneurs are not given loans when their creations offer promise, or given applause or papal blessings, to name other coin. Incentives can be offered. But the creativity itself cannot be produced by formula, or

[11] D. Hume, 'Of the Rise and Progress of the Arts and Sciences' (1741), in Hume, *Essays*, London, n.d., p. 82.

[12] J. A. Schumpeter, *Capitalism, Socialism, and Democracy*, 3rd edn, New York, 1962.

else it would already have been. (It can be killed, of course, by any number of formulas, such as that applied to Russia between 1917 and 1991.)

A Whiggish view of Britain's first age of economic creativity, to 1860

The most important case of modern creativity and achievement is the Industrial Revolution. Yet British creativity in business is of surprisingly early date. Give me a lever and a place to stand on, said boasting Archimedes, and I shall move the world. What is odd about his world is that for all its creativity in some directions it did not apply the lever, or anything much else, to practical use. Practical use was a matter for slaves. Macaulay, historian of freedom and eloquent among the early defenders of capitalism, noted that Archimedes 'was half ashamed of those inventions which were the wonder of hostile nations, and always spoke of them slightingly as mere amusements, trifles in which a mathematician might be suffered to relax his mind after intense application to the higher parts of his science'.[13]

Applied technology, as Joel Mokyr has argued in a recent book, was a North European achievement.[14] The Industrial Revolution, in Mokyr's view, is not properly thought of as a late and sudden shift to capitalism. It was the culmination of a millennium of technological creativity. In the 1930s a British schoolboy, when asked in an examination to explain the Industrial Revolution, penned an immortal line: 'About 1760 a wave of gadgets swept over England'. Mokyr amends the child's wisdom: About AD 900–1995 a wave of gadgets swept over Europe. The 'Dark Ages' contributed more to our physical well-being than did the spirit-gladdening ages of Pericles or Augustus. From classical times we got toy steam-engines and erroneous principles of motion. From the ninth and tenth centuries alone the cold plains of the North supplied the horse collar, the stirrup, and the mould-board plough. An explosion of ingenuity down to 1500 yielded in addition the blast furnace, cake of soap, cam, canal lock, carrack ship, cast iron pot, chimney, coal-fuelled fire, cog boat, compass, crank, cross-staff, eyeglass, flywheel, glass window, grindstone, hops in beer, marine chart, nailed horseshoe, overshoot water-wheel, printing press, ribbed ship, shingle, ski, spinning-wheel, suction pump, spring watch, treadle loom, water-driven bellows, weight-driven clock, wee drop of whiskey, wheelbarrow, whippletree (see 'The Wonderful One-Hoss Shay'), and the windmill. Down to 1750 the pace slackened, without stopping. Then came 'The Years of Miracles', as Mokyr calls them, from 1750 to 1900. The Industrial Revolution has raised the bread, ships, and innocent amusement available to the ordinary person by a factor of twelve. I repeat: conservatively, a factor of twelve, now promising to give the entire world the living standard of Camberley. It is the characteristic modern achievement.

[13] T. B. Macaulay, 'Lord Bacon'(*Edinburgh Review*, July 1837), in *Critical, Historical and Miscellaneous Essays*, III, Boston, 1882 (1860 edn), pp. 336–495 (450).

[14] J. Mokyr, *The Lever of Riches: Technological Creativity and Economic Progress*, New York and Oxford, 1990.

How much was it a product of routine and how much of creativity? Creativity leads to profit in some coin, if only pure delight. The economist Israel Kirzner has argued recently that profit is a reward for what he calls 'alertness'.[15] Sheer – or as we say 'dumb' – luck is one extreme. Hard work is the other. Alertness falls in between, being neither luck nor routine work. Pure profit, says Kirzner, earned by pure entrepreneurs (and pure artists), is justifed by alertness.

Mokyr's story of European ingenuity can be told in Kirzner's metaphors, to the advantage of both. As both emphasize, the systematic search for inventions can be expected in the end to earn only as much as its cost. The routine inventor is an honest workman, but is worthy therefore only of his hire. The cost of routine improvements in steam-engines eats up the profits. It had better, or else the improvements are not routine. Routine inventions, as Mokyr says, are not free lunches. 'The cold and calculating minds of Research-and-Development engineers in white lab coats worn over three-piece suits' made some of the inventions. But only some, and these not the most important, nor earning high profits.

The classical economist down to the present says there is no free lunch. You do not get something for nothing. Make more guns and you must make less butter. Scarcity reigns. But the Industrial Revolution and its long preparation does not appear to have been a matter of scarcity and trade-offs. Something happened beyond the grim sacrifice of one generation for the comforts of the next. There was, says Mokyr, 'an increase in output that is not commensurate with the increase in effort and cost necessary to bring it about'.[16] The fact has been known in economics since the 1950s, when Moses Abramowitz and Robert Solow first drew attention to the so-called 'Residual'.[17] The Residual is the enrichment left over after routine investment has explained as much as it can. It is embarrassingly large and all attempts to explain it by hard work of a classical kind have failed.

[15] I. Kirzner, *Discovery, Capitalism, and Distributive Justice*, Oxford, 1989.

[16] Mokyr, *Lever of Riches* (n. 14 above), p. 3.

[17] M. Abramowitz, 'Resource and Output Trends in the United States since 1870', *American Economic Review*, 46, 1956, pp. 5–23; R. Solow, 'Technical Change and the Aggregate Production Function', *Review of Economics and Statistics*, 39, 1957, pp. 312–20.

If hard work was not the cause, is the explanation to be found at the other extreme of Kirzner's spectrum – sheer, dumb luck? Mokyr turns over the notion that the Industrial Revolution happened by luck, and rejects it. After all, it happened in more than one place ripe for it (in Belgium and New England as in Britain, for instance) and spread selectively (to northern but not southern Italy; to Japan and latterly Korea but not China). It is patterned, as luck is not.

Well, then, is it Kirzner's metaphor of 'alertness' that explains Mokyr's 'lever of riches'? Yes. Mokyr makes a distinction between micro-inventions (such as the telephone and the light bulb, both searched for methodically), which responded to the routine forces of research and development, and macro-inventions (such as the printing press and the gravity-driven clock), which did not. He stresses throughout that both play a part in the story. Yet he is more intrigued by the macro-inventions, which seem less methodical and, one might say, less economic, more creative. Gutenberg just did it, says Mokyr, and created a galaxy (block printing even for books was commonplace in the late fifteenth century, and so Mokyr may perhaps have chosen a poor example; but the distinction remains). Mokyr's story of macro-inventions can be aligned with economic metaphors of 'alertness', and connected thereby to unpredictable profit and thence to creativity.

But there is something missing in the metaphor and the story, needed to complete the theory. From an economic point of view, alertness by itself is highly academic, in both the good and the bad sense. It is both intellectual and ineffectual, the occupation of the spectator, who is, as Addison put it in the first number of the *Spectator*, 'very well versed in the theory of a husband or a father, and can discern the errors of the economy, business, and diversion of others better than those engaged in them'.

If his observation is to be effectual the spectator has to persuade a banker. Even if he is himself the banker he has to persuade himself, in the councils of his own mind. What is missing, then, from the theory of technological change is power. Between the conception and the creation, between the invention and the innovation, falls the shadow. Power runs between the two. An idea without a bankroll is merely an idea. In order for an invention to become an innovation the inventor must persuade someone with a bankroll. We are back to professional audiences listening to the orations of the entrepreneurs.

This is as true of literary or scientific opportunity as it is of technological invention. Until he won the Goncourt Prize in 1919, Proust was not much considered. The Prize persuaded the French public to take him seriously. Until Saul Bellow put his imprimatur on the books, William Kennedy (author of *Ironweed* and other Albany novels) worked as a reporter on a bad newspaper. Intellectual bankers need to be persuaded as much as financial ones.

Mokyr understands this, and calls it 'openness to new information'. The word is better 'persuasion' than sheer 'information'. He quotes a contrast between the delightful stage of alertness and the less delightful stage of persuasion, 'a struggle against stupidity and envy, apathy and evil, secret opposition and open conflict of interests, the horrible period of struggle with man, a martyrdom even if success ensues'.[18] Any academic or businessperson can supply instances. What matters, to put Mokyr's theme in rhetorical form, are the conditions of persuasion.

Europe's fragmented polity made for pluralistic audiences, by contrast with intelligent but stagnant China. 'Nothing is more favourable to the rise of politeness and learning', wrote Hume, 'than a number of neighbouring and independent states, connected by commerce and policy'.[19] An inventor persecuted by the Inquisition in Naples could move to Holland. 'It seems that as a general rule', writes Mokyr, 'the weaker the government, the better it is for innovation'.[20] As Nathan Rosenberg and L. E. Birdzell have put the point, 'The first requisite for the release of these potentialities was the expansion of the sphere within which trade could be conducted with some degree of freedom from the arbitrary exercise of external power'.[21] The requisite achieved by 1700 was freedom, and in particular the freedom to persuade competing audiences.

Early in his book Mokyr asserts oddly that there is no connection between capitalism and technology: 'Technological progress predated capitalism and credit by many centuries, and may well outlive capitalism by at least as long'.[22] One doubts it. Capitalism was not, contrary to the Marxist story, a modern invention. As the medievalist David Herlihy put it in 1971, 'research has all but wiped from the ledgers the supposed gulf, once thought fundamental, between a medieval manorial economy and the capitalism of the modern period'.[23] Any idea requires capitalism and credit in order to become an innovation, regardless of whether the surrounding society is fully capitalistic. The Yorkshireman who invested in a windmill *c.*1185 was putting his money where his mouth was, or else putting someone else's money there. In either case he had to persuade.

[18] Mokyr, *Lever of Riches* (n. 14 above), p. 186.

[19] Hume, 'Of the Rise and Progress' (n. 11 above), p. 85.

[20] Mokyr, *Lever of Riches* (n. 14 above), p. 180.

[21] N. Rosenberg and L. E. Birdzell, Jr, *How the West Grew Rich: The Economic Transformation of the Industrial World*, New York, 1986, p. 150.

[22] Mokyr, *Lever of Riches* (n. 14 above), p. 6.

[23] D. Herlihy, 'The Economy of Traditional Europe', *Journal of Economic History*, 31, 1971, pp. 153–64 (155).

What makes alertness work, then, and get its power, is persuasion. At the root of technological achievement is a rhetorical environment that makes it possible for creative people to test their unpredictable notions. The Industrial Revolution, in other words, had a rhetorical origin. The climate of persuasion was favourable for creativity. It is no accident, I am claiming, that the nations where speech was free to a fault were the first in economic achievement: Holland, Scotland, England, Belgium, and the United States.

The story is Adam Smith's Bargain: leave me alone and I'll make you rich. The claim is that freedom leads to achievement. The claim, I repeat, is an old and battered one, sneered at by clerks in all ages, who know that it is not freedom but a particular dogma which leads to achievement in God's eyes. Without being comparably dogmatic I suggest mildly that Whiggism deserves a fresh hearing, the more so in a post-Marxian age.

The Whig view of British creative 'failure', 1860 to the present

The economy of Britain in the first eighty years of industrialization, 1780–1860, was so smart that it was rich. In the teeth of sharply rising population and a world war, income per head over the eighty years doubled. Macaulay wrote in 1830:

> The present moment is one of great distress. But how small will that distress appear when we think over the history of the last forty years; a war, compared with which all other wars sink into insignificance; taxation, such as the most heavily taxed people of former times could not have conceived; a debt larger than all the public debts that ever existed in the world added together; the food of the people studiously rendered dear; the currency debased, and imprudently restored. Yet is the country poorer than in 1790? We firmly believe that, in spite of all the misgovernment of her rulers, she has been almost constantly becoming richer and richer. . . . A single breaker may recede; but the tide is evidently coming in.[24]

Marx and Engels wrote in *The Communist Manifesto* that 'The bourgeoisie, during its rule of scarce two hundred years, has created more massive and colossal productive forces than have all preceding generations together'. With this one can agree. There was more to be done in 1848 or 1860, but what had been achieved was astounding.

The ability of intellectuals to look a gift horse in the mouth should never be underestimated. The creative gift of the Industrial Revolution is beyond compare the greatest achievement of civilization. And yet the

[24] T. B. Macaulay, 'Southey's Colloquies' (*Edinburgh Review*, January 1830), in *Critical, Historical and Miscellaneous Essays*, II, Boston, 1882 (1860 edn), pp. 184–5.

clerks have always had their doubts. They wish to fit the achievements of nations to the life of man, finding a cycle of ages from dust to dust. It is ever popular to announce that The End Is Near, giving one a reputation for hardheadedness. The reason again is that achievement is unpredictable. The resources and ingenuities we already know are limited, as anyone can see. It takes an optimistic faith to suppose that creativity will provide, around the corner. And yet for the two centuries past it has, repeatedly. Again Macaulay:

> We cannot absolutely prove that those are in error who tell us that society has reached a turning point, that we have seen our best days. But so said all who came before us, and with just as much apparent reason.[25]

We cannot absolutely prove it because if we were so smart we would already know how to make the days better, now. The study of historical examples cannot provide predictions, merely wisdom.

Consider, for example, the achievements of the British economy over the *second* century of the Industrial Revolution. It is widely believed that in Britain the century has been one of 'failure'. Intellectuals are accustomed to second-guessing the achievements of the market. Their contempt for economic achievements shows in their readiness to suppose that they could have done better. The debate about British performance has flipped and flopped since the 1920s between prosecutions and defences of the late Victorians. The sons of Victorian fathers, prominent among them that great second-guesser John Maynard Keynes, attributed Britain's difficulties between the wars to Victorians long dead. Around 1940 the charge was stated at length by historians such as Duncan Burn. During the early 1960s the case for the prosecution, thrice told, was brought to a peak of eloquence by historians such as David Landes. In the late 1960s and 1970s, unexpectedly, the Victorians acquired defenders, mainly Americans trained in technical economics. Around 1980 the prosecution was renewed by another group of historians and historical economists. And by the late 1980s the defence also had been renewed. The cycle of revision makes the head ache, but no more so than twenty other long-running controversies in economics.

The British experience being first in manufacturing and then disgracefully 'failing' is still supposed to contain a moral for us all. Britain was the first industrial nation, and the first to become mature – some would say, with charming ageism, senile. Britain's past looks to many like the world's future. We are all British in the end. And if capitalism works, as others would claim, it should certainly have worked in Britain, most of all in the grand old days of *laissez-faire*, in that late Victorian age.

[25] Ibid., p. 186.

The story of achievement frittered away is laid out in a few pages of Landes's classic work of 1965, containing a conference paper of 1954, reprinted and extended as a book in 1969, *The Unbound Prometheus: Technological Change and Industrial Development in Western Europe from 1750 to the Present*.[26] The main question of the middle third of Landes's book is, 'why did industrial *leadership* pass in the closing decades of the nineteenth century from Britain to Germany?'.[27] His answer in brief is:

> Thus the Britain of the late nineteenth century basked complacently in the sunset of economic hegemony. . . . [N]ow it was the turn of the third generation, the children of affluence, tired of the tedium of trade and flushed with the bucolic aspirations of the country gentleman. . . . [T]hey worked at play and played at work.[28]

What is most wrong about the metaphor of leadership in a race of industrial might is that it assumes silently that first place among the many nations is vastly to be preferred to second, or twelfth. Leadership is number-one-ship. In the motto of the great American football coach, Vince Lombardi: 'Winning isn't the most important thing; it's the only thing'.

Landes reports correctly that:

> Within fifteen years [of cheering the Prussian victory over perfidious France in 1870] . . . the British awoke to the fact that the Industrial Revolution and different rates of population growth had raised Germany to Continental hegemony and left France far behind.[29]

He is correct that the British in the 1880s did fret about German 'hegemony' and did speak of the necessity to 'awaken'. The British at the time certainly did believe the Lombardi motto, *numero uno* or nothing.

It is the usual panic of the intellectuals, the sort we are seeing now in the United States *vis-à-vis* Japan and Europe. The journalists and professors are enchanted by the image of foreign trade as a football game. Landes yields to the magic, asserting unconsciously the salience of coming first *and only first*. For example: 'To be sure, it is easy to demonstrate the exaggeration of these alarms. Germany's gains still left her far *behind* Britain as a commercial power . . .'.[30] Landes is not thinking critically about his historical sources or his economic story. The metaphors of disease, defeat, and decline are too harshly fixated on Number One to be right for an economic tale. The Lombardi motto governs narrowly

[26] Cambridge, 1969.
[27] Ibid., p. 326 (italics supplied).
[28] Ibid., p. 336.
[29] Ibid., p. 327.
[30] Ibid., p. 328 (italics supplied).

defined games well enough. Only one team wins the Super Bowl. The fixation on Number One, though, forgets that in economic affairs being Number Two, or even Number Twelve, is very good indeed.

The sporting metaphor, in other words, is not a sensible way of measuring the achievement of the British economy since the late nineteenth century. Its forty-five million souls were not trying to score points on Germany or the United States. They were trying to earn a living and gain the pearly gates, on their own, making individual choices daily with no collective goal in mind. In the century after 1860 the residence of the souls in Britain – or, better, in a world economy integrated from the mid-nineteenth century on – gave them steadily expanding choice; and they had been relatively rich at the outset. The prize for second in the race of economic growth was not poverty. The prize was great enrichment, if rather less enrichment than certain other groups of people abroad, mainly poorer people. Since 1860, in other words, Britain has grown well, from a high base.

By contrast, the diseases of which the pessimists speak so colourfully are romantically fatal; the sporting or military defeats are horribly total; the declines from former greatness irrevocably huge. A historian can tell the recent story of the first industrial nation as a failure, and be right by comparison with a few countries and a few decades. The historian would sell books to Americans in the last years of the twentieth century, because Americans – or at least the Americans who write the newspaper articles and frame the trade policies – are anxious about loss of 'leadership'.

On a wider, longer view, however, the metaphor of failure in a race is strikingly inapt. Before the British the Dutch were the 'failure'. The Dutch Republic has been 'declining' practically since its birth. With what result? Disaster? Poverty? A 'collapse' of the economy? Not at all. The Netherlands has ended small and weak, stripped of its empire, no longer a strutting power in world politics, a tiny linguistic island in a corner of Europe – yet fabulously rich, with among the highest incomes in the world (now as in the eighteenth century), a domestic product per head quadrupling since 1900, astoundingly successful by any standard but Lombardi's. Again the perspicacious Macaulay in 1830:

> If we were to prophesy that in the year 1930 a population of fifty million [he was very nearly right], better fed, clad, and lodged than the English of our time, will cover these islands, that Sussex and Huntingdonshire will be wealthier than the wealthiest parts of the West Riding of Yorkshire now are, . . . that machines constructed on principles yet undiscovered will be in every house, . . . many people would think us insane.[31]

[31] Macaulay, 'Southey's Colloquies' (n. 24 above), p. 185.

Though historically mistaken, the pessimistic story is the dominant one. Failure to keep up in technological change, it is said, explains why British growth dropped after 1875, in comparison with its mid-century pace and in comparison with that of the new industrializing countries. The failure in turn is said to have caused British shares of world markets to fall. Martin Wiener's pessimistic storytelling, for instance, has Britain 'surrendering a capacity for innovation and assertion' by 1901.[32] Such a remark jars in the alternative and optimistic story, which tells of a necessarily less bulky Britain engaging none the less in such innovation and assertion as radar, the Battle of Britain, jet engines, and the structure of deoxyribonucleic acid.

The historians are second-guessing the inventors and entrepreneurs. A historian of Victorian England pretends to be able to see opportunities missed by businesspeople at the time. Usually the historian has not done as much looking into the question of whether by-product coking of coal (say) or the Solvay process of soda making would be profitable, as the most negligent banker would have done at the time. The historian exaggerates the advantage of hindsight: that by-product coking was at length adopted does not mean that it was adopted too late in Britain, if adopted earlier in Germany. He uses a mechanical model of human creativity, in which it is child's play to see how to create better.

British observers in the early nineteenth century, like Americans in the Jazz Age, were startled at the ease with which the country had taken industrial leadership. Britain was the first, but a few of its intellectuals were nervously aware of the strangeness of a small island running the world. In 1840, early in British success, J. D. Hume warned a select committee of Parliament that tariffs on imports of wheat would encourage other countries to move away from agriculture and towards industry themselves, breaking Britain's monopoly of world manufacturing:

> we place ourselves at the risk of being surpassed by the manufactures of other countries; and . . . I can hardly doubt that [when that day arrives] the prosperity of this country will recede faster than it has gone forward.

This was nonsense in 1840 and continues to be nonsense in 1995, clothed in the sporting rhetoric of 'competitiveness'. Britain was made better off by the industrialization of the rest of the world, in the same way that you would be made better off by moving to a neighbourhood of more skilled and healthy people. British growth continued from 1840 to the present, making Britons steadily better off. Likewise, Americans are made better off when Japan 'defeats' them at car-making, because then

[32]M. Wiener, *English Culture and the Decline of the Industrial Spirit, 1850–1980*, Cambridge, 1981, p. 158.

they will do something they are comparatively good at – banking, say, or growing soybeans – and let the Japanese do the car making or the consumer electronics.

The stories, then, are wrong. They are routinely applied to Britain and now America, but they are mistaken. As much as American intellectuals delight in telling and retelling them in the sports bar, urging us to buckle up our football pads for *The Zero-Sum Solution: Building a World Class Economy* (L. Thurow, 1985) or finally to get down to *The Work of Nations: Preparing Ourselves for 21st-Century Capitalism* (R. B. Reich, 1991), the story is wrong about America. And it was just as wrong about Britain a century ago. The story of *The Rise and Fall of the Great Powers* (P. Kennedy, 1987) is a fairy-tale.

It is true that Britain and America have grown slower than some other countries. Why was that? Because Britain and America started richer. The story of industrial growth in the past century has been a story of convergence to British and American standards of excellence. Germans in 1900 earned about half of what Britons earned; now they are about the same. If sporting metaphors must be used, it was like aerobic dancing, in which everyone wins. The falling British share of world markets was no index of 'failure', any more than a father would view his falling share of the poundage in the house relative to his growing children as a 'failure'. It was an index of maturity.

The trouble with the pessimistic choice of story in the literature of British and American 'failure' is that it describes this happy achievement as a tragedy. Such talk is at best tasteless in a world of real tragedies – Argentina, once rich, now subsidizing much and producing little; or India, trapped in poverty after much expert economic advice. The economists and historians appear to have mixed up the question of why Britain's income per head is now six times that of the Philippines and thirteen times that of India – many hundreds of percentage points of difference which powerful forces in sociology, politics, and culture must of course contribute to explaining – with the more delicate and much less important questions of why British income in 1987 was 3 per cent less than French or 5 per cent more than Belgian.

So the telling of a story of America following Britain into 'decline' is dangerous nonsense. It is nonsense because it is merely a relative decline, caused by the wholly desirable enrichment of the rest of the world. It is dangerous because it leads us to blame foreigners for our real failings, in secondary education, say, or in the maintenance of bridges.

Nothing awful happens to Britain in this story and no neurotic blame or xenophobic hysteria is in order. Macaulay's common sense and historical perspective in 1830 should be revived:

> The political importance of a state may decline, as the balance of power is disturbed by the introduction of new forces. Thus the influence of Holland and of Spain is much diminished. But are Holland and Spain poorer than formerly? We doubt it. Other countries have outrun them. But we suspect that they have been positively, though not relatively, advancing. We suspect that Holland is richer than when she sent her navies up the Thames, that Spain is richer than when a French king was brought captive to the footstool of Charles the Fifth.[33]

The main British story since the late nineteenth century is the more than trebling of British income as others achieved British standards of living or somewhat beyond. A 228 per cent increase of production between 1900 and 1987 is more important than an 8 per cent 'failure' in the end to imitate German habits of attention to duty. Looked at from India, Britain is one of the developed nations. The tragedy of the century past is not the relatively minor jostling among the thoroughbreds in the lead pack of industrial nations. It is the appalling distance between the leaders at the front and the donkeys at the rear.

The story can be told statistically, from the tables of the leading student of world growth and trade, Angus Maddison. He assembled recently the statistics of national output for thirty-one countries from 1900 to 1987. Expressed in the purchasing power of 1980, some of the countries are shown in Table 1. Note, in contrast to the journalism of economic 'failure' in the mature industrial countries, that:

1. Americans are still richer than anyone else, after years of 'failure'. In 1987 the Americans earned $13,550 per head (in 1980 prices), about 40 per cent higher than, say, the Japanese or the (West) Germans.
2. Britain is still rich by international standards. After a century of 'failure' the average Briton earns a trifle less than the average Swede and a trifle more than the average Belgian. If you don't believe it, stay at a Belgian hotel. But the British average is over three times that of Mexico and fourteen times that of India. If you don't believe it, step outside your hotel in Calcutta.

To use the image of the racecourse, the whole field, followers as well as leaders, advanced notably – usually by factors of three or more since 1900 in real output per head. The main story is this general advance. The tripling and more of income per head relieved much misery and has given life-affording scope to many people otherwise submerged: think of your great-grandparents.

[33] Macaulay, 'Southey's Colloquies' (n. 24 above), pp. 183–4.

Table 1. The economic achievement of nations: rich and poor in 1900 and 1987 (in dollars of 1980 purchasing power)

Country	National product per head		Factor of increase
	1900 ($)	1987 ($)	
Rich countries			
United Kingdom	2798	9178	3.2
Belgium	2126	8769	4.1
France	1600	9475	5.9
Germany	1558	9964	6.4
United States	2911	13550	4.6
The newly rich			
Japan	677	9756	14.4
The enrichening			
South Korea	549	4143	7.5
USSR	797	5948	7.5
The newly poor			
Argentina	1284	3302	2.6
The poor			
India	378	662	1.8
Mexico	649	2667	4.1

Source: A. Maddison, *The World Economy in the Twentieth Century*, Paris, Development Centre of the Organization for Economic Co-operation and Development, 1989, p. 19.

In the face of a world-girdling achievement of modern economic growth the fixation on a trivial 'lag' of Britain and now America behind some of the other leaders is strange. It arises from the intellectual conviction that 'economic creativity' is an oxymoron, that any fool could do better. It arises, too, from an aristocratic fixation on competition, à la Lombardi, so scornful of bourgeois co-operation in business. Many in Britain bemoan the loss of empire and delight in describing a powerful industrial nation of fifty-five million people as 'a small island'. Intellectuals mope around the senior common room regretting a lost vocation for instructing the natives. Many American leaders of opinion have adopted the British despair and indulge in sage talk that 'we must do

better'. Soon enough it will be stiff upper lips, old chaps. In spoofing this lugubrious Anglo-Saxon attitude no one has improved upon Sellars and Yeatman, in their classic of sixty years ago, *1066 and All That*. The précis of memorable English achievements in creativity from blue Celts and Boadicea to modern times ends abruptly on p. 115, after the Great War – because then 'America became Top Nation and history came to a.'