

Table of contents, Preface, and some fragments from the nearly final MS. The book was published in November, 2010

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Bourgeois Dignity: Why Economics Can't Explain the Modern World

Deirdre N. McCloskey
deirdre2@uic.edu

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Preface

A big change in the common opinion about markets and innovation, I claim, caused the Industrial Revolution, and then the modern world. The change occurred during the seventeenth and eighteenth centuries in northwestern Europe. More or less suddenly the Dutch and British and then the Americans and the French began talking about the middle class, high or low—the “bourgeoisie”—as though it were dignified and free. The result was modern economic growth.

That is, ideas, or “rhetoric,” enriched us.¹ The cause, in other words, was language, that most human of our accomplishments. The cause was not in the first instance an economic/material change—not the rise of this or that class, or the flourishing of this or that trade, or the exploitation of this or that group. To put the claim another way, our enrichment was not a matter of Prudence Only, which after all is a virtue possessed by rats and grass, too. A change in rhetoric *about* prudence, and about the other and peculiarly human virtues, exercised in a commercial society, started the material and spiritual progress. Since then the bourgeois rhetoric has been alleviating poverty worldwide, and enlarging the spiritual scope of human life. The outcome has falsified the old prediction from the left that markets and innovation would make the working class miserable, or from the right that the material gains from industrialization would be offset by moral corruption.

In other words, I argue that depending exclusively on materialism to explain the modern world, whether right-wing economics or left-wing historical materialism, is mistaken. The two books to follow will make the positive case for a rhetorical, or ideological, cause of our greatly enlarged human scope. Here the case is negative. The usual and materialist economic histories do not seem to work. Bourgeois dignity and liberty might.

Such a theme is old-fashioned, as old as eighteenth-century political theory. Or it is new-fashioned, as new as twenty-first-century studies of discourse. Either way, it challenges the usual notions about “capitalism.” Most people harbor beliefs about the origins of the modern economy that historical and economic science have shown to be mistaken. People believe, for example, that imperialism explains European riches. Or they believe that markets and greed arrived recently. Or they believe that “capitalism” required a new class or a new

1. Since the seventeenth century the word *rhetoric* has often been misunderstood as lies or bloviation. I use it in its ancient sense, “the means of [unforced] persuasion,” which includes logic and metaphor, fact and story. Modern pragmatics, criticism, and social psychology have largely been a reinvention of ancient rhetoric, how words matter. If any of that strikes you as crazy or indefensible, you may wish to consult McCloskey 1985a (1998), 1990, 1994c.

self-consciousness about one's class (as against a new rhetoric about what an old class did). Or they believe that economic events must be explained "ultimately," and every single time, by material interests. Or they believe that it was trade unions and government protections that have elevated the working class. None of these is correct, as I hope to persuade you. The correct explanation is ideas.

. . . . I tell the story of modern economic growth, summarizing what we have thought we knew from 1776 to the present about the nature and causes of the wealth of nations—how we got refrigerators and college degrees and secret ballots. The book tests the traditional stories against the actually-happened, setting aside the stories that in light of the recent findings of scientific history don't seem to work very well. A surprisingly large number of the stories don't. Not Marx and his classes. Not Max Weber and his Protestants. Not Fernand Braudel and his Mafia-style capitalists. Not Douglass North and his institutions. Not the mathematical theories of endogenous growth and its capital accumulation. Not the left-wing's theory of working-class struggle, or the right-wing's theory of spiritual decline.

Yet the conclusion is in the end positive. As the political scientist John Mueller put it, capitalism—or as I prefer to call it, "innovation"—is like Ralph's Grocery in Garrison Keillor's self-effacing little Minnesota town of Lake Wobegon: "pretty good."² Something that's pretty good, after all, is pretty good. Not perfect, not a utopia, but probably worth keeping in view of the worse alternatives so easily fallen into. Innovation backed by liberal economic ideas has made billions of poor people pretty well off, without hurting other people.³ By now the pretty good innovation has helped quite a few people even in China and India. Let's keep it.

The Big Economic Story of our times has not been the Great Recession of 2007–2009, unpleasant though it was. And the important moral is *not* the one that was drawn in the journals of opinion during 2009—about how very rotten the Great Recession shows economics to be, and especially an economics of free markets. Failure to predict recessions is not what is wrong with economics, whether free-market economics or not. Such prediction is anyway impossible: if economists were so smart as to be able to predict recessions they would be rich. They're not.⁴ No science can predict its own future, which is what predicting business cycles entails. Economists are among the molecules their theory of cycles is supposed to predict. No can do—not in a society in which the molecules are watching and arbitraging.

The important flaw in economics, I argue here, is not its mathematical and necessarily mistaken theory of future business cycles, but its materialist and unnecessarily mistaken

2. Mueller 1999.

3. I will use the word *liberal* throughout not in its confused and twentieth-century American sense ("left-wing") but in its older and still European sense of "devoted to liberty, especially political and economic liberty." It is part of my argument that the American sense can be corrosive of true liberalism. (But so can neoconservatism.)

4. McCloskey 1990.

theory of past growth. The Big Economic Story of our own times is that the Chinese in 1978 and then the Indians in 1991 adopted liberal ideas in the economy, and came to attribute a dignity and a liberty to the bourgeoisie formerly denied. And then China and India exploded in economic growth. The important moral, therefore, is that in achieving a pretty good life for the mass of humankind, and a chance at a fully human existence, ideas have mattered more than the usual material causes. As the economic historian Joel Mokyr put it recently in the opening sentence of one of his luminous books, “economic change in all periods depends, more than most economists think, on what people believe.”⁵ The Big Story of the past two hundred years is the innovation after 1700 or 1800 around the North Sea, and recently in once poor places like Taiwan or Ireland, and most noticeably now in the world’s biggest tyranny and the world’s biggest democracy. It has given many formerly poor and ignorant people the scope to flourish. And contrary to the usual declarations of the economists since Adam Smith or Karl Marx, the Biggest Economic Story was not caused by trade or investment or exploitation. It was caused by ideas.

Innovation backed by ideology, then, promises in time to give pretty good lives to us all. Left and right tend to dismiss the other’s ideology as “faith.” The usage devalues faith, a noble virtue required for physics as much as for philosophy, and not at all irrational. But maybe both sides are correct. A socialist maintains her faith in governmental planning despite the evidence that it doesn’t work to the benefit of the poor. A conservative maintains his faith that what’s good for the military-industrial complex is good for the country despite the evidence that it impoverishes and coarsens the people.

I claim that a true liberalism, what Adam Smith called “the obvious and simple system of natural liberty,” contrary to both the socialist and conservative ideologue, has the historical evidence on its side. Despite the elements of regulation and corporatism defacing it (and the welfare programs improving it), it has worked pretty well for the poor and for the people for two centuries. I reckon we should keep it—though tending better to its ethics.

....

Chapter 1

The Modern World Was an Economic Tide, But Did Not Have Economic Causes

Two centuries ago the world’s economy stood at the present level of Bangladesh. In those good old days of 1800, furthermore, the average young person in Norway or Japan

5. Mokyr 2010, p. 1.

would have had on past form less rational hope than a young Bangladeshi nowadays of seeing in her lifetime the end of her nation's poverty—or at least the beginning of the end. In 1800 the average human consumed and expected her children and grandchildren and great-grandchildren to go on consuming a mere \$3 a day, give or take a dollar or two.⁶ The figure is expressed in modern-day, American prices, corrected for the cost of living. It is appalling.

By contrast, if you live nowadays in a thoroughly bourgeois country such as Japan or France you probably spend about \$100 a day. One hundred dollars as against three: such is the magnitude of modern economic growth. The only people much better off than \$3 or so up to 1800 were lords or bishops or some few of the merchants. It had been this way for all of history, and for that matter all of prehistory. With her \$3 a day the average denizen of the earth got a few pound of potatoes, a little milk, an occasional scrap of meat. A wool shawl. A year or two of elementary education, if lucky and if she lived in a society with literacy. She had a 50-50 chance at birth of dying before she was thirty years old. Perhaps she was a cheerful sort, and was “happy” with illiteracy, disease, superstition, periodic starvation, and lack of prospects. After all, she had her family and faith and community, which interfered with every choice she made. But at any rate she was desperately poor, and narrowly limited in human scope.

Two centuries later the world supports more than six-and-half times more souls. Yet contrary to a pessimistic “Malthusian” belief that population growth would be the big problem, the average person nowadays earns and consumes almost ten times more goods and services than in 1800. Despite the disturbing pauses during the three dozen or so recessions that have roiled the world's economy since 1800, nearly every trough of a business cycle has been followed in a few years by a new all-time peak in the welfare of the poor of the earth, and the cases of very long recoveries were those from the two world wars, now distant.⁷ Starvation

6. Strictly speaking, “1990 international Geary-Khamis dollars”—so I've inflated a bit (using the consumer price index in the USA since 1991) to bring the figures in a rough and ready way up to 2008 prices in the United States. That is, the \$3 is to be understood as what you would live on in Chicago, say, in 2008 if you had the misfortune of the world's average real income in 1800. The figures were estimated by Angus Maddison in his amazing palace of numbers, *The World Economy* (2006), these particular numbers on p. 642. (It will become apparent how much I have relied on Angus's work, which would already have earned a Nobel prize if economics were not so disdainful of “mere data collecting”; imagine how astronomy or biology would have done with such an attitude! Anyway, his work for me and for many others is *sine quo nullum*. For “two centuries ago” I used the average of his world figures for 1700 and 1820. Economic historians agree on a factor of ten or so worldwide since the eighteenth century: for example, Easterlin 1995, p. 84.

7. In Maddison's calculation of the real per capita GDP of 12 West European countries, 1869 to 2001 (Maddison 2006, pp. 439–441; a reasonable aggregate since they were certainly tied by the business cycle, and were all developing), eight out of the twelve new highs were exceeded within only two or three years after the big crashes (1884, 1890, 1900, 1907, 1974, 1980, and

worldwide is therefore at an all-time low, and falling. Literacy and life expectancy are at all-time highs, and rising. Liberty is spreading. Slavery is retreating, as is a patriarchy enslaving of women.

In the now much richer countries, such as Norway, the average person earns fully forty-five times more than in 1800, a startling \$137 a day, or \$120 a day for the average person in the United States, or \$90 in Japan.⁸ The environment—the concern of a well-to-do and educated bourgeoisie—is in such rich places improving. Even the merely improving places, like China, which is still very poor at \$13 a day but much better off than in 1978, have started to care about the future of the earth.⁹ Economic history has looked like an ice-hockey stick lying on the ground. It had a long, long horizontal handle at \$3 a day extending through the two-hundred-thousand-year history of *Homo sapiens* to 1800, with little bumps upward on the handle in ancient Rome and the early medieval Arab world and high medieval Europe, with regressions to \$3 afterward—then a wholly unexpected blade, leaping up in the last two out of the two thousand centuries, to \$30 a day and in many places well beyond.¹⁰

True, some whole countries, and many people even in rapidly growing places like China or especially India, remain terribly poor. Out of the 6.7 billion people on the planet the terribly poor constitute a “bottom billion,” thankfully shrinking, but for the present suffering the appalling \$3 a day that had been the human lot since the African savannah. Some hundreds of millions live on a bare dollar, sleeping on mats on the streets of Mumbai.¹¹ Some 27 million are literal slaves, such as the Dinkas in Sudan. And many girls and women worldwide, as in much of Afghanistan, are held in slavish ignorance. Yet the share of the terribly poor and the terribly unfree in world population is now falling faster than at any time in history. World population has in fact been decelerating since the 1970s, and in a few generations will actually start falling.¹² Look around you at modern family sizes.

In fifty years, if things go as they have since 1800, the terribly poor will have become

1992); after the two severe depressions (1875 and 1929) the peaks took as long as six or seven years to be exceeded; and the two ***world wars began in peak years not to be exceeded for sixteen (1913) and twelve years (1939).

8. World Bank 2008, pp. 161, 216, 112.

9. World Bank 2008, p. 58.

10. The “bumps on the handle” follow Walter Scheidel and Gregory Clark, reported in Zanden 2009, p. 274, fig. 35.

11. The “bottom billion” is Paul Collier’s phrase (Collier 2007). The Norwegian ratio to average entire-world gross national income per capita in 2006 (at purchasing-power parity: adjusting for the cost of living) was 5.4 (according to World Bank 2008, pp. 8, 161). And relative to the average of low-income countries by World-Bank definitions the ratio was 27, that is, \$137 a day compared with the low-income average of \$5 a day (World Bank 2008, p. 10).

12. Maddison 2006, p. 615; U.S. Census Bureau, Population Division 2009, projecting that by 2050 the rate will be down to 0.5 percent per year, as against its historic peak of over 2.0 percent in the 1960s.

adequately nourished. Slaves and women will be largely free. The environment will be improving. And the ordinary person worldwide will have become bourgeois. In 1800 there were good reasons to be pessimistic—though many people in that bright dawn were in fact optimists. Nowadays, although an age of widely circulating tales of impending catastrophe, there are many more reasons to be optimistic about our future.

In a good deal of the world the optimistic outcome has already happened. Marxists have long been vexed by the complacently bourgeois character of the American working class. The economic historian Werner Sombart asked in 1906, “Why is there no socialism in the United States?” and answered that “all socialist utopias come to grief on roast beef and apple pie.”¹³ It turned out that the prosperous Americans were merely showing the way for the British and the French and the Japanese. We seem to be on track to merge not into a universal class of the proletariat but into a nearly universal class of the innovative bourgeoisie. (I use the French word *bourgeoisie* in its wide sense, as the hiring or owning or professional or educated class . . . , usually in towns, the “middle class.” I do not use it in its frequent Marxist sense as *la haute bourgeoisie*, the class of captains of industry alone.) Your physical therapist, now earning \$35 an hour, or \$280 a day, working for AthletiCo, who went to university and then to graduate work and now to continuing education, does not regard himself as a wage slave.¹⁴ He works four days a week, and his wife, also a physical therapist, three. He and she can at any moment become a little company in private practice. The relations of production no longer tell much about the mentality or the prospects of hired labor. You work for a wage. Do you feel immiserized? Reflect, oh dear bourgeois-by-education reader, on the real and demeaning poverty of your own ancestors in 1800, and offer thanks to the Bourgeois Era and to the Age of Innovation.

In 2007 the economist Paul Collier observed that for decades “the development challenge has [been thought of as] a rich world of one billion people facing a poor world of five billion people. . . . By 2015, however, it will be apparent that this way of conceptualizing development has become outdated. Most of the [formerly poor] five billion, about 80 percent [or four billion], live in counties that are indeed developing, often at amazing speed.”¹⁵ Collier is right, and the sums in 2015 will be more like six billion rich or richifying people facing a bottom billion of persistently poor.¹⁶ Witness richifying China and India nowadays—places still poor by the standard of Hong Kong or Belgium, but growing in real income per head at amazing, unprecedented speeds, twice or three times faster than other countries—7 to 10 percent per year. Their growth rates are faster than the rates at which the United States or

13. Sombart 1906.

14. Bureau of Labor Statistics, U.S. Department of Commerce, at <http://www.bls.gov/oes/current/oes291123.htm>.

15. Collier 2007, p. 3 (and for the next quotation, p. x).

16. World population in 2009 was about 6.77 billion.

Japan ever grew, and imply a quadrupling of human scope every twenty or fourteen years, in a short generation. In two such generations their real incomes per head will have risen by a factor of sixteen, to the \$48 a day the United States enjoyed in the 1940s. The fact provides some scientific ideas about what to do for the bottom billion or so.

Yet Collier also says that “since 1980 world poverty has been falling *for the first time in history.*” That last is mistaken (though perhaps he means the absolute numbers of poor people instead of their share, in which case maybe he is right). As a *share* of all the world’s population the world’s poverty has been falling not for two decades but for two centuries. A higher and higher share have become since 1800 those \$30- or \$48- or \$137- or \$280-a-day folk, in the top four to six billion. Witness again Norway and Japan, once abysmally poor. The history provides some scientific ideas about how we got here and where we are going. . . .

. . . . The main point of this book is that the hockey-blade leaps, such as Norway’s from \$3 to \$137 per head, with its cultural and political accompaniments, did *not* happen mainly because of the usual economics. That is, they did not happen because of European trade or Dutch investments or British imperialism or the exploitation of sailors on Norwegian ships. Economics did matter in shaping the pattern. It usually does. Exactly who benefited and exactly what was produced, and exactly when and where, was indeed a matter of economics—a matter of incomes and property and incentives and relative prices. If a historian doesn’t grasp the economics he will not understand the pattern of modern history. The pattern was shaped by the trade in cotton and the investments in seaports, by the supply of steam engines and the demand for elementary education, by the cost of wrought iron and the benefit of railways, by the plantation exploitation of slaves and the market participation of women. Economics of a material sort can surely explain why Americans burned wood and charcoal many decades longer than did the forest-poor and coal-rich people of inner northwestern Europe. It can explain why education was a bad investment for a British parlor maid in 1840, or why the United States rather than Egypt supplied most of the raw cotton to Manchester, England, or to Manchester, New Hampshire, or why indeed the cotton growers of the present-day African Sahel are damaged by protection for American cotton. Economics can explain why a comparative advantage in making cloth out of cotton shifted from India to England and then back to India.

Economics, though, can’t explain the rise in the whole world’s (absolute) advantage from \$3 to \$30 a day, not to speak of \$137 a day. That is the main scientific point of the book. Economics can’t explain the blade of the hockey stick. It can’t explain the onset or the continuation, in the magnitude as against the details of the pattern, of the uniquely modern—the widespread coming of automobiles, elections, computers, tolerance, antibiotics, frozen pizza, central heating, and higher education for the masses, such as for you and me and Eva. If an economist doesn’t grasp the history she will not understand this most important of modern historical events. An economics of a bourgeois or Marxist sort does not account for

the unprecedented size and egalitarian spread of the benefits from growth, only the details of its pattern. Material, economic forces, I claim, were not the original and sustaining causes of the modern rise, 1800 to the present. Economics does most usefully explain how the rising tide expressed itself in microgeographical detail, channeled into this or that inlet, mixing with the river just so far upstream, lapping the dock to such-and-such a height. But the tide itself had other causes.

What then? I argue here, and in complementary ways in the two volumes to follow, that innovation (not investment or exploitation) caused the Industrial Revolution. Many historians and economists would agree, so there's not much that is surprising in that part of the argument. But I also argue—as fewer historians and very few economists would—that talk and ethics and ideas caused the innovation. Ethical (and unethical) talk runs the world. One-quarter of national income is earned from sweet talk in markets and management.¹⁷ Perhaps economics and its many good friends should acknowledge the fact. When they don't they get into trouble, as when they inspire banks to ignore professional talk and fiduciary ethics, and to rely exclusively on silent and monetary incentives such as executive compensation. The economists and their eager students choose Prudence Only, to the exclusion of the other virtues that characterize humans—justice and temperance and love and courage and hope and faith—and the corresponding sins of omission or commission. The theorists of prudence forbid ethical language, even in the word-drenched scene of banking. Such a reduction to Prudence Only works reasonably well in some parts of the economy. You'll do well to choose Prudence Only, and silent incentives, when trying to understand covered interest arbitrage in the foreign exchange markets. But it doesn't explain the most surprising development of all.

In particular, three centuries ago in places like Holland and England the talk and thought about the middle class began to alter. Ordinary conversation about innovation and markets became more approving. The high theorists were emboldened to rethink their prejudice against the bourgeoisie, a prejudice by then millennia old. (Sadly, the talk and prejudice and theory along such lines didn't alter right away in China or India or Africa or the Ottoman lands. By now it has, despite resistance from European progressives and non-European traditionalists.) The North Sea talk at length radically altered the local economy and politics and rhetoric. In northwestern Europe around 1700 the general opinion shifted in favor of the bourgeoisie, and especially in favor of its marketing and innovating. The shift was sudden as such things go. In the eighteenth and nineteenth centuries a great shift occurred in what Alexis de Tocqueville called “habits of the mind”—or more exactly, habits of the lip. People stopped sneering at market innovativeness and other bourgeois virtues exercised far

17. McCloskey and Klamer 1995.

from the traditional places of honor in the Basilica of St. Peter or the Palace of Versailles or the gory ground of the First Battle of Breitenfeld.

To speak for a moment to my economist colleagues, some of us have saved our models in the face of a dawning realization of how radical the development was in the eighteenth and especially in the nineteenth and twentieth centuries by speaking of “nonlinearities” or “economies of scale” or “multiple equilibria.” Though such tricks are fun to think about, they don’t work scientifically. Some other economists, now led by an astonishing group of economic historians with a serious focus on growth theory and growth theorists with a serious focus on history, argue instead that Europe, and especially Britain, was preparing for the blade of the hockey stick for centuries. The new history has a theme similar to an old history attributing Europe’s excellence to its ancient civilization, Christian and humanist, from Israel and Greece, and the Germanic tribes in the forests. The trouble is, as the best among the economists admit with puzzlement, that India and the Arab lands and Iran and China and especially Japan were equally excellent and ready. Many such rich areas long before had the low interest rates and good property laws praised by the economists—China in the seventeenth century, Northern Italy in the fifteenth century, the Arab world in the tenth century, Rome in the first century. But for millennia no blade of the hockey stick ensued.¹⁸ When ideology changed, it did.

I am claiming that the economy around the North Sea grew far, far beyond expectations in the eighteenth and especially in the nineteenth and most especially in the twentieth century *not* because of mechanically economic factors such as the scale of foreign trade or the level of saving or the amassing of human capital. Such developments were nice, but derivative. The North Sea economy, and then the Atlantic economy, and then the world economy grew because of changing forms of speech about markets and enterprise and invention. Technically speaking (I continue saying to my economist colleagues), the new conversation caused the dimensions of the Edgeworth box to explode. Pareto-optimal reallocation by exchange within a fixed box, or reallocation by aggression along the contract curve, or the modest expansion of the box achievable by investment, was not what happened—though it is these three which economists want most to talk about, because they understand them so well. On the contrary, the production possibility curve, the dimensions of the Edgeworth box, leapt out, radically, and from the point of view of conventional economics, inexplicably.¹⁹

The argument in truth should not shock a thoughtful economist. All economists have realized since the 1870s that economics is something that happens between people’s ears. The

18. A recent and comprehensive survey is Zanden 2009. On p. 289 and in many other places he admits that China and Japan were ready.

19. I am indebted to a conversation in August 2009 with Karl Wärneryd of the Stockholm School of Economics for this way of putting the point.

economists learned so from the various forms of neoclassical economics (Mengerian or Marshallian, or from institutionalism or from modern Marxism). Valuations, opinions, talk on the street, imagination, expectations, hope are what drive an economy. In other words, you don't have to be a materialist, denying the force of ideas, just because you are an economist. Rather to the contrary. One of the leading contributors to the new growth theory, Robert Lucas, declared that "for income growth to occur in a society, a large fraction of people must experience changes in the possible lives they imagine for themselves and their children. . . . In other words. . . economic development requires 'a million mutinies.'"²⁰ Lucas's formulation is more psychological than the sociological and rhetorical one proposed here. But in any case, to believe that habits of the lip changed in the seventeenth and especially the eighteenth century, for various good and interesting reasons—some in turn material, some autonomously rhetorical—does not deny conventional economics a place. It merely takes speech seriously within the economy and the society. It initiates a humanistic science of the economy, "humanomics" as the economist Barton Smith calls it. Speech, not material changes in foreign trade or domestic investment, caused proximally the nonlinearities, or (expressed in more conventional theorizing) the leaping out of the production possibility curve, the imaginings of possible lives. We know this empirically in part because trade and investment were ancient routines, but the new dignity and liberty for ordinary people were unique to the age. What was unique was a new climate of persuasion, out there in the shops and streets and coffeehouses populated by the bourgeoisie. As I shall try to persuade you, oh materialist economist.

first part of

Chapter 4

Many Other Plausible Stories Don't Work Very Well

Quite a few of my social-scientific and even many of my humanistic colleagues will be strongly inclined to disagree, and not merely about my praise for the bourgeoisie. They have the idea, held with passionate idealism, that ideas about ideas are unscientific. For about a century, 1890 to 1980, the ideas of positivism and behaviorism and economism ran the social-scientific show, and many of the older showpeople still adhere to the script we learned together so idealistically as graduate

20. Lucas 2002, p. 17. Zanden (2009) uses Lucas's remark as the motto for his book, but the age of a million mutinies was after the date he ends his own researches, 1800.

students.²¹ Economists and historians who believe themselves to be quite exempt from any philosophical influences are usually the slaves of some defunct philosopher of science a few years back—commonly a shakily logical positivist nearly a hundred years back.

Their faith is admirable. Yet in denying (before the scientific conversation begins) the relevance of words and rhetoric and identity and creativity, in favor of numbers and interest and matter and Prudence Only, they are standing against a good deal of the historical evidence, not to speak of science studies in the half century since Thomas Kuhn. The opponents of ideas as causal are what the modern Marxists call with a sneer “vulgar” Marxists—wanting passionately to be seen as tough-minded behaviorists, positivists, materialists, quantitative, “evidence based,” every single time, regardless of the common sense or the historical evidence. Their methodology, they are quite sure, yields the only scientific truth. It is their identity, which is why they become upset and abusive when some unScientific fool claims that something was caused by ideas. They even feel (I seem to recall) that it is masculine to deny ideas. The trouble is that such a methodological preconception is often historically wrong. The American constitution, for example, as the historian Bernard Bailyn argues, was a creative event in the realm of ideas—and its economic origins are easily exaggerated.²² “The Atlantic democratic revolutions of the later eighteenth century,” writes Jonathan Israel, “stemmed chiefly from a general shift in perceptions, ideas, and attitudes,” a “revolution of the mind.”²³ The abolition of slavery, a policy once advocated merely by a handful of radical churchmen (and the Baron de Montesquieu), played in the 1820s and 1830s a role in British politics, and later of course a much bigger role in American politics. It had less to do with the North’s material interests than with cheap printing interacting with evangelical Christianity. As Lincoln famously said on being introduced to the author of *Uncle Tom’s Cabin* (1852), “So this is the little lady who wrote the book that made the big war.” Books can indeed make wars—Erskine Childers’s spy novel, *The Riddle of the Sands: A Record of Secret Service* (1903), was no minor influence on the Anglo-German naval rivalry. Socialist ideas and at length socialist reality spread after the disappointed revolutions of 1848 in congresses and party meetings and manifestos. Various nationalisms had spread across Europe in reaction to Napoleon’s conquests, but then were matured in poetry and songs of risings and in the screeds of exiles resident in London. Talk, talk, talk. Ideas matter.

21. In the field of history the fullest telling of the story of objectivism is Peter Novick’s brilliant book, *That Noble Dream* (1988). My own *The Rhetoric of Economics* (1985a; 1998) tells a similar tale about economics.

22. Bailyn 2003, especially chapter 1, “Politics and the Creative Imagination.”

23. Israel 2010, pp. 37, 39; see also pp. 87, 91.

To explain the new dignity of the middle class in northwestern Europe, and to explain the success it brought to the modern world, the social scientists need to moderate their fervent ideology of materialism—though of course without denying material forces. They need to collect the facts on ideas and rhetoric and social distance—though still collecting facts on the price of iron and the size of bribes to congressmen, too. It is not a rule of scientific method that an economic subject, such as revolutionary economic growth, must entail a narrowly economic explanation.

Marshall Sahlins put it this way:

It is not that the material forces and constraints are left out of account, or that they have no real effects on [the] cultural order. It is that the nature of the effects cannot be read from the nature of the forces, for the material effects depend on their cultural encompassment. . . . The practical interest of men in production is symbolically constituted. . . . Nothing in the way of their capacity to satisfy a material (biological) requirement can explain why. . . dogs [in the West] are inedible but the hindquarters of the steer are supremely satisfying of the need to eat.²⁴

In his recent history of the American business school and its role in legitimizing and then corrupting professional managers, the sociologist Rakesh Khurana declared that “I take it that ideational interests can be important factors in a professionalization project, and that statements of them must sometimes be taken at face value, . . . along with social roles and private (material or power) interests.”²⁵ Likewise the sociologist of religion Rodney Stark, without by any means neglecting material forces, urges us to take sometimes at face value, or at any rate *some* value, the actual content of religious doctrine.²⁶ Sometimes people mean what they say, or at least they say by accident their meaning. Words are facts for a social science, too.

The present book supports such a balancing step indirectly, by looking at a representative sample of apparently promising materialist and antirhetorical explanations of the Industrial Revolution and the modern world—explanations such as investment or exploitation or geography or foreign trade or imperialism or genetics or property rights. It finds them to be surprisingly weak. It concludes therefore (I admit the inferential gap) that the remaining explanations, such as ideas and rhetoric, must be strong. (The two books to follow will offer more positive evidence for the change in rhetoric.)

The critical method of “remainders” or “residues” was recommended in his

24. Sahlins 1976, pp. 206–207.

25. Khurana 2007, p. 11.

26. Stark 2003, p. 2: “Ideas about God have. . . consequences”; p. 11: “Monotheism has immense capacities to mobilize human action.”

System of Logic (1843) as one of four methods of induction by J. S. Mill, that admirably learned and open-minded scholar. “Subducting from a given phenomenon,” wrote Mill in his high-flown but lucid style, “all the parts which, by virtue of preceding inductions, can be assigned to known causes, the remainder will be the effect of the antecedents which have been overlooked, or of which the effect was as yet an unknown quantity.”²⁷ In simple language, take out what you can measure, and what’s left is the impact of what you can’t. If the economic and material causes usually proposed as explanations for the Industrial Revolution turn out to be weak, then the large remainder might well be the effect of a remaining antecedent—a rhetorical change, perhaps. If the new/old investment and trade can’t do it, maybe the new ways of talking and thinking can. The crucial remaining antecedent, I claim, was a rhetorical change around 1700 concerning markets and innovations and the bourgeoisie, a rhetoric spreading after 1800. It was merely a change in talking and thinking about dignity and liberty. But it was historically unique and economically powerful. It raised the tide (though on the time scale of all human history, by the way, the tide was more like a tsunami; the implied suddenness of the Japanese word better fits the case).

The materialist accounts are many, from the “original accumulation” favored by early Marxist historians to the “new institutionalism” favored by late Samuelsonian economists.²⁸ The criticism made here does not hurl into the eighth circle of Hell every possible version of the theories suggested up to now; nor does it damn their advocates, many of whom are my personal friends and admired colleagues, whether Marxist or Samuelsonian. Their arguments may well be true that posit a surplus value staying with capitalists for a long time, or that explain with reallocations some increases of efficiency here or there of 2 or 3 percent of national income. The scientific evidence, however, seems to be strong that the economic, Prudence Only theories, whether taken individually or together, can’t explain the startling rise of real incomes from 1700

27. Mill 1843, p. 464.

28. “Samuelsonian” is an adjective for modern, American-style economics, which was originated by the late, great, and amiable Paul A. Samuelson (1915-2009) and by his brother-in-law (also great and amiable) Kenneth Arrow (b. 1921), and announced in Samuelson’s modestly entitled PhD dissertation of 1947, *The Foundations of Economic Analysis*. It insists that every economic issue must be treated as a problem of constrained maximization by utility-seeking individuals. To this, Arrow added the use of proof in the style of the department of mathematics (as against departments of physics or engineering, which care not a fig about such existence-theorem proofs). Samuelsonian economics, especially in its recent form melded with Milton Friedman’s conclusions, is commonly called “neoclassical.” But the term perpetuates an anachronism, since neoclassical economics names the much earlier new economics during and after the 1870s (Menger, Walras, Jevons, Marshall, Clark, Wicksell), which was wider than Samuelsonian in method, or wider than Friedmanite in conclusion

to the present, thousands of percents. Rhetoric perhaps can.

The negative case made here, summarizing fifty years of research by economic and historical scientists, is:

Foreign trade was too small and too anciently common to explain the rising tide after 1700 in northwestern Europe. Capital accumulation was not crucial, since it is pretty easily supplied. Literacy, for example, is a form of investment in human capital, but responds to demand. Coal can be and was moved. Despite what you may think, European empires did not enrich the imperial countries, and anyway the chronology is wrong, and anyway imperialism was commonplace in earlier times. Likewise, the institutions of property rights were established many centuries before industrialization, in China more even than in Europe. The European marriage pattern was not only European. Greed didn't increase in the West. In bourgeois countries during the Industrial Revolution the Catholics did just as well as the Protestants, at least when in similar circumstances, as they were in Amsterdam. The Muslims and the Hindus and the Buddhists, or for that matter the Confucians and most of the animists, could think as rationally about profit and loss as did the Christians. Populations had grown, even explosively, in earlier times and other places. The Black Death hit all of Eurasia. Genetic variation and evolution work too slowly and irrelevantly to explain European success. Until the eighteenth century many parts of the Far and Near and Southern East were as rich, and appeared to be as ready for innovation, as parts of the West—except at length in the crucial matters of the dignity and liberty of the bourgeoisie. Until the seventeenth century the Chinese and the Arabs practiced a science more sophisticated than the European one. The science of the Scientific Revolution was in any case mostly about prisms and planets, and before the twentieth century even its other branches did not much help in worldly pursuits. True, European science was in its non-normal, revolutionary episodes an important parallel in the realm of ideas to the acceptance of creative destruction. But the new dignity and liberty for innovators was a rhetorical event outside of science, and it influenced science itself by elevating bourgeois stick-to-itiveness (such as Charles Darwin's) over aristocratic gestures (such as Lord Bacon's).

In 1500 only one of the ten largest cities in the world, Paris, was in Europe. In 1800 still only Paris, London, and Naples ranked so.²⁹ After a century of shocking divergence, however, only one city outside Europe or the United States was in the top ten (namely, Tokyo, and this after Japanese industrialization had taken hold).³⁰ Yet in our own times, it is estimated that by 2015 only two cities with only partial European origin, Mexico City and São Paulo, will be in the top ten. Jack Goody calls it

29. Hohenberg 2003, p. 179.

30. The word "divergence" and the idea that it happened after 1800 is from Pomeranz (2000) and others of the "California School."

“alternation,” and economists call it “convergence.” “No one wishes to deny Europe (or America) its recent advantage,” writes Goody, “only to dispute the reasons given which all too often relate to imaginary long-term superiority. . . . The advantages. . . are of much more recent and specific origin.”³¹ The wheel turns. In short, the Europeans were not economically special until about 1700. They showed most plainly their special ingenuity only briefly in the two centuries after 1800 (as they had by then been showing for some centuries their special brutality). By the early twenty-first century they had reverted to not being special at all, even in brutality. The episode of their innovative specialness, and the rising tide, came from a change in their economic rhetoric. It made the difference.

An example of the details:

Chapter 14

The Tide Didn't Happen because of Thrift

How, then? How and why did the first Industrial Revolution happen, with its astonishing follow-on in the nineteenth and twentieth centuries? In this book we specialize in widely believed explanations that don't work very well. One widely believed explanation is thrift.

The word “thrift” in English is still used as late as John Bunyan to mean simply “wealth” or “profit,” deriving from the verb “thrive” like “gift” from “give” and “drift” from “drive” (the derivation was still vibrant in 1785 to a scholarly poet like William Cowper, who laments the working poor in *The Task* (17, bk. 4), “With all this thrift they thrive not”). But sense 3 in the *Oxford English Dictionary* is our modern one, dating significantly from the sixteenth century: “So I will if none of my sons be thrifty” (1526); “food is never found to be so pleasant. . . as when. . . thrift has pinched afore” (1553).

The modern “thrift,” sense 3, can be viewed as a mix of the cardinal virtues of temperance and of prudence in things economic. Temperance is the cardinal virtue of self-command in the face of temptation. Lead me not into temptation. Prudence, by contrast, is the cardinal virtue of practical wisdom. Give us this day (a way to make prudently and laboriously for ourselves) our daily bread. It is reason, know-how, rationality, efficiency, getting allocation right, *savoir faire*. Prudence without temperance does not in fact do the task it knows it should thriftily do, and knows how to do. Temperance without prudence, on the other hand, does not know in practice what to do: *ne savoir pas faire*. A prudent housewife in the “Ladder to Thrift,” as the

31. Goody 2010, p.122.

English agricultural rhymester Thomas Tusser put it in 1580, “makes provision skillfully.”³² Without being full of skill, that is, prudent, she does not know how to be thrifty in saving tallow for candles or laying up salt mutton for Eastertide.

Prudent temperance has in a sense no history, because it happens by necessity in every human society. The Hebrew Bible, for example, speaks of thrift, though not very often, usually associating it with diligence: “The sluggard will not plough in the autumn by reason of the cold; therefore shall he beg in [the] harvest, and have nothing”; “Seest thou a man diligent in his business? He shall stand before kings” (Proverbs 20:4; 22:29). Jesus of Nazareth and his tradition used parables of thrift to point to another world, though again the parables of thrift are balanced by parables of entrepreneurship such as the parable of the talents, or of liberality, such as changing water into wine to keep the party going.³³ “Eat and drink,” advises the Koran, “but do not be wasteful, for God does not like the prodigals” (7:31). In the Koran, as in the Jewish and Christian books, thrift is not a major theme.

Of course other faiths than the Abrahamic also admire on occasion a prudent thrift. The Four Noble Truths of Buddhism, to be sure, recommend that life’s sorrow can be dissolved by the ending of desire, in which case advice to be thrifty would be lacking in point. Be “thrifty” with your modest daily bread in your monk’s cell? Buddhism is similar in this respect to Greek and Roman stoicism, which advocated devaluing the world’s lot, an inspiration early and late for Christian saints of thriftiness. Yet Buddhism allows for prudent busy-ness, too. The “Admonition to Singâla” is in the Buddhist canon “the longest single passage. . . devoted to lay morality.”³⁴ Buddha promises the businessman that he will “make money like a bee” if he is wise and moral:

Such a man makes his pile
As an anthill, gradually.

And then it counsels an astounding abstemiousness, far beyond that contemplated even in Max Weber’s worldly asceticism:

He should divide
His money in four parts;
On one part he should live,
With two expand his trade,
And the fourth he should save
Against a rainy day.

The rate of savings recommended is fully 75 percent—though with no allowance for

32. Tusser 1588, p. 13.

33. A full statistical analysis is given in McCloskey 2006a, pp. 446–450.

34. Introduction by A. L. Basham, p. 120, to the passage in Embree 1988, vol. 1. The passage below is Dīgha Nikāya 3.182ff., reprinted p. 123.

charity, which made the Buddhist commentators on the text uneasy.

In England the thirteenth-century writers of advice books to Norman-English landowners start with a little bit on thrift and then go on to the prudent details of managing an agricultural estate. The third paragraph of *The Husbandry* by Walter of Henley, after a bow in the second paragraph to the sufferings of Our Lord Jesus, prays “that according to what your lands be worth yearly. . . you order your life, and no higher at all.”³⁵ And then in the same vein for five more paragraphs. The anonymous *Seneschaucy*, written like Walter in Norman French in the late thirteenth century, instructs the lord’s chief steward “to see that there is no extravagance. . . on any manor. . . and to reduce all unnecessary expenditure. . . which shows no profit. . . . About this it is said: foolish spending brings no gain.”³⁶ The passage deprecates “the practices without prudence or reason” (*lez maners saunz pru e reyson*). So much for a *rise* three or four centuries later of prudence, reason, accounting, rationality, Calvinist asceticism, and thrift. From the camps of the !Kung to the lofts of Chicago, humans need to live within their incomes, being by their own lights “thrifty.”

The prehistory of thrift, in other words, extends back to the Garden of Eden. It is laid down for example in our genes. A protoman who could not store fat on his thighs and stomach thriftily in feast times would suffer in famine and leave fewer children. And therefore his descendent in a prosperous modern society needs irritatingly to watch his weight. Prudent temperance does not require a stoic or monkish or Singâla abstemiousness. A ploughman burning 3,000 calories a day had better get them somehow. One should be thrifty in eating, says Tusser, but not to the point of denying our prudent human solidarity:

Each day to be feasted—what husbandry worse!
Each day for to feast is as ill for the purse.
Yet measurely feasting with neighbors among
Shall make thee beloved, and live the more long.³⁷

And so too actual luxury, the opposite of thrift. “Depend on it, sir,” said Samuel Johnson in 1778, “every state of society is as luxurious as it can be. Men always take the best they can get,” in lace or food or education.³⁸ Marx noted cannily that “when a certain stage of development has been reached [notice the stage-theoretic vocabulary that Marx borrowed from eighteenth-century pioneers], a conventional degree of

35. Walter, late thirteenth century, in Oschinsky 1971, p. 309.

36. *Seneschaucy*, late thirteenth century, in Oschinsky 1971, p. 269. Raftis speaks of the coming of “up-to-date double accounting by the end of the twelfth century” on big estates (1996, p. 120), which would be surprisingly early if he is speaking precisely, as he usually does.

37. Tusser 1588, p. 18.

38. Boswell 1791, April 14, 1778 (vol. 2, p. 203).

prodigality, which is also an exhibition of wealth, and consequently a source of credit, becomes a business necessity. . . . Luxury enters into capital's expenses of representation."³⁹ It sounds plausible enough. Otherwise it would be hard to explain the high quality of lace on the collars of black-clad Dutch merchants in paintings of the seventeenth century, or indeed the Dutch market for the paintings in their hundreds of thousands that reflected back in oily richness the merchants and their world.

The average English and American English person from the sixteenth through the eighteenth century, then, surely practiced thrift. Yet this did not distinguish her from the average English or American English person before or after, or for that matter from the average person anywhere on earth since the Fall. "My other piece of advice, *Copperfield*,' said Mr. Micawber, 'you know. Annual income twenty pounds, annual expenditure nineteen nineteen and six, result happiness. Annual income twenty pounds, annual expenditure twenty pounds ought and six, result misery.' . . . To make his example the more impressive, Mr. Micawber drank a glass of punch with an air of great enjoyment and satisfaction, and whistled the College Hornpipe. I did not fail to assure him that I would store these precepts in my mind, though indeed I had no need to do so, for, at the time, they affected me visibly."⁴⁰

Thrift in the sense of spending exactly what one earns is indeed forced by accounting. Not having manna from heaven or an outside Santa Claus, the human world must get along on what it gets. If we do not at least hunt or gather, we do not eat. The world's income from the effort must equal to the last sixpence the world's expenditure, "expenditure" understood to include investment goods. So too Mr. Micawber. If he spends more than he earns he must depend on something turning up, such as a loan or a gift or an inheritance. He draws down his credit. In the meantime his transfers from his diminishing balance sheet—what he owns and owes—pays to the last sixpence for his glass of punch and his house rent.

Thrift in the sense of spending less than one earns and thereby accumulating investments as a capital sum is again a matter of accounting. You must allocate everything you earn somehow, to bread and punch or to bonds and house building or to sheer waste and your mattress. If you can resist consuming soft drinks and other immediate consumption goods, "abstaining from consumption" in the economist's useful way of putting it, you necessarily save. That is, you add to your bank account or to your mattress or to your capital in education or in battleships. Of course you can allocate foolishly or well, to bombs or to college educations, to glasses of punch or to a savings account.

39. Marx 1867, chap. 24, sec. 3, p. 651.

40. Dickens, *David Copperfield*, 1849–1850, chap. 12.

There is nothing modern about such accounting. It comes with life and the first law of thermodynamics, in the Kalahari or in Kansas City. In particular, because of the peculiarly unproductive character of their agriculture, the preindustrial European world needed urgently to abstain from consumption, “consumption” understood as immediate expenditures that are not investments in some future. Yields of rye or barley or wheat per unit of seed planted in medieval and early modern agriculture in northern Europe were extremely low: only three or four—they are fifty or so now for wheat, and eight hundred for the maize introduced after Columbus. (In monsoon Asia the flooding rains allow the cultivation of rice, which has always had a high yield-seed ratio, with the additional benefit that the annual and sometimes biannual flooding would fertilize and weed the fields, without plowing. Rice was introduced by the Muslims into Spain and Sicily, and it spread by the fourteenth century into, for example, the Po Valley in Northern Italy.⁴¹)

The low yields of wheat, barley, and oats forced northern Europeans in the good old days, if they did not want to starve next year, to refrain from a great deal of consumption this year. No matter how much your stomach growled with hunger as you did it, one quarter to one third of the grain crop had to go back into the field as seed in the fall or the spring, its fruit to be harvested the next September. It had better. In an economy in which the grain crop was perhaps half of total income, the seed portion alone of medieval saving implied an aggregate saving rate of upward of one half times one quarter, that is, 12 percent. The rate of saving in modern industrial economies is seldom above 10 or 20 percent. No wonder there was little savings available for trying out innovations—and the less so because the crops were variable. Medieval life was precarious (with yield-seed ratios of 3 or 4, it is no wonder) and innovation correspondingly dangerous.⁴²

The trade in grain was restricted to the parts of Europe served by rivers and seas, since overland cartage was enormously expensive when roads were mere tracks through the mud—and even coastal water transport was at first expensive as a share of the price. The price of wheat in Valencia, Spain, in 1450 was 6.7 times the price in Lwów, Poland (by 1750 it had fallen to a few percentage points of difference).⁴³ Therefore local grain storage for local consumption was also high by modern standards. Nowadays if the grain crop does poorly in America the market easily supplies the deficiency from the other side of the world. No need to store seven year’s plenty. In the late Middle Ages some grain did flow from the Midlands to London or from Burgundy to Paris. Yet it began to flow from as far away as Poland to Western Europe

41. Goldstone 2009, p. 11.

42. McCloskey 1976 and 1989 make such calculations of risk for medieval agriculture.

43. Braudel and Spooner 1967, fig. 23, p. 477.

in large amounts only gradually during the sixteenth and seventeenth centuries, by the efforts of innovative Dutch merchants and shipbuilders. Only in the nineteenth century did it come from so distant a clime as Ukraine or, later, North and South America, or finally Australia. Until the eighteenth century therefore the grain crops in the narrow markets tended to fail together. The potato famine of the 1840s was the last big replay in Europe of a sort of undiversified catastrophe commonplace there in the 1540s, and more so in the 1340s. Grain storage, in other words, amounted to another desperate form of saving, crowding out more modern forms of investment.⁴⁴ In such circumstances you stored grain in gigantic percentages of current income, or next year you died. In West Germanic languages such as Dutch, German, and Old English, the word cognate with “starve” (for example, Modern Dutch *sterven*, Modern German *sterben*, Old English *steorfan*) is the main word for “die.”

Such desperate scarcities were broken in the New World of the British Americans, who ate better than their Old World cousins within a generation of the first settlements. It was not a remarkable achievement, considering that the American rivers were full of fish and the woods full of game, and that their cousins back in England were then passing through the worst times for the workingman since the early fourteenth century.⁴⁵ Plentiful land in Massachusetts or Pennsylvania, at any rate on the literal frontier, made it unnecessary to save so much in grain, which anyway was high-yield maize. The forced thrift was freed for other investments.

Yet notice: although the North American English (and the French, Dutch, Swedes, and Germans there) became as early as the late seventeenth century pretty well off by the wretched European standards, and therefore freed from using up their savings protecting next year’s grain crop, what became British North America and then Canada and the United States was by no means the home of the Industrial Revolution. It was too small in population, too far away from a mass of consumers, too tempted by a comparative advantage in agriculture and forestry products, or for that matter too restricted by French or British mercantilism. The northeast of the United States, like southern Belgium and northern France, was to become a close follower, of course, in the 1790s and 1800s. The rapid American adoption of manufacturing surprised many people, such as John Adams. He told Franklin in 1780 that “America will not make manufactures enough for her own consumption these thousand years.”⁴⁶ “Yankee ingenuity” is not a myth, as the quick industrialization of New England was to show. The North American colonies did indeed contain many ingenious inventors willing to get their hands dirty. Even the North American slave areas were not inventive deserts

44. McCloskey and Nash 1984. Compare Cipolla 1994, p. 89.

45. Innes 1988, p. 5.

46. Quoted in Leo Marx 1964, p. 148.

by any means: look at Jefferson's ingenuity, and the improvement of cotton varieties.

But the leaders of industrialization, from the 1760s, were northwest England and lowland Scotland. These were lands of grindingly *necessary* thrift. Yields of agriculture were still low—the real “agricultural revolution” came finally in the nineteenth century (not as used to be thought in the eighteenth) with guano, selective breeding, steel plows, cheap water transport, reaping machines, commodity exchanges, and clay-pipe drainage. In short, the homeland of the Industrial Revolution was not a place of excess savings waiting to be redirected to factories.

The point is that there is no aggregate increase in thrifty savings to explain the modern world. Thrifty saving is not peculiar to the Age of Innovation. Thrift or prudence did not increase in the childhood of modernity. Actual saving stood high before modern times, and did not change much at the time of modern innovation. It changed only *after* the innovation had given us new opportunities to invest. We were routinely thrifty long before we were mainly urban, and long, long before we came to celebrate bourgeois dignity and bourgeois liberty and the creative destruction which they wrought.

Looking at thrift in a cheerful way, the starting point used to be said to be (according to Max Weber in 1905, for example) a rise of thriftiness among Dutch or especially English Puritans. Marx characterized such classical economic tales, from which Weber took his inspiration, as praise for “that queer saint, that knight of the woeful countenance, the capitalist ‘abstainer.’”⁴⁷ We can join Marx for a moment in disbelieving the optimistic tale—noting again, and contrary to Marx's own pessimistic version of the same tale, that abstention is universal. Saving rates in Catholic Italy or for that matter Confucian Buddhist Taoist China were not much lower, if lower at all, than in Calvinist Massachusetts or Lutheran Germany. According to recent calculations by economic historians, in fact, British investment in physical capital as a share of national income (not allowing for seed investment) was strikingly *below* the European norm—only 4 percent in 1700, as against a norm of 11 percent, 6 percent as against 12 percent in 1760, and 8 percent against over 12 percent in 1800.⁴⁸ Britain's investment, though rising before and then during the Industrial Revolution, showed less, not more, abstemiousness than in the less advanced countries around it.

The evidence suggests, in other words, that saving depends on investment, not the other way round. If you want to do well, you should innovate, with a modest stake borrowed from your brother, and then set aside out of your profit from having a good idea (if indeed it is good) the additional savings to reinvest in your expanding business.

47. Marx 1867, chap. 24, sec. 3, p. 656.

48. Crafts, Leybourne, and Mills 1991, table 7.2, p. 113; and Feinstein 2003, p. 45.

Your savings rate will rise, but as a result of your innovation, not as a precondition of it. When in the nineteenth century the rest of Europe started to follow Britain into industrialization, its savings rates rose, too. Yet the rest of Europe's markedly higher rates during the eighteenth century did not cause it then to awaken from its medieval slumbers. Saving was not the constraint. As the great medieval economic historian M. M. Postan put it, the constraint was not "the poor potential for saving," but the "extremely limited" character in pre-nineteenth-century Europe of "opportunities for productive investment."⁴⁹ Innovation was it.

. . . .

And one more:
Chapter 22
Not Even Coal

Yet four impressive scholars recently have insisted on coal: Anthony Wrigley (1962, 1988), Kenneth Pomeranz (2000), Robert Allen (2006, et al., 2009), and John Harris (1998). The historical demographer Wrigley has long claimed that the substitution of mineral fuel for wood and animal power made the Industrial Revolution. In one sense he is obviously correct, since wood could not have easily fueled the steam engines and blast furnaces of England—though observe that well into the nineteenth century the United States used wood to power steamboats on the Mississippi and used charcoal to refine iron in Pennsylvania. Yet coal deposits do in fact correlate with early industrialization. The coal-bearing swath of Europe from Midlothian to the Ruhr started early on industrial growth. English coal was important from an early date in heating London's homes, blackening the Black Country, eventually running Manchester's steam engines—though Manchester, *New Hampshire's* cotton mills kept using falling water. It is hard to imagine big electricity-generating stations running on logs. Eventually hydroelectric and especially atomic power did something in replacing coal, and we all hope that wind and solar and geothermal power will prevail. But dirty old King Coal still matters a lot.

Yet the sheer availability of coal does not seem, at least on static grounds, to be important enough for the factor of sixteen, or even a doubling 1780–1860. As Eric Jones observed a capability of exploiting an endowment may matter more. Obviously coal determined *where* industry was, but one must not confuse location with overall extent

49. Postan is thus quoted with approval by another great student of the times, Carlo Cipolla, in Cipolla 1994, p. 91.

and national gain.⁵⁰ Economically speaking, a coal theory, or any other one-step geographical theory, has an appointment with Harberger. The share in national income of land was much higher in the eighteenth century than now (perhaps 20 percent then as against 2 or 3 percent now), but the share of coal land within all land was small.⁵¹ The calculations would be worth doing, but they probably would turn out like the others. Gregory Clark and David Jacks have recently argued that substitutes for coal meant that an upper bound on the loss from a coalless Britain would have been a mere 2 percent of national income—when what is to be explained is a 100 percent increase down to the mid-nineteenth century and much larger increases afterward.⁵² Think of ball bearings and Allied bombs.

Especially, coal could be moved, and was—it went to Amsterdam and London, moving about Europe and the world like Swedish iron and lumber, or French salt, or Irish cattle. The presence of coal somewhere reachable at low cost may have been important for the steam stage of industrialization, say 1800–1950. And before the railway a transport route by sea would have been very important. The point, however, is that the coal didn't need to be on the spot. As Goldstone notes, if the coal fields had been located in Normandy, then the London fireplaces and the Cornish pumping engines would have imported their coal from France, and we would have no sage talk about the necessity of British coal inside the legal confines of Britain. Yet Normandy would not necessarily have industrialized, if lacking the requisite dignity and liberty of the bourgeoisie (whose standing there, at any rate in the minds of the Parisian clerisy around 1856, may be inferred from *Madame Bovary*). The place where steam engines were most used was Cornwall, with no coal—but gigantic amounts of it across the Bristol Channel in South Wales. Norrland in Sweden exported lumber and paper pulp, but did not make the house frames or the paper.

The recent advocates for coal are right, however, to emphasize that any argument about industrialization needs to be made comparatively. The Chinese in the seventeenth century had long been using coal on a big scale to get, for example, the high temperatures to fire ceramics, exporting the result westward.⁵³ Kenneth Pomeranz argues for the importance of the accident that in Europe, especially in Britain, cheap coal sat close to populations. China's coal was far away from the Yangtze Valley—the valley being until the nineteenth century a place which was in other ways, he argued (though later proven mistaken), comparable to Britain in wealth, at the high end of the

50. As Pollard does in complaining about “the influence of theoretical economists on economic historians” (Pollard 1981, p. 4).

51. Clark 2007, p. 137.

52. Clark and Jacks 2007.

53. Goldstone 2009, p. 13.

\$3 ± \$2 a day of our ancestors. The valley was where the demanders of coal and in particular the skilled craftsmen were. China very early used coal (and natural gas, of all things), but its coal was inland, with no cheap water routes like London's "sea coal" from Newcastle, used in English lime kilns and glassmaking from the thirteenth century on, and by around 1600 increasingly for house fuel (the local price of firewood had sharply risen).

Yet one might object that a more vigorous protoinnovation ("vigorously exploiting its endowment") would have *moved* the industry to, say, Manchuria (not entirely unnaturally, perhaps, under the rule of Manchus after 1644), or at any rate to some other coal-bearing lands of the gradually widening Central Kingdom, exporting the finished products instead of the raw coal. After all, eventually China did just that, as on a smaller geographical scale the British did in the (newly) industrial northwest and northeast, or the Germans in Silesia, or on a larger scale the Europeans in exporting finished products to the world. You do not have to move coal—even before the railway made moving it cheap. You can move people or move finished goods or both.

Coal as merely a new source of heating, in short, does not work very well for explaining our riches. Robert Allen, who would disagree, has emphasized that coal was relatively cheap in England compared with labor, as against its high relative price on much of the Continent. By the end of the eighteenth century, certainly in London, and even the once-poor North, English people enjoyed higher real wages than most of the Continent, except the Netherlands: "Craftsmen in London or Amsterdam earned six times what was required to purchase the subsistence basket [of goods], while their counterparts in Germany or Italy only 50% more than that standard."⁵⁴ His argument is that cheap coal relative to scarce labor led to innovation. That is, he attributes the scale of British innovation to the pattern of factor scarcities. Labor was scarce relative to coal fuel in Britain, *and so* innovations would be labor-saving. *And so* Britain would have a large volume of innovations.

Neither "and so" makes much economic sense. The economic historian H. J. Habakkuk in 1962 put forward the same argument about the United States during the nineteenth century: labor was scarce relative to capital, *and so* America innovated by saving labor. Allen himself accurately summarizes one crushing point against such an argument, following critics such as Peter Temin and other economic historians reacting to Habakkuk: "One problem is that businesses are only concerned about costs *in toto*—and not about labor costs or energy costs in particular—so all cost reductions are equally welcome."⁵⁵ Well put. As another leading student of technology, Tunzelmann,

54. Allen 2006, p. 6.

55. Allen 2006, p. 10. See Temin 1966, 1971; and Mokyr 1990, p. 166.

remarks, “In truth, it is extremely difficult to make a logical theoretical argument for the seemingly self-evident proposition that scarce labor should induce labor-saving bias in technology.”⁵⁶ A shilling got from saving not labor but coal (coal saving was in fact the obsession of early users of steam engines, as Margaret Jacob has shown from their writings) is the same shilling that one got from saving labor (which Jacob notes was seldom mentioned by the engineers she has studied).⁵⁷ If one would prefer an inconclusive theoretical argument over a conclusive empirical finding such as Jacob’s (at the University of Chicago after its better day of true empiricism they say “That’s all right in practice, but what about in theory?”), one could refer to the economist Daron Acemoglu’s argument about the set-up costs of research: precisely because coal was abundant in Britain the engineers sought innovations that justified the set-up costs of looking into ways of saving it, not labor.⁵⁸ Later, in the nineteenth century, as Allen and I discovered some time ago, British iron- and steelmaking made advances mainly by saving coal, as in for example Neilson’s recycling of hot gases from the blast furnace to cut coke usage by two-thirds, or the hard driving later in the century with similar results.⁵⁹ By that time Britain had even higher wages, and the real price of coal had not much changed. What happened, one may ask, to the alleged labor-saving bias between the late eighteenth and the late nineteenth centuries?

If wages relative to coal prices were all that mattered, Jacob has also noted, Belgium and the extreme south of the high-wage Netherlands, both of which had coal, and in any case could import it very cheaply from Northumberland across the North Sea, would have been the Birminghams and Manchesters of the late eighteenth century. And to look at the point from the opposite side, why did not industry on the *low-wage* parts of the Continent away from the Netherlands therefore explode with *coal-saving* innovations? As Mokyr puts it, “Economies that had not coal would constantly be under pressure to develop more fuel-efficient techniques, or engines that used alternative sources of energy,” instancing windmills in Asia or water mills in Rome (both of which, he notes, were *not* greatly improved subsequently, or used to power an industrial revolution).⁶⁰ You can see the underlying illogic: *something* is always relatively scarce, “and so” innovation in saving the scarce input will be high. “And so”

56. Tunzelmann 2003, p. 87.

57. Jacob, personal correspondence, 2008. Compare MacLeod 1988, pp. 151–181 on the saving of capital vs. labor saving in patent applications.

58. Acemoglu 2002; but Boldrin and Levine (2009) have another model, with diminishing returns to inventive labor rather than fixed costs of inventing. It’s that way with models independent of scientific test.

59. McCloskey 1973; Allen 1977.

60. Mokyr 1990, p. 160.

every age and place has an incentive to innovate in great volume. The logic has somehow gone astray.

Cheap coal can indeed explain the location of power-hungry industries in Lancashire vs. Wiltshire, or Birmingham vs. Bordeaux (though, by the way, Allen does not sufficiently acknowledge the importance of water power). If one is willing to glide by the point that a shilling is a shilling, as Allen does so glide, after tipping his hat to the critics of Habbakuk, then the high ratio of wages to coal might be supposed, illogically, to affect the composition of innovations. The matter to be explained in the Industrial Revolution, though, is not the composition of innovation, but its magnitude. Patrick O'Brien and Caglar Keyder recognized the point long ago, arguing that France took "another path" than Britain did to the twentieth century. One could ask therefore why in eighteenth-century Italy or indeed China there was not a labor-*using* path to the modern world. That British innovations were biased (as the economists put it) toward labor saving, if they were (though in iron making, as I said, they definitely were not, and about the whole economy the econometric studies agree that Britain was not), says nothing at all about how many innovations in total the British would make. If spaghetti is cheap relative to rice in Italy compared with Japan you can expect Italians to eat relatively more spaghetti than rice. Yet such an expectation does not say anything about how much food in total the two countries will consume, one sort of food aggregated with another. In explaining modern innovation the aggregate is what matters, not the pattern.

It is easy to get confused about the economics here. China did use labor-intensive methods of all kinds. Doing so, however, is merely using old technology (not innovating new technology, that is, getting really new ideas) in a way determined by the abundance of labor relative to, say, land. In such matters, Allen properly affirms, relative prices matter. Yet using people to hoe the fields by hand instead of using capital-intensive methods such as great iron plows is not an advance of the sort that made us rich compared to our great-great-great-great-great grandparents. It is not an "advance" at all, in fact, but a choice of different routines from existing plans of business, different paths on the same map. Allen cites Rainer Fremdling, who has persuasively shown that the nonuse of coke for iron on the Continent before the 1850s—it had been in use in Britain for a century by then—was not an entrepreneurial failure (as Landes for example had argued) but a matter of relative prices.⁶¹ Peter Temin had argued earlier, likewise, that the use of charcoal for blast furnaces in the United States in the same era was another case in point: wood for charcoal was cheap relative to coal

61. Fremdling 2000, referred to in Allen 2006, p. 18.

there.⁶² And I had done the same sort of research on British iron makers about a claimed “failure” to use now *Continental* techniques of by-product coking later in the century, or a “failure” to have in other ways the same pattern of use of ideas as the Americans or Germans (David Landes again made the claim I was criticizing; Landes does tend to scold for sloth and incompetence whomever was not using whatever he asserts without quantitative inquiry was the best technique; it is a corollary of his race-to-the-swiftest, *élan-vital* theory of world history and his overuse of second-guessing).⁶³

Splendid though such quantitative researches in historical economics are, however, they are not the same as explaining the innovativeness of British vs. Continental economies in the eighteenth and early nineteenth centuries, or the innovativeness of Europe generally 1700 to 1900. To explain the size as against the composition of innovativeness you need factors like a lead in the practical side of the Enlightenment (Jacob, Goldstone, Mokyr, Israel) or in entrepreneurial *élan vital* (Landes; though note how poorly the hypothesis does in the late nineteenth century) or—to come to the One True Explanation—in the extent to which a rhetoric of dignified and liberated business had been adopted (McCloskey). One needs, to put it again in economic jargon, an explanation of absolute, not comparative, advantage.

Relative prices of the sort economists usually concern themselves with, in other words, have a highly doubtful connection with the amount of innovativeness in total. As Allen argues, the scale of Britain’s mining of coal and lead and tin explains “why steam engine research was carried out in England.”⁶⁴ That sounds reasonable. Margaret Jacob for example would probably agree. For the same reasons, as Alan Olmstead and Paul Rhode have recently argued, biological innovation in crops and livestock took place in the United States during the nineteenth century—this against still another version of the scarce-labor hypothesis (which claims that mechanization was the key to American agricultural improvement).⁶⁵ Economies of scale in a leading industry, though, is not a theory of the amount of innovation of all sorts, in banking and insurance and cotton and wool and glassmaking and printing. The total amount of innovation is what is to be explained. You can, again, lose on the swings what you gain on the roundabouts: America’s attention to innovation in agriculture, natural though it was, left less attention to be devoted to innovation in chemicals.

The historian John Harris argued for coal in a way that makes more sense than the static arguments favored by the economists. He wrote that in Britain in the seventeenth century and before, “the move to general use of a cheaper mineral fuel. . .

62. Temin 1964.

63. McCloskey 1973.

64. Allen 2006, p. 27.

65. Olmstead and Rhode 2008a, 2008b.

nearly always necessitated important technical change in order to accommodate the use of the equipment of the relevant industry," such as glass making or salt making. "The long success with this change of fuel. . . over a couple of centuries was a major reason for a willingness to try new methods in other industrial fields and to be prized away from traditional practices."⁶⁶ Yes: the accident of easy coal and expensive forests could lead to a tinkering mentality (say) about applications of heat. (Though again the Chinese were in such matters many centuries ahead. In this case, however, the Coal Effect works through habits of the mind, not (as the economist would wish) directly through relative prices. I stand with the admirable Tocqueville: "Looking at the turn given to the human spirit in England by political life; seeing the Englishman. . . inspired by the sense that he can do anything. . . I am in no hurry to inquire whether nature has scooped out ports for him, or given him coal or iron."⁶⁷

How far have we gotten?

The claim is that the economist's static model does not explain the factor of sixteen. The static model and its quasidynamic extensions can tell what did *not* cause the Industrial Revolution and its sequel, correctives to popular fable and sharpeners of serious hypotheses. It is useful science. Yet the kind of growth contemplated in the classical models, embedded nowadays deep within economics as a system of thought, was not the kind of growth that overtook Britain in the late eighteenth century and then was gloriously continued in the nineteenth century and then in the wide world.

One might reply that many small effects, static and dynamic, could add up to the doubling of income per head to be explained: trade, coal, education, canals, peace, investment, reallocation. The late Charles Feinstein suggested this to me at a conference bringing the "new" economic history to Britain in the 1980s. I honor the broad-minded impulse to avoid uncausal explanations. But on the other hand the purpose of a science is to uncover causes. If one cause such as gravity explains most of a phenomenon, such as the acceleration of a falling stone, then there can't be a complaint that "uncausal explanations are always wrong in [physics or] history." Sometimes they are right, or right enough for scientific purposes. Sometimes air resistance doesn't matter very much, and then Galileo's merely uncausal rule does the job: $a = g = 32$ ft./sec./sec.

And another trouble—the historical trouble emphasized before—is that many of the suggested effects, whether in the first or the second century of modern economic growth, were available for the taking in earlier centuries. The mystery inside the

66. Harris 1992, p. 133.

67. Tocqueville 1835, p. 116.

enigma of modern economic growth is why it is so very modern. If canals, say, are to explain some major part of the growth of income, it must be explained why a technology available since the beginnings of settled society, and used with increasing sophistication in many of them from the third millennium BCE on, was suddenly so very useful as to cause an epochal rise in productivity around 1800 CE. The Chinese invented the pound lock in 984 CE (it got to Europe in 1373) and in 1327 CE completed the Grand Canal of 1,100 miles (the Canal du Midi from the Atlantic to the Mediterranean, the pride of French rationalist engineering, was completed only in 1681 CE and was a mere 149 miles). China had constructed elaborate systems of lockless transport canals many centuries earlier, as of course did ancient Mesopotamia and the Indus Valley civilization.⁶⁸ The Iranians dug long tunnels through mountains to water their plains, as did the people of Teotihuacan. The Romans led water for scores of miles on arches and through tunnels. What, then, is so special about the Bridgewater Canal (1776) bringing coal to Manchester?

In any case, adding up the material causes proposed for the Industrial Revolution doesn't seem to work, either. One trouble is that adding up a dozen effects shown to be individually on the order of 1 or 2 percent still does not come close to the 100 percent rise of income per head in the first century of the Industrial Revolution. (I repeat: the capital accumulation supposed to "explain" the rise would not have happened if the innovation had not happened; marginal products would have been promptly driven down to zero. And the deeper trouble is that the doubling is not enough, since in short order the result of modern economic growth was not a factor of two or even three but a factor of sixteen—not 100 percent but 1,500 percent—and greatly larger if the better quality of goods and services like lighting and health care and education could be properly accounted for. And the still deeper problem is that what needs to be explained is why the multiple causes converged in the late eighteenth century. To this question I have an answer. The historians who hypothesize a happy conjuncture of otherwise routine economic forces do not.

The classical model from Smith to Mill was one of reaching existing standards of efficiency and equipment. Allocate things until the supply price equals the demand price, and capture the efficiency gains. Nice. It is a pure theory of the virtue of prudence, that is, economics in the style of Jeremy Bentham (1748–1832) and Paul Samuelson (1915–2009). As an account of modern economic growth the model looked quite plausible until the late nineteenth century. To attach it to a place: the model was one of reaching Holland's riches in 1700. And indeed as late as 1870 the Western European countries had merely accomplished such a catching up with Holland, so far

68. Temple 1986 (2007), pp. 218, 197.

as average income per head was concerned. (They had by then prepared the technical and organizational grounds for a growth gigantically beyond old Holland, and Holland itself was beginning to industrialize seriously, but that is another and later matter). According to Maddison's figures, per capita income in the Netherlands was \$2,110 in 1700 (\$5.70 a day expressed in 1990 dollars), which was about what had been achieved in most Western European countries by 1870 —for example, France at \$1,876 and a collection of the twelve richest European countries at \$2,086.⁶⁹ No wonder the classical economists imagined limits close to what they could see plainly in Holland, and had no idea that the \$5.40 a day (in 1990 prices) that the average Western European earned in 1870—again, a little less than what the average Dutch person had earned 170 years earlier—was to increase by the end of the twentieth century to an astounding \$50 a day, and higher.

Holland was to the eighteenth century what Britain was to the late eighteenth and the nineteenth, and America was to the twentieth, a standard for the wealth of nations. "The province of Holland," wrote Adam Smith in 1776, speaking in precise terms about the western province of the United Provinces whose main port was Amsterdam, "in proportion to the extent of its territory and the number of its people, is a richer country than England. The government there borrows at two percent, and private people of good credit at three. The wages of labor are said to be higher in Holland than in England, and the Dutch. . . trade upon lower profit than any people in Europe."⁷⁰ Smith's emphasis on routine profit at the margin is characteristic of the classical school. The classical economists thought of economic growth as a set of prudent investments which would, of course, decline in profit as the limit was reached. (The anxieties of stagnationism in the 1940s among economists such as Keynes and Alvin Hansen, as I've noted, were similar. They reckoned that opportunities had been exhausted, and that after the war the Great Depression would resume. On the political left, Baran and Sweezy [1966] kept up the stagnationist argument for some decades after its time.)

Smith spoke a few pages later of "a country which had acquired that full complement of riches which the nature of its soil and climate, and its situation with respect to other countries allowed it to acquire."⁷¹ He opined that China "neglects or despises foreign commerce," and "the owners of large capitals [there] enjoy a good deal of security, [but] the poor or the owners of small capitals. . . are liable, under the pretense of justice, to be pillaged and plundered at any time by the inferior

69. Maddison 2006 (2001), app. B, table 21, p. 264.

70. Smith 1776, vol. 1, 1.9.10, p. 108.

71. Smith 1776, vol. 1, 1.9.14, p. 111.

mandarins.”⁷² In consequence the rate of interest in China, he claimed, was 12 rather than 2 percent. Not all the undertakings profitable in a better ordered country were in fact undertaken, says Smith, which explains why China was poor. Smith and his followers sought to explain why China and Russia were poorer than Britain and Holland, not why Britain and then Holland were to become in the century or two after Smith so very much more rich (Smith, incidentally, was off in his facts about China, as most Europeans were: not all the Chinese were in fact poor, and China engaged in foreign trade on a large scale, and even the “inferior mandarins” gestured toward Confucian standards). The revolution of spinning machines and locomotive machines and sewing machines and reaping machines and insurance companies and commodity exchanges and universities that was about to overtake northwest Europe was not what Smith had in mind. He had in mind that every country, backward China and Russia, say, and the Highlands of his native Scotland, might soon achieve what the thrifty and orderly Dutch had achieved. He did not have in mind the factor of sixteen that was about to occur even in the places in 1776 with a “full complement of riches.”

In the event, a vastly fuller complement of riches came from bourgeois dignity and liberty inspiring innovation in machines, both physical and social. The supply and demand curves whizzed out, making the classical and modern economists’ obsession with moving from nonequilibrium to equilibrium along fixed curves look beside the point. The cool and calculative virtues of prudence and temperance and justice were not the virtues most called for—hope and courage were, with supports in love and faith. Smith wrote a book about temperance and a book about prudence and planned to write one about justice. Temperance, prudence, and justice: he especially admired these three cool and public virtues, admitting love and courage only on the side, and trying to exclude entirely the incense-smelling virtues of faith and hope.⁷³ And yet hope and courage dominate innovation. Smith, of course, did mention innovation, in his discussion of the division of labor: “Men are much more likely to discover easier and readier methods of attaining any object, when the whole attention of their minds is directed towards the single object.”⁷⁴ And he was eloquent on the need for sound governmental institutions, such as public schools and sensible commercial policies. What is striking in his and subsequent discussions, however, is how much weight was placed on mere prudent (and just and temperate) reallocations. Yet the reallocations, the reshufflings, the moving even of coal—mere efficiencies—we have

72. Smith 1776, vol. 1, 1.9.15, p. 112; compare 1.8.24, p. 89. Zanden 2009, p. 24, concludes that Smith was right, but Zanden’s survey of the Chinese data is not entirely persuasive, and in any case he admits that in early modern times interest rates fell heavily in China, and more in Japan.

73. McCloskey 2008e.

74. Smith 1776, vol. 1, 1.1.8, p. 20.

found, were too small to explain what is to be explained.