

The Two Movements in Economic Thought, 1700-2000: Empty Economic Boxes Revisited

Deirdre Nansen McCloskey¹

My theme is of a Rise and a Fall of understanding, coming from a failure to measure one's understanding.

Down to 1848 the new field of political economy was gradually coming to understand the system of market-tested betterment (lamentably called by its enemies "capitalism"). After 1848, however, more and more of the economists, as they increasingly called themselves, came gradually to *mis*understand it. Indeed, the political left and the middle came to treat the theories of exchange-tested betterment with angry contempt, such as Thorstein Veblen's blast against English economics, with its allegedly necessary assumption of the «hedonistic conception of man . . . of a lightning calculator of pleasures and pains, who oscillates like a homogeneous globule of desire of happiness under the impulse of stimuli» (Veblen 1898). 'Imperfections' in the market took center stage in economics, and the understanding that had developed during the Rise was at best forgotten, or at worst condemned as 'capitalist' propaganda, so obviously false that no actual measurement of its falsity need be offered.

The trouble we economists have had with the gradual Fall after 1848 is that seldom has an alleged imperfection in market-tested betterment been subject to a measurement showing that the imperfection is important enough to abandon the approximations of supply and demand. The alleged imperfections offered up since 1848 are theoretical. Often they are thoughtfully and mathematically expressed. That's good. Nothing is wrong with theorizing

¹ Professor Emerita of Economics, History, English, and Communication, University of Illinois at Chicago, deirdre2@uic.edu, website deirdremccloskey.org. A summary of the essay was presented as a keynote at the XIIIth STOREP (Storia dell'Economia Politica) conference, held at the Università di Catania, June 24, 2016. I thank the participants, and especially Maurizio Caserta, Giovanna Vertova, and Maria Cristina Marcuzzo for their suggestions. The audience at the Catania conference, it must be said, did not on the whole agree with my argument. It was also presented, with more agreement I believe, at the Annual Conference of the History of Economics Society Trinity College, University of Toronto, Friday, June 23, 2017. In the meantime Anthony Waterman of the University of Manitoba gave me characteristically wise and penetrating comments. He also does not entirely agree.

or mathematics. We need more, not less, theorizing and mathematics in economics. But theories, whether mathematical or verbal, are not of course proven facts, and to treat concepts without empirical content as facts is a mistake. As Kant said, «thoughts without content are empty» (A51/B76).²

That is my main point: the Fall has not been justified scientifically. The imperfections might, that is, to use an image of the economic historian and student of Marshall, John H. Clapham, in 1922, turn out to be «empty economic boxes». We don't know because we have not measured. Most scientific justification depends on measurement. The Fall has not. It has depended on thoughts without content. From the point of view of the sciences depending on measurement, such as geology or history, the course of economic science since 1848 looks strange indeed.

The crux in the retreat from understanding after 1848 was an ill-chosen piece of rhetoric, the locution '*perfect* competition'. '*Perfect*' competition came to be seen by the left and then by the center and even by some on the right as a unicorn. Economists discovered more and more reasons, they thought, to doubt that such a beast existed, *even approximately*. The word '*approximately*' here is crucial. What a quantitative policy science like economics requires is adequate approximations, in which we know the degree of approximation. That's what other quantitative sciences do. Economics on the whole does not.

The history of economics can therefore be divided into two parts. Before 1848, extending to the 1870s, was the education, stretching slowly from Aristotle, accelerating in the late 18th century and especially in the early 19th. After 1848, and itself accelerating after the 1870s, came the re-education in '*imperfections*'. Or some would say, as I would, the '*de-education*'.

The economist Joseph Persky's splendid new book, *The Political Economy of Progress: John Stuart Mill and Modern Radicalism* (2016) dates the turning point to Mill's *Principles of Political Economy* (1st ed. 1848). Persky argues persuasively that Mill expresses the triumph of laissez faire, yet also expresses the beginning of the theoretical criticisms of its imperfections. Persky celebrates the criticisms. Like another brilliant colleague of mine at the University of Illinois at Chicago studying such matters – the philosopher Samuel Fleischacker writing on the Blessed Smith – Persky writing on the Amiable Mill claims his man for the left of politics. My colleagues on the left are surely correct in this. Mill under the influence of Harriet Taylor, and under his own unusual openness to views contrary to his own, became the original moderate social democrat, while also being the culmination of classical liberalism. And Smith was indeed an original egalitarian, advocating what he called «the liberal plan of equality, liberty and justice».³ In other words, Mill and Smith were original liberals, advocating laissez faire. Yet Smith was no scorner of the poor, and Mill was also an original socialist, as Persky notes, advocating intervention to repair a growing list of imagined but unmeasured imperfections. Mill therefore was simultaneously the peak of the Rise of laissez faire and the beginning of its long Fall.

² See the lucid discussion of this famous remark by Robert Hanna in the Stanford Encyclopedia of Philosophy at <http://plato.stanford.edu/entries/kant-judgment/supplement1.html>

³ SMITH 1776, vii.9.3.

Existence Theorems are Not Sufficient for Science

The simplest form of the it's-a-unicorn criticism after 1848 is to note with a smirk that in the world after Eden, of course, no 'perfection' can exist. Note the word 'exist', a qualitative absolute. No approximations about it. The argument is heard daily on both sides of the question whether we live under approximately good conditions.

But the argument depends on a humanistic, pure-mathematics notion of exist-or-not. Economists think they are doing quantitative, policy science when they produce another *possible* failure of exchange-tested betterment to achieve utopia, *even though they do not offer evidence of its factual importance*. It would be like producing a model of gravity saying that it *possibly* could be not an inverse square law but an inverse cube law, yet without offering evidence on the factual importance of the new model.

The routine of exist-or-not infects even statistical studies, which are of course supposed to give just such evidence of approximation. The studies depend on a dubious notion derivable it is said from the very numbers themselves, without a scientific judgment of How Big is Big, of statistical 'significance,' yes or no—a notion recently repudiated even by its long-time sponsor, the American Statistical Association.⁴

The problem is not, I repeat, the use by economists of mathematics, or of statistical theory. Most economists and I agree with Léon Walras, who wrote in 1900, «As for those economists who do not know any mathematics. . . yet have taken the stand that mathematics cannot possibly serve to elucidate economic principles, let them go their way repeating that 'human liberty will *never* allow itself to be cast into equations' or that 'mathematics ignores frictions which are *everything* in social science'». ⁵

The problem is the *kind* of mathematics used, arising from the kind of teachers of mathematics the young economists apply to. Most economists learn their mathematics from the Department of Mathematics, not from the Departments of Engineering or of Physics or of Meteorology. Therefore they learn to prove mathematical propositions rather than to use the propositions to study the world. Actual engineers and physical scientists do not care whether the mathematical propositions have been proven back in the Department of Mathematics up to the standard of a Greek-style proof-of-existence-by-contradiction, such as the proof of the irrationality of the square root of 2. They care only that they are useable approximations--that the square root of 2 can be expressed as a rational number approximately, such as 1.41421356237--and that the approximations appear so far to have allowed the bridges that were built with their aid to continue standing. Calculus, for example, was used to study the physical world in all manner of ways during the two centuries after its invention, long before the Department of Mathematics came up with a rigorous proof that it made sense to claim that epsilon was 'infinitesimally' small, but not zero. Schödinger's wave equation, again, has no axioms that prove it by the rules of the Department of Mathematics. But since 1926 it has been used in physics most energetically.

⁴ AMERICAN STATISTICAL ASSOCIATION 2016.

⁵ WALRAS 1874/1900 [1954], p. 47.

Yet to enter a leading graduate program in economics nowadays you need to master real analysis, the calculus-on-steroids that is the foundational course for a student majoring in mathematics. It consists of the proofs of exist-or-not beloved of pure mathematicians, though useless for actual science. An economist so educated by pure mathematicians is tempted therefore to linger in the lovely world of exist-or-not, and to eschew the trouble-filled world of factually large/factually small required of a political economy. She believes (mistakenly, as the physicists could tell her) that a mathematical expression, or an economic theory such as purchasing power parity, is of no use if you cannot arrange a mathematics-department proof of its consistency with axioms. She believes (mistakenly, as the engineers could tell her) that in building a bridge you need to prove theorems. The economist believes that you need a proof of the stability of solar system, or of the Italian economy, before you can propose mathematical expressions for its movements. She believes that calculus must of course be proven (by real analysis) before you can use it to trace a cannon ball, or to maximize a function such as utility. She believes, when she turns to what she thinks is an empirical method, that whether a coefficient in a regression equation 'is positive' is a scientific question.

Alan Turing, a great British mathematician, had in 1939 a famous debate with Ludwig Wittgenstein, a great Austrian philosopher, trained as an aeronautical engineer. Great against great, but from two worlds of mathematical learning.

Wittgenstein: The question is: Why are people afraid of contradiction? It is easy to understand why they should be afraid of contradictions in orders, descriptions, etc. *outside* mathematics. . . . Why should they be afraid of contradictions inside mathematics? Turing says, «Because something may go wrong with the application [of the mathematics]» . . . But if something does go wrong. . . then your mistake was of the kind of using as wrong natural law.

Turing: You cannot be confident about applying your calculus until you know that there is no hidden contradiction. . . .

Wittgenstein: But nothing has ever gone wrong that way yet.⁶

The economists, inhabiting a bridge-building science of policy, should be on Wittgenstein's side, using mathematics. Too often they are on Turing's side, yearning and yearning to prove economic theory free of hidden contradictions.

My point, I repeat, is not anti-mathematical. But what we need is mathematics relevant to the actual economic world, such as Fourier series and general-equilibrium simulations and fuzzy logic. Not their proofs. If you can prove that on such-and-such axioms 'there exists' a competitive equilibrium you have offered nothing of scientific value. I knew the mathematical economist Frank Hahn slightly. To my challenge that general equilibrium existence theorems were useless as political economy he replied that, if he could show how very many and very strange were the conditions necessary for *perfect* competition, he could show «why Margaret Thatcher was wrong». Frank was lingering in the world of thoughts without content, for an ethico-political purpose. Suppose you agree with him that Thatcher was wrong. To prove it, however, you do not need theorems. You need an empirical demonstration that her (brief) flirtation with free-market policies turned out badly, in the actual British world.

⁶ Quoted in HODGES 1983, p. 154

Yet the Humanities are a Necessary First Step

Nor is my point, to look at the other side, anti-humanistic. The humanities – such as literary criticism in the Department of Literature, and number theory in the Department of Mathematics, and transcendent meaning in the Department of Theology – study categories, such as good/bad, lyric/epic, 12-tone/melodic, red giant/white dwarf, hominid/Homo sapiens, prime/not, exist/not. Such humanistic and human categorization, obviously, is a necessary initial step in a scientific argument. You have to know what your categories *are* by well-considered definition, such as Homo sapiens sapiens/Homo sapiens neanderthalensis, before you can *count* their members.

Some definitions are helpful and wise, some misleading and stupid. The humanities, and the humanistic steps in any science, study such questions, offering more or less sensible arguments for a category being wise or stupid. ‘Gravity’ expressed mathematically proved to be wise, ‘phlogiston’ and ‘the ether’ not so much. In 1880 economists and psychologists thought that ‘utility’ was measurable, then not, then a century on, in the form of ‘happiness’, yes again, though criticism from the humanities makes the new Yes doubtful.⁷ Philosophers habitually use on/off, qualitative categories to recommend, for example, reducing the psychology of risk-taking to quantities.⁸ By 1910 many economists and other scientists believed that the category ‘Aryan race’ was helpful and wise in thinking about the economy and the society. Around 1910 the American Progressives, for example, especially the leading economists among them, believed passionately in racism, and advocated policies such as immigration restrictions and the minimum wages to achieve eugenic results in favor of the Aryan race.⁹ Indeed most scientists, such as the great English statistician Carl Pearson, thought it was wise. It was, we later decided, a misleading and stupid and even evil category.

The necessity of the humanistic first step, observe, applies to physical and biological sciences as much as to *les sciences humaines* or *die Geisteswissenschaften* or plain Italian *scienza*. Meaning is scientific. The Danish physicist Niels Bohr wrote in 1927, that «It is wrong to think that the task of physics is to find out what the world is. Physics concerns what we can say about it».¹⁰ We. Humans. Say. With words. About *geisteswissenschaftliche* categories the German-American poet Rose Äuslander wrote, «In the beginning / was the word / and the word was with God / And God gave us the word / and we lived in the word. / And the word is our dream / and the dream is our life».¹¹ Truer words were never spoken. We dream of categories, in our metaphors and stories, and with them make our lives, especially

⁷ MCCLOSKEY 2012.

⁸ Lining up qualitative arguments with a *qualitative* theory of probability, by contrast, is described in STEFÁNSSON 2016.

⁹ LEONARD 2016.

¹⁰ Quoted in *Niels Bohr: Reflections on Subject and Object* (2001) by Paul McEvoy, p. 291. The provenance of the remark is a little hazy, but it is well known. In Danish, the philosopher Hans Siggaard Jensen informs me, it was something like «Fysik er ikke om hvordan verden er, men om hvad vi kan sige om den».

¹¹ «Am Anfang/war das Wort/und das Wort/war bei Gott/Und Gott gab uns das Wort/und wir wohnten/ im Wort/ Und das Wort ist unser Traum/ und der Traum ist unser Leben».

our scientific lives saying the world. There is nothing scary or crazy or French or post-modern about such an idea. The 'hardest' sciences rely on human categories.

Yet if you are making a quantitative point, as must happen in a policy science like economics, you must after the humanistic step proceed to the actual count. Then perhaps you can prove Margaret Thatcher wrong. The purpose of a scientific assertion is to change minds. But it is mischievous to seek to change minds merely by the 'insight' that is imagined to come from pure theory, such as the scores of solution concepts in game theory, unless you have checked the theory against facts of our world and shown that the insight is quantitatively important. Otherwise we are liable in economics to be misled by our political passions, as Frank Hahn was. Such is the merit of numbers. If you know that real income per head has risen in Italy since 1800 by a factor of about thirty, then your political impulse to condemn 'capitalism' as impoverishing is at least disciplined. You may continue to be a socialist, but you will have to sharpen your argument in some other way than going on and on using the alternative false-fact of impoverishment.

The unicorn argument against the market, I repeat, depends on a common-sense piece of non-sense. It is that 'after all in this vale of tears no perfect thing can exist'. As Kant, the theorist of perfection, said, «Out of the crooked timber of humanity, no straight thing was made».¹² We know such a proposition a priori. Imperfection by such a non-quantitative standard is not, as Kant also put it, a 'synthetic' (that is, an empirical) statement. And so, says the left wing of economic politics (the right also I say offers often such evidence-free logic), 'perfect' competition cannot *exist*. And so market-tested betterment fails. Despite the factor of thirty. QED. It is being said to fail categorically, in Kantian terms by a 'synthetic a priori'. An opening gambit ends the game in four moves. Queen's Gambit Declined. Concede.

It is a silly argument, though heard on all sides. On the left, Paul Samuelson and Joseph Stiglitz and some of their followers argue without measurement that a *perfect* market cannot *exist*, and therefore government intervention is desirable/necessary/good. On the right, Ludwig von Mises and Friedrich Hayek and some of their followers argue without measurement that a *perfect* central plan cannot *exist*, and therefore socialism is impossible/impractical/bad. Notice that I am being politically fair in the accusation of silliness.

The un-measuring silliness has been a persistent feature of economics since Athens or Salamanca or Edinburgh or Cambridge, England or Cambridge, Massachusetts or Chicago, Illinois. It substitutes an existence theorem for a quantitative judgment, substituting blackboard economics for factual inquiry. No need to measure. Decide on humanistic grounds that the actual economy falls into this or that qualitative category – the labor-excess category or the irrationality-of-consumers category – and then go home. Or, rather, go to politics.

¹² «Aus so krummem Holze, als woraus der Mensch gemacht ist, kann nichts ganz Gerades gezimmert werden» is from Kant's Idea for a Universal History on a Cosmopolitan Plan (1784), Sixth Thesis, translated in <https://www.marxists.org/reference/subject/ethics/kant/universal-history.htm#n2>. The remark was made famous by Isaiah Berlin. Kant took it from the Bible, in Ecclesiastes 1:15, «That which is crooked cannot be made straight». One stands amazed that many secular students of Kant insist that his upbringing as a German Pietist had no influence on his thinking.

Yet a quantitative judgment needs, of course, a measurement. The policy question is *how far* actually existing plans or actually existing markets deviate from a pretty good result. The ‘pretty good’ locution comes from the political scientist John Mueller’s important book of 1999, *Capitalism, Democracy, and Ralph’s Pretty Good Grocery*. He argues that ‘pretty good’ is all we can hope for, which is approximately good or bad in a sense we can measure. We better not attempt utopia, considering how far from pretty good the attempts at utopia have ranged, from theocracies in Geneva and Iran to socialism in New Harmony, Indiana and Stalinist Russia, and now in Venezuela.

I myself would judge empirically that central planning, or even its socialism-lite version of heavy regulation as in Italy or the USA, have on the whole in their 20th-century versions been pretty bad for the wretched of the earth. Consider the Chinese under Mao or the Indians under the License Raj. I judge that if we want to actually help the poor, as everyone should want, then *laissez faire* is a better choice, as indeed the recent liberalizations of the economies of China and India suggest. You may disagree. But anyway such a judgment is factual and quantitative, not humanistic and categorical – even though the humanistic and categorical step, I repeat, is necessary to start.

That is, I myself judge *quantitatively* that the experience of East Germany compared with West Germany, say, shows that thorough central planning leads to incomes half or less of what can be attained in a more *laissez-faire* economy; or that the same is shown by Hong Kong vs. what we used to call Red China. Thomas Sowell puts it this way:

While capitalism has a visible cost – profit – that does not exist under socialism, socialism has an invisible cost – inefficiency – that gets weeded out by losses and bankruptcy under capitalism. The fact that most goods are more widely affordable in a capitalist economy implies that profit is less costly than inefficiency. Put differently, profit is a price paid for efficiency.¹³

Profit including land rent is about 20 percent of national income in the United States.¹⁴ The inefficiency of socialism, judging from examples such as East Germany and North Korea, is more like 50 percent. Generously. Case closed, empirically. Well, maybe not closed, but at any rate the numbers speak to a relevant scientific question. The categories ‘capitalism’ or ‘socialism’ by themselves do not. In some possible worlds, central-planning-and-nationalization socialism *could* ‘work’. That it doesn’t work very well in our world is an empirical fact, if true, not a qualitative judgment.

You may disagree with me, I repeat, on the quantitative judgment. You may argue for example in the style of Duhem’s Dilemma that I have not properly controlled the experiments, such as for the especially tyrannical character of East German or North Korea, which somehow is not in the same humanistic category, if in a milder form, as taxation and regulation backed by police powers in Sweden and the United States. But the point remains that when we talk of measurement we have at least initiated a liberal discussion among friends, with some chance of eventual resolution. If we stay with the blackboard economics

¹³ SOWELL 2015, p. 114. Donald Boudreaux drew my attention to the passage

¹⁴ GIOVANNONI 2014, Figure 8, p. 21. The ‘property’ complement of the share of income accruing to employees, with a attribution of the laboring part of mixed incomes (such as those of proprietors such as farmers) rises from 16 percent in 1960 to 22 percent in 2012. Enterprise profit should exclude rents, which are included here. But because rents are also absorbed by socialist states, the category (determined by the humanities) here is about right.

of exist-or-not we will argue endlessly and increasingly angrily about what kind of unicorn we scorn, blue or red. The left says that a perfect market is the unicorn, a mythical beast. The right says that on the contrary a perfect government is the unicorn, equally mythical. More likely, we will stop listening to the other side, and never get to a reasoned, quantitative agreement about policy. *Audite et alteram partem* was inscribed over the door of many a medieval city hall. «Listen even to the other side» is a good motto for science, too.

Are the Economic Boxes Still Empty?

The humanities I repeat one more time *are* necessary for a policy science: What is the correct definition of ‘labor’s share’? What is the most sensible definition of ‘externalities’? What is the criterion for the ‘good’ functioning of a market? Have we chosen the accounting categories comprehensively?

But categories, I have said, are the beginning of a policy discussion, not the end. Too many economists think they are the end. The economic historian John H. Clapham made such a complaint in 1922, when the theorists, as they still do nowadays, were proposing on the basis of a diagram or two that government should subsidize allegedly increasing-returns industries. The economists were silent on how to attain the knowledge how to do it, or how *much* their non-quantitative advice would actually help an imperfect government to get closer to the perfect society, if it started from a pretty good, or pretty bad, actual society. Clapham wrote with irritation that the silence was discouraging to «the student not of categories but of things». (The ‘categories’ are the humanistic steps in a science; ‘thing’ are the next steps, a history with measurement.) He chided A. C. Pigou in particular. One looks, Clapham wrote, into «*The Economics of Welfare* to find that, in nearly a thousand pages, there is not even one illustration of what industries are in which boxes [that is, in which theoretical categories], though many an argument begins, ‘when conditions of diminishing returns prevail’ or ‘when conditions of increasing returns prevail,’ as if everyone knew when that was». Clapham ventriloquized the reply of the theorist imagining without quantitative oomph«“those empty economic boxes»” a reply heard yet, with no improvement during the intervening 95 years in its plausibility: «If those who know the facts cannot do the [later econometric] fitting, we [theorists finding grave faults in the economy so easily remedied by our splendid proposals, such as an industrial policy favoring increasing returns industries] shall regret it. But our doctrine will retain its logical and, may we add, its pedagogic value. And then you know it goes so prettily into graphs and equations».¹⁵

Long ago I expressed such a problem with exist-or-not in a theorem, one that seems to fit pretty well the history of disputes in economics since the beginning. I called it the ‘A-Prime, C-Prime Theorem,’ as follows.¹⁶ Suppose a set of assumption *A* characterizing the economy, such as a convex production possibility set, implies a set of conclusions about policy, *C*, such as that free international trade is desirable. With such and such general (or not so general, but anyway categorical, non-quantitative) assumptions *A*, there exists – strictly implied by *A* – a state of the world, a conclusion, which we may name *C*. A typical statement in economic theory is, «if information is [perfectly] symmetric, a desirable equilibrium of the game exists» or, «if people are [perfectly] rational in their expectations in

¹⁵ CLAPHAM 1922, 311, 305, 312.

¹⁶ MCCLOSKEY 1989.

the following sense, buzz, buzz, buzz, then there exists an equilibrium of the economy in which monetary policy is useless». Fine. That's qualitative, humanistic, theoretical, categorical work, well worth doing as a first step in a science.

Now imagine an *alternative* set of assumptions about the economy, A' , which is to say 'A prime'. Just such a re-imagination is what happened for example in the transition from rational-expectations to neo-Keynesian macroeconomics, or from competitive, free-entry to monopolistic, excess-capacity microeconomics. Naturally, if you change assumptions – introduce households that do not operate on lightning calculation, say; or make information a little asymmetric; or introduce any Second Best, such as monopoly or taxation; or admit non-convexities in production, those increasing returns industries – the conclusion is going to change, at any rate in general.

Of course. There is nothing profound or surprising about such a claim. Changing your assumptions might change your conclusion, a little or quite a lot depending on the world's facts. Call the new conclusion C' , saying that free international trade is under the new assumptions *not* desirable. So we now have both the old and disgracefully right-wing A implies C and the fresh, publishable, Nobel-worthy, and splendidly left-wing novelty, A' implies C' .

Yet we can add *another* prime, and, as the mathematicians say, proceed as before, introducing some other possibility for the assumptions, A'' , which implies its own C'' , and we get still another publication in the *Journal of Economic Theory*. And so forth: A''' implies C''' without limit. And on and on and on, until the economists get tired, and go home, or to politics.

Any economist who has lived through the rise and fall on the blackboards of abstract general-equilibrium theorizing or free-lunch Keynesian theorizing or activity-analysis theorizing or selfish game-theory theorizing or rational-expectations theorizing or neo-institutional theorizing or behavioral economics theorizing (I am offering predictions about those last two; no extra charge), knows that A -prime, C -prime goes nowhere scientifically. And so:

The A-Prime, C-Prime Theorem

For each and every A mapping into C there exists an A' or A'' mapping into C' or C'' or whatever, disjoint with the original C . Proof: Left as an exercise for the reader.□

What has been gained scientifically? The A-Prime, C-Prime Theorem is a good description of how economic argument proceeds when it's not seriously tested, as it never is if one stays with tests of statistical significance (to speak of a bankrupt method), or in any case if one does not take the quantitative step seriously and inquire into actual magnitudes. It is pure thinking, «thoughts without content», in Kant's phrase – philosophy or theology or pure mathematics or economic theory, excellent fields of study, among my favorites, in three of which I have in fact published, but none of them sufficient for a policy science. The theorizing of imperfections has not been disciplined by any serious inquiry into How Much, which might involve serious simulations or other serious ways of facing up to the critique of judgment entailed in the issue of How Big is Big. The theorizing, and the criticism or defenses of market society they are supposed to support, are at present usually qualitative, not quantitative. They are not organized to allow actual quantities into the story.

The List of “Existing” Imperfections is Very Long, But Unmeasured

I claimed at the outset that the Rise and Fall of laissez-faire liberalism is a useful framework for the history of economics. I have just claimed, by way of justifying the first claim, that an error of scientific method, which we can study in the rhetoric of economics, caused the Fall. Let me give some details.

Since the founding geniuses of Classical economics, an exchange-tested betterment (a locution to be preferred to ‘capitalism’, with its erroneous implication that capital accumulation, not a democratization of ingenuity, was the initiating cause of the Great Enrichment since 1800) has enormously improved the welfare of large parts of a humanity now seven times larger than in 1800, and bids fair in the next half century so to enrich everyone on the planet.¹⁷ Look again at China and India (and stop saying, «But not *everyone* in those places has become rich»; she will, as the European history shows, at any rate by the ethically relevant standard of basic comforts denied to most people in England and France before 1800, or in China before its new beginning in 1978, and India’s in 1991). And yet especially the left in its worrying routinely forgets this most important secular event since the invention of agriculture – the Great Enrichment by 1,000 or 3,000 or 10,000 percent per capita, depending on which place one is talking about and what technique of measurement one favors for improvements in the quality of goods and services. The left, and the center, and some on the right go on worrying and worrying about imperfections, in a new version every half generation or so. As Schumpeter put it in 1942, falling in with the doubts concerning ‘perfect’ competition after 1848, the imagined imperfections «have shaken that unqualified belief in its virtues cherished by the generation which flourished between Ricardo and Marshall – roughly, J. S. Mill’s generation in England and Francesco Ferrara’s on the Continent. Especially the propositions that a perfectly competitive system is ideally economical of resources and allocates them in a way that is optimal with respect to a given distribution of income – propositions very relevant to the question of the behavior of output – cannot now be held with the old confidence» (Schumpeter 1942, 1950; p. 103).

Here is a partial list of the worrying pessimisms (you will think of additions, and I ask you to write to me and educate me about them), which each has had its day of fashion since the time, as the historian of economic thought Anthony Waterman put it, «Malthus’ first [1798] *Essay* made land scarcity central. And so began a century-long mutation of ‘political economy,’ the optimistic science of wealth, to ‘economics,’ the pessimistic science of scarcity».¹⁸

1. Malthus worried that workers would proliferate.
2. Ricardo worried that the owners of land would engorge the national product.
3. Marx worried, or celebrated, depending on how one views historical materialism, that owners of capital would at least make a brave attempt to engorge it.
4. Mill worried, or celebrated, depending on how one views the sick hurry of modern life, that the stationary state was around the corner. Then the economists, many on the left but some also I say on the right, or the center, in quick succession

¹⁷ If you are not persuaded, see MCCLOSKEY 2016, and then be so.

¹⁸ WATERMAN 2012, p. 425. I have slightly modified the punctuation.

1848 to the present – at the same time that exchange-tested betterment was driving real wages up and up and up – commenced worrying about imperfections and pessimisms they discerned concerning ‘capitalism’:

5. greed, offensive to Christians
6. alienation, as in the Young Marx
7. the uneducated consumption tastes of the workers
8. the drinking habits of the workers (thus Irving Fisher)
9. infant industries (List in Germany, Carey in the United States)
10. the unique national histories of economies (the German Historical School), as against the analytic egalitarianism assumed in ‘English’ economics¹⁹
11. the lack of bargaining strength by the workers
12. racial impurity
13. women working
14. immigration of lesser breeds
15. the race to the bottom in wages, considering that there was an easy eugenic solution such as immigration restriction, compulsory sterilization, and the minimum wage (all advocated by most of the American economics profession c. 1910)
16. neoclassical theory being insufficiently evolutionary (Veblen; Alchian)
17. monopoly and the trusts (Hovenkamp 1990)
18. imperialism, the last stage of capitalism (Lenin; Hobson)
19. imperialism as robbery (vs. Davis and Huttenbach 1988)
20. adulterated food if no regulation
21. Veblen effects: demand curve sloping up
22. unemployment (a new word with Beveridge’s book of 1909)
23. lack of coordination (rationalization in the 1920s)
24. self-interested markets so obviously bad, unlike the wise and good social engineers in government
25. business cycles (eventually Schumpeter; Hayek; Keynes)
26. underinvestment in increasing-returns industries (as Pigou argued)
27. externalities
28. British overinvestment abroad (vs. Edelstein 1982; McCloskey 1980)
29. under-consumption (dating back to Malthus and the general glut; then Keynes; now the neo-Keynesians and the new Keynesians)
30. monopolistic competition
31. separation of ownership from control (Berle and Means)
32. lack of planning (vs. Mises)
33. the economy is embedded in society, making prices conventional (Karl Polanyi)
34. price-governing markets are only recent, and optional (Karl Polanyi; Moses Finley)
35. post-War stagnationism (Keynes, Hansen)
36. investment spillovers
37. unbalanced growth
38. capital insufficiency (Harrod/Domar/Solow models; William Easterly vs. ‘capital fundamentalism’)
39. businesspeople do not price by marginal cost or marginal revenue, but by average plus markups
40. predatory pricing leads to monopoly
41. few competitors in an ‘industry’ leads away from price equal to marginal cost
42. absence of entrepreneurs in certain cultures, such as China and India

¹⁹ PEART AND LEVY 2005.

43. dual labor markets (W. Arthur Lewis)
44. cost-push inflation (Otto Eckstein)
45. capital-market imperfections
46. oligopoly
47. peasant irrationality (vs. Theodore Schultz)
48. cultural irrationality
49. economic behavior has motives beyond self-interest
50. low-level traps, the cycle of poverty (W. Arthur Lewis; Gunnar Myrdal)
51. the prisoner's dilemma (much later, vs. Elinor Ostrom)
52. public goods cannot be supplied privately (Samuelson; vs. Coase, Demsetz)
53. *the failure to define property rights (Alchian, Demsetz, Coase: one of a few, like those immediately following here signaled by an asterisk, from the political right)
54. *incomplete contracts (Cheung)
55. *overfishing (H. Scott Gordon [1954] and Anthony Scott [1955])
56. *tragedy of the commons (Garrett Hardin)
57. over-population (Hardin's motive)
58. *transaction costs (Coase)
59. *public choice, entailing public servants with interests of their own (Buchanan, Tullock)
60. *regulatory capture (the ICC case being Gabriel Kolko 1965; Stigler 1971)
61. *free riding (Mancur Olson 1965)
62. *sclerosis of institutions (Mancur Olson 1982)
63. missing markets (George Akerlof 1970; Joseph Stiglitz 1984)
64. the Cambridge capital controversy and the indefinability of capital (Piero Sraffa; Joan Robinson; Geoffrey Harcourt; see above, Ricardo)
65. informational asymmetry (Akerlof)
66. unions as good monopolies (vs. H. Gregg Lewis, 1955-1980)
67. third-world exploitation (see above, imperialism)
68. advertising (Galbraith 1958)
69. public underinvestment (Galbraith 1958)
70. without fine tuning of the economy, we are doomed
71. large scale econometric models are the way forward
72. the invisible hand is mere magic unless proven by axioms mathematically
73. the conditions sufficient in logic for invisible-hand results are unreasonable (Hahn; Arrow; Debreu)
74. false trades out of equilibrium make it impossible to conclude that supply equal to demand is optimal
75. any imperfection throws economic analysis into a hopeless world of second-best (Lipsey and Lancaster 1956)
76. all policy arguments, such as the effect of minimum wages, must be expressed in general equilibrium, or else they are inconclusive
77. most economic propositions, such as downward sloping demand curves, are only provable econometrically
78. without econometrics we have no empirical proofs of anything
79. most econometric results have serious flaws
80. the middle-income trap
81. history is irrelevant: what matters is the future
82. history is decisive: what matters is the past
83. path dependency (Brian Arthur 1994; Paul David 1985)
84. the economy is a complex system, with chaos and catastrophe (Arthur 1994)
85. worker cooperatives are lamentably rare considering that they are always better than corporations or proprietorships

86. the lack of international competitiveness (Michael Porter 1990)
87. consumerism (see above, bad taste of workers; advertising)
88. consumption externalities (Fred Hirsch; Robert Frank)
89. overworking (Schor 1993)
90. unemployment and inefficiency results from menu costs in the product market (neo-Keynesian neoclassicism)
91. knowledge has zero opportunity cost, but is expensive to produce (Paul Romer)
92. irrationality (behavioral economics)
93. irrational entrepreneurs (Schumpeter; Keynes; Akerlof and Schiller)
94. hyperbolic discounting
95. too big to fail
96. environmental degradation
97. absence of considerations of gender in economics (Julie Nelson)
98. underpaying of care workers (Nancy Folbre)
99. GDP is a poor indicator of anything important (Stiglitz and others)
100. prices are influenced by an unjust distribution of income, and therefore are irrelevant to policy for a just society
101. profit is against people and social well-being
102. overpayment of CEOs
103. without artificially high wages we will not get labor-saving innovation (Kaldor; Habakkuk; Robert Allen; Robert Reich)
104. the government has innovated most (Mazzucatto)
105. any imperfection – orphan drugs, for example – shows that capitalism is bad on balance, even if the imperfection is caused by government
106. neo-liberalism has impoverished people worldwide
107. neo-stagnationism (Tyler Cowen 2011, 2014; Robert Gordon 2016); and finally:
108. rising inequality, soon (Thomas Piketty)

Thomas Piketty's book *Capital in Twenty-First Century*, worrying that the rich might someday get richer, expresses only the latest, you see, of the leftish (and some rightish) worries about imperfections in 'capitalism'. One can line up the later items in the list, and some of the earlier ones revived à la Piketty or Krugman, with particular Nobel Memorial Prizes in Economic Science. I will not name the men (all men, in sharp contrast to the method of Elinor Ostrom, Nobel 2009), but can reveal here the formula. First, discover or rediscover a necessary or sufficient condition for *perfect* competition or a *perfect* world (in Piketty's case, for example, a more perfect equality of income). Then assert without evidence (here Piketty does better than the usual practice) but with suitable mathematical ornamentation that the condition might be imperfectly realized or the world might not develop in a perfect way. Perfection, after all, is a unicorn. Then conclude with a flourish (here however Piketty joins the usual low scientific standard) that 'capitalism' is doomed unless we experts intervene with a sweet use of the monopoly of violence in government to implement anti-trust against malefactors of great wealth, or subsidies to diminishing-returns industries, or foreign aid to splendidly honest governments, or money for obviously infant industries, or the nudging of sadly childlike consumers or, Piketty says, a tax miraculously arranged worldwide on inequality-causing financial capital.

What is peculiar about the history of imperfection-finding, and, from the left, the proposed statist corrections, is that almost never does the economic thinker feel it necessary to offer evidence that his proposed state intervention will work as it is supposed to, and

almost never does he feel it necessary to offer evidence that the imperfectly attained necessary or sufficient condition for perfection is large enough in the actual world such that its imperfect fulfillment reduces by very much the performance of the economy in aggregate. Meanwhile since 1848 the real income of many of the wretched of the earth was increasing by a factor of thirty.

As the amiable Joe Stiglitz, prize student of the amiable Paul Samuelson (Samuelson being only the first of two Nobels to graduate from Gary, Indiana High School, the second being Joe himself), put it: «Whenever there are externalities – where the actions of an individual have impacts on others for which they do not pay or for which they are not compensated – markets will not work well. But recent research has shown that these externalities are pervasive, whenever there is imperfect information or imperfect risk markets – that is always».²⁰ The ‘recent research’ Joe has in mind showing that imperfect information is relevantly ‘pervasive’ is ‘research’ on the blackboard. No one has offered a criterion short of perfection for ‘not work well’. No one has measured how ‘pervasive’ externalities arising from imperfection is, always.

By a figure of rhetoric called by the Romans *copia*, the sheer number of the briefly fashionable but seldom or never measured ‘imperfections’, fully 108 here, has taught young economists to believe that exchange-tested betterment has worked disgracefully badly – even though all the quantitative instruments agree that it has worked since 1800 spectacularly well. The youngsters are taught the optimality of supply equals demand for a week or so, and then in the rest of the course are taught the 108 imperfections. They innocently suppose that their elders such as Stiglitz or Samuelson or Pigou *must* have found some actual facts behind what goes so prettily into graphs and equations. The youngsters therefore become huffy and scornful when some doltish economic historian such as Clapham or McCloskey asks for actual scientific evidence.

A rare exception to the record of not checking out what oomph might characterize an alleged imperfection was the book of 1966 by the Marxists Paul Baran and Paul Sweezy, *Monopoly Capital*, which actually tried (and honorably failed) to measure the extent of monopoly overall in the American economy.²¹ For most of the other worries and the corresponding statist solutions on the list – such as that externalities obviously require government intervention (as have declared in historical succession Pigou, Samuelson, and Stiglitz) – the economists have supposed that this or that reason the economy, for is horribly malfunctioning and obviously needs immediate, massive intervention from government, advised by wise heads such as Pigou, Samuelson, and Stiglitz. The economic scientists have not felt it worth their scientific time to show that the malfunctioning matters much in aggregate.

By contrast, economists on the right, such as Arnold Harberger and Gordon Tullock and H. Gregg Lewis or Deirdre McCloskey, claiming that the economy works pretty well through an exchange-tested betterment inspired by equality before the law and equal opportunities to have a go, have sometimes actually done the factual inquiry, or have at least

²⁰ Stiglitz interview in *The International Herald Tribune*, October 11, 2006.

²¹ BARAN AND SWEEZY 1966. It is significant that Sweezy’s prize-winning Ph. D thesis in the Harvard Economic Series (1938) was on the early monopolization of the English coal trade.

suggested how it might be done.²² The performance of Pigou, Samuelson, Stiglitz, and the rest on the left (admittedly in these three cases a pretty moderate ‘left’) would be as though an astronomer proposed on some qualitative assumptions that the hydrogen in the sun would run out very, very soon, requiring urgent intervention by the Galactic Empire, but didn’t bother to find out with serious observations and serious quantitative simulations and serious applied mathematics *roughly how soon* the sad event was going to happen.

An instance is Robert Solow’s influential assertion that saving rates do not affect the rate of growth in the steady state. Down to the present the growth theorists conjure with the steady state, despite the calculation made soon after Solow by a Japanese economist, Ryuko Sato, concluding that to get back to 90 percent of the steady state after a disturbance would take. . . about a century.²³ Mostly in economic theory it has sufficed to show the mere *direction* of an ‘‘imperfection’ on a blackboard – Samuelson’s ‘qualitative theorems’ so lamentably recommended in *Foundations* – and then await the telephone call from the Swedish Academy quite early some October morning.

One begins to suspect that the typical leftist – most of the graver worries have come from thereabouts, naturally enough, though perhaps not so naturally considering the payoff from ‘capitalism’ for the working class in the Great Enrichment – starts with a root conviction that exchange-tested betterment is seriously defective. The conviction is acquired at about age 16, when the proto-leftist discovers his neighbor’s poverty but has no intellectual tools to understand its source. I myself followed such a pattern, and therefore became for a time a Joan-Baez socialist, singing labor union songs, with guitar accompaniment. Then the lifelong ‘good social democrat’, as he describes himself (and as I for a while described myself), when he has started to become a professional economist, looks around, in order to support the now deep-rooted conviction innocently acquired, for any *qualitative* indication that in some imagined world the conviction would be true, without bothering to find numbers drawn from our actual world that show it to have scientific oomph economy-wide. An example, examined in detail through surveys of economists by Jason Briggeman, is the widespread belief that the Food and Drug Administration is justified in requiring that drugs be subject to ‘pre-market testing for efficacy’. None of the economists Briggeman asked could offer factual evidence for the claim that such a policy improves consumer welfare, considering the probability of a Type II error.²⁴ The pattern is the utopianism of good-hearted leftward folk who say, «Surely this wretched society, in which some people are richer and more powerful than others, can be greatly improved. We can do *so much* better!» The utopianism springs from the logic of stage theories, conceived in the eighteenth century as a tool with which to fight traditional society, as in *The Wealth of Nations* among lesser books. Surely, the leftists say indignantly, history is not finished. *Excelsior!*

True, the right can be accused of utopianism as well, a utopianism having its own adolescent air, when it asserts without evidence that we live already in the best of all possible worlds. Some of the older-model Austrian economists, and some of the Chicago School who

²² HARBERGER 1954 on allocative monopoly; Tullock 1967 on rent seeking; H. Gregg Lewis 1963, 1986 on trade union success; McCloskey 1970 on overinvestment abroad.

²³ R. SATO 1963. Amusingly, another Japanese Sato, one K. SATO, immediately questioned the claim, bringing it down to 30 years. But 30 years still makes steady-state analysis mistaken as policy. A treatment of the state of play is REISS 2000.

²⁴ BRIGGEMAN 2015.

have lost their taste for engaging in serious testing of their truths, act so. Yet, admitting that there is a good deal of blame to spread around in economics for developing a policy pseudo-science without measurement, the leftward refusal to quantify about the system as a whole seems more prevalent and more dangerous.

I have a beloved and extremely intelligent Marxist friend who says to me, «I *hate* markets!» I reply, «But Jack, you delight in searching for antiques *in markets*». «I don't care. I *hate* markets!» The Marxists such as Jack have their own specialized history of empty economic boxes. They have worried in sequence that the typical European worker would be immiserized, for which they had little evidence, then that he would be alienated, for which they had little evidence, then that the Third-World worker in the periphery would be exploited to benefit the worker in the core, for which they had little evidence. Recently the Marxists (and admittedly much of the rest of the society, educated in elementary school to worship the forest) have commenced worrying about the environment – on what the late Eric Hobsbawm called with a certain distaste natural in an *old* Marxist «a much more middle-class basis».²⁵ We await their evidence, and their proposals for what to do about it, short of having us all return to Walden Pond and the life of 1845, or having us all commit suicide and leave the world to less evil species.

Long ago I had a nightmare. I am not much subject to them, and this one was vivid. It was an economist's nightmare, a Samuelsonian one. What if *every single* action, I dreamt, had to be performed *exactly* optimally? Maximize Utility subject to Constraints. Max U s.t. C . *Precisely*. Suppose, in other words, that you had to reach the *exact* peak of the hill of happiness subject to constraints, with *every single* reaching for the coffee cup or *every single* step in the street. You would of course fail in the assignment repeatedly, frozen in fear of the slightest deviation from optimality. In the irrational way of nightmares, it was a chilling vision of what economists call rationality. A recognition of the impossibility of *exact* perfection lies behind Herbert Simon's satisficing, Ronald Coase's transaction costs, Steven N. S. Cheung's contractual incompleteness, George Shackle's and Israel Kirzner's reaffirmation of the wisdom of the baseball player and coach, Yogi Berra: «It's hard to predict, especially about the future».²⁶

We young American economists and social engineers in the 1960s, innocent as babes, were sure we could attain predictable perfection. 'Fine tuning' we called it. It failed, as exact perfection always must. John Mueller urges us, as I noted, to seek merely the 'pretty good' – which would require some fact-based estimate that we are not (or are: sadly, the empirical results sometimes run alarmingly contrary to one's ideology) terribly far from optimality in, say, Garrison Keillor's imagined Lake Wobegon, Minnesota, in which Ralph's Pretty Good Grocery is in its advertising comically modest and Scandinavian («If you can't find it at Ralph's, you probably don't need it»). Mueller reckons that capitalism and democracy as they actually, imperfectly exist in places like Europe or its offshoots are pretty good. Or they *might* be pretty good. We don't actually know until we've made the factual estimates of how far from perfection all the imaginable imperfections take us. Mueller and I reckon that the failures to reach perfection in, say, the behavior of Congress or the equality of the U.S. distribution of income are probably not large enough to matter all that much to the performance of the polity or the economy. After all, we are immensely more free and more

²⁵ HOBBSAWM 2011, p. 416.

²⁶ Simon 1947, Shackle 1972 (1992), Coase 1960, Kirzner 1979.

rich than our ancestors in 1800. The Great Enrichment is a powerful empirical test, justifying optimism about exchange-tested betterment. Or not. But if you say not, you as a scientist will want to provide contrary evidence, and not rely merely on lofty sneering.

Piketty, for Example, Does Not Grasp the Response of Supply to Scarcity

The result of the ever-lengthening list of imperfections has been that young economists do not feel that they need to study the history of economic thought, or 'price theory' as understood by economists such as Armen Alchian or George Stigler or Steven Cheung, even up to the level of grasping what the political economists of 1848 understood exchange-tested betterment to be.

You will challenge me on the point. Surely economists who master Mas-Collel-Whinston-Green can handle anything that such primitives as Mill or Marshall or Friedman knew. Surely. But, alas, no. Because of the abstraction of exist-or-not and the List of Imperfections, the young economists, and many of the elderly ones, rush on to splendid versions of Max U and instrumental variables before they understand. . . well . . . economics. They do not understand the wisdom of 1848. They are therefore singularly ill-equipped to criticize it.

Let me turn again to Piketty as a recent example, the last of the List. I do not mean to torture him in particular. In many ways I admire his book of 2013 (2014), and gave it a long and respectful review, concluding that it was a brave attempt, though ethically and conceptually and statistically flawed to the point of being simply wrong. (Scientists, after all, are often wrong, even if they are excellent. She who is perfect, quantitatively speaking, cast the first stone.)

An early passage, beginning at the bottom of page 6 of the English translation, I must say, brought me up short. It showed that like many of the proponents of the numerous imperfections listed above, Piketty does not grasp how markets are *alleged* to work according to the understanding of 1848, which originated in Cantillon and Smith and especially in Malthus and Ricardo, was given mathematical form by Jules Dupuit, was clear enough in Mill and Ferrara, and was perfected later by Walras and Marshall and Samuelson and Arrow and the rest.

Piketty begins the passage by seeming to concede to his *neoclassical* opponents (he declares himself early in the book to be a proud early Classicist, Ricardo plus Marx). «To be sure, there exists in principle a quite simple economic mechanism that should restore equilibrium to the process [in this case the process of rising prices of oil or urban land, leading to a Ricardian Apocalypse of the rich suppliers of oil or land engorging the national product]: the mechanism of supply and demand. If the supply of any good is insufficient, and its price is too high, *then demand for that good should decrease, which would lead to a decline in its price*».

The (English) words I italicize mix up movement along a demand curve with movement of the entire curve, a first-term error at university. The correct analysis (we tell our first-year, first-term students by around week two or three) is that if the price is 'too high' it is *not* the movement of the whole demand curve that 'restores equilibrium' (though

the high price in the short run does give people a reason to conserve on oil or urban land, with smaller cars and smaller apartments, moving as they in fact have done in both cases during the past forty years up along their otherwise stationary demand curves *ceteris paribus*).

What actually, in our economic world, 'restores equilibrium' (if by that locution is meant 'a nicely low price') is instead an eventual *outward-moving supply curve*. The supply curve moves out because entry is induced by the smell of super-normal profits, in the medium and long run (to use the Marshallian vocabulary). New oil deposits are discovered, new refineries are built, new suburbs are settled, new high-rises to save urban land are constructed, as has in fact happened massively since, say, 1973, unless government has restricted oil exploitation (usually on environmental grounds) or the building of high-rises (usually on corrupt or aesthetic grounds).

Piketty goes on – remember: it does not occur to him that a high price causes after a while the *supply* curve to move out; he thinks the high price will cause the demand *curve* to move *in*, leading to 'a decline in price' (of the scarce item, in his case oil or urban land) – «such adjustments might be unpleasant or complicated». To show his contempt for the ordinary working of the price system as he misunderstands it, and as the political economists finally by 1848 had come to understand it, he imagines comically that «people should . . . take to traveling about by bicycle». The substitutions along a given demand curve, or one now mysteriously moving *in*, without any supply response, «might also take decades, during which landlords and oil well owners might well accumulate claims on the rest of the population» (now suddenly he has the demand curve moving *out*, for some reason faster than the supply curve moves out, though he does not in fact acknowledging any movement in the supply curve) «so extensive that they could they could easily [on grounds not argued] come to own everything that can be owned, including», in another use of the comical alternative, «bicycles, once and for all».

Having butchered the elementary analysis of entry and of new supplies, which after all is the economic history of the world, he speaks in heavy jest of «the emir of Qatar» as a future owner even of those bicycles. (The phrase was written before the recent and gigantic expansion of oil and gas exploitation in Canada and the United States.) In short, he concludes triumphantly, having seen through the obvious silliness to be found among those rich-person-friendly neoclassical economists, rather in the style of a bright yet market-hating first-year student in the third week of elementary economics, «the interplay of supply and demand in no way rules out the possibility of a large and lasting divergence in the distribution of wealth linked to extreme changes in certain relative prices, . . . Ricardo's scarcity principle».²⁷

Piketty the economist, you see, does not understand supply response. In keeping with his position as a man of the left, he has a vague and confused idea about how markets are *supposed* to work, and especially about how supply is supposed to respond to higher prices. One might offer the mild suggestion that if he wants to offer pessimistic conclusions concerning «a market economy based on private property, if left to itself» (571) he should learn what elementary economics, agreed to by all who have studied it enough to understand

²⁷ PIKETTY 2014, 6-7.

what it is saying, whether or not it in fact characterizes the actual world, does say how a market economy based on private property behaves if left to itself.

I was so startled by the passage that I went to the French original and called on my shamefully poor French to make sure it was not a mistranslation. A charitable reading might say at first that it was – very charitable because after all the preparatory senselessness remains: «then demand [the whole demand curve?] for that good should decrease» («*alors la demande pour ce bien doit baisser*»). Yet Piketty’s English is much better than my French – he taught for a couple of years at MIT, and speaks educated English when interviewed. If he let stand the senselessness in the translation by Arthur Goldhammer (a mathematics Ph.D. who has since 1979 done fully 75 translations of books from the French – though admittedly this is his first translation of technical economics), especially in such an important passage, one has to assume that Piketty thought it was fine economics, a penetrating – nay decisive – criticism of those silly native-English-or-now-German-speaking economists who think that supply curves move out in response to increased scarcity. (Yet I again urge a bit of charity: she who has never accidentally left a little senselessness in her texts, and especially in translations out of her native tongue, is again invited to cast the stone.)

In the French version one finds, instead of the obviously erroneous English, «which should lead to a decline in its price», typical of the confused first-term student, the clause «*qui permettra de calmer le jeu*», «which should permit some calming down», or more literally, «which would permit some calming of the play» [of, in this case, supply and demand]. ‘*Calmer le jeu*’, though, is in fact sometimes used in economic contexts in French to mean heading off a price bubble. And what ‘calming down’ could mean in the passage, other than an economics-and-common-sense-denying *fall* in price *without* a supply response having meanwhile taken place, is hard to see.

The rest of the passage does not support the charitable reading. The rest is uncontroversially translated, and spins out the notion Piketty evidently believes that supply responses do not figure in the story of supply and demand, which anyway would be unpleasant and complicated – so much more unpleasant and complicated than, say, the state taking a radically larger share of national income in taxes, with its attendant inefficiencies, or the state encouraging the spurning of capitalist ownership in favor of «new forms of governance and shared ownership intermediate between public and private» (p. 573), with its attendant corruptions and lack of skin in the game.

Piketty, it would seem, has not read with understanding the theory of supply and demand that he disparages, such as proposed in Smith (one sneering remark in the book on page 9), Say (ditto, mentioned in a footnote along with Smith as optimistic), Bastiat (no mention), Walras (no mention), Menger (no mention), Marshall (no mention), Mises (no mention), Hayek (one footnote citation on another matter), Friedman (pages 548-549, but only on monetarism, not the price system). He is in short not scientifically qualified to sneer at self-regulated markets (for example on page 572), because he has no idea how they work, or at any rate how they are supposed to work in the usual expositions since they were clarified in 1848 and the decades following. It would be like someone attacking the theory of evolution (which is analogous to the theory the economists use of entry and exit in self-regulating markets – the supply response of entry into a niche being what inspired Darwin) without understanding natural selection or the Galton-Watson process or modern genetics.

It is not his fault. He was educated in France. French-style teaching of economics, against which the insensitively-named Post-Autistic Economics (PAE) movement by students of economics in France was directed, is abstract and Cartesian, never deigning to study the ordinary price theory that one might use to understand the oil market, 1973 to the present.²⁸ In that market the real price of oil since 1980 has fallen, because of supply responses – never considered in books by non-economists such as Paul Ehrlich's *The Population Bomb* (1968) or by economists such as Piketty, neither of whom understand elementary economics.

An example is that monopoly has dramatically fallen 1800 to the present, not risen

What is to be done?

Answer: follow the scientific standard of physics or geology or history, and refrain from offering up an alleged imperfection in a market, or in Markets in general, or offering up an assertion to the contrary that markets are flawless, without an empirical showing that the alleged effect good or bad is quantitatively important, at the very least in the market under consideration, relative to some imagined perfection, and at the best--the truly relevant scientific matter--in the economy as a whole, giving a sufficient reason to turn then (or not so turn in the other case) to an admittedly imperfect government to improve the operation of exchange--tested betterment, which appears to have enriched the modern world.

Let me give as an example the empty economic box of number 17 in the list of imperfections, the alleged prevalence and *increasing* prevalence of enterprise monopoly. Many economists, and more of the general public on the left of the political spectrum, believe that the power of monopolies has increased steadily since, say, 1800. They see large enterprises and, illogically, conclude that they must have monopoly power. The belief buttresses many other of the entries in the list of imperfections, such as adulterate food if not regulation of monopolies in meatpacking c. 1910, the lack of coordination (or the opportunity for it, thinking of syndicalism) during the 1920s, the monopolistic competition studied in the 1930s by my teacher Edward Chamberlain, the cost-push inflation from monopolized industries studied in the 1950s by another teacher of mine, Otto Eckstein, regulatory capture by the very monopolies, as my colleagues at Chicago argued in the 1970s, advertising and planned obsolescence à la Galbraith, overpayment of CEOs, oligopoly allegedly addressed by game theory, too big to fail in banking, and now the cry of allegedly rising inequality. All of these imperfections and more have flourished for a decade or so in economic thought, in part by assuming that monopoly grows and grows and grows.

I will not repeat here the Chicago-School line – with which, if your care, I in fact pretty much agree, on the basis of massive evidence others have collected from economic history – that the main source of actual monopoly (the post office, for example, or the ever-extending system of patents and copyrights, invented by the governing elite in Venice many centuries ago) is in fact the very government itself, by way of prohibitions, regulations, and protections. The savants of the Chicago School claim that without governmental intervention a new entry – the supply response – is usually vigorous, and that a new Bill Gates is usually

²⁸ On the other hand, the French economist Bernard Guerrien, who inspired the movement, has his own problems with elementary economics. MCCLOSKEY 2006.

working in a new garage right now to overturn the old Bill Gates. The empirical evidence for the 'usually' in the last sentence seems on its face strong. After all, creative destruction (the phrase of Sombart's in 1913 that Schumpeter later made his own) is precisely the matter of entry in supply that Piketty does not grasp, and that has made for the Great Enrichment.

Once upon a time, for example, many little local fortunes were based on a local monopoly of a department store. Yet the department-store model, and the shopping malls that depended on it when the local chains had merged, has long faded, and with it the super-normal rents making such fortunes. The fade is to our common good, producing the equality of real comfort that characterizes the modern world. William Nordhaus (2004) has calculated that in recent times the original inventor retains only 2 percent of the social value of her invention, the rest going to the consumers by way of entry.

Instead I will propose – but leave as an exercise to the reader to actually accomplish – a simple empirical test about how important monopoly is for the economy as a whole, by a criterion which can be justified by the theory of the core, originating in Edgeworth 1881 (see Telser 2007). It is: How many competing suppliers did the typical consumer face in 1800, and how many now, weighted by the importance of the item consumed in the consumer's budget? How many competing demanders, likewise, did the typical worker face in 1800 and in the present for his services? In other words, how many coalitions, to use the terms in the theory of the core (distinct from game theory, note), did buyers and sellers have available? How big?

I think it is obvious – I would like to hear why it is not – that the number of such suppliers or demanders has enormously increased since 1800, or 1900, or 1950, especially among a substantial margin of customers located between their suppliers or demanders, and that therefore monopoly/ monopsony has *decreased* dramatically, not increased. We are now much closer, factually speaking, to a pretty good competitive economy than we were in 1800, or 1900, or 1950. To put it another way, we are closer to Pareto optimality – not further, as the sequence of 'imperfections' that economists have claimed would suggest.

The central reason of course is falling transport/ transaction costs. In 1800 even in a country quite rich by the wretched standards of the time, such as Holland or England, the average consumer of flour for her bread or of a builder for her hovel faced very few suppliers. She could not get across town easily to take advantage of the price differential between her local monopolist baker and the new and cheaper entrant over at Zeedyk. Her husband could not venture to the next town to find employment, and continued therefore to labor at low wages for the local chair-maker. It is a matter of transport/transaction costs.

In a wider field, getting out to the frontier of settlement in the U.S. or Argentina or Australia, or at any rate escaping the low land/labor ratios of much of Europe compared to the frontiers, would cost many weeks of non-employment on a sailing ship and many months of saving out of paid employment at home to get steerage passage even in a much-improved steamship. It is why immigrants to the new worlds were commonly a little richer than comparable countrymen stopping at home to starve.

Europeans in olden days were well and truly stuck. They were less stuck than in the Middle Ages (and there is a good case to be made by the way that in 1800, and especially in the Middle Ages, people in China were even less stuck). But stuck they were, partially walled off from competitive offers to sell or buy goods or labor in their locale, by

transportation costs and government-sponsored monopolies and high transaction costs such as serfdom and guilds and tariffs.

I do not claim that trade did not occur across regions. On the contrary, even in a Europe riven by tariffs and mountains and guilds, not to speak of its unusually violent and persistent warfare, there was sufficient competition by marginal buyers and sellers across locales to bring prices of many goods and services and labor and capital quite close to each other by arbitrage. And arbitrage in wheat and labor improved a great deal from the Middle Ages to the Early Modern.²⁹ It was one of Adam Smith's (few) unique analytic contributions to point this out, and to back it up, as he characteristically did, with canny factual observations.

But I do claim about those olden days that inside the margin many consumers and employees had few options, and the suppliers or demanders they faced had an ability, considering the high transactions costs of resale of goods or labor, to set the terms of trade unfavorably to them. Monopoly. Monopsony.

And I further claim that a long, long series of innovations in transport and transaction costs since 1800 has radically reduced the ability of the monos to do so. Consider (again I invite factual suggestions or contradictions):

- proliferating **turnpikes** in the 18th and early 19th centuries (as Daniel Klein 1992 and others have shown),
- the rise of **private roads** (still common in Sweden),
- metaled roads** between towns by McAdam
- and **stage coaches** (see Charles Dickens) rushing along them,
- river and port improvement,**
- canal** transport (especially in Holland, as Jan de Vries has shown, but then also in Britain; and in the United States, notably the Erie Canal),
- the **breakdown of guilds**, as for example by Napoleon's conquering armies,
- the **breakdown of local tariffs**, as on the Rhine, again by Napoleon,
- paving of **roads in town,**
- gas illumination of towns,**
- policing of roads**, in town and out (highwaymen disappeared in Western Europe),
- the **telegraph**, giving information on prices instantly,
- steamboats** on the western rivers (see Mark Twain),
- and above all the **RAILWAY**, pushing into every big village in England and every substantial town in the United States,
- and the **steam ship**, connecting markets worldwide,
- leading to **passenger liners**, and a sharp fall in trans-Atlantic fares,
- the **street car**, first pulled by horses,

²⁹ See for example the astonishing chart in BRAUDEL AND SPOONER 1967. Subsequent studies have not improved upon their chart by marshalling meaningless tests of statistical "significance."

then by steam plants pulling **cable cars** (in the 1880s Chicago had the world's longest cable-car network),

then **electric trolleys**,

making the **department store** with its price-breaking "*bon marché*" (see Zola, *The Ladies' Paradise* [1883]),

and especially the **BICYCLE**, that object of Piketty's scorn, at first an expensive toy for gentlemen, eventually a breaker of monopoly and monopsony for working people on **good urban roads**,

reliable **postal service** on the railways (my great grandfather sorted mail on the route into Chicago from Indianapolis),

and then the great **mail-order** firms, such as in the United States Montgomery Ward and Sears, Roebuck,

subways, first steam and then (1890 in London) electric,

the **telephone**, at first expensive then a ubiquitous aid for dealing and information,

above all, the **AUTOMOBILE**, again at first a toy of the rich, but at length even the Joad family in Steinbeck's *The Grapes of Wrath* would flee starvation by auto,

and the **motor truck**, cheapening delivery and competing eventually with the railways,

the **Good-Roads** movement, paving the dirt tracks of Route 66 from Chicago to LA, for example, and eventually making truck delivery of even slaughtered cattle cheap,

the **Sears-Roebuck** regional brick-and-mortar stores after World War II,

the **interstate system of highways**, thanks for a change to the government,

the **supermarket**, enabled by the automobile,

the **commercial strip** outside every U.S. town, competing with downtowns,

the **shopping mall**, with a department-store anchor,

falling tariffs, enforced by the WTO, making the world a single market in, say, automobiles,

and eventually routine **air transport**,

deregulation of air and truck and rail transport,

the **breakdown of the postal and telephone monopolies** worldwide,

discount stores, such as Walmart,

and especially the **INTERNET**, giving low-cost information about alternative deals

cell phones,

then **Amazon.com** reinventing the mail-order and destroying the mall.

In other words, it would seem that since 1800 or 1900 competition in the sense of multiple sources of supply and demand has increased very largely, and the power of monopolies ('the international corporation'' the left says, with a shiver) has dramatically declined. During the 1950s the Americans spoke of having 'three and a half' suppliers of automobiles, namely, Ford, Chrysler, General Motors, and American Motors. Then the tariffs

on imported autos were slashed, with transitional episodes of quotas on Japanese autos to enrich auto workers at the annual cost of \$200,000 in higher prices to auto buyers for each \$20,000 job saved in Detroit. Now an American consumer faces four times or so more suppliers of autos, such as Toyota, GM, Volkswagen, Hyundai, Ford, Nissan, Fiat-Chrysler, Honda, Suzuki, Groupe PSA, Renault, BMW, SAIC, Daimler, Mazda, Dongfeng, Mitsubishi, Changan, Tata, and the rest. There is now more reason, not less, to expect exchange-tested betterment to work in the way the political economists by 1848 had realized it might well, leading to the Bourgeois Deal: Let the bourgeoisie such as the auto manufacturers try out betterments for profit, and in the long run the bourgeoisie will enrich us all.

The scientific point here is that if monopoly is typical of the list of imperfections – and as I said monopoly figures in many of its items – it is a feeble list. There are in fact economic and historical reasons to think that the case against the significance of monopoly is not a singleton. Informational asymmetry such as George Akerlof's Lemons Problem is lessened by universal education, by autos for comparison shopping, by telephones («Let your fingers do the walking» was the motto of the Yellow Pages in the U.S., now creatively destroyed by the internet), by cell phones, and now by Yelp and Uber and the like. That is, there is reason to think that informational asymmetry is a *lessening* problem – noting that there has been no scientific showing that it is a *big* problem to begin with, speaking of the economy as a whole, and speaking of the economy's closeness, or not, to a pretty good outcome of supply and demand.

In the list of imperfections, again and again, the empirical showing is nil. I await empirical refutation, but it seems to me on the basis of existing empirical studies that the following propositions are factually true. Inequality since 1800 has fallen, not risen, if one focuses on equality of real comfort instead of on Liliane Bettencourt's undoubtedly most vulgar jewelry box. Imperialism was not profitable for the countries conquering others, however gratifying to jingoism and however devastating to its victims. Unemployment is caused as much by government intervention, such as interference in the wage bargain, as it is by inherent flaws in market economies. Stagnationism has been asserted by every second generation of economists, to be refuted in the economic history of the next. Non-linear dynamics, though attractive to the engineering mind, cannot be shown factually to be typical of market economies. That consumers are irrational does not imply that markets are. The middle income trap confuses absolute with comparative advantage. If advertising had magical powers it would not be merely 2 percent of national income, most of it informative, or aimed at experts. If free riding were insoluble we would have a war of all against all, and the life of man would be solitary, poor, nasty, brutish, and short, which it is not. Overpopulation did not happen. Peak oil didn't happen. China and India broke out of the vicious circle of poverty. Foreign aid has enriched elites and financed impoverishing projects. Inflation is everywhere and always a monetary phenomenon, and to think otherwise is to mistake relative for absolute prices. Capital accumulation has not been the cause of exchange-tested betterment, but its consequence. Monopolistic competition assumes that suppliers do not acknowledge interaction when it is obvious that they can and should.³⁰

³⁰ That I do not give citations for the assertions in the paragraph does not mean the evidence for their truth is exiguous. I cannot resist citing one theoretical essay showing the illogic, at least, of my teacher Chamberlain: McCloskey 1986, Chp. 20, Section 1.

Immigrants were not lesser breeds. The landlords did not engorge the national product, and monopoly capitalists were competed away by entry, as in falling transport costs.

§

The hunt for imperfections in the form of A-prime, C-prime assertions of exist-or-not, in short, has been great fun, but has been a scientific mistake. We need to recover the soft priors of 1848, using our now superior abilities in measuring to get back to a policy science, as indeed applied economists (with low scientific prestige) are forced to do when they actually advise the prince. Richard Feynman the great theoretical physicist declared in 1965 that «It does not make any difference how beautiful your guess [at a scientific law] is. It does not make any difference how smart you are. . . --if it disagrees with experiment [or observation] it is wrong. . . . Guessing, computing consequences, and comparing with experiment [and observation is all there is to Science]."³¹ Note: "computing consequences." How big?

Such a science, I predict, will discover what the undoubted magnitude of the Great Enrichment suggests: that we've done amazingly well, and that a free-market economy left pretty much to its own devices works astoundingly well, especially by calling out, from the mass of ordinary people, when suddenly allowed and encouraged to have a go, the exchange-tested betterments that explain most of economic growth, despite a hundred and more confidently alleged but economically unimportant imperfections piled up since 1848 by the economists dealing in thought without content.

Time to get back to serious science, after a century and a half of playing with those empty economic boxes.

Works Cited

- AKERLOF, GEORGE A. 1970, "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism." *Quarterly Journal of Economics* 84:488-500.
- AMERICAN STATISTICAL ASSOCIATION 2016, "Statement on Statistical Significance and P-Values." *The American Statistician* 70 (2): 129-133. At <http://amstat.tandfonline.com/doi/pdf/10.1080/00031305.2016.1154108>
- ARTHUR, W. BRIA 1994, *Increasing Returns and Path Dependence in the Economy*. Ann Arbor: University of Michigan Press.
- BARAN, PAUL, AND PAUL SWEETZ 1966, *Monopoly Capital*. New York: Monthly Review Press.
- BASTIAT, FRÉDÉRIC 1845, *Economic Sophisms*. Trans. Arthur Goddard. Irvington-on-Hudson, NY: The Foundation for Economic Education, 1996.
- BEVERIDGE, WILLIAM H. 1909, *Unemployment. A Problem of Industry*. London: Lomgmans, Green.

³¹ Feynman 1965, 156, 160.

- BOSKIN, MICHAEL J., ELLEN R. DULBERGER, ROBERT J. GORDON, ZVI GRILICHES, AND DALE W. JORGENSON 1998., "Consumer Prices, the Consumer Price Index, and the Cost of Living." *Journal of Economic Perspectives* 12 (1, Winter); 3-26.
- BRAUDEL, FERNAND, AND FRANK SPOONER 1967, "Prices in Europe from 1450 to 1750." In E. E. Rich and C. H. Wilson, *The Cambridge Economic History of Europe, vol. IV: The Economy of Expanding Europe in the Sixteenth and Seventeenth Centuries*. Cambridge: Cambridge University Press.
- BRIGGEMAN, JASON 2015, "Search for Justification of the Policy of Pre-Market Approval of Pharmaceuticals." Ph.D dissertation, George Mason University. At http://mars.gmu.edu/bitstream/handle/1920/9656/Briggeman_gmu_0883E_10872.pdf
- BUCHANAN, JAMES, AND GORDON TULLOCK 1962, *The Calculus of Consent: The Logical Foundations of Constitutional Democracy*. Ann Arbor: University of Michigan Press.
- CHEUNG, STEVEN N. S. 1969, *The Theory of Share Tenancy*. University of Chicago Press.
- CLAPHAM, JOHN H. 1922, "Of Empty Economic Boxes." *Economic Journal* 22(3): 305-314.
- COASE, RONALD H. 1960, "The Problem of Social Cost." *Journal of Law and Economics* 17: 357-376.
- COWEN, TYLER 2011, *The Great Stagnation: How America Ate All the Low-Hanging Fruit of Modern History, Got Sick, and Will (Eventually) Feel Better*. New York: Dutton.
- COWEN, TYLER 2013, *Average Is Over: Powering American beyond the Age of Stagnation*. New York: Dutton.
- CROUZET, FRANÇOIS. 1965. "La formation du capital en Grande-Bretagne pendant la Révolution Industrielle." 589-642 in Deuxième conférence internationale d'histoire économique/Second International Conference of Economic History, Aix-en-Provence 1962, École pratique des hautes études - Sorbonne, Sixième Section: Sciences économiques et sociales, Congrès et Colloques, tome VIII (Mouton and Co: Paris-The Hague.
- DAVID, PAUL A. 1985. "Clio and the Economics of QWERTY." *American Economic Review* 75 (March): 332-337.
- DAVIS, LANCE E., AND R. A. HUTTENBACK 1988, *Mammon and the Pursuit of Empire: The Economics of British Imperialism*. Cambridge: Cambridge University Press.
- EASTERLY, WILLIAM 200,. *The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics*. Cambridge, MA: MIT Press.
- ECKSTEIN, OTTO 1958, "Inflation, the Wage-Price Spiral and Economic Growth", in Joint Economic Committee, U.S. Congress, *Relationship of Prices to Economic Stability and Growth*.
- EDELSTEIN, MICHAEL 1982, *Overseas Investment in the Age of High Imperialism: The U.K., 1850-1914*. New York: Columbia University Press; London: Methuen.
- FEYNMAN, RICHARD 1965, *The Character of Physical Law*. Cambridge: MIT Press, 2017.
- FLEISCHACKER, SAMUEL 2014, "Adam Smith and the Left." In Ryan Hanley, ed., *Adam Smith: A Princeton Guide*. Princeton: Princeton University Press.
- FOLBRE, NANCY 2001, *The Invisible Heart: Economics and Family Values*. New York: The New Press.
- FRANK, ROBERT 2005, "Positional Externalities Cause Large and Preventable Welfare Losses." *American Economic Review* 95(2): 137-141.
- GALBRAITH, JOHN KENNETH 1958, *The Affluent Society*. Boston: Houghton Mifflin.
- GIOVANNONI, OLIVIER 2014, "What Do We Know About the Labor Share and the Profit Share? Part III. Measures and Structural Factors." Levy Economics Institute, Bard College, working paper 805, at http://www.levyinstitute.org/pubs/wp_805.pdf
- GORDON, H. SCOTT 1954, "The Economic Theory of a Common-Property Resource: The Fishery." *Journal of Political Economy* 62: 124-142.
- GORDON, ROBERT J. 2016, *The Rise and Fall of American Growth: The U.S. Standard of Living since the Civil War*. Princeton: Princeton University Press.

- HARBERGER, ARNOLD C. 1954, "Monopoly and Resource Allocation." *American Economic Review* 44: 77-87.
- HARCOURT, GEOFFREY C. 1972, *Some Cambridge Controversies in the Theory of Capital*. Cambridge: Cambridge University Press.
- HARDIN, GARRETT 1968 "The Tragedy of the Commons." *Science* 162: 1243-1248.
- HIRSCH, FRED 1976, *Social Limits to Growth*. Cambridge: Harvard University Press.
- HOBBSAWM, ERIC 2011, *How to Change the World: Reflections on Marx and Marxism 1840–2011*. New Haven: Yale University Press.
- HOVENKAMP, HERBERT 1990, "The First Great Law & Economics Movement." *Stanford Law Review* 42:993–1058.
- KIRZNER, ISRAEL 1973, *Competition and Entrepreneurship*. Chicago: University of Chicago Press.
- KIRZNER, ISRAEL 1979, *Perception, Opportunity and Profit*. Chicago: University of Chicago Press.
- KIRZNER, ISRAEL 1989, *Discovery, Capitalism, and Distributive Justice*. Oxford: Basil Blackwell.
- KLEIN, DANIEL B. AND GORDON J. FIELDING 1992, "Private Toll Roads: Learning from the Nineteenth Century." *Transportation Quarterly* 46: 321-41.
- KLEIN, DANIEL B., AND JOHN MAJEWSKI no date, "Turnpikes and Toll Roads in Nineteenth-Century America." At <http://eh.net/encyclopedia/turnpikes-and-toll-roads-in-nineteenth-century-america/>
- KOLKO, GABRIEL 1965, *Railroads and Regulation, 1877–1916*. Princeton, NJ: Princeton University Press.
- LEONARD, THOMAS C. 2016, *Illiberal Reformers: Race, Eugenics and American Economics in the Progressive Era*. Princeton: Princeton University Press.
- LEWIS, H. GREGG 1963, *Unions and Relative Wages in the United States*. Chicago: University of Chicago Press.
- LEWIS, H. GREGG. 1986. *Union Relative Wage Effects: A Survey*. Chicago: University of Chicago Press.
- LIPSEY, RICHARD G., AND KELVIN LANCASTER 1956, "The General Theory of Second Best." *Review of Economic Studies* 24 (1): 11–32.
- MAZZUCATO, MARIANA 2013, *The Entrepreneurial State: Debunking Public vs. Private Sector Myths*. London: Anthem Press.
- MCCLOSKEY, DEIRDRE NANSEN 1970, "Did Victorian Britain Fail?" *Economic History Review* 23 (Dec): 446-59.
- MCCLOSKEY, DEIRDRE NANSEN 1989, "Formalism in Economics, Rhetorically Speaking." *Ricerche Economiche* 43, 1-2 (Jan-June): 57-75. Reprinted in *Knowledge and Persuasion in Economics* (Cambridge: Cambridge University Press, 1994).
- MCCLOSKEY, DEIRDRE NANSEN 2007, "A Solution to the Alleged Inconsistency in the Neoclassical Theory of Markets: Reply to Guerrien's Reply." *Post-Autistic Economics Review* 7, Sept. 18 May.
- MCCLOSKEY, DEIRDRE NANSEN 2012, "Happyism: The Creepy New Economics of Pleasure," cover story in *The New Republic*, June 28.
- MCCLOSKEY, DEIRDRE NANSEN 2016, *Bourgeois Equality: How Ideas, Not Capital or Institutions, Enriched the World*. Chicago: University of Chicago Press.
- MILL, JOHN STUART. 1848. *Principles of Political Economy*.
- MUELLER, JOHN 1999, *Capitalism, Democracy, and Ralph's Pretty Good Grocery*. Princeton: Princeton University Press.
- NORDHAUS, WILLIAM D. 2004, "Schumpeterian in the American Economy: Theory and Measurement." Closed access paper, National Bureau of Economic Research Working Paper W1043
- OLSON, MANCUR. 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge: Harvard University Press.
- OLSON, MANCUR. 1982. *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities*. New Haven: Yale University Press.

- PEART, SANDRA J., AND DAVID M. LEVY. 2005. *The "Vanity of the Philosophers": From Equality to Hierarchy in Post-Classical Economics*. Ann Arbor: University of Michigan Press.
- PERSKY, JOSEPH. 2016. *The Political Economy of Progress: John Stuart Mill and Modern Radicalism* Oxford and New York: Oxford University Press.
- PIKETTY, THOMAS. 2014. *Capital in the Twenty-First Century*. Trans. from 2010 French edition by A. Goldhammer. Cambridge: Harvard University Press.
- PORTER, MICHAEL E. 1990. *The Competitive Advantage of Nations*. London: Macmillan .
- REISS, J. PHILIPP. 2000. "On the Convergence Speed in Growth Models." FEMM Working paper 22/2000. Otto von Guericke University of Magdeburg, at http://io.econ.kit.edu/downloads/Reiss_OnTheConvergenceSpeedInGrowthModels.pdf
- SATO, K. 1963. "On the Adjustment Time in Neoclassical Growth Models." *Review of Economic Studies* 33: 263-268.
- SATO, RYUZO. 1963. "Fiscal Policy in a Neo-Classical Growth Model: An Analysis of Time Required for Equilibrating Adjustment." *Review of Economic Studies* 30: 16-23.
- SCHOR, JULIET B. 1993. *The Overworked American: The Unexpected Decline of Leisure*. New York: Basic.
- SCHUMPETER, JOSEPH A. 1942, 1950. *Capitalism, Socialism and Democracy*. Reprint with a intro. by R. Swedberg. London: Allen and Unwin, 1976, reprinted London and New York: Routledge, 2003.
- SHACKLE, GEORGE L. S. 1972 (1992). *Epistemics and Economics: A Critique of Economic Doctrines*. Cambridge: Cambridge University Press.
- SIMON, HERBERT A. 1947. *Administrative Behavior: a Study of Decision-Making Processes in Administrative Organization*. New York: Macmillan.
- SOWELL, THOMAS. 2015. *Basic Economics: A Common Sense Guide to the Economy*. 5th ed. New York: Basic Books.
- SRAFA, PIERO. 1960. *Production of Commodities by Means of Commodities: Prelude to a Critique of Economic Theory*. Cambridge: Cambridge University Press.
- STEFÁNSSON, H. ORRI. 2016. "What is 'Real' in Probalism?" Forthcoming *Australian Journal of Philosophy*, published online September.
- STIGLER, GEORGE J. 1971. "The Theory of Economic Regulation." *Bell Journal of Economics and Management Science* 2 (Spring): 3-21.
- STIGLITZ, JOSEPH, AND DAVID M. G. NEWBERRY. 1984. "Pareto Inferior Trade." *Review of Economic Studies* 51 (1): 1-12.
- TELSER, LESTER G. 2007. *The Core Theory in Economics: Problems and Solutions*. London: Routledge.
- TULLOCK, GORDON. 1967. "The Welfare Costs of Tariffs, Monopolies, and Theft." *Western Economic Journal* 5: 224-232
- VEBLEN, THORSTEIN. 1898. "Why Is Economics Not an Evolutionary Science?" *Quarterly Journal of Economics* 12 (July): 373-397.
- WATERMAN, ANTHONY M. C. 2012. "Adam Smith and Malthus on High Wages." *European Journal of the History of Economic Thought* 19: 409-429.
- ZOLA, ÉMILE. 1882-1883 (1992). *The Ladies Paradise*. Reprint of trans. by H. Vizetelly, 1886. Introduction by Kirstin Ross. Berkeley: University of California Press.