

Slouching Towards Utopia?

The Economic History of the Twentieth Century

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-Wealth-

This twentieth century has been above all the century of increasing material wealth.

The growth in the wealth of the industrial economies over the twentieth century has been unprecedented compared with *all* other economies and *all* previous eras. Standards of material comfort and capabilities that were beyond the richest of previous centuries are within the grasp of the bulk of America's population today. Rates of increase that would have struck all other centuries as miraculous fast are today taken for granted.

This ratcheting-up by many notches of the pace of economic growth and change is the most important characteristic of twentieth century economic history. It is also surprisingly difficult to grasp. Computers, automobiles, airplanes, VCR's, washing machines, vacuum cleaners, telephones, and other technologies--combined with mass production--give middle-class citizens of the United States degrees of material wealth--control over commodities, and the ability to consume services--that previous generations could barely imagine.

In fact, the gulf is so large it is even hard for us to imagine what it has meant.

Montgomery Ward and Consumers' Choices

A good place to begin is with the 1895 Montgomery Ward catalog. At the turn of the century Montgomery Ward was the largest mail-order business in the United States. It supplied rural and small-town households around the country with goods produced in America's factories. It was one of *the* ways that the forty percent or so of America's households that still lived in small towns or isolated farmsteads could purchase the products of industrial civilization.

The shops and stores of the big cities were much less convenient than the regular arrival of the mail-order catalogues. Shipping by mail order from centralized warehouses, companies like Montgomery Ward were willing to supply goods ranging from sterling silver teaspoons to sets of the *Encyclopedia Britannica* to drill presses.

Multiplication of Productivity 1895-1997: Time Needed for an Average Worker to Earn the Purchase Price of Various Commodities

Commodity	Time-to-Earn in 1895 (Hours)	Time-to-Earn in 1997 (Hours)	Productivity Multiple
Horatio Alger books (6 vols.)	21	0.6	35.0
One-speed bicycle	260	7.2	36.1
Cushioned office chair	24	2.0	12.0
100-piece stoneware dinner set	44	3.6	12.2
Hair brush	16	2.0	8.0
Cane rocking chair	8	1.6	5.0
Solid gold locket	28	6.0	4.7
Encyclopedia Britannica	140	33.8	4.1
Steinway piano	2400	1107.6	2.2
Sterling silver teaspoon	26	34.0	0.8

(from the 1895 Montgomery Ward *Catalogue*; facsimile edition Dover Books 1969, intro. by Boris Emmett)

The table above presents a typical sample of consumer goods available through Montgomery Ward at the start of the twentieth century. Near the top of the table is a one-speed bicycle, costing \$65 if ordered from Montgomery Ward in 1895. The price of a bicycle measured in "nominal" dollars has more than doubled over the past century (as a result of inflation). But the bicycle today is much less expensive in terms of the only measure that truly counts, its "real" price: the work and sweat needed to earn its cost. It took perhaps 260 hours' worth of the average American worker's production in 1895 to amount to enough money to buy a one-speed bicycle. Today an average American worker can buy a one-speed bicycle of higher quality for a little less than one day's value added.

In terms of labor power, bicycles have become 36 times cheaper over the near-century from 1895 to 1990. On the bicycle standard--measuring wealth by counting up how many bicycles it can buy--Americans today are 36 times richer than they were back in 1895.

Other commodities would tell a different story. A cushioned office chair has become only 12 1/2 times cheaper, in terms of the time the average worker requires to produce enough to pay for it. A Steinway piano or an accordion is only twice as cheap.

The answer to the question "how much wealthier are we today than our counterparts of a century ago?" depends on which set of commodities you view as central and important. If you care only about personal services--having a butler around to answer the door and polish your silver spoons--then you would find little difference in national average wealth between 1895 and 1990: an hour of a butler's time then cost about an hour's worth of the time of an average worker; an hour of a butler's time today costs about the same; on the butler-hiring standard we are no richer off than a century ago. But suppose you care a lot, instead, about your ability to buy mass-produced manufactured goods--like bicycles. On the bicycle standard, the table shows that Americans today are some 36 times as rich in a material sense as their counterparts of a century ago were in 1895.

If you average over all the commodities they made then and that we made now, you find that the average productivity multiplication is about eightfold: an average worker today could buy with one hour's work the average bundle of things that an average worker of a century ago took eight hours to earn.

New Goods and New Kinds of Goods

So do we have an answer? Is the answer that we today are eight times as rich as our counterparts of a century ago? (And that the gulf is larger if we care more about manufactured goods; smaller if we care more about personal services, or some kinds of luxuries.)

No, we do not yet have an answer.

The set of calculations above--taking commodities that existed then and exist now and comparing their labor-standard prices--is conceptually flawed. It is flawed because there are many things we make today that were not made back in 1890. A lot of our wealth today is our ability to make a broader range of commodities than used to be possible. And that broader range is not factored into the calculations above anywhere.

Consider the automobile. The automobile replaces both the horse and buggy and the traction-driven cable car. It greatly expands the area that is "local." With a horse, a shopping expedition to a store six miles away is an all-day expedition. With a car, it takes an hour. Thus the automobile makes the standard suburb-with-shopping-malls "denser"--in the sense that there are more places and types of places you can reach in an hour--than even the densest of pre-industrial cities. It allows suburban residents to have the best of

both worlds: the relatively large houses and lawns that had been associated with country or luxury living in the pre-industrial past, plus the density of human contacts, the cultural opportunities, and the economic opportunities of a densely-populated city. Today three million people live within half an hour of downtown Boston. A century ago only some 100,000 lived within half an hour of downtown Boston. Thus the automobile has made "living in Boston" an option for thirty times as many people.

The *Atlantic Monthly* of 1901 contains a short--anonymous--article by a college professor complaining about his low salary--which was about five times the productivity of the average worker in 1901, and gave him the same place in the relative income distribution as a salary of \$330,000 a year would today. He could not afford an "appropriate" house within walking distance of campus. They did not have the spare income to keep a horse. So they rode bicycle--not comfortable in New England or the Midwest in winter, fall, or spring. And he spent as large a share of his income on the family bicycles as someone would on, say, a Honda Civic today.

The qualitative jump in our standard of living because we now know how to make cars--the jump from the shift to the automobile from the bicycle--is omitted entirely from the simple calculation above suggesting an eight-fold multiplication of material wealth.

A second example: in *Looking Backward*, Edward Bellamy's turn of the last century utopian novel, the narrator--thrown forward in time from 1895 to 2000--hears the question, "Would you like to hear some music?" He expects his host to play the piano--a social accomplishment of upper-class women around 1900. To listen to music on demand then, you had to have--in your house or nearby--an instrument, and someone trained to play it. It would have cost the average worker some 2400 hours, roughly a year at a 50-hour workweek, to earn the money to buy a high-quality piano, and then there would be the expense and the time committed to piano lessons.

But today, to listen to music-on-demand in your home, all you need is a CD or a tape player--or in a pinch, if you are willing to let others choose your music for you, a radio.

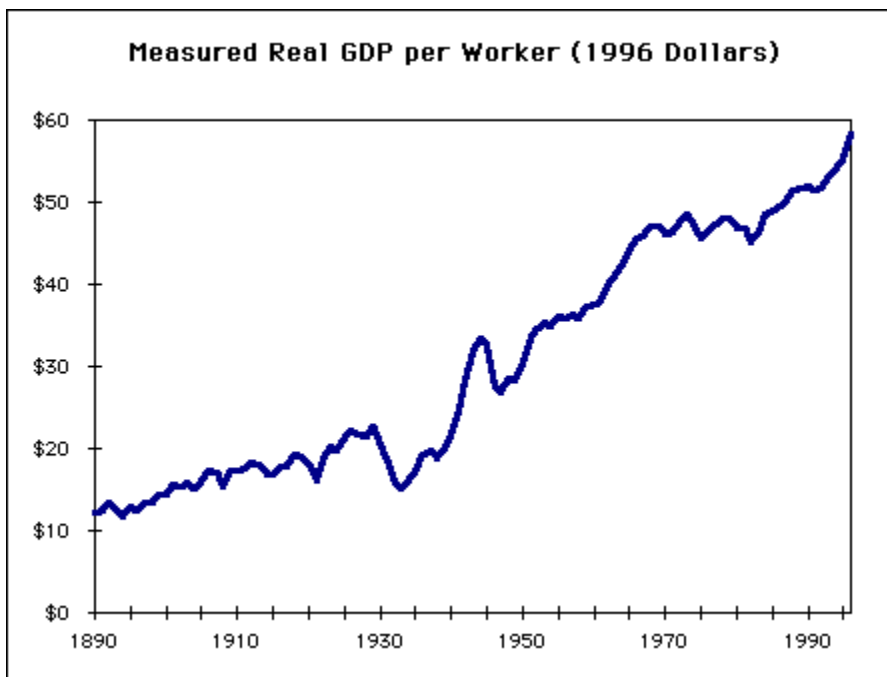
The labor-time value of a Steinway piano has fallen in price from 2400 average worker-hours a century ago to 1100 average worker-hours today. But if what you value is not the piano itself but the capability of listening to music at home, the cost has fallen from 2400 average worker-hours a century ago to 10 hours today (240 dollars for the boom-box plus 10 dollars for the CD).

So when we calculate the increase in material wealth, do we count the halving of the real labor-time price of the *commodity*; or do we count the 240-fold decrease in the real labor-time price of the *capability* of listening to piano music? The experiences of live and recorded music are different in kind. But are they different enough to put a serious dent in the fact that a household today can acquire the capability of listening to piano music for only 1/240 the labor time cost a household of a century ago? And whose piano playing do you *really* want to listen to--to one of the world's best and most accomplished pianists, or to that of your cousin Sarah?

Measured Real GDP per Worker

How to summarize this pattern of higher productivity and greater economic prosperity?

Pull *Historical Statistics of the United States* down off of the library shelf, perform a few calculations, discover that GDP per worker in the United States today is some \$57,000 dollars per year-measured at 1996's prices-and that what *Historical Statistics* tells us of GDP per worker in the United States in the past is as plotted in the figure below: a little over a century ago--back in 1890-GDP per worker (at 1996's prices) was some \$12,000 a year.



The upward jump of productivity and wealth has not been confined to the core of the world economy. In 1987, 97 percent of households in Greece, not usually considered one of the world's industrial leaders, owned a television set. In Mexico there was one automobile for every sixteen people, one television for every eight, one telephone for every ten.

Why the "per worker"? Real GDP is a measure only of economic activity that passes through the market. As the share of the American adult population in the paid labor force has risen, so measured GDP has risen, even though part of what has been going on has

been the shifting boundary between categories of work that used to be outside, but are now inside the market. So divide real GDP by the size of the American *labor force* (not by the population) to attempt to control for the shifting boundary between market and non-market work, and still arrive at a measure of material well-being and prosperity.

Note, first, that on this scale the business cycle-centered concerns of newspaper financial pages are barely visible. Almost all of the business cycles--the recessions and depressions--experienced in the past century appear as insignificant ripples that do not materially affect the pace of productivity growth or the level of production. The key feature is the upward trend, not the irregular cycle. Recessions are in fact *not* feared because they significantly reduce the volume of production. They are feared because of the distribution of the losses that they create. Most people are unaffected, but some of the people lose their jobs and a few of the rich lose their wealth

There is one exception: the Great Depression of 1929-1941, which temporarily annihilated a generation's growth in riches, saw unemployment peak at a quarter of the labor force and remain above ten percent until the beginnings of World War II, and provoked fears that the run of economic growth that had commenced with the industrial revolution had played itself out. But the Great Depression was unique, a watershed that has not been repeated.

How Much Does *Historical Statistics* Underestimate Growth?

Thus *Historical Statistics* seems to say that the average American worker today--with a 1996-price GDP per worker of some \$57,000--is nearly five times as well off in a material wealth or an economic productivity sense as his or her counterpart in 1890. Adjusting for the declining length of the work-year over the past century, as the eight- or the seven-and-a-half hour day has become the norm and as vacations have grown, and find that the multiplication of *measured* wealth is more like seven-fold.

This measure is relatively close to the eight-fold multiplication over the past century of our power to produce the average commodity that was produced a century ago. And this near-equality is no surprise, for the calculations in *Historical Statistics* are of the same conceptual experiment: suppose we could take everything produced in some past year, stuff it into a time machine, move it forward to today, and sell it; how much would it be worth? That is what the "1996 prices" in the statement "GDP per worker in 1890 was some \$12,000 a year at 1996 prices" means.

But we already know that this way of measuring the multiplication of material wealth over the past century is flawed: it takes no account of improvements in material welfare that come not from getting better at producing the old goods but from producing new goods, and new types of goods.

My family's income today is roughly \$110,000 a year--about twice average GDP per worker. Suppose that you stuffed me and my family into a time machine, sent us back a century to 1890, and then gave us an income equal to twelve times that of 1890 average GDP per worker--an income that would put us at the same place in the relative income distribution then as some \$350,000 a year would today. We would not be among the 1,000 or so richest families in the country, those that might be invited to the most exclusive parties in the mansions of Newport Rhode Island. But we would be among the next outer circle of 10,000 or so.

Would we be happy--or at least not unhappy--with the switch? Our power to purchase some commodities would be vastly increased: we would have at least three live-in servants, a fifteen-room house (plus a summer place), if we lived in San Francisco we would live on Russian Hill, if we lived in Boston we would live on Beacon Hill, if we lived in New York we would live on Park or Fifth Avenue.

The answer is surely that we would *not* be happy.

I would want, first, health insurance: the ability to go to the doctor and be treated with late-twentieth-century medicines. Franklin Delano Roosevelt was crippled by polio. Without antibiotic and adrenaline shots I would now be dead of childhood pneumonia. The second thing I would want would be utility hookups--electricity and gas, central heating, and consumer appliances. The third thing I want to buy is access to information--audio and video broadcasts, recorded music, computing power, and access to databases.

None of these were available *at any price* back in 1890.

I could substitute other purchases for some. I could not buy a washing machine, but I could (and would) hire a live-in laundress to do the household's washing. I could not buy airplane tickets; I could make sure that when I did travel by long distance train and boat I could do so first class, so that even though travel churned up enormous amounts of time it would be time spent relatively pleasantly. But I could do nothing for medical care. And I could do nothing for access to information, communications, and entertainment technology, save to leave the children home with the servants and go to the opera and the theater every other week. How much are the central heating, electric lights, flouridated toothpaste, electric toaster ovens, clothes-washing machines, dishwashers, synthetic fiber-blend clothes, radios, intercontinental telephones, Xerox machines, notebook computers, automobiles, and steel-framed skyscrapers that I have used so far today worth--and it is only 10 A.M.?

I would not be satisfied with my attempts to substitute using late nineteenth century technology. First of all, I would be dead. Second a very large chunk of my-high-material standard of living is the broad range of commodities newly-invented over the course of the past century that I can choose to purchase, and that I *do* use because they give me capabilities that were simply not possible a century ago.

The most important component of the past century's economic growth is the new commodity component--the goods and services of which people alive in the 1890s could dream but not purchase.

Whenever we hear a sentence like "average GDP per worker in 1890 was equal to some \$12,000 at 1995 prices," we cannot help but think that the material standard of living *then* was about what we could obtain *now* if we had \$12,000 to spend. But it was not. The simple valuing of the past's production at the present's prices leaves out a very important part of the picture: the material standard of living *then* was about what we could obtain *now* if we had \$12,000 to spend, *but were required to spend it all on commodities that have been around for more than a century*: no modern entertainment or communications or transportation technologies; no modern appliances; buildings, roads, bridges, and other infrastructure built using century-old technologies.

Return for a moment to Edward Bellamy's utopian novel *Looking Backward*. Of the two hundred pages of his book, Bellamy devotes six to a technological marvel of the late twentieth century. After answering "yes" to the question "would you like to hear some music?" Bellamy's protagonist is stupefied to find his host "merely touched one or two screws," and immediately the room was "filled with music; filled, not flooded, for, by some means, the volume of melody had been perfectly graduated to the size of the apartment. 'Grand!' I cried. 'Bach must be at the keys of that organ; but where is the organ?'" He learns that his host has called the orchestra on the telephone--in Bellamy's utopia you can dial one of four orchestras and then put it on the speakerphone.

Bellamy then has his protagonist say that "'if we [in the nineteenth century] could have devised an arrangement for providing everybody with music in their homes, perfect in quality, unlimited in quantity, suited to every mood, and beginning and ceasing at will, we should have considered the limit of human felicity already attained...'"

To Edward Bellamy--a self-described utopian visionary, a late-nineteenth century well-educated minister's son from an industrial town in western Massachusetts--the equivalent of a modern radio that can receive any of four stations is "the limit of human felicity." What if someone were to take him to Tower Records? Or Blockbuster Video? His heart would stop on the spot. We do not think of our modern ability to listen to high-fidelity go-anywhere listen-to-anything music for a very small labor time cost as truly remarkable. We do not daily give thanks for our cassette players and our CD collections, and reflect that because of them we have reached the limit of human felicity.

For Bellamy, listening to good music--any kind of well-composed and performed music--was a big deal. You got dressed up to go to the symphony and the opera. You could do so only rarely. Yet to us today it is not a big deal. New products and new technological capabilities invented and introduced over the past century have transformed experiences that were rare and valued luxuries, possible only to a rich few at great expense, into features of modern life almost as common as water--and that we take for granted as much as we take our water for granted. In Bellamy's mind, music played on many instruments at once by an ensemble of professional musicians was close to being the ultimate luxury.

Such performances were rare and expensive to produce. They were valuable--like diamonds. Bellamy's view of us would be somewhat analogous to our view of a civilization in which everyone has boxes of gem-quality diamonds in their basement, and thinks of these boxes as no big deal.

So how much has material wealth grown in the past century?

My own personal guess (and if you do not agree, your introspection-based assessment is certainly as valid as mine) is that--if confined to purchasing and consuming only those commodities that were in the set of items producible in 1890--I would be very, very unhappy indeed. I am not sure that *anyone* in 1890--not even Andrew Carnegie, John D. Rockefeller, or Queen Victoria--was as well-off then in a material-welfare sense as I am today.

So that perhaps the right answer is that we are so much wealthier than our counterparts of a century ago that the question has no meaning: no one then had the material wealth of a middle-class citizen of the industrial economies today.

And if it does have meaning, the answer is astronomical. William Nordhaus--a Yale professor and a member of President Carter's Council of Economic Advisers--brackets the growth in real wages over the past century as somewhere between a 21-fold and a 182-fold increase.

Alan Greenspan--Chairman of the Federal Reserve--has guessed that failure to take proper account of new goods and new types of goods has led us to overstate inflation and understate real income growth by 1.5 percent per year. Compounding this overstatement for a century and applying it to the numbers in *Historical Statistics* leads to an estimate of a thirty-fold increase in material wealth over the past century.

That will do if we must have a single number.

Pre-Twentieth Century Growth:

The twentieth century appears is unique in its pace of economic growth. Such rapid growth in standards of living has never been seen before, anywhere--save possibly in the generation that saw the discovery of fire.

The nineteenth century saw, according to *Historical Statistics*, perhaps a doubling of material standards of living in the United States--perhaps a tripling or quadrupling once proper account is taken of the impact of new technologies like the railroad and the telegraph, and the expanded range of technological capabilities. Nineteenth century growth was itself remarkably fast: people christened the nineteenth century the "industrial revolution" because it seemed a remarkable event relative to what had happened before. Before the nineteenth century growth was even slower. The standard of living in the Netherlands, probably the richest economy in the world at the end of the eighteenth

century, might have been some fifty percent higher than it had been three centuries before, at the time of the Renaissance.

And before that?

Between the invention of agriculture and the commercial revolution that marked the end of the middle ages, wealth and technology developed slowly indeed. Medieval historians speak of centuries and half-millennia when they speak of the pace at which key inventions like the watermill, or the heavy plow, or the horse collar diffused across the landscape. And improvements in technology relatively quickly led to increases in population, until the human population once again reached a new Malthusian steady state in which births were held in checks by death. For most of human history before the industrial revolution, increases in technological capability led to increases in the population that could be supported on a given natural resource base, with little if any appearing as an improvement in the median standard of living.

So slow was the pace of change that people, or at least aristocratic intellectuals, could think of their predecessors of a thousand years before or more as effectively their contemporaries. And they were not far wrong. Marcus Tullius Cicero, a Roman aristocrat and politician of the generation before the Emperor Augustus, might have felt more or less at home in the company of Virginia planter Thomas Jefferson. The slaves outside grew different crops. The plows were better in Jefferson's time. Sailing ships were much improved.

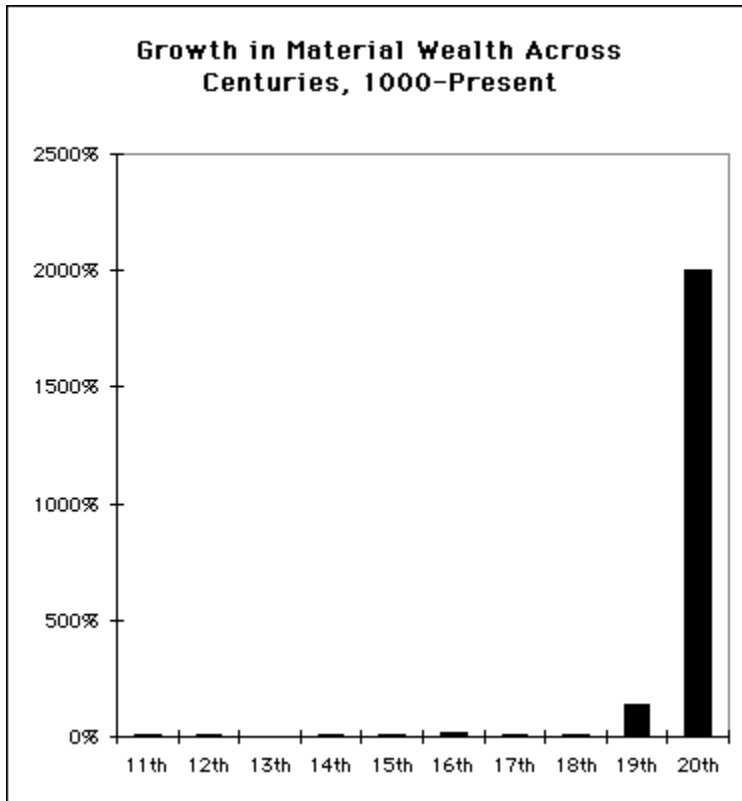
Printing technology would have struck Cicero as amazing and wonderful: for Cicero acquiring one copy of one book involved two months' worth of copying labor by a literate slave, an amount of labor that we would value at perhaps \$4,000 dollars compared to the \$10 price of a trade paperback book today; we today find the real price of books in terms of human labor to be 1/400 of what it was for Cicero, and even in Jefferson's day the real price of books had already fallen to perhaps 1/50 of what it had been at the beginning of the Roman Empire. But overall the differences in standards of living and in technologies used to manipulate the world were small.

Even the first century of the industrial revolution produced more "improvements" than "revolutions" in standards of living. With the railroad and the spinning and weaving of textiles as very important exceptions, most innovations during the first century or so of the industrial revolution proper were innovations in transportation, in how goods were produced, and in new kinds of capital but not consumer goods. Standards of living improved because of these innovations in production processes and capital goods. But styles of life remained much the same. Improvements in productivity in the first half of the nineteenth century at least were concentrated in a few relatively narrow sectors rather than spread throughout the economy.

So slow was the pace of improvement that literary intellectuals in the first half of the nineteenth century debated whether this industrial revolution was worthwhile. Was it an

improvement or a degeneration in the standard of living? And opinions were genuinely divided.

The figure below shows--approximately--the relative pace of economic growth in productivity levels and living standards for the leading-edge economies of Europe (plus the European-settled North American economies) over the past ten centuries. The estimates are rough and approximate only. But the figure does not do violence to the *qualitative* picture as it tries to indicate the relative economic growth over each of the past ten centuries of the leading-edge economies.



In 1848, in the middle of the nineteenth century, before the industrial revolution proper had spread far from its original homes in Belgium and in the British midlands, a young German philosopher-turned-political activist marveled at the extraordinary pace of economic growth in his day. He saw it as a new historical epoch that was only a century old and yet was opening wide the door to utopia. He saw the epoch as equivalent to that of Prometheus, the mythological Greek demigod who defied the chief god Zeus, brought knowledge of fire to humanity, and transformed humanity's condition. He wrote that the economically ruling class--the capitalist class, the entrepreneurial class, the business class, the *bourgeoisie*--of this epoch was:

...the first to show what man's activity can bring about. It has accomplished wonders far surpassing Egyptian pyramids, Roman aqueducts, and Gothic cathedrals; it has conducted expeditions that put in the shade all former Exoduses of nations and crusades....[It has], during its rule of scarce one hundred years...created more massive

and more colossal productive forces than have all preceding generations together. The subjection of nature's forces to man, machinery, the application of chemistry to industry and agriculture, steam-navigation, the railways, electric telegraphs, the clearing of entire continents for cultivation, the canalization of rivers, the conjuring of entire populations out of the ground--what earlier century had even a presentiment that such productive forces slumbered in the lap of social labor?

Karl Marx was dumbfounded at the pace of the economic transition he saw around him. Yet compared to the pace of economic growth in the twentieth century, all other centuries--even the nineteenth century that so impressed Karl Marx--were standing still.
