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# Slouching Towards Utopia?

## *The Economic History of the Twentieth Century*

### I Introduction

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#### **The Millennial Perspective:**

Three thousand years from now--to pick a number out of the air--world history survey courses will spend *at most* a single session on the twentieth century. And in that single session the teacher will try frantically and hastily to cover five points:

- The twentieth century's history is overwhelmingly *economic* history.
- The twentieth century has seen humankind's material wealth explode beyond all previous imagining.
- The twentieth century has seen more brutal and more barbaric tyrannies than any previous century; moreover, its tyrannies have had their roots in economic ideologies and economic discontents.
- The twentieth century has seen vast and growing relative economic gulfs between national economies: our world is more unequal today than ever before.
- Economic policy in the twentieth century has been, to put it politely, inept.

Let me expand these five points:

- **The history of the twentieth century is overwhelmingly economic history.**

Other centuries have other kinds of history. The history of the 1750-1850 century is primarily political: the American and French Revolutions and their consequences. The history of the fifteenth century is primarily cultural: in Europe the Renaissance, in China the flourishing under the Ming Dynasty. The history of the seventh century is primarily religious: the birth of Islam.

But the history of the twentieth century is primarily economic.

In the past humanity's economy--how people make, distribute, and consume the necessities and conveniences of their lives--changed at a glacial pace from decade to decade or century to century. The economic level of human activity provided the background for the rest of history. Perhaps in the very long run the economy was the material base on which the rest depended. But more that was *interesting* seemed to happen in political, cultural, religious, or intellectual history, where changes moved at a more rapid pace.

In the twentieth century, however, the pace of economic change has been so great as to shake the rest of history to its foundation. For perhaps the first time the making and using the necessities and conveniences of daily life--and how production, distribution, and consumption changed--was *the* driving force behind a single century's history.

- **The twentieth century has seen the material wealth of humankind explode beyond all previous imagining.**

There had been much technological progress before the industrial revolution of the eighteenth and nineteenth centuries. The windmills, dikes, fields, crops, and animals of Holland in 1700 were very different from the marshes of 700. The ships that docked at the Chinese port of Canton had much greater range and the commodities loaded on and off them had much greater value in 1700 than in 700.

But pre-industrial technological progress led to little improvement in the standard of living of the average human: improvements in technology and productive power raised the numbers of the human race, not its material standard of living. And the pace of technological change was relatively slow. Historians write of the centuries that it took the horse collar, or the heavy plough, to diffuse throughout western Europe.

The eighteenth and nineteenth centuries saw change. For the first time technological capability outran population growth and natural resource scarcity. Manufacturing overtook agriculture as the major location of employment. For the first time ever food production made up less than half of total economic product. And by the last quarter of the nineteenth century the average inhabitant of a leading economies--a Briton, a Belgian,

a Netherlander, an American, a Canadian, or an Australian--had perhaps three times the material wealth and standard of living of the typical inhabitant of a pre-industrial economy.

Thus standards of living did rise in the eighteenth and nineteenth centuries. But they did not rise by much. Economic historians today debate whether the average British worker in 1850 was 75% better off than in 1750, or only 25% better off.

However, standards of living have exploded in the twentieth century.

What took a worker in 1890 an hour to produce takes an a worker in a leading economy today only seven minutes: by this measure we today have some eight times the material prosperity of our counterparts of a little more than a century ago. But such a calculation is a substantial underestimate of the boost to productivity and material prosperity of the past century. We today are better at making the goods of a century ago, but we also have the technological capability to make an enormously expanded range of goods and services: from videocassettes and antibiotics to airplane flights and plastic bottles.

We today would feel--would be--enormously impoverished if our incomes and prices remained the same, but if we were forbidden to use any commodity not produced in 1890. This expansion in the range of what we can make is an enormous additional multiplier of material well-being. Are we sixteen? thirty-two? sixty-four times as rich in a material sense as our predecessors of the late nineteenth century?

The magnitude of the growth in material wealth has been so great as to make it nearly impossible to measure. If you want a single number for the twentieth century, a thirty-fold increase--a 3000% increase, compared to the 25% to 75% increase in standards of living in the century around 1800--will do. But the qualitative gap is so great that the quantitative question hardly has meaning.

This explosion of material wealth is the most important piece of the history of the twentieth century. Toward the end of the nineteenth century the British historian Thomas Babington Macaulay could look back on previous centuries in which:

*...noblemen were destitute of the comforts the want of which would be intolerable to a modern footman... farmers and shopkeepers breakfasted on loaves the very sight of which would raise a riot in a modern workhouse... to have a clean shirt once a week was a privilege reserved for the higher class of gentry... men died faster in the purest country air than now die in the most pestilential lanes...*

Today we look back on the era of Thomas Babington Macaulay--and the gulf that separates our material wealth and comfort from that of his age is greater than the gulf that separated him from any previous human community since the discovery of fire.

- **The twentieth century has seen more brutal and more barbaric tyrannies than any previous century--and its tyrannies have had their origins in economic discontents and economic ideologies.**

In this century governments and their soldiers have killed perhaps forty million people in war: either soldiers unlucky enough to have been drafted into the mass armies of the twentieth century, or civilians killed in the course of what could be called military operations.

But wars have caused only about a fifth of this century's violent death toll. Governments and their police have killed perhaps one hundred and sixty million people in time of peace: class enemies, race enemies, political enemies, economic enemies, imagined enemies. You name them, governments have killed them on a scale that could not previously have been imagined. If the twentieth century has seen the growth of material wealth on a previously- inconceivable scale, it has also seen human slaughter at a previously-unimaginable rate.

Call those political leaders whose followers and supporters have slaughtered more than ten million of their fellow humans "members of the Ten-Million Club." All pre-twentieth century history may (but may not) have seen two members of the Ten-Million Club: Ghenghis Khan, ruler of the twelfth century Mongols, launcher of bloody invasions of Central Asia and China, and founder of China's Yuan Dynasty; and Hong Xiuquan, the mid-nineteenth-century Chinese intellectual whose visions convinced him that he was Jesus Christ's younger brother and who launched the Taiping Rebellion that turned south-central China into a slaughterhouse for decades in the middle of the nineteenth century.

By contrast the twentieth century has seen perhaps five people join the Ten Million Club: Adolf Hitler, Chiang Kaishek, Vladimir Lenin, Joseph Stalin, and Mao Zedong. Hitler, Stalin, and Mao have credentials that may well make them the charter members of the Thirty Million Club as well--perhaps the Fifty Million Club. A regime whose hands are as bloody as those of the Suharto regime in Indonesia--with perhaps 450,000 communists, suspected communists, and others in the wrong place at the wrong time dead at its creation in 1965, and perhaps 150,000 inhabitants of East Timor dead since the Indonesian annexation in the mid-1970s--barely makes the twentieth century's top twenty list of civilian-massacring regimes.

What does this--bloody--political and secret police history have to do with economic history, with the story of how people produced, distributed, and consumed the commodities needed and desired for their material well-being?

First, the possibility that the secret police will knock at your door and drag you off for torture and death is a serious threat to your material well-being. The seventeenth-century political philosopher Thomas Hobbes wrote that people are motivated by sticks and carrots: "the fear of violent death, and the desire for commodious living." In a century where the chance that a randomly-selected person will be shot or starved to death by his

or her own government approaches two percent, the fact of large scale political murder becomes a very important aspect of everyday life and material well being.

Second, the twentieth century is unique in that its wars, purges, massacres, and executions have been largely the result of economic ideologies. Before the twentieth century people killed each other over theology: eternal paradise or damnation. Before the twentieth century people killed each other over power: who gets to be top dog, and to command the material resources of society. But only in the twentieth century have people killed each other on a large scale in disputes over the economic organization of society.

Fidel Castro rules in Havana whether or not farmers are allowed to sell their crops in roadside stands: his suppression of small-scale private markets in agriculture has nothing to do with the maintenance of his own power or improving the efficiency of production, and everything to do with *ideology*. In a similar way, collective power, personal status, or eternal salvation had little to do with such disastrous twentieth century episodes as the Soviet collectivization of agriculture, the Cuban suppression of farmers' markets, the Khmer Rouge's forced emptying of Cambodia's cities, or the disaster of Mao's Great Leap Forward. All were in large part attempts to guide and shift the economy in ways that their particular ideologies dictated--never mind that the ideologies never made much (substantive) sense as blueprints for economic organization, and served to do little more than to create and provide the excuse for creating yet more human misery.

Other twentieth century disasters had equally strong roots in economic ideology: it is hard to imagine how World War II could have come about in the absence of Adolf Hitler's insane *idée fixe* that the Germans needed more "living space" if they were to be a strong nation. Hitler was in deadly earnest when he wrote in his autobiography, *My Struggle*, that Germany could only be strong and prosperous if it had a better land-labor ratio: that it needed more "land for the German plough" to grow food for the German nation.

As Aleksandr Solzhenitsyn has written:

*The imagination and inner force of Shakespeare's villains stopped short at ten or so cadavers, because they had no ideology.... It is thanks to ideology that it fell to the lot of the twentieth century to experience villainy on the scale of millions.*

- **The twentieth century has seen a vast and growing relative economic gulf between national economies.**

Those economies that were relatively richer than most of the world at the start of the twentieth century have by and large seen their material wealth and prosperity explode. Those nations and economies that were relatively poor have grown richer, but for the most part slowly. The relative gulf between rich and poor economies has grown steadily over the past century. Today it is larger than at any time in humanity's previous

experience, or at least larger than at any time since only some tribes knew how to use fire.

This glass can be viewed either as half empty or as half full.

Half empty: we live today in the most unequal world ever. Half full: most of the world has already made the transition to sustained economic growth; most people live in economies that while far poorer than the leading-edge post-industrial nations of the world's economic core have successfully climbed onto the escalator of economic growth and thus the escalator to modernity. The economic transformation of most of the world is less than a century behind the of the leading-edge economies--only an eyeblink behind, from the millennial perspective.

On the other hand, one and a half billion people live in economies that have not made the transition to economic growth, and have not climbed onto the escalator to modernity. It is hard to argue that the median inhabitant of Africa is better off in material terms than his or her counterpart of a generation ago.

The existence, persistence, and increasing size of large gaps in productivity levels and living standards across nations is, in a word, *bizarre*. You can understand why pre-industrial civilizations had different levels of technology and prosperity: different civilizations had different exploitable nature resources, and the diffusion of new ideas from civilization to civilization was very slow.

But understanding why gaps in relative productivity persist and grow is more difficult. The source of the material prosperity seen today in leading-edge economies is no secret: it is the storehouse of technological capabilities that have been invented since the beginning of the industrial revolution. This storehouse is no one's property. Most of it is accessible to anyone who can read, and almost all of the rest is accessible to anyone who can obtain an M.S. in Engineering. Because of modern telecommunications ideas today spread at the speed of light. Governments, entrepreneurs, and individuals in poor economies should be straining every muscle--should in fact have long ago strained every muscle--to do what Japan began to do in the mid-nineteenth century: acquire and apply everything in humanity's storehouse of technological capabilities.

This "divergence" is another important aspect: economies are, by almost every measure, less alike today than a century ago in spite of a century's worth of revolutions in transportation and communication.

- **Economic policy in the twentieth century has been, to put it very politely, inept.**

The century has seen the century-long economic disaster of communism, and the quarter-century-long disaster of fascism.

But even governments that have avoided the mistakes of communism, or of fascist-inspired central planning, have often been inept as well at managing their economies: inept at coping with depressions, inept at coping with unemployment, inept at nurturing foreign trade, or inept at keeping inflation from turning into hyperinflation.

Some of this ineptness has arisen because often twentieth century economists did not know what to prescribe: the history of economic policy doctrines reads like alchemy, not chemistry. Often proposed remedies made economic problems worse. Take a representative respected economist on an average day and his advice is likely to have been bad--for three examples discussed below, consider Nobel Prize winner Friedrich Hayek during the Great Depression, Nobel Prize winner Milton Friedman in the mid-1980s, or Kennedy-Johnson stalwart Arthur Okun at the end of the 1960s

Some of it is that politicians did not like to follow their economists' advice, or at least sought for a more complaisant set of economists--those who would give advice that would be more politically pleasing and palatable to follow.

The twentieth century economy has been a tremendously powerful, efficient, and productive social mechanism--the market system. Yet few, or few of those in power, have known how to operate or fix it. The inescapable image is of an ocean liner crewed and steered by chimpanzees. Thus another important facet of twentieth century economic history is the story of economic policy: how governments have managed or mismanaged their economies, and how knowledge of how the economic system works has been painfully gained and painfully lost.

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### **Other Themes:**

There are other important themes as well: shifts in the distribution of relative wealth and economic power from rich to middle-class and back again, as the wave of social democracy sloshes across the industrial economies in the twentieth century; the Great Depression, the defining moment of twentieth century economic history; the rise and fall of the economic preeminence of the United States.

But from the perspective of a millennium, the most important aspects of twentieth century economic history are those outlined above: the dominance of economic events in twentieth century history; the tremendous surge of material prosperity; the coupling of productive power and economic ideology with mass murder; the bizarrely uneven distribution of economic growth and prosperity around the world; and the failure of economic policy to advance from the stage of alchemy to chemistry.

The first part of this book tries to take such a millennial perspective: a chapter on each of the principal themes of the economic history of the twentieth century.

Only afterwards do I drop back into narrative: beginning with the state of the world economy at the end of the nineteenth century; skating over developments up through

World War I; discussing attempts to rebuild and reorganize the world economy in the aftermath of World War I; tracing the causes, progress, and consequences--economic and political--of the disaster that was the Great Depression; analyzing the economic consequences of World War II; marveling at the job of reconstruction done in the aftermath of Adolf Hitler's war and at the pace of the subsequent Great Keynesian Boom of the generation after World War II; and last focusing on the more troubled economic period since 1973 or so.

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## **The Focus**

The focus throughout is on the industrial core of the world economy: the rich nations, originally grouped around the North Atlantic Ocean, that have been at the leading edge of economic development, structural change, and technological advance in this century. But I hope that I have paid due attention to the economic history of the rest of the world as well.

The level of analysis attempts to be neither "history from above" nor "history from below" but rather "history from beside."

History from above tells of the doings of kings, princes, and general secretaries in marble-floored buildings. History from below tells of what ordinary people ate and wore and thought. Neither is fully adequate. The focus on the Duke of This or the Earl of That found in "history from above" is a trivially small part of the history. How did people try to get enough to eat? Were people well enough nourished for young women to easily reach puberty? How did patterns of daily life change? The answers to these questions tell us more about the history and are intrinsically at least as interesting as are stories of assassinations and intrigue at the courts of Tiberius Claudius Nero Caesar Germanicus (the Roman Emperor Claudius) or of Josef Vissarionovich Djugashvili (the Soviet General Secretary Stalin).

But the patterns of daily life of the general population and how they change make little sense if they are divorced from any consideration of high politics and changing technology. For high politics and changing technology shape and change how real people live.

It is a commonplace that each generation writes its own history: each generation is interested in different facets of the past, and a given work of history often tells as much about its own present in which it was written as about the past that it purports to analyze.

This commonplace is not completely true. One reason to write history is that it is entertaining: the stories of what people actually did and suffered that historians tell are some of the greatest stories on earth. The twentieth century has more than its share of such narratives. A second reason for history is simply to gratify curiosity, which may or may not be related to the circumstances of the writer's or the reader's era.

Yet the search for lessons of the past for the present and the future is a third powerful motive. Today, in the wealthy and industrialized countries of the world, our principal concerns are with the creation and maintenance of liberty and prosperity. Other audiences in other places and other times have had different concerns: how to ensure the triumph of the "true" theology, how to conquer one's neighbors, or how elites can maintain political power or economic and social dominance. This history is written from our particular turn-of-the-twenty-first-century viewpoint: it tells the story of the twentieth century as the story of liberty and prosperity--the partial escapes from (and at time and places the falls back down into) servitude and poverty.

I think that this is the most interesting take on the history of the twentieth century. Others can disagree. One of the glories of the history of the twentieth century is that its story has a (relatively) happy ending: this is a (relatively) free country, and a (compared to the past) relatively free world, in which people *can* disagree. It might easily have been otherwise.

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**from "The Second Coming"**

by W.B. Yeats

...Things fall apart; the center cannot hold;  
Mere anarchy is loosed upon the world,  
The blood-dimmed tide is loosed, and everywhere  
The ceremony of innocence is drowned;  
The best lack all conviction, while the worst  
Are full of passionate intensity.

Surely some revelation is at hand;  
Surely the Second Coming is at hand...  
The Second Coming!...

... now I know  
That twenty centuries of stony sleep  
Were vexed to nightmare by a rocking cradle,  
And what rough beast, its hour come round at last,  
Slouches towards Bethlehem to be born?

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## -II. Wealth-

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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 feats 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.

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### **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**

<b>Commodity</b>	<b>Time-to-Earn in 1895 (Hours)</b>	<b>Time-to-Earn in 1997 (Hours)</b>	<b>Productivity Multiple</b>
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.

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### **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).

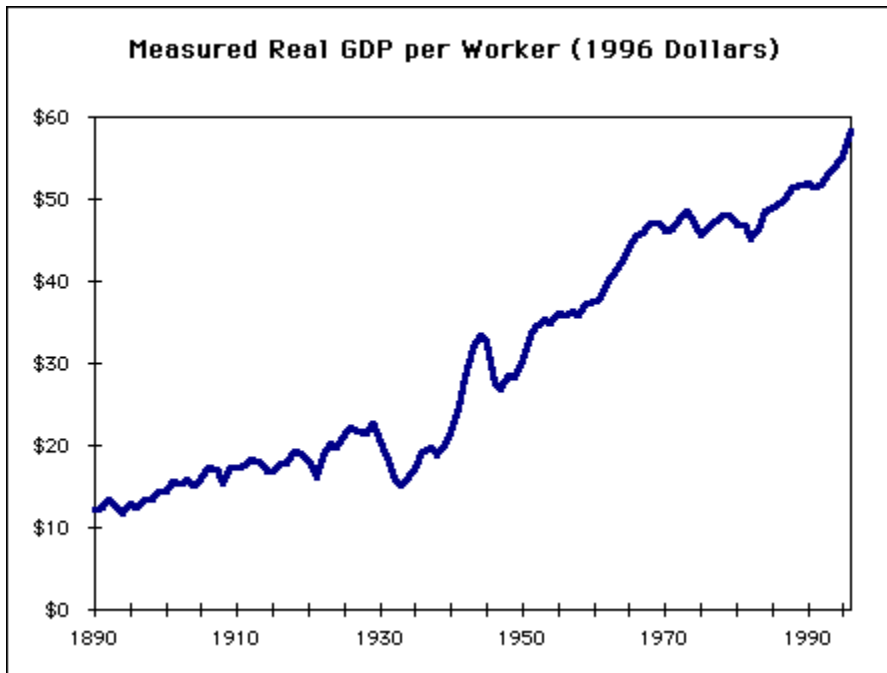
So when we calculate the increase in material wealth, do we count the halving of the real labor-time price of the *commodity*; or do we count the 240-fold decrease in the real labor-time price of the *capability* of listening to piano music? The experiences of live and recorded music are different in 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?

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## 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.

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### **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.

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### **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 check 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.

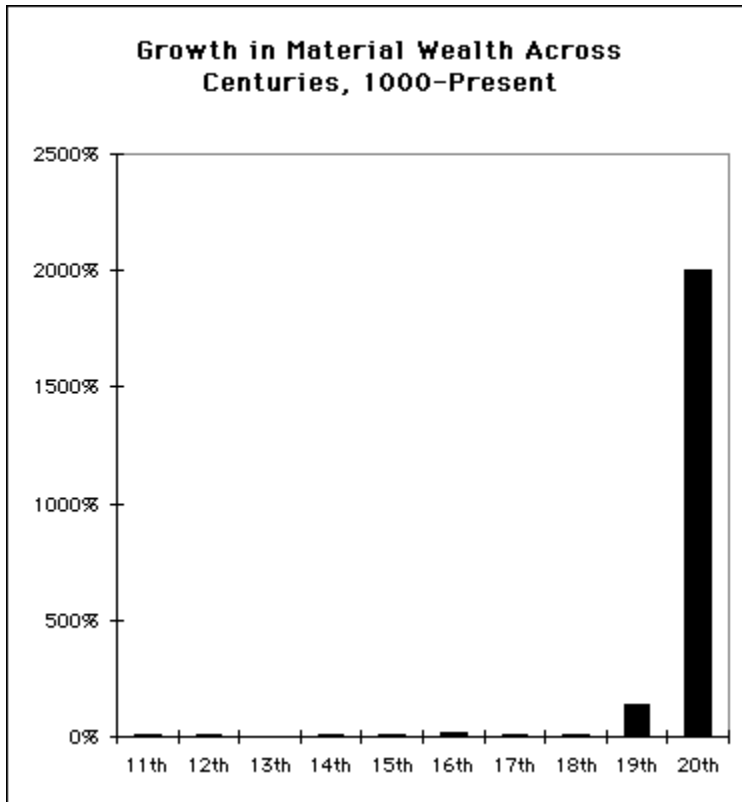
Printing technology would have struck Cicero as amazing and wonderful: for Cicero acquiring one copy of one book involved two months' worth of copying labor by a literate slave, an amount of labor that we would value at perhaps \$4,000 dollars compared to the \$10 price of a trade paperback book today; 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.

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## **Slouching Towards Utopia?: The Economic History of the Twentieth Century**

### **-III. The Meaning of Economic Growth-**

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January 1997; DRAFT 1.00

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#### **Population Growth:**

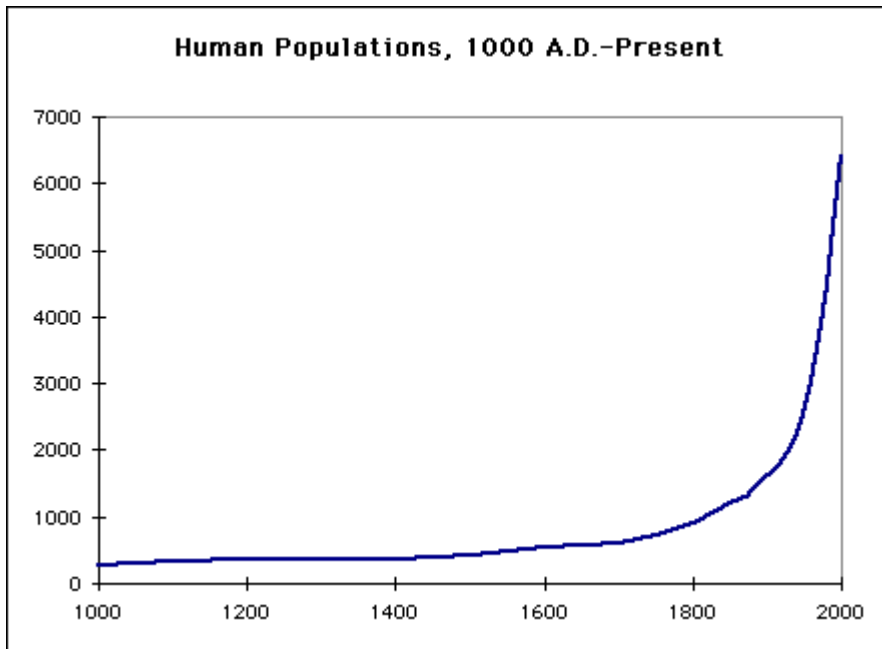
The tremendous increases in material wealth and living standards in the twentieth century have been accompanied by a three-fold multiplication in the human population of the world as well--the fastest rate of increase in human population ever, or at least since the invention of fire, and an increase that has carried the human population of the world to levels that far outstrip those of previous centuries: today there are, we think, more than six billion people alive on this earth.

Demographers guess that on the eve of the invention of agriculture--say, sometime around 10,000 B.C.--the hunting and gathering human population of the world was about five million. From then up until roughly the Year One populations grew relatively swiftly, as civilizations based on agriculture and herding spread throughout the world as different groups learned the techniques of farming and livestock management from their neighbors. By the Year One perhaps 250 million people lived on the earth.

<b>Human Population</b>		
<b>Date</b>	<b>Population (Millions)</b>	<b>Growth (Percent Per Year)</b>
10000 B.C.	6	0.008%
1	252	0.037%
1000	253	0.000%
1500	461	0.120%
1750	771	0.206%
1900	1,634	0.501%
1950	2,530	0.874%
1990	5,292	1.845%

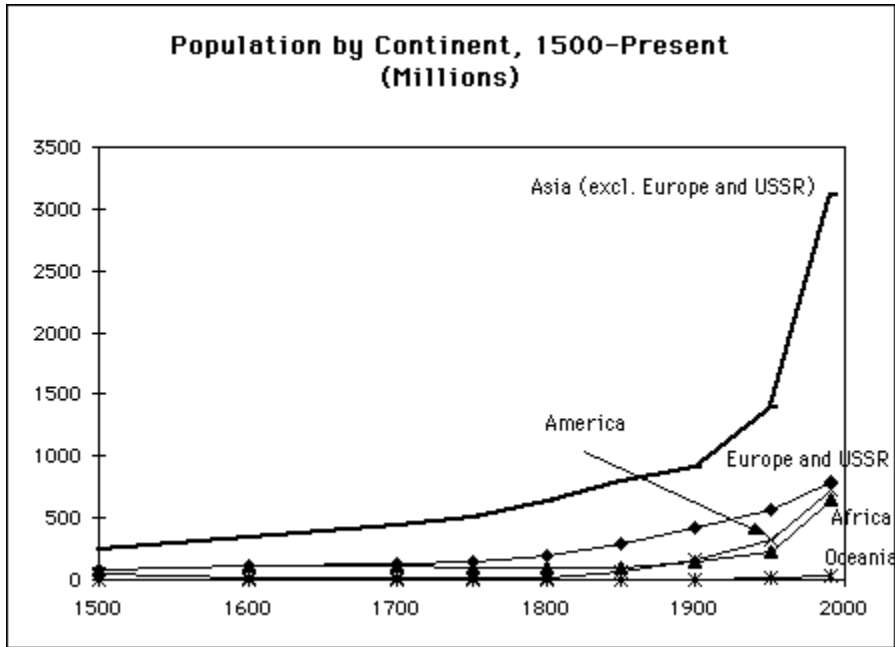
Thereafter populations grew more slowly. Arable land that could be used to grow crops using the technologies of the time was mostly occupied. When population expanded, it would run into sociological or biological limits: more people scratching a living from the same plot of land would reduce nutrition, and deprive some women of the chance of conceiving; a lack of open farmsteads would keep young adults single and in their parents' households for an extended time, rather than forming households and having children of their own. Slow improvements in technology and investments in land-clearing would raise the pool of available natural resources to a population, fertility would rise, and population would grow-until once again the population would begin to press against the sociological or biological limits given available technology, fertility would fall, and the episode of growth would come to an end. Between the Year One and the year 1700 demographers guess that the population of the world grew from roughly 250 million to roughly 700 million.

After 1700 population growth began to accelerate. Some argue that it was due to improving climates: both Europe and China appear to see substantial population growth in the eighteenth century, and China certainly did not benefit from the waves of technological innovation and improvement that were beginning to sweep over Europe. Others argue that the quadruple congruence of printing, religious doctrines generating higher literacy, technological innovation driven by constant wars between European nation-states, and expanded trade greatly multiplied Europe's command over its environment and banished the Malthusian forces that had previously swung into action to check population growth.



The eighteenth century appears to have seen human populations grow by perhaps fifty percent worldwide. The nineteenth century saw human population grow by some eighty percent. And--as modern technologies have diffused throughout the world--in the twentieth century human populations have tripled.

Before the twentieth century, the fastest-growing populations on the globe were almost invariably the richest populations on the globe. In the twentieth century things have been different: population growth in the richest countries has slowed down markedly. People are living longer than ever before, but also fewer children are being born, per couple of childbearing age, than ever before. This slowdown in fertility-based population growth to near-stasis in the world's richest countries is the second stage in what is called the *demographic transition*. Thus the population of Europe has grown relatively slowly in the twentieth century--and is growing even more slowly today--even though it was the richest continent in this century.



The demographic transition has two components, and is driven by rising income and wealth and the sociological changes that rising income and wealth set in motion. The first stage is one of greatly accelerated growth: a richer population has better nutrition, sees more opportunities, and receives better medical care. Thus both the biological and sociological checks to rapid population growth vanish. And population growth accelerates: life expectancy rises and more children are born.

Life Expectancy in the Demographic Transition								
Country\Year	1750	1800	1850	1880	1900	1930	1950	1990
England	36.9	37.3	40	43.3	48.2	60.8	69.2	74.5
France	27.9	33.9	39.8	42.1	47.4	56.7	66.5	76.1
Italy				35.4	42.8	54.9	65.5	75.9
Japan				35.1	37.7	45.9	59.1	78.5

The second stage comes when children cease to be a short-term addition to the economic resources of a household and become a short-term use of economic resources: when--at least from the standpoint of five or ten years--having more children is no longer "investment" (in the number of people who will soon be able to help with odd jobs or the harvest, or the number of people who will be able to keep the household's textile spinning and weaving moving smoothly), but is instead more like "consumption". In relatively rich, urban populations most children are in school, and there is little that a pre-adolescent can do that would significantly increase household income in any case.

<b>Characteristics of the Demographic Transition</b>		
	Italy 1880	Italy 1980
Births per 1000	36.5	11.4
Deaths per 1000	28.7	9.6
Life Expectancy	35.4	74.4
Maternal Age at First Marriage	24.1	24
Maternal Age at Final Birth	39	30
Percent of Population 0-14	32.20%	21.40%
Percent of Population 15-64	62.70%	65.30%
Percent of Population 65+	5.10%	13.30%

Thus mothers and fathers put more energy into sharply limiting the number of children in their households, and more energy into improving the quality of life and education for the children that they do have. Throughout the world, as countries have industrialized and urbanized, the pattern of rapid initial population growth followed by a sharp reduction in fertility and in the rate of population growth has repeated itself.

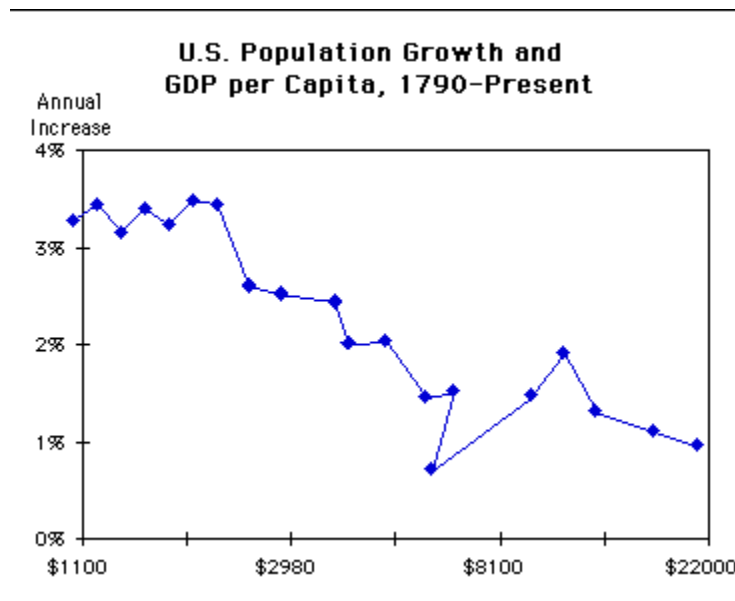
The first nation to go through the demographic transition was France. Today developing economies, like Mexico and China, are undergoing the same process. Population grows extremely rapidly during the transition--the historical range is from a less-than-doubling for France to an apparent seven-fold multiple of population in Mexico's transition. But the period of rapid population growth has, in almost all cases to date, come to an end usually less than a century after the beginning of the steep fall in the death rate that marks the start of the transition.

#### **Timing of the Demographic Transition for Selected Nations**

<b>Country</b>	<b>Beginning</b>	<b>End</b>	<b>Duration</b>	<b>Transition Multiplier</b>
Sweden	1810	1960	150	3.83
Germany	1875	1965	90	2.11
Italy	1875	1965	90	2.26
Russia	1895	1965	70	2.05

France	1785	1970	185	1.62
China	1930	2000?	70?	2.46
Taiwan	1920	1990	70	4.35
Mexico	1920	2000?	80?	7.02

Indeed, the demographic transition has progressed sufficiently far that the world appears to be past the time of maximum percentage population growth. In the late 1960s, the world population was growing at some 2.1 percent per year. Today it is growing somewhat more slowly, at some 1.7 percent per year.



But how fast the rate of population growth will decline in the future, and what the trend of global population will be--that is anyone's guess. Some observers are predicting that the human species will run up against its natural resource constraints in short order, and begin seeing a return to a time in which widespread famine and disease check human populations and are a normal part of human experience. Indeed, some observers have been predicting the beginnings of widespread death from famine for thirty years. According to Paul Ehrlich's popularization *The Population Bomb*, the first major famines were supposed to hit the developing world in the 1970s.

Yet so far nutritional levels around the globe keep rising; food supply has more than kept pace with population growth. There is no sign *yet* of a return of human populations to any "Malthusian" regime.

Whether declining rates of population growth will be the result of human choices in the presence of relative material abundance, or the result of a "Malthusian" apocalypse of war, famine, disease, and death is not clear. However there is every reason to hope for the first.

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## Causes of Growth: the Importance of the Market

Why has the twentieth century been so different from all previous centuries in the pace of its economic growth?

One answer is that the twentieth century has been blessed with *market* economies. Market economies have many powerful advantages over other ways of organizing economic activity--whether by redistribution within extended kin groups, reciprocal exchanges of goods for goods among people who know each other well, or large-scale government- or temple-mediated redistribution and storage. Market economies give manufacturers and traders every incentive to use resources most efficiently. They have the additional advantage of providing a "sunset" for relatively inefficient organizations: enterprises that are relatively inefficient cannot pay their bills, and vanish. This automatic weeding-out of inefficient organizations that fail the test of the market is so lacking where state enterprises draw on the general taxation or money-printing power of the state.

How important has the fact that most economic life has been governed by the market in the twentieth century been? We are lucky to be able to take a look at what production, distribution, and economic growth in the twentieth century would have been like in the absence of the market system by looking across what used to be the iron curtain, at how economic growth proceeded under the central planning system in the Soviet Union that Columbia economist Richard Ericson calls the "classical Soviet-type economy."

In the Soviet Union the production and distribution of commodities was determined by vast bureaucracies. A complex structure of overlapping administrative hierarchies that gathered information, coordinated interactions, disseminated instructions, and monitored performance. The heads of the Communist Party stood at the top of the system, drawing information from and sending information to more than twenty ministerial committees, with such names as *Gosplan* (responsible for planning), *Gossnab* (materials supply), *Gostroi* (responsible for construction), and *Goskontrud* (responsible for labor relations). These ministerial committees in turn issued directives to and gathered information from more than fifty branch ministries composed of several hundred departments. At the base of the bureaucratic pyramid were the enterprises: 46,000 industrial enterprises, 50,000 state and collective farms; 47,000 construction enterprises, and 1,000,000 wholesale and retail trade enterprises.

Planning began with directives from on high, that *Gosplan* used to produce numerical targets and priorities, and that were specified in increasing detail down the administrative hierarchy until they became specific targets for enterprises: your factory will produce five million ball bearings next year. Enterprises respond to these assignments by requesting machines, buildings, raw materials, workers, and other resources. Central authorities strive for maximal performance with threats of punishment and demotion, while subordinates plead their inability to perform their assigned tasks. The outcome is a comprehensive set of commands to all ministries that--in the eyes of the top, at least--involves a rough, tolerable balance between supplies and demands. Typically the

resulting demand from each organization is a small percentage increase in what it is doing.

When it becomes impossible to do what was commanded because the plan is inconsistent or impossible, subordinates make critical choices on the spot in which they have every incentive to *appear* to fulfill the plan: a producer of ball-bearings will find itself driven to produce that assortment of bearing sizes and qualities which it can accomplish--whether or not fulfilling planned categories and numbers has any relation to social demand or to the needs of users. Thus tractor components are produced that do not fit with other components; buildings are built without the utility connections to make them habitable. Attempts by central planners to bring enterprise production into closer conformity with social needs tend, in Ericson's words, to "generate additional inconsistencies, as they are ill-informed, taken under time pressure, and themselves channeled and compartmentalized by the hierarchy."

In Ericson's view, the resulting system lacked flexibility--no one has or can gain authority to solve problems--and lacked incentives: every incentive is to meet the plans and desires of superiors, and not to achieve beneficial economic consequences.

It functioned in certain, limited circumstances. When the task was to accomplish something where even the highest political authorities could see whether it had been accomplished or not, the system functioned: when the task was to build a subway for Moscow or a dam at Dnepropetrovsk, and when the party was willing to shoot people from chief engineers on down if the task was not accomplished, then Moscow got a subway and Dnepropetrovsk got a dam; when the task was to replicate something that existed elsewhere in the world, it could be replicated (although at enormously greater cost); when the consumers of an industry ran it, and had a blank check to use whatever methods and resources they wished to achieve the production of what they desired, then it could indeed be produced. The Soviet armed forces, with first claim on national resources and with the ability to send defaulters to Siberia or worse, got not state-of-the-art but functional equipment produced by the Soviet military production complex.

But elsewhere? The Soviet Union singularly failed to produce quality consumer goods, or a varied crop of foodstuffs, or habitable apartments. As Richard Ericson assessed the harvest of seventy years of Soviet rule, it left the Communists' successors with:

*...over sixty years where building physical capital and institutions has been largely an arbitrary, willful political act, independent of economic considerations. The result is a capital stock that is massively obsolete, abuse and destruction of the resource base, and an environmental poisoning unmatched in history. Most Soviet steel output uses a technology all but abandoned by the rest of the world. The bulk of investment goes to the backlog of unfinished, and never to be finished, construction. New industrial facilities that take less than two years to build in the rest of the world remain under construction for over fifteen years. Vast amounts of expensive imported equipment rusts at ports, rail sidings, and construction sites. Large oil reserves have been rendered inaccessible by use of technologies allowing rapid and easy meeting of*

*quotas. The entire Aral Sea area of central Asia has been poisoned, the sea itself reduced to a salinated cesspool and the agriculture around it ruined by excessive use of chemicals, all in pursuit of the plan.*

How does a market system do a better job? First, it imposes a reality check on every organization--an organization that is relatively inefficient at producing will find its customers going elsewhere, and its revenues falling. It will soon go bankrupt and vanish. This "sunset" concentrates the minds of bosses and managers on figuring out how to produce more goods, more efficiently. Second, it imposes a reality check on every line of business because products that are unsatisfactory to customers do not sell: there is no such thing in a market economy as "overfulfilling" your plan targets by producing something that is useless to all of your customers. Third, the market possesses enormous flexibility: organizations and individuals can change their production patterns any time they choose, without seeking approval at all levels up to and including the highest levels of the national government.

Comparisons of the Soviet Union's economy, and of the economies of the other Communist regimes of Eastern Europe, with Western European patterns suggest that adoption of the market economy has the capacity to multiply economic prosperity by a factor of two to five.

Indeed, previous episodes of mercantile capitalism--like Classical Athens around 400 B.C., Sung dynasty China around 1000 A.D., Mediterranean Islam *circa* 1000, northern Italy around 1500, or Augustan Britain around 1750--have been relatively bright spots in human history. They have been richer than their neighbors, and they have seen wealth and enterprise spread and increase. But until this century, no episode of "capitalism", no market economy has generated anything like the explosion of wealth seen in this century.

So two additional factors have been very necessary to the economic miracle of the twentieth century: first, political democracy; second, technological density.

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### **Causes of Growth: Political Democracy**

Before our century, a productive mercantile economy was a goose that laid golden eggs. But from a historical perspective, a golden goose is a short-lived beast. The ruling prince was always subject to the temptation to squeeze the goose a little tighter, either to pay for a slightly greater degree of courtly splendor or to pay for a slightly higher military effort on whatever was the current active conquest frontier.

In fact, history is littered with the corpses of golden geese.

One of the oldest themes in economics is the incompatibility of despotism and development. Economies in which security of property is lacking--because of either the possibility of arrest, ruin, or execution at the command of the ruling prince, or the possibility of ruinous taxation--experience relative stagnation. By contrast, economies in

which property is secure--either because of strong constitutional restrictions on the government's power, or because the ruling class is itself a mercantile, property-owning, entrepreneurial class--should prosper and grow. Even in the eighteenth century, both Adam Smith and Montesquieu remarked on the correlation between constitutional republican rule and economic growth, and between despotism and economic decline.

And a transition from a mercantile republican to a despotic or a dictatorial regime usually meant that the best days of the local economy were past--that economic decline was on the way as higher and higher taxes and greater and greater exactions to achieve whatever were the current goals of the rulers disrupted the mercantile economy.

Successful democracy changes the calculus. Once people have gotten it into their heads that legitimate governmental authority comes not because God has anointed the king or through inheritance, it becomes hard to maintain a government that does not have popular support. At the very least, regular plebiscites are necessary to demonstrate that the current bunch of thugs-with-guns holds power by the will of the people. If not, then other bunches of thugs-with-guns will be tempted to stage coups, or the government will fall because mass discontent and demonstrations undermines the loyalty of the army: think of the fall of the Shah of Iran in 1979, of President Ferdinand Marcos of the Philippines in 1986, of the Argentine junta that attempted to imprison Juan Peron in 1945, or of Erich Honeker's Communist regime in East Germany in 1989. In the later stages of the twentieth century, especially, governments may not be elected by the people but they can be overthrown by popular discontent.

Hence courtly splendor and an over-mighty military budget become of less interest and less urgency to rulers--even to non-democratic rulers. Keeping real wages rising, employment high, and profits growing becomes the principal aim of governments. For political parties that are either unlucky to catch an unfavorable wave of the business cycle or unskillful enough to disrupt economic growth are likely to vanish rapidly. Economic growth becomes an aim of government policy in itself, rather than a way station on the way to a larger military budget.

This is not to say that governments know how to achieve economic prosperity. It is possible to question whether the net impact of government attempts to boost output and employment in this century has been positive. But before the coming of modern democracy, government policy had a substantial bias against economic growth.

Some--mostly apologists for Lee Kuan Yew of Singapore, or for other semi-authoritarian semi- or un-elected East Asian rulers of rapidly-growing economies--argue that democracies are subject to "indiscipline": civil disorder, or cycles of tax-your-enemies and reward-your-political-friends. By contrast, they argue, a benevolent dictator has every inclination to take the long view, for his security of tenure and the power of his successors are closely linked to rapid economic growth.

But there is a problem with this argument. There is no such thing as a "secure" dictatorship, and no such thing as an authoritarian ruler who can afford to take the long

view. There never was. Consider, as an example, the monarchy of England, the strongest in Europe for the five hundred years 1000-1500, and still strong up until the Glorious Revolution of 1688. Queen Elizabeth I Tudor executed her legal heir. King Richard I Plantagenet "Lion-Heart" found that his younger brother had bribed the Duke of Austria to imprison him. 18 out of 31 monarchs had something go seriously awry with the succession before or upon their death. Only one time in five did the English throne pass peacefully down to the legitimate second-generation heir of any monarch. Any one dictator can be "enlightened", and pro-development. The chance of a chain of such despotic rulers being benevolent is very small indeed.

Bet on democracy as a co-requisite for successful economic development in the long run.

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### **Causes of Growth: Technological Density**

Even the conjunction of market economic organizations and political democracy is insufficient to account for the economic miracle of the twentieth century. Both of these factors are only tangentially related to the extraordinary explosion of technology--of scientific knowledge and its application to production in every day life--in this century. In order to achieve this centuries' revolutions in science and technology, we need "technological density" as well: research and development has to become an industry in itself, rather than an avocation of a few learned gentlemen reading papers before a Royal Society, to maintain the pace of invention and innovation that we now take for granted. Only the confluence of all three, market institutions, political democracy, and high technological density, could generate the economic revolutions of the twentieth century.

Hiero of Alexandria built the first steam engine roughly two thousand years ago--an enclosed sphere on a vertical pole with two openings, one on the right side and one on the left, each pointing counterclockwise. Put some water in the sphere and put the apparatus over a fire. The water boils, the steam escapes through the jets, and the sphere begins to spin clockwise.

A pleasant toy.

It would be more than seventeen hundred years before the steam engine would be used to substitute for human or animal musclepower to boost production. Much pre-industrial technology seems similar: ideas that contain the germ of powerful advances in human command over nature, but just the germ, and are never developed. There is technological progress in the ancient and the medieval world, but it takes place at a glacially slow pace. Medieval historians plot the hundreds of years that it takes the horse collar--so that the weight of whatever the horse is pulling rests on its shoulders, not its neck; thus the horse does not half-choke itself every time it tries to pull--to diffuse and become general across Europe. They plot the thousands of years that it takes the water wheel to become common, and the extraordinary lapses of time before simple improvements--like going from the "undershot" to the "overshot" wheel--are introduced.

And there are times of retrogression. Go to the Musee de Cluny in Paris and look at the crowns of the Visigoths. The Visigoths were a tribe of barbarians that conquered and ruled what is now Spain for more than two centuries at the end of the Roman Empire and before the Muslim invasion of Iberia. Their crowns show pathetically poor workmanship: the Visigoths in 600 A.D. could not find any goldsmiths in Spain capable of doing work even one-tenth as competent as was routinely done in the Iberian city of New Carthage--now Cartagena--800 years before.

Some of it was cultural. Archimedes is reputed to have refused to write a handbook of engineering; Henry Hodges reports that the reason given was that "the work of an engineer... was ignoble and vulgar."

We can track the very, very long run growth of human technology--from "One Million B.C.", in MIT economist Michael Kremer's phrase--by looking at the growth of human population density. For almost all of human history until the industrial revolution, human populations have been in Malthusian equilibrium: average living standards were close to subsistence, and improvements in technology led to increases in population that brought population to the level that could be supported at near-subsistence given the technological capability to use natural resources. If we look at the relationship between human population levels and population growth rates before the industrial revolution, it looks as though the higher the population the higher the growth rate: back when the human population was less than 100,000, population growth averaged less than one-tenth of a percent per year; by the time the human population reached a billion, population growth averaged half a percent per year. It is tempting to speculate that, back before the industrial revolution, higher populations meant higher growth rates because higher populations led to greater *technological density* and a faster rate of technical progress: the larger the population, the more people there are to hear about and improve on previous discoveries and to make new ones. Thus the faster technological capability grows.

Moreover, the rise in sea level at the end of the last ice age some fifteen thousand years ago cut the major continents off from one another as far as technological diffusion was concerned: Eurasia plus Africa, the Americas, Australia, and Tasmania formed four separate human cultural populations as far as technological progress was concerned for most of the past fifteen thousand years. Of these four regions Eurasia plus Africa had more than twice the land area of the Americas, Australia had about one tenth the non-desert land area of the Americas, and Tasmania had about one-thirtieth the non-desert land area of Australia.

<b>Pre-Contact Populations and Population Densities by Continent</b>			
<b>Continent</b>	<b>Non-Desert Area (Million Sq. Km.)</b>	<b>1500 Population (Million)</b>	<b>1500 Population Density</b>
Eurasia plus Africa	75	400	5.33
Americas	34	20	0.58
Australia	4	0.24	0.06
Tasmania	0.1	0.003	0.03

In 1500, when improvements in ship construction and other factors restored cultural contact between continents, Eurasia plus Africa had some twelve times the population density of the Americas; the Americas had some five times the population density (on non-desert lands) of Australia; and Australia had some three times the population density of Tasmania. It is almost inevitable to attribute these differences in population density to differences in technology: much of metallurgy, the plough, the wheel, and the domestication of many large animals (rather than hunting them to extinction) were known in Eurasia plus Africa, but not in the Americas. And it is hard to see any cause for these divergences in technological development in a relatively small number of thousands of years other than *technological density*: the old world had more spaces for people and civilizations to live, hence more possibilities for good ideas to develop and then diffuse. The higher the population--and the more that different members and segments of the population can communicate with one another--the higher the *technological density*.

Technological density depends on more than just sheer numbers alone. We today have much more than the ten times the capability to invent and discover that the human race had five hundred years ago and that a simple count of human numbers would suggest. In broad historical perspective, there have been four upward leaps in technological density over the past ten thousand years that have greatly improved communication at any given level of population density: *writing*, *printing*, the development of the specialized vocabularies and procedures of modern *science*, and the long-distance *telecommunications revolutions* that make communication nearly instantaneous across the entire globe.

Information about what human life was like before the invention of *writing* is--not surprisingly--scarce. That it transformed humanity's capability to remember and thus to build technological knowledge there can be no doubt: as Sir Isaac Newton put it, "If I have seen further than other men, it is because I have stood on the shoulders of giants." And shoulder-standing is not possible without writing to make reliable communication across generations possible. We know of no "civilizations" without writing of some form.

*Printing*--in the sense of Johann Gutenberg and movable type--is only some five hundred years old in Europe, and only some twelve hundred years old in China. The impact of printing on China (little impact: used for the mass distribution of some Buddhist texts, but for little else) should caution us against any narrow belief in technological

determinism. Sir Francis Bacon, for example, noted that the three inventions of gunpowder, the compass, and printing had utterly transformed Europe. Yet all three of these were known, indeed invented, in China. And they had not transformed China.

But in Europe the invention of printing had a profound effect on much of cultural, religious, and scientific development. Over the fifty years separating pre-Gutenberg times from the start of the sixteenth century, the cost of producing a book fell by a factor of several hundredfold: for the time and skilled labor that a monastic scribe would have taken to produce several manuscript copies of a work, a post-Gutenberg printer could (using a different kind of skilled labor) produce 1,000 copies.

After Gutenberg the purchase of a book was a more significant decision than today, when buying a book consumes the money earned in 15 or 30 minutes of work by the average established member of the *litterati*. Technical progress in book production has contributed to further tenfold or so since the immediate post-Gutenberg age; offsetting this is the fact that the average established member of the *litterati* ranked considerably higher in the income scale in the sixteenth century than today; the representative book purchaser in the sixteenth century spent the equivalent of an hour or two's wages on a book.

Contrast this with the month or more's worth spent on creating and purchasing a pre-Gutenberg manuscript--overhead for maintaining the library and the scriptorium, the time of the copyist (and the requirement that the copyist be **highly** literate lest he corrupt the manuscript), and distribution of what was truly a one-of-a-kind product.

What difference did it make that the cost of production of the "unit of information" that was a book went from weeks or months of skilled labor time to hours of skilled labor time? The historian Elizabeth Eisenstein makes a strong case for four very important consequences of this reduction in the cost of books:

- The fifteenth-century European *Renaissance* did not peter out, as had previous episodes of "classical revival." The Carolingian renaissance of the ninth century and the renaissance of the thirteenth century never acquired their capital letters, because the rediscovery of Greek and Roman learning proved temporary and was confined to a relatively small number of people. The fact that the fifteenth-century Renaissance took place at the same time as printing meant that the newly discovered and translated Greek and Latin authors were distributed in great numbers around Europe --and never again was European culture to lose contact with the intellectual world of the Roman Empire that had come before it.
- The sixteenth-century *Reformation* was not suppressed, as previous episodes of heresy and religious revival had been suppressed or absorbed by the Roman-ruled Latin European church. A century or two before, a Hus or a Wycliffe had been able to spread their doctrines only as fast as they could travel and only to as many people as they could speak; counteraction, by contrast, could draw on the entire communications, church, and abbey structure of the Latin church. Without printing, Martin

Luther's and Jean Calvin's heresies would have met the same fate. The religious history of early modern Europe would have been very different: it is quite possible that modern science would have been successfully suppressed, without the reservoir of protestant governments and churches willing to trumpet whatever the Rome-based Latin church wished to disapprove.

- The seventeenth-century origin of modern science is unthinkable without the density of information exchange made possible by printing. Is it a coincidence that Copernicus follows Gutenberg by less than a century?
- The creation--around networks of printers and authors--of a "cosmopolitan" and tolerant outlook. Liberalism has an elective affinity with printers' workshops.

The process of economic growth was perhaps unstoppable after Galileo, and probably unstoppable after Newton. The success of each previous generation's scientists and engineers enlarged the pool of those willing to work on science and technology in the next generation. The printing press made the diffusion of work and knowledge across Europe cheap, easy, and rapid. The second half of the seventeenth century saw the invention of the pendulum clock, the pocket watch, the microscope, the vacuum pump (without which the steam engine was impossible)--and champagne. The first half of the eighteenth century saw the invention of the flying shuttle (which doubled weaving productivity) and the Newcomen "atmospheric" steam engine. The second half of the eighteenth century saw the invention of Arkwright's automatic spinning machine, of the improved Watt "condenser" steam engine, the power loom, the cotton gin, the hot-air balloon, vaccination, and lithographic printing.

Thereafter the flow of inventions became a flood. European governments made it profitable to become inventors by adopting the patent system: the power to devise patent and copyright laws is one of the few powers explicitly granted congress by the U.S. constitution. The links between science and industry became close and tight with the invention of electric technologies and with the application of physics to engineering design. Thomas Edison was among the first to assemble a research laboratory: more than fifty mechanics and scientists in a facility in Menlo Park, New Jersey.

We can approximately gauge the increasing technological capability of humanity before the industrial revolution by looking at non-mechanized sources of power. An "overshot" waterwheel (so called because the water shoots over the wheel and falls on the wheel from above; better than an "undershot" wheel which requires that the steam flow be neither too low nor too high) generates the power of perhaps two hundred humans (for humans get tired, while the waterwheel does not). Pictures of the Dutch countryside before the industrial revolution that are populated with windmills are not pictures of an idyllic pre-technological utopia; rather, they are pictures of one of the most technologically-advanced economies of its day.

<b>Pre-Industrial Sources of Power</b>	
<b>Source</b>	<b>Horsepower</b>
Man working a pump	0.04
Man working a crank	0.08
Man pushing a capstan	0.05
Horse in a circle at a walk	0.58
18-foot overshot waterwheel	5.0
Post windmill	8.0
Turret windmill	14.0

But the industrial revolution moved things a full order of magnitude forward. The energy at the disposal of the average Belgian industrial worker in 1910 was some ten times what his or her own muscles could have provided.

<b>Power Used in Belgian Industry, ca. 1910</b>	
<b>Industry</b>	<b>Horsepower per Worker</b>
Metals	1.59
Ceramics	0.63
Food processing	1.91
Textiles	1.14
Apparel	0.07
Leather	0.43
Printing	0.36
Craftsmen	0.51

The first half of the twentieth century saw power at the service of the average manufacturing worker improve roughly fivefold as electricity replaced steam, and as capital accumulation multiplied the number and capability of machines. By 1953 the average American manufacturing worker had roughly three hundred times as much power at his or her disposal as did his or her colonial predecessor of two hundred years before. And simply counting horsepower understates the change, for the precision with which power and force can be used vastly exceeds what was possible in previous centuries as well, and there are many applications where the precise application is more important than the amount of force.

<b>Sources of Mechanical Drive in American Manufacturing</b>							
<b>Thousand Horsepower</b>							
<b>Year</b>	<b>Steam Engines</b>	<b>Steam Turbines</b>	<b>Internal Combustion Engines</b>	<b>Water Wheels and Turbines</b>	<b>Electric Motors</b>	<b>Total</b>	<b>Horsepower per Manufacturing Worker</b>
1869	1216	0	0	1130	0	2346	1.04
1879	2186	0	0	1225	0	3411	1.10
1889	4581	0	9	1242	16	5848	1.25
1899	8022	0	120	1236	475	9853	1.57
1909	12026	90	592	1273	4582	18563	2.25
1919	11491	465	856	970	15612	29394	2.68
1929	6857	1112	722	623	33844	43158	3.90
1939	4216	1736	866	394	44827	52039	4.35
1948						86095	6.60
1953						105007	7.18

How long will this go on? There might have been a time when people might have thought that the industrial revolution would run its course: the industrial revolution of the eighteenth and nineteenth centuries was based on power (first steam, then electricity and gasoline), simple automation using power (looms and spinning machines), and metalworking. Perhaps at some point the pace of productivity improvement in these technologies would begin to slow. But power, simple automation, and metalworking were followed by industrial revolutions in chemicals and in artificial materials; in transportation; in communications; and then in microelectronics and information processing--not to mention the atomic bomb. So far there are no signs that invention and innovation have begun to run into increasing returns, and the technological density of the world continues to grow.

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### **Consequences of Growth: Structural Change**

Looking at simple one-dimensional measures of growth hide extraordinary shifts in the relative quantities and the character of the goods consumed. Turn of the century urban households spent half or more of their money on food. Households today spend one fifth on food. Half of Americans were farmers in 1900. Only three percent are farmers today. As economic growth proceeds, agriculture shrinks and industry grows, until industry in its turn peaks at a little more than one-third of the economy and then itself begins a slow decline relative to services. The balance between agriculture and industry, between design and craftwork, between production and distribution, and--most important--between labor within and without the household all underwent profound shifts in the past century.

<b>Employment Structure in Great Britain</b>				
<i>Year</i>	<i>Agriculture</i>	<i>Industry</i>	<i>Other Services</i>	<i>Information-Intensive Services: Control, Entertainment, Education, Communication</i>
1000	80%	12%	5%	3%
1500	67%	15%	12%	6%
1700	56%	22%	14%	8%
1820	40%	32%	18%	10%
1890	16%	44%	23%	17%
1990	2%	29%	35%	34%

Before the industrial revolution, even during the industrial revolution, agriculture had always been more important than industry in the sense of making up a greater part of employment and of real national product. Representative urban families had always spent more than half of their incomes on food. The overwhelming majority of rural families had always raised their own food, plus if they were lucky enough surplus for the lord, the taxman, and perhaps a little to exchange in addition.

Farming was always hard work, especially in the pre-industrial Malthusian days when improvements in technology soon generated increases in population, and thus reductions in the amount of land each farmer could work. The Greek philosopher Aristotle of Stagira believed that farming dulled the brain--that the contemplation and education necessary for full human mental development would inevitably be beyond the reach of all but a small portion of the human race, because the destiny of most of the human race was to farm the land, and farming left no leisure for philosophy. Eighty to ninety percent of households in the world of Aristotle had to labor, and as far as he could see would always have to labor, full time to grow food for themselves and the rest of the population. This Aristotle saw as the law of nature. Aristotle also believed that the first prerequisite of philosophy was leisure--which required, in Classical Athens, property, wealth, and slaves.

All this changed in the twentieth century. By its end, instead of the 4:1 ratio of farmers to non-farmers of the middle ages or the 1:1 ratio in the later nineteenth century, the ratio was 1:30: one farm for every thirty non farm households.

What would Aristotle say if told that in the United States today not eighty percent, but three percent of households are farmers? What would he say if he went on to learn that a major political flashpoint is that these three percent grow too much food? What would he say to the observation that the United States today could maintain its entire population at the material standard of living of classical Athens without requiring more than 100 hours a year of work from each of its adult citizens? The number of families fed by the food grown by one farm family has gone from 1.2 in Aristotle's day to 2.5 in the late

nineteenth century to 33 today. What had been the principal occupation of the human race for 10,000 years-agriculture-has become the occupation of only a small part of the late twentieth century population.

Within industry, the balance of work also underwent profound shifts. Even in 1900, most industrial production was handwork, craft production. Even the most mass-produced and machine-intensive commodities-textiles and weapons-still required considerable handwork and final filing and fitting to complete their production. In the late twentieth century, most industrial production was mass production: handwork by skilled, specially trained, long-time experienced workers was the exception rather than the rule. Skills entered the production process mostly at the design stage, and at the maintenance stage-not, except for luxury goods, at the stage of direct craft production.

The balance between production and distribution also changed. By the end of the twentieth century, the United States had more people employed selling cars than making cars. Assembly-line auto workers were a smaller part of the total automobile production and distribution workforce than the employees of the distribution channel.

The character of the service sector changed as well. Think of the service sector as being divided into two components: those who perform services directly (whether cutting hair, carrying goods from place to place, or extracting appendixes) and those whose service-sector work is largely directed toward creating and manipulating information: governors, tax accountants, scribes and recorders, teachers, messengers (and others who work in communications technology), and entertainers. Throughout most of human history the number of service-sector workers has been relatively small: trade and personal services are luxuries largely for the rich. And there is little information to be processed: how many bushels of wheat the serfs owe to Baron Fred. As the commercial revolution took hold, and as trade greatly expanded, the size of the distribution component of the service sector grew rapidly. Perhaps one in five workers in Britain in 1800 was serving as a butler, or a porter, or a waiter, or a carter.

More recently it has been the turn of the information-intensive services to grow. This is not to say that information-intensive service-sector jobs are high-paying high-skill jobs. In fact, the growth of the retail scanner in the past generation has completed a process begun with the invention of the original cash register that has turned "cashier" from a high-wage, high-skill, high-trust job into one of the lowest-skilled of entry-level jobs in the modern economy. Yet the job of cashier continues to be very information intensive: tracking what is bought, and how much money is paid for it.

And perhaps most important of all, the balance between work within and without the household also shifted profoundly. Reductions in infant mortality, the advancing average age of marriage, and the increasing costs of child-raising together drove a decrease in fertility. The rate of population growth slowed drastically, from an approximate doubling each generation to a rate approximately consistent with zero long-run population growth in the advanced industrial economies. The number of babies per potential mother dropped by about two-thirds.

Along with the reduction in fertility came an expansion of household technology: microwaves, dishwashers, washing machines, dryers, vacuum cleaners, improved chemical cleansing products, and so on all made the tasks of keeping the household clean, ordered, and functioning much easier. Maintaining a nineteenth century, high-fertility household was a much more than fulltime job. Maintaining a twentieth century household was--except in peak periods surrounding birth and illness--a part time job. Large reserves of female labor that had, for most of the nineteenth century and before, been effectively tied to work within the household because of the backward state of household technology could now be used for other purposes.

It is presumably no accident that the reduction in the internal time demands of running a household came at the same time as the rise of modern feminism. It is presumably an accident that this reduction and rise of feminism came at a time when women's liberation could turn to its own account ideological and intellectual weapons that had already proven effective for two centuries. First, the Third Estate had used equality among adult males--the principle of "careers open to talents"--to overthrow status-based distinctions between classes of nobles and classes of commoners. Second, ethnic and religious groups that were victims of discrimination had used the same principles--judgment not by the color of their skin but by the content of their character--to win a series of partial victories, and to end racism as a dominant public ideology in the industrial west.

Third, the same principles could be applied by feminists. Restrictions on female education, on female voting, and on female career choice could all be attacked using the same set of principles and ideals that had proven effective in the first two waves of equality. In response to the declining time demands of within household work and the expanding set of outside opportunities, female participation in the paid labor force surged. At the turn of the twentieth century, the principle was that (with the sizeable exceptions of female domestic servants and--principally unmarried--female factory operatives) the paid labor force consisted of men. At the end of the twentieth century, things were very different.

In the United States, the end of the twentieth century saw female levels of training and education rapidly approaching male levels, and poised to surpass them. Male wages and earnings still appeared higher than female wages and earnings by more than could be easily accounted for by differences in education, training, and degree of labor force attachment: there was still discrimination visible at the aggregate level. But the discrimination-driven wedges between male and female wages appeared to be closing--slowly--with every passing decade.

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### **Consequences of Growth: Slouching Towards Utopia?**

I have spent nearly forty pages arguing that the most important thing about twentieth century economic history is its extraordinary surge in material prosperity, a surge so great as to remake the world in which the average human being lives, at least in the leading-edge nations that make up the industrial core of the world economy.

Yet turn to other forms of history, whether political, cultural, or social, and the enormous absolute and relative pace of twentieth century economic growth has much lower billing. It is seen out of the corners of their eyes, at the edge of their peripheral vision--if it is noted at all.

To some degree this is the result of an over-narrowness of focus forced by their specialization: a professional deformation. Cultural historians typically track eras by the styles of life lived by the upper classes. Political historians look at the distribution of power and influence at the top of the income distribution. Social historians spend more time looking at the relative gap between top and bottom than looking for significant shifts at the bottom. The rich today are very rich indeed, but they are rich in different things and in different ways than the rich of a century ago.

So a view of the century that concentrates on changing elite styles of life, on the use of political power and influence, or on the *relative* gap between rich and poor, will not see economic growth at the center of its picture.

This fuzziness of vision is reinforced by the fact that in some ways, today's rich *are* impoverished when compared to their predecessors a century ago. The formal marks of deference and service that they were accustomed to receive have in large part disappeared. The ability to boss one's many servants around has traditionally been the mark of belonging to the truly upper class, and this style of life is the one that has become rarest--because it has become much more expensive in relative terms--today.

The rich today live in smaller houses. They have fewer servants. They share modes of intercity and international transport with those who a century ago would not have been allowed on the boat or in the railroad car. The upper classes today are far richer than their predecessors of a century ago, if wealth is understood in terms of command over nature and over commodities. But the rich of today have less ability to command human beings. If what you value in wealth is domination--the command and control over the wills of others that wealth gives you--then the rich are poorer in spirit (although much more prosperous in body) than the rich of a century ago.

A small detail is revealing. Consider George Orwell, who after the end of World War II was to become famous as the author of *Animal Farm* and of *1984*: anti-utopian novels about how the future might go horribly wrong--and had gone horribly wrong in the Soviet Union. But before World War II George Orwell was a socialist. His most famous pre-World War II books were *Homage to Catalonia*, an account of his experience fighting for the left in the Spanish Civil War, and *The Road to Wigan Pier*--an account of his travels among the unemployed and desperate of England during the Great Depression of the 1930's. Orwell wrote *Wigan Pier* as a call for fundamental reform at the least, and possibly for revolution. He sought to convince middle class citizens that they had interests in common with the working classes: interests in prosperity, in fairness, in the avoidance of unemployment, and in an egalitarian distribution of wealth.

One of Orwell's major points is that the system (which Orwell, writing during the Great Depression, argues is not working at all for the lower classes) is not working for the middle classes either. So Orwell tries to sketch the plight of the British "lower upper-middle class" in the years just after World War I. As Orwell tells it, this class-to which he belonged--was becoming relatively impoverished. They had lost the traditional marks of British upper-class status:

*[Y]our gentility was almost purely theoretical.... Theoretically you knew all about servants and how to tip them, although in practice you had one or, at most, two resident servants. Theoretically you knew how to wear your clothes and how to order a dinner, although in practice you could never afford to go to a decent tailor or a decent restaurant....[I]n [this]...kind of shabby-genteel family... there is far more consciousness of poverty than in any working-class family above the level of the dole.*

From today's perspective, Orwell's vision seems nonsense. It divides the world into two groups: those with more than two live-in servants--those with a nanny, a cook, a butler, and perhaps more--and everyone else. A household with "one or, at most, two resident servants" has only a "shabby" gentility. It is, Orwell thinks, ripe for recruitment to the cause of socialism, for there is no real difference between them and the industrial working classes.

But how many upper-class American families have permanent live-in servants today? As Orwell counts, rich Americans today cannot claim to be "genteel"--and should presumably be socialist--even though they have levels of real wealth some thirty-fold greater than their counterparts of the past century.

The answer is that Orwell believes that the touchstone of being truly well off is to boss many people around in your private life: only if there are people always waiting on you. Note the marks of gentility: servants, multiple restaurant waiters, tailors. The upper and middle classes in England were indeed losing their ability to casually employ armies of resident servants in the first third of this century. But they were not losing this ability because they were becoming poorer. They were losing this power because those who would otherwise have become their servants were becoming richer. Real wages were rising, opportunities for employment outside domestic service appeared more attractive, and potential servants were demanding higher real wages to enter domestic service.

Moreover, technology was creating cheap and effective replacements for many forms of personal service. Scrubwomen have been replaced by dry cleaners and washing machines. Maids (for the rich) have been replaced by vacuum cleaners and dishwashers. Messengers have been replaced by telephones. Butlers have been replaced by answering machines. Automobiles have become more reliable, so that each car does not need to come with a full-time chauffeur *cum* mechanic. There is a story that one of the founders of Mercedes-Benz said that there would never be more than a million cars in the world, because there were no more than a million potential chauffeurs.

When you unpack what is really going on, it becomes very hard to think of it as a "plight" at all. It is hard to argue that *any* class of people in Britain really were impoverished by the replacement of scrubwomen by washing machines. There is thus a certain cognitive dissonance created by judgments of wealth, poverty, and gentility like those of Orwell. He implicitly defines wealth not as the power to get things done but as the power to make other people do them. The twentieth century has seen wealth defined as power over nature increase; but wealth defined as power over people cannot increase. It in fact declines over time as the economy grows because people become less hungry, and so less willing to be bossed around.

This raises an issue: is the purpose of wealth to get things accomplished--to get clothes clean--or is it to demonstrate one's power by bossing the scrubwomen around?

Economists have a strong professional bias--perhaps a professional deformation of our own-- to define it as the first. This is, at bottom, a moral stance: love of domination for domination's sake is not allowed to be an end and a source of utility. The aim must be to get clothes clean, not to show that you are master and she is servant. Your wealth and welfare are defined as the things *you* can do (or cause to get done) in absolute terms, not by how your pile of commodities stacks up when compared to somebody else's or how many other people you can boss around. You are not impoverished if someone else becomes better off.

The past century has in fact seen the wages of relatively unskilled workers rise at about the same pace as productivity as a whole. Any commodity or service--like restaurant meals, skilled hand-crafted carpentry, or tailoring--that is heavily labor intensive has become, compared to other commodities, more expensive. The rise in material standards of living has necessarily taken the form not of an increase in the ability to acquire commodities that require not predominantly the input of other people's time and skill, but of an increase in the ability to acquire commodities created primarily the application of technology and the use of machines.

The past century has seen households trade cash for leisure. The wholesale city price of raw foodstuffs today amounts to four percent of consumer expenditure. It amounted to 20 percent a century ago. Yet the share of food in household budgets has shrunk not by a factor of five but by a factor of two. The difference is that today much preparation is done outside the household: mixing, chopping, pre-cooking, combining, freezing, and processing all make cooking a meal a much less time-consuming process today than it was a century ago. Our food bill today seems so large because we count a very large share of the meal production process as a market expenditure. A century ago, much of this process was hidden inside the household and was never registered through a market exchange. To a large extent, Americans today are like rich Edwardian Britons in that they do have cooks. But today the counterparts of the last century's domestic servant cooks work outside the household, for companies like Nabisco, using very capital- and machine-intensive production processes.

A counterpart of the rising price of labor-intensive services has been the falling prices of once luxurious and scarce goods, and the growth of the consumption of "cheap luxuries" on the part of the relatively poor. Once again, this disquiets Orwell: the system is taking advantage of the relatively poor by enabling them to consume commodities that they *think* are luxuries, but that in fact are no longer so. In Britain during the Depression many among the poor were deprived of steady employment, good housing, nourishing well-balanced diets, and their self-respect as productive and hard-working members of society. Yet there were no revolts and little protest, even though "whole sections of the working class...have been plundered of all they really need." Why not? Because they had been "compensated...by cheap luxuries which mitigate the surface of life": fish and chips, artificial-silk stockings, tinned salmon, cut-price chocolates, movies, radio, tea.

Orwell is profoundly uneasy with these cheap modern "luxuries." His prose shows this uneasiness with words like "palliative," "mitigate," "surface." He is in the last analysis not pleased but upset by the fact that "the youth...for two pounds ten on [installments]...can buy himself a suit which... at a... distance looks... tailored on Saville Row. The girl can look like a fashion place at an even lower price.... [I]n your new clothes you can stand on the corner, indulging in a private daydream of yourself as Clark Gable or Greta Garbo." At some level Orwell believes that this expanded range of choice masks the reality of the situation--which is that the working class has gained little in terms of relative income, relative wealth, or relative power. It makes tolerable what should not be tolerated: that the upper class has too large a share of the pie.

This shows that Orwell does not have the habits of mind of an economist, to whom *absolute* levels of material prosperity are much more important than *relative* wealth distinctions. But Orwell may have been right. It may be a mistake to say that the twentieth century has given the shop-girl of this century the same standard of living as a duchess of the nineteenth century, *if* the key element of being a duchess is being exceptional. To the extent that goods are valued not for the services they provide by themselves but as indices of exclusivity, it is pointless to produce them for more people because then they become less exclusive and so less valuable.

The economist Paul Krugman, for example, is on Orwell's side: he would rather be middle-class in 1950 than working poor in 1990--even though the material standard of living of America's working poor in 1990 is higher than that of America's middle class in 1950. He:

*know[s] quite a few academics who have nice houses, two cars, and enviable working conditions, yet are disappointed and bitter because they have never received a [job] offer from Harvard and will probably not get a Nobel Prize. They live very well... but they judge themselves relative to their reference group, and so they feel deprived. And on the other hand, it is an open secret that the chief payoff from being really rich is, as Tom Wolfe once put it, the pleasure of "seeing 'em jump." Privilege is not merely a means to other ends, it is an end in itself.*

It may be a big mistake to think that human happiness is necessarily and significantly increased by piling up larger and larger heaps of material goods. For today we have exceeded the technological capabilities of all previous utopias. Recall Edward Bellamy's *Looking Backward*, where the limit of human felicity is attained by the ability to dial one of four orchestras and listen to it over a speakerphone.

Yet America today does not see itself as possessing wealth vast beyond dreams. Americans today do still have dreams of avarice. And certainly do not believe that they live in anything like a Utopia. They by and large do not feel as though they have gone far beyond the limits of useful wealth into the realm of sybaritic luxury. And America has not been able to--or has not wished to--distribute this wealth in a way that makes everyone feel that he or she has "enough."

Thus *we today do not see ourselves as living in, or even as rapidly approaching, Utopia.* Yet dreamers in all previous centuries would have thought that Utopia could be built with much less power over nature and ability to produce material goods than a late twentieth century industrial nation in fact possesses.

I want to stress this contrast between how we regard our prosperity, and how our predecessors would have regarded us. Consider John Maynard Keynes, perhaps the greatest economist of the twentieth century. He was one of the few who did clearly see the power of economic growth in an essay he wrote at the beginning of the Great Depression: "Economic Possibilities for Our Grandchildren." Keynes, correctly, classified the then-current depression as a temporary interruption of a long-run tide of rising prosperity. But what did he see as the result of this rising tide? Keynes concluded that the Economic Problem, that is "the problem of want and poverty and the economic struggle between classes and nations," was in the last analysis "nothing but... a transitory and *unnecessary* muddle."

Keynes' argument had three steps. First, he--correctly and in fact somewhat pessimistically--expected "...the standard of life in progressive countries one hundred years hence will be between four and eight times as high as it is [in Britain] today." We in the United States only a little more than half a century after his writing have at least met and perhaps far surpassed this expectation. Second, Keynes saw human needs as "fall[ing] into two classes--those needs... absolute in...that we feel them whatever the situation of our fellow[s]... and those which are relative...that we feel... only if their satisfaction... makes us feel superior...." Third, he argued that although "needs of the second class... may indeed be insatiable... this is not so true of the absolute needs."

Keynes' conclusion was that "a point may soon be reached... when these [absolute] needs are satisfied, in the sense that we prefer to devote our further energies to non-economic purposes." In that case:

*the day is not far off when the Economic Problem will take the back seat where it belongs, and that the arena of the heart and head will be occupied... by our real problems---the problems of life and of human relations, of creation and behavior and religion.*

Then the desire to acquire for the sake of impressing our next door neighbors will fall as well:

*When the accumulation of wealth is no longer of high social importance, there will be great changes in... morals.... We shall...rid ourselves of many of the pseudo-moral principles which have hag-ridden us for two hundred years.... We shall...assess...the love of money as a possession--as distinguished from the love of money as a means to the enjoyments and realities of life--for what it is... one of those semi-criminal, semi-pathological propensities which one hands over with a shudder to the specialists in mental disease. All kinds of social customs and economic practices, affecting the distribution of wealth and of economic rewards and penalties, which we now maintain... however distasteful and unjust they may be in themselves, because they are tremendously useful in promoting the accumulation of capital, we shall then... discard.*

There are many ways to see that Keynes is mistaken. First, note that much of what Keynes thought of as "necessities" in the mid-1930s would have struck, say, Agamemnon in 1400 B.C. as pointless and decadent luxuries.

More important, Keynes's predictions have not come to pass. He expected society to undergo a profound change as attention shifted from working hard to keep the wolf from the door to living a good life. But we today do not feel that material acquisition is about to go out of style, we do not appear to be on the threshold of converting *en masse* from full-time to half-time or quarter-time work, and we have not begun to rank and applaud people by how they spend their leisure as opposed to what they do at work. The dividing line between useful necessity and pointless luxury always comes at roughly twice one's current standard of living. After all, Americans *could* subsist--healthily--off of wheat flour, evaporated milk, cabbage, spinach, and navy beans for less than fifty cents a day. But, as George Stigler wrote:

*such a diet would not be to the satisfaction of either the population or the students of nutrition.... Man insists upon luxuries such as meat, and should we somehow fully address his desire (despite his penchant for shifting from sow belly to pheasant), he will no doubt insist upon shifting to another and more expensive food.... [T]he economic system has as its purpose forcing people to find new scarcities... the alteration of a host of circumstances and policies that deprive large numbers of people of eminently desirable things that a more efficiently organized society could afford.*

So there is no real reason to expect "satiation" at any level of per capita income that I can foresee. The level of luxury at which people imagine satiation is always three times the value of their current consumption.

It is significantly more pleasant to eat broiled sole at Chez Panisse than to munch on a tuna sandwich while sitting on the concrete wall by the North Gate to the Berkeley Campus. It is more fun to write on a powerful laptop PC, while sitting at a tile table in an air-conditioned cafe and drinking cappuccino, than to write on a manual typewriter in a small, hot office while drinking a combination of dishwasher and sludge made from instant coffee--or to write with bad ink on parchment by the light of a single candle.

We cannot approach utopia in terms of material welfare because we can always imagine how increased resources could give us a more comfortable and rewarding life. Or perhaps it is better to say that from the standpoint of every previous century we have surpassed utopia, but failed to stop and properly appreciate the accomplishment.

An equally important answer, of course, is that Utopia does not require merely command over nature. It requires command over self, and command over society as well. Command over self is a matter of psychology. But it means that material welfare is not standard of living. Public order and public safety, relative income, one's material consumption relative to one's parents, and so forth all make the standard of living or style of life more complicated than simply the consumption of material goods, of commodities and services. They make relative income as important, in some circumstances, as absolute prosperity. And it is as important to teach people how to choose the ends they want their lives to serve as to give them wealth--power--that can be used to achieve such ends.

The second answer is that we have not achieved utopia--in spite of immense material wealth--because we have approached it as a problem of engineering, and it is in fact a problem of psychology. This leads to a third answer: our collective failure to solve the problems of command over self means that the economy is not just as a means for the satisfaction of wants, but also serves as a social discipline mechanism: a device for compulsion and regulation of behavior through the granting and withdrawal of material rewards for appropriate and inappropriate behavior.

The institutions of the economy and polity never confine themselves just to the administration of things, but become part of the government of humans as well.

Yet to use the economy as a social discipline device to control behavior requires that those who do not behave appropriately do not benefit from the fruits of our collective prosperity. And economic forces can only be effective as mechanism of social control if the relative misery generated by the failure to behave appropriately is great: if the economy is to be used as a social discipline mechanism, then some must be disciplined--and live in poverty. This principle was re-stressed during the right-wing swing of the political pendulum in the 1980s: it was argued that the rich and skilled would not work their hardest and do their best unless they got to keep a very large share of what was produced, and that the poor would be idle and unproductive unless the consequences of unproductivity were truly dire--that disability insurance only encouraged more people to remain disabled, and that unemployment insurance only encouraged people to stay unemployed.

Thus the paradox; the carrot of lower taxes to the rich and the stick of a withdrawal of social insurance to the poor are, it is widely agreed, necessary to rev up the engine of rapid economic growth and development. The result is a society that is materially richer than any previously imagined utopia. Yet this society also falls far short of anyone's vision of a shining city on a hill. In the imagination of utopians, their cities on a hill did not have masses of itinerant beggars, or poor mothers working their fingers to the bone because of life-choices they had made in the distant past. Yet our civilization does.

There is a possibly apocryphal story about Lenin in exile in Switzerland. One day he was eating lunch in a hotel. Someone asked him how, after the revolution had been accomplished and the building of utopia had been completed, goods would be distributed. Lenin pointed to the sugar bowl in front of him. In middle class restaurants, he said, sugar and salt are not scarce; everyone takes what they need, and there is enough for all. So will it be for all commodities under socialism.

Now Lenin was not only one of the most brutal but also one of the most clueless political leaders of the twentieth century. He had no understanding of how to create a government that would nurture and protect individual liberty. He had no idea how to order society to create general prosperity. He did understand--to Russia's great misfortune--the institutions of political conspiracy.

But it is not only from Lenin's perspective alone, but from Edward Bellamy's and from John Maynard Keynes's perspective that our present society falls short of the utopia that they had imagined such great material wealth and technological capability would generate. From their perspective, our combination of enormous material wealth on the one hand with the use of economic forces as a social discipline device on the other would appear profoundly weird, and mark a degree of continued enslavement to "avarice, usury, and precaution" that they would have found incredible.

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#### **-IV. Genocide-**

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- Magnitude of Twentieth Century Genocide
  - Origins of Twentieth Century Genocide
  - Communism and Nazism
  - Economic Ideology and Political Murder
-

This chapter carries a dark, grim message: the boost to human productive, technological, and organizational powers seen in the twentieth century was truly values-neutral. The century that has seen the fastest economic growth and the richest human societies ever has also seen the greatest--and multiple--genocides. The greatest crimes of human history have been committed, and the greatest criminals of all time have lived, in the past hundred years.

The table below presents a few estimates from R.J. Rummel's *Death by Government*--a book that undertakes the grim task of attempting to roughly count up the violent death toll of the twentieth century. Rummel excludes from his count of genocide the deaths of soldiers in time of war, and the "incidental" deaths of civilians in time of war (that is, deaths that occurred as a consequence of what could be classified as military operations directed against enemy armed forces or war-making power: military exercises like the British night bombing of German cities during World War II are counted as episodes of genocide). Rummel's estimates of genocide are only of the people whom governments, in time of peace or far from the battlefield, have killed.

Some of the estimates are solid; some are shaky; some are wild guesses. Some are barely estimates at all: we know next to nothing of what has gone on in North Korea over the past fifty years, and Rummel's guess--he doesn't label it an "estimate"--is based on the projection that North Korea has been no better and now worse than similar countries with similar ideologies and similar degrees of self-imposed isolation.

I think some estimates are too high, and some are too low (I suspect Communist China and Nazi Germany should be switched). But Rummel's estimates are not without evidence, and on average I have no reason to believe that they are biased in any systematic way.

Deaths as a result of military operations in this century have been horrific enough: governments and their soldiers have killed perhaps forty million people in war--either soldiers unlucky enough to have been drafted into the mass armies of the twentieth century, or civilians killed in the course of operations that generals could claim were directed at reducing the enemy's war-making potential.

## Civilians Killed by Governments in the Twentieth Century: Top Twenty Regimes

Location (Regime)	Deaths	Era
Soviet Union (Communists)	61,900,000	1917-1990
China (Communists)	35,200,000	1949-present
Germany (Nazi Third Reich)	20,900,000	1933-1945
China (Kuomintang)	10,400,000	1928-1949
Japan (Imperial-Fascist)	6,000,000	1936-1945
China (Communist Guerrillas)	3,500,000	1923-1948
Cambodia (Communists)	2,000,000	1975-1979
Turkey ("Young Turks")	1,900,000	1909-1917
Vietnam (Communists)	1,700,000	1945-present
North Korea (Communists)	1,700,000	1948-present
Poland (Communists)	1,600,000	1945-1948
Pakistan (Yahya Khan)	1,500,000	1971
Mexico (Porfiriato)	1,400,000	1900-1920
Yugoslavia (Communists)	1,100,000	1944-1990
Russia (Czarist)	1,100,000	1900-1917
Turkey (Mustafa Kemal "Ataturk")	900,000	1918-1923
United Kingdom (Constitutional)	800,000	1900-present
Portugal (Fascist)	700,000	1926-1975
Croatia (Fascists)	700,000	1941-1945
Indonesia (Suharto)	600,000	1965-present

But the top twenty regimes have killed--roughly--156,000,000 civilians in this century. Wars have been less than a quarter of this century's violent death toll. Far from the battlefield and in time of peace, governments in this century have bloody hands: class enemies, race enemies, political enemies, economic enemies, imagined enemies--you name it, governments have slaughtered them on a previously unimagined scale.

Let us call those leaders whose regimes have slaughtered more than ten million of their fellow humans "members of the Ten-Million Club." All pre-twentieth century history *may* (but may not) have seen two members of the Ten-Million Club: Chingis (Ghengis) Khan, the ruler of the twelfth century Mongols, the launcher of tremendously bloody invasions of Central Asia and China, and the founder of China's ruling Yuan Dynasty (Marco Polo's travels were to the court of the Yuan Emperor Kubulai Khan); and Hong Xiuquan, the mid-nineteenth-century Chinese intellectual who declared himself Jesus Christ's younger brother and launched the Taiping Rebellion. No single individual played a significant role in the creation and growth of the early modern Atlantic slave trade, or in the disease-and-exploitation-driven decimation of the pre-Columbian populations of the

Americas. The first of these two historical episodes was on a super-genocidal scale; the second is uncertain--it may only have been genocidal.

By contrast, the twentieth century has seen perhaps five members join the Ten Million Club: in alphabetical order, Adolf Hitler, Chiang Kaishek, Vladimir Lenin, Joseph Stalin, and Mao Zedong. Hitler, Stalin, and Mao have credentials that may well make them the charter members of the Thirty Million Club as well--perhaps even the Fifty Million Club: our knowledge of what went on inside China, the Soviet Union, and the Third Reich is very imperfect. A regime whose hands are as bloody as those of the Suharto regime in Indonesia--with the blood on its hands of perhaps 450,000 communists, suspected communists, and others who simply were in the wrong place at the wrong time at its creation in 1965, and perhaps 150,000 inhabitants of East Timor since the Indonesian takeover in the mid-1970s--such a regime barely makes the twentieth century's top twenty list as far as the massacre of civilians is concerned.

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### **Origins of Twentieth-Century Genocide**

Some have traced the beginnings of the twentieth century's culture of genocide to the overturning of the traditional rules of European war that sharply distinguished combatants from non-combatants. In the Boer War at the turn of the century in South Africa the British army found itself faced with a stubborn guerrilla movement after the defeat of the Boer Republic's conventional armies. The British army responded by inventing the concentration camp as we know it: depopulating the countryside, and crowding civilians together. Disease spread through the camps and mortality was relatively high--although lower than in virtually every other twentieth century concentration camp.

Others trace it to the rhetoric of violence that always accompanied Karl Marx's version of socialism. In Marx's writings, democratic political institutions, individual rights, and public deliberation are always masks and shams in the absence of substantive economic equality--and were to be fought as fiercely as medieval barons who slaughtered peasants for failing to pay feudal rents.

Still others trace it to the great French Revolution of the eighteenth century, to political philosophers like Jean-Jacques Rousseau, and to the idea that whatever political party represents the Nation is engaged in a life-and-death struggle with Enemies, a struggle in which scruples about means are out of place.

Still others say that it was there all along, but that pre-twentieth century governments and religions by and large lacked the organizational capability and certainly lacked a motive to exterminate their fellow human beings by the tens of millions. They could conduct pogroms, purges, and witch-burnings on a retail scale, and only the absence of modern technologies of communication and organization kept them from moving to the same wholesale scale of slaughter as the Khmer Rouge. It was a French Catholic bishop who,

when asked how to sort out the heretics from the true believers in a newly captured city, is reported to have said: "Kill them all!--God will recognize his people."

There is some truth to all of these interpretations. For example, the practice of Robespierre's Committee of Public Safety during the French Revolution in executing not just the leaders but also the followers and families of their political opponents (a practice that Robespierre's political opponents turned against *him* as soon as they could), the practice of using the military to depopulate restive regions like the Vendee of western France, and the practice of using rigged courts to give a thin veneer of "legality" and due process to political murder did have their origin in the French Revolution.

The first two major episodes of genocide in this century, the perhaps one million peasants killed in Russia in the last two decades of the Czarist regime and the perhaps than one million civilians dead in the last years of President Porfirio Diaz's rule and the years of the Revolution in Mexico, look a lot like the traditional use of violence by an aristocracy to maintain its power and wealth, only writ larger as a result of better technologies of communication and organization.

But the greater power of governments to organize and carry out purges, the sharpening of ethnic conflicts, and the rising power of violent nationalism were, even together, not enough to trigger the genocides of this century. That required two political movements: Communism and Fascism. And both Communism and Fascism were movements that had *economic* ideology at their core.

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### **Communism and Nazism:**

Communism as we have known it was born when Vladimir Lenin's fraction of the Russian left--the "Bolshevik" or majority faction of the formerly-unified Russian Social Democratic Party--seized power in a late-1917 coup from the post-Czarist provisional government led by Kerensky. A brutal Civil War followed, as "White" supporters of the Czar, local autocrats seeking effective independence, Lenin's "Red" followers, stray other forces-- including a Czech army that found itself first trapped in and then effective ruler of Siberia, and Japanese regiments (the United States sent both troops to secure base areas for anti-Communist forces, and food to feed Russians in Communist-controlled areas)--fought back and forth over much of Russia for three years.

When the Civil War ended, Lenin's regime was in control. The Czarist generals were dead or in exile in Paris. Any liberal democratic or social democratic center had been purged by the Whites or the Reds in the course of the Civil War. And the relatively small group of socialist agitators that had gathered under Lenin before the revolution found itself with the problem of running a country and building a utopia, with the assistance of those who had declared for the Reds and against the Whites and joined Lenin during the Civil War.

The first imperative facing Lenin's regime was the necessity of eliminating capitalism. According to the Marxist theory that Lenin deeply believed, capitalism--private ownership of businesses and land, and private receipt of profits--was *the* source of inequality or exploitation. But how do you run industry and economic life in the absence of business owners--of people whose incomes and social standing depend directly on the prosperity of individual enterprises, and who thus have the incentives and the power to try to make and keep individual pieces of the economy productive and functioning?

Lenin's answer was that you organize the economy like an army: top down, planned, hierarchical, with under-managers promoted or fired depending on how well they attained the missions that the high economic command had assigned them. Lenin had been impressed by what he saw of the German centrally-directed war economy of World War I.

The second imperative facing Lenin's regime was to industrialize Russia. Frightened that the powers of the industrial core might decide to overthrow their regime, and desperately aware of their economic weakness, it seemed to Lenin and his followers that military discipline in the service of industrialization was essential.

The third imperative was to survive. As the British historian Eric Hobsbawm has written of Lenin's regime, "as Lenin recognized... all it had going for it was the fact that it was... the established government of the country. It had nothing else. Even so, what actually governed the country was an undergrowth of smaller and larger bureaucrats..." And for a government to survive when there are no powerful social classes or interest groups that have ideological allegiances or substantive reasons to back it requires great ruthlessness.

Great ruthlessness was exercised not only against society outside the Communist Party but against the activists of the Communist Party itself. A "command economy" turned out to require a "command polity" as well. The Communist Party won the Russian Civil War as a one-party dictatorship with a powerful and aggressive secret police, committed to using mass terror to suppress counter-revolutionaries, and banning even internal democracy and discussion of policies and politics. As the German Marxist Rosa Luxemburg had warned, the process begins by ruling in the name of the people, then by substituting the judgment of the Party for the wishes of the people, then by substituting the decisions of the Central Committee for the judgment of the Party, and then by substituting the whim of the Dictator for the decisions of the Central Committee.

And the dictator who won the struggle for power after Lenin's death--Josef Stalin--was a paranoid psychopath to boot. Stalin made Lenin's terror look mild and reasonable.

Peasants were shot, died of famine, and were exiled to Siberian prison labor camps in the millions during the 1930s. Factory workers were shot or exiled to Siberian labor camps for failing to meet production targets assigned from above. Intellectuals were shot or exiled to Siberian labor camps for being insufficiently pro-Stalin, or for being in favor of the policies that Stalin had advocated *last* year and being too slow to switch.

Communist activists, bureaucrats, and secret policemen fared no better. More than five million government officials and party members were killed or exiled in the Great Purge of the 1930s as well. All of Stalin's one-time peers as Lenin's lieutenants were gone by the late 1930s—save for Leon Trotsky, in exile in Mexico, who survived until one of Stalin's agents put an ice pick through his head in 1940.

Of the 1800 delegates to the Communist Party Congress of 1934, less than half were alive by 1939.

We really do not know how many people died at the hands of the Communist regime in Russia. As Basil Kerblay write in his *Modern Soviet Society*, we know more about how many cows and sheep died in the 1930s than about how many of Stalin's opponents, imagined enemies, and bystanders were killed. R.J. Rummel estimates 62 million dead.

The story of Mao in China is similar to the story of Stalin in Russia: the same ruthless commitment to use any means necessary to remake society and preserve Communist Party rule, the same desire to override all other social forces and centralize economic and social life into a near-military hierarchy, the same delusions of grandeur and paranoia at the top. Mao's lieutenants were perhaps better than Stalin's at attempting to ease him out of power and into symbolic retirement: Liu Shaochi and Deng Xiaoping thought that they had achieved this in the aftermath of the catastrophic economic policies of the 1950s that led to a great famine that killed tens of millions. But Mao's lieutenants' willingness to try to control their paranoid leader triggered the upheaval of the Cultural Revolution, Mao's counterstroke in which he rallied the young and the ideologically pure against the hierarchy of the Communist Party, and may in the end have simply increased the death toll.

The third of the leaders of the most murderous regimes of the twentieth century, Adolf Hitler of Nazi Germany, probably did not match up to his peers Stalin and Mao in length of his tyranny, but surely was their master in evil. He gained a voice in German politics by exploiting nationalist resentment against those who had beaten Germany in World War I and the economic distress of the Great Depression. He took power by outmaneuvering the right-wing politicians who had taken him into the cabinet to boost their popular support.

He quickly turned Germany into a centralized-totalitarian-dictatorship in which, in theory at least, all social and economic institutions were "coordinated" with the Nazi Party. "What need have we to socialize industry or agriculture? We socialize human beings!" Up until the start of World War II the terror was, by twentieth century standards, relatively small: murder, imprisonment, and harassment of Jews, opposition political activists, homosexuals, and some of the disabled and mentally ill. After the beginning of World War II, the machine of extermination was put in motion on a large scale. Some were worked to death in slave labor camps at the disposal of German businesses like Krupp and I.G. Farben. Some were shot by mobile extermination teams. Many were shot by the army well behind the fighting lines. Some were left to die in concentration camps. Many others were killed assembly-line fashion in extermination camps.

Stalin and Mao could point to *reasons* --insane and mistaken reasons, true, but reasons nevertheless--why their actions and killings made sense in terms of ends that we all share of general prosperity and human development, and why they had chosen the path that the poet W.H. Auden wrote of as "the acceptance of guilt in the *necessary* murder." The Cultural Revolution in China was needed to keep China a socialist country that could someday become a free and equal utopia, to keep it from degenerating into a bureaucratic despotism like the Soviet Union. The mass slaughter of the peasants of the Ukraine was necessary because an agriculture based on private farming and small plots rather than collective farming and industrialized agriculture could never produce the increases in productivity needed to feed the growing cities of the industrializing Soviet Union. These justifications were wrong--insanely wrong--but economic development and the avoidance of bureaucratic despotism *are* good things.

But Hitler? Killing in concentration camps, extermination camps, and through forced labor, killing six million Jews, two million of scattered nationalities from western Europe, and twelve million or so from eastern Europe *in addition to the battle-related deaths of World War II*? Why? To diminish the likelihood that the German "race" would be further polluted through intermarriage, and to provide more "living space" for German farmers.

Stalin and Mao still have their defenders: people who admit with one hand that "there is no doubt that under some other leader [than Stalin]... the sufferings of the peoples of the [Union of Soviet Socialist Republics] would have been less, the number of victims smaller"; yet with the other go on to write that:

*any policy of rapid modernization in the U.S.S.R... was bound to be ruthless and, because imposed against the bulk of the people and imposing serious sacrifices on them, to some extent coercive... closer to a military operation than to an economic enterprise. On the other hand... the breakneck industrialization of the first Five-Year Plans (1929-41) generated support by the very "blood, toil, tears, and sweat" it imposed on the people.... sacrifice itself can motivate.*

Hitler, however, does not have his defenders, has no one to claim that he used perhaps excessive means to good ends. His ultimate goals--the Aryan racial purity of the German people, and sufficient "living space" at the disposal of the German nation to allow it to dominate the world--are far, far outside the admissible bounds.

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### **Economic Ideology and Political Murder:**

What does this bloody political and secret police history have to do with *economic* history, with the story of how people produced, distributed, and consumed the commodities needed and desired for their material well-being? First, the possibility that the secret police will knock at your door and drag you off for torture and death is a serious threat to your material well-being. The seventeenth-century political philosopher Thomas Hobbes wrote that people are motivated by sticks and carrots: "the fear of violent

death, and the desire for commodious living." In a century where the chance that a randomly-selected person will be shot or starved to death by the government approached five percent, the fact of large scale political murder becomes a very important aspect of everyday life and material well being.

Second, the twentieth century is unique in that its wars, purges, massacres, and executions were part of struggles over *economics*. Before the twentieth century people killed each other over theology: eternal paradise or damnation. Before the twentieth century people killed each other over power: who gets to be top dog, and to command the material resources of society. These motives are, to some extent, comprehensible.

But only in the twentieth century have people killed each other on a large scale in disputes over the economic organization of society.

Communism saw itself as a utopian mode of social and economic organization, engaged in a death struggle with the other modes of "Capitalism" and "Feudalism." Opponents of regimes *had* to die because their very existence was "objectively" reinforcing the strength of the opposing modes of organization, and preventing the achievement of universal prosperity and utopia.

Naziism was, in its origins, National *Socialism*: the National Socialist German Workers' Party. Those Nazis who took the "socialism" as implying a serious desire on the part of a Nazi government to level the distribution of income died in the 1934 purge, a year and a half after Hitler took power. But anti-capitalist rhetoric remained--a stock-in-trade of Nazi propoganda was always the contrast between good hard-working German technicians and bad blood-sucking Jewish financiers. And the Nazi justification for taking power was rooted both in the desire to reverse the shame of Germany's defeat in World War I (and the unequal treaty settlement imposed by the victors) and in the desperate poverty of the Great Depression, which demonstrated the political bankruptcy of the liberal Weimar Republic.

The economic ideologies of the Communists and the Nazis did not play a significant role in boosting or maintaining their power. The Communist Party chief of a Ukrainian village is and remains boss whether the cattle are owned by individual farmers or by the village collective. Lenin and his successors had little trouble maintaining political control during the 1920s, the decade of the "New Economic Policy" that saw the party allow the revival of private enterprise. And the flaws in trying to run economic life through nationwide central planning were obvious early in the regime. The Nazi government's power depended on its use of the police and of terror. The expropriation of Jewish enterprises, the gathering of much industry into the hands of second-in-command Hermann Goering, and the attempt to impose central planning for military purposes did not aid the Nazi regime: its success at mobilizing national economic resources for World War II was less than that of Stalin's Russia, Churchill's Britain, or Roosevelt's America.

But these economic ideologies played an enormous role in creating and energizing the movements, and in directing their actions while they were in power.

Fidel Castro rules in Havana whether or not farmers are allowed to sell their crops in roadside stands. Deng Xiaoping's control over China was not impaired by his decision to be pragmatic: to announce that a good cat was one that catches mice-not one that was the ideologically-correct color. Power, personal status, and eternal salvation had little to do with the Soviet collectivization of agriculture, the Cuban suppression of small-scale markets, or the disaster of Mao's Great Leap Forward. These were in large part and certainly appeared on the surface to be attempts to guide and shift the *economy* in order to meet the requirements that some ideology claimed were necessary.

Other twentieth century disasters had equally strong roots in economic ideas: it is hard to see World War II in the absence of Adolf Hitler's *idée fixe* that the Germans needed a better land-labor ratio-more "living space", more *lebensraum*-if they were to be a strong nation; beliefs that overseas colonies provided powerful economic advantages fueled great power rivalries before World War I.

Imperial Japan drew from its own and to a much lesser extent the German militarist traditions. But its wave of conquest drew inspiration from the European pattern of colonial empires, and from *economic* theories that a country could not maintain full employment and rapid growth without the "vent for surplus" production and investment provided by a colonial empire. By 1936 Japan had a colonial empire consisting of many Pacific islands, Taiwan, Korea, and Manchuria. Then the army decided to add much of China to the colonial empire; the far eastern phase of World War II began; and perhaps five million Chinese civilians died.

So a very important part of twentieth century history is the fact that the causes of the bloodshed were in large part *economic ideologies*: beliefs about how the world worked, and how the economy should be organized.

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## **Slouching Towards Utopia?: The Economic History of the Twentieth Century**

### **-V. First and Third World-**

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- The Iron Curtain
  - "Convergence"?
  - Determinants of Relative Economic Growth

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Those nations and economies that were relatively rich at the start of the twentieth century have by and large seen their material wealth and prosperity explode. Those nations and economies that were relatively poor have grown richer, but for the most part slowly. And the relative gulf between rich and poor economies has grown steadily. Today this relative gulf is larger than at any time in humanity's previous experience, or at least larger than at any time since there were some tribes that had discovered how to use fire and other tribes that had not.

This particular glass can be viewed either as half empty or as half full. Half empty: we live today in the most unequal, in terms of the divergence in the life prospects of children born into different economies, world ever. Half full: most of the world has already made the transition to sustained economic growth; most people live in economies that, while far poorer than the leading-edge post-industrial nations of the world's economic core, have successfully climbed onto the escalator of economic growth and thus the escalator to modernity. The economic transformation of most of the world is less than a century behind the economic transformation of the leading-edge economies--only an eyeblink behind, from a millennial perspective.

On the other hand, one and a half billion people live in economies that have *not* made the transition to intensive economic growth, and have *not* climbed onto the escalator to modernity. It is very hard to argue that the median inhabitant of Africa is *any* better off in material terms than his or her counterpart of a generation ago.

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### **The Iron Curtain:**

Begin by looking at the snaky geographic line across Eurasia that used to be called the "Iron Curtain," a name coined by Winston Churchill in a famous speech given in Missouri in 1947. On one side were regimes that owed their allegiance to Karl Marx and to Marx's viceroys on earth. On the other side were regimes that claimed during the 1946-1989 Cold War between Communism and Liberalism to be of the "free world"--and that were, if not good, at least less-worse guys: only two of the twenty most genocidal twentieth-century regimes fall on "our" side of the Iron Curtain in the post-World War II era. By the standards of the twentieth century that is not a bad score.

### **Comparing the GDP per Capita Levels of Economies Behind the Iron Curtain with Those of Similarly Situated Economies that Escaped Communist Rule**

<b>East-Block Country</b>	<b>GDP per Capita</b>	<b>Matched West-Block Country</b>	<b>GDP per Capita</b>	<b>Relative Gap</b>
North Korea	700	South Korea	7660	0.91
China	490	Taiwan	9550	0.95
Vietnam	170	Philippines	850	0.8
Cambodia	150	Thailand	2110	0.93

FSR Georgia	580	Turkey	2970	0.8
Russia	2340	Finland	19300	0.88
Bulgaria	1140	Greece	7390	0.85
Yugoslavia	3240	Italy	19840	0.84
Hungary	3350	Austria	23510	0.86
Czech Republic	2710	Germany	23560	0.88
Poland	2260	Sweden	24740	0.91
Cuba	460	Mexico	3610	0.88
<b>Geometric Mean</b>	<b>930</b>	<b>Geometric Mean</b>	<b>8030</b>	<b>0.88</b>

Walk along this geographical line from Poland to Korea, and then hop over to the only western hemisphere Communist satellite--Cuba--looking first left at the level of material welfare in the Communist country, and then right at the level of material welfare in the non-Communist country. Before Communism regions adjacent to the Iron Curtain were seen as having similar economic destinies. And the location of the Iron Curtain is a historical accident: it is where Stalin's Russian armies stopped after World War II, where Mao's Chinese armies stopped in the early 1950s, and where Giap's Vietnamese armies stopped in the mid 1970s.

Notice as you walk that to your right, outside the Iron Curtain, the countries are far better off in terms of GDP per capita. They are not necessarily better off in education, or health care, or in the degree of income inequality: if you were in the poorer half of the population--and if you were not homosexual, if you kept your mouth shut, and if you were not swept up in one of the anti-profitier drives--you probably received a better education and had access to better medical care in Cuba than in Mexico until the collapse of the Soviet Union, and the end of Russian subsidies to Cuba at the end of the 1980s.

But the countries fortunate enough to lie outside what was the Iron Curtain are vastly more prosperous. Mexico today is, we think, some eight times as wealthy as Cuba, which few if any would have predicted in the mid-1950s before Castro seized power. Greece today is some six and a half times as well off as Bulgaria. Even the Philippines are five times as well off as Vietnam. And Taiwan--where the Chinese Nationalist Kuomintang Party retreated after losing the final late-1940s phase of their Civil War to Mao--is some nineteen times as well off as the Chinese mainland.

Depending on how you count, between two-thirds and seven-eighths of the potential material production and prosperity of a country has been annihilated if it fell under Communist rule. Communism was not only a source of genocide, it was also a source of economic stagnation and decline: not one of the brighter lights on humanity's tree of good ideas.

The fact that a large part of the globe fell under Communist rule in the twentieth century is the first major factor making for enormous disparities in the world's distribution of economic wealth across nations. Moreover, figuring out how to move from a stagnant, ex-Communist economy to a dynamic, growing one is proving very difficult. It looks as if the "economies in transition" closest to the European Union will successfully become growing economies and democratic polities: Slovenia, Hungary, the Czech Republic, Poland, Lithuania, Latvia, and Estonia all appear to be making a success of their transitions from Communism. What will happen elsewhere is still uncertain.

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## "Convergence"?

The nineteenth-century British philosopher and economist John Stuart Mill hoped and believed that he would live to see the world economy's distribution of income and wealth draw closer together. Cruel and inefficient tyrannies had always left countries impoverished, but--with the spread of democracy, liberty, education, and liberalism--Mill thought that cruel and inefficient tyrannies would soon be a thing of the past.

Resource and population pressure--too many mouths to feed given limited arable land and limited agricultural technology--had kept many other countries at the edge of famine. The amount of bread that the wage of a bricklayer would buy fell by a third, back to the level of 1300, during the glorious reign in England of Queen Elizabeth I. No matter what went on in high politics and courtly luxury, the mass of humanity was close to the edge of want. Life was nasty, brutish, and short.

But Mill was optimistic; Mill thought that the spread of birth control and the advance of technology would remove hunger from the world.

Mill looked out at a world where the industrial revolution, concentrated in northwest Europe, had as yet raised the standard of living of only a small proportion of the world's population. The advance of European living standards accompanied by stagnation elsewhere had opened huge relative wealth gaps between Europe and the rest of the world. Mill hoped and expected this wealth inequality to be transitory.

Democracy and literacy were spreading across the globe. The modern technologies of the industrial revolution were not the private property of any one man or group of men; instead, they were "public goods," open to all. Anyone who could read and observe could learn what were the key technologies that had made the industrial West so rich. And the material benefits from tapping the storehouse of industrial technologies were so great that businessmen and governments outside of Europe would strain every nerve to do so, and would bring their countries into the modern industrial age.

When they did so, the world's nations would draw together in terms of standards of living, and then human command over nature would continue to rise and the burden of labor to fall. For the industrial revolution was not a once-and-for-all jump in the level of

technology alone, but a once-and-for-all jump in the level accompanied by a *permanent* upward shift in the rate of change.

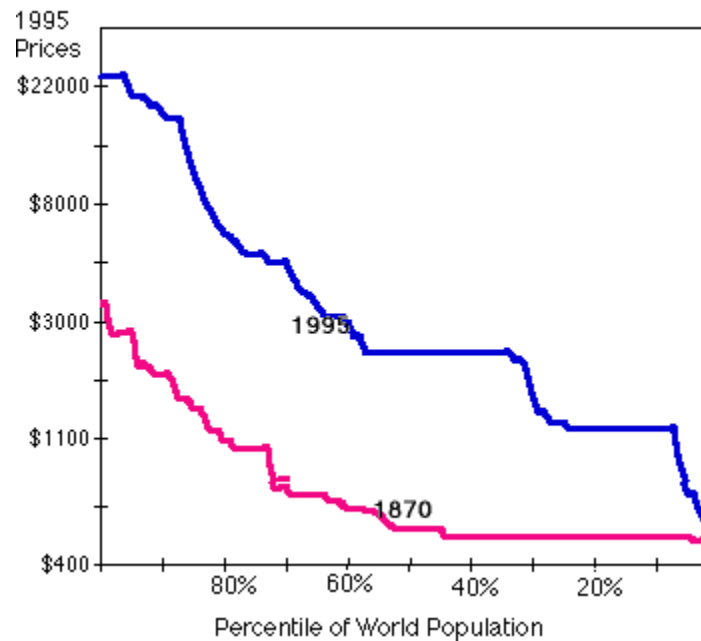
In many ways, Mill was correct. The successive technological waves of the Industrial Revolution, roads and canals first, then textiles, then steam power in mining, then iron-working and railroads, and so forth, *did* permanently change the material conditions of human life. As technologies became more sophisticated, children became net consumers of household resources rather than net producers of resources for the household. Fertility dropped. Thus rates of population growth remained low while technology and available natural resources expanded. The industrial revolution was an enormous shock to the world economic order. It did give Europe, and especially northwestern Europe, and especially Great Britain, an enormous edge in terms of productivity and technology. And the technologies of the industrial revolution did begin to diffuse.

In spite of stringent laws restricting the export of technologies and of skilled workers adopted by Britain, its technology leaked out to other countries. When the Lowells, Cabots, and Appletons of Boston wished to build a textile factory they hired a managing engineer, Paul Moody, from England. They gave him a substantial equity stake in the Waltham-based Boston Manufacturing Company that they had started and had based on Francis Cabot Lowell's hurried and secret sketches of British textile machinery. Industrialization spread from old England to New England, and into Belgium, Germany, northern France, and beyond in Mill's lifetime.

Yet thereafter the process of diffusion did not live up to Mill's hopes. On the eve of the twenty-first century, the world is much richer than it was in J.S. Mill's day. But the distribution of the world's wealth between nations is more unequal than when J.S. Mill wrote. The economic history of the past century and a quarter is a history not of "convergence" but of "divergence": the different countries and peoples of the world have not drawn closer together in relative living standards, but have drifted further apart.

The figure below shows the distribution of world real GDP per capita--by percentage of world population, not by nation-state--in 1993 and in 1870, as best as it can be estimated. The estimates are the standard ones from *Historical Statistics*: those that show merely a seven-fold multiple of material prosperity at the top end of the world income distribution over the past century. In actual fact, as I argued above, people living in the richest countries of the world today have between twenty and two-hundred times the material standard of living as their counterparts of a century ago.

### World Distribution of Income, 1870-1995



Question: Does this mean that the world's poorest people today are between three and thirty times as well off as their counterparts of a century ago? Are the underestimates of economic growth as significant at the low as at the high end of the world's income distribution?

Answer: There are underestimates, but they are probably not as large. This is not to say that the world's poorest today are as poorly off as the world's poorest of a century ago. First of all consider life expectancy: even in the poorest countries today, life expectancy at birth is fifty years, twice what it was a century ago. Even the imperfect penetration of modern medical technologies into the poorest parts of the third world have done marvels for human well-being.

But the benefits that the world's poor have gotten from the invention of new goods and new types of commodities are almost surely smaller than the benefits that the rich have received from the past century's waves of innovation. Suppose that the prices of a set of commodities that take up fifty percent of your budget fall in half: the increase in your real standard of living is approximately twenty-five percent. Suppose that the prices of a set of commodities that take up five percent of your budget fall in half: the increase in your real standard of living is approximately five percent. The rich today are in the first, and the poor today are in the second, category: it truly is the case that the material standard of living of the rich today is vastly greater than the calculations of *Historical Statistics* suggests relative to their counterparts of a century ago, and that the material standard of living of the world's poor today is somewhat greater than the calculations of *Historical Statistics* suggests, relative to their counterparts of a century ago.

If the underestimate of economic growth over the past century is greater at the high end and less at the low end of the world's income distribution, doesn't that mean that standard calculations greatly *underestimate* how unequal the world income distribution is? Perhaps. Here we run into the limits of index numbers. We have been trying to summarize the complicated, multi-faceted considerations that make up the standard of living in a single number--real GDP per capita. We should not expect that we will be able to do this unambiguously and without distortion: we cannot even project a map of the world onto a flat piece of paper without distortion. It might well be that different sets of "real income" measures are better for different comparisons.

But in this case correcting for possible distortions would simply amplify the message of the figure above: the world is a much, much more unequal place in relative incomes than it was a century ago.

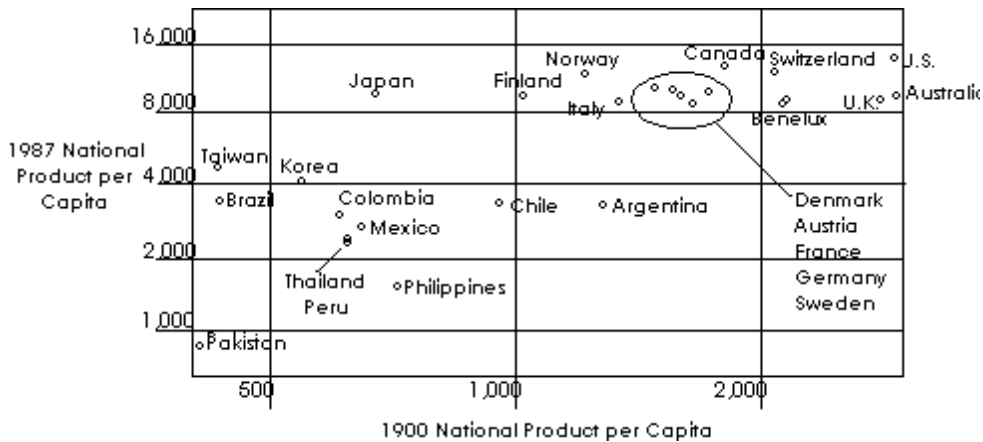
Now there are a large number of additional *caveats* attached to these estimates. To mention two:

- The 1993 measurements are of low quality; the 1870 GDP per capita estimates are of abysmal quality.
- The figure suppresses all variability in productivity and real GDP per capita *inside* of nation-states: everyone in China is assumed to have the 1993 purchasing-power-parity concept real GDP per capita of \$2,330.

Nevertheless the major conclusion is sound: the world is, in relative terms, a much more unequal place than it was a century ago. There has been no "convergence."

Moreover, the failure of convergence is not just a failure of the diffusion of technology to reach the world's poorest nations. Some of the richest nations at the turn of the twentieth century have grown very slowly since; some of the poorest have grown very rapidly. Consider the pairs of nations Argentina and Norway, Chile and Finland, the Philippines and Japan, and Pakistan and Taiwan. Within each pair, the nations appear on the best available estimates to have begun the twentieth century at about the same levels of national product per capita. Yet today the second member of each pair has between three and eight times the material prosperity of the first member of each pair. Over the twentieth century, some of the poorest economies grew very rapidly and caught up or are rapidly catching up to the world's industrial leaders; some of the richest economies grew very slowly and fell far behind the productivity levels of the world's industrial leaders.

### **Growth and Non-Convergence, 1900-1987**



This is not to say that the slowly-growing countries have necessarily stagnated. Many of them have not. For example, consider Argentina, one of the world's most disappointing performers in terms of economic growth in the twentieth century. Argentina has experienced substantial economic growth. *Officially measured* labor productivity or national product per capita in Argentina today is perhaps three times what it was in 1900. True productivity, taking adequate account of the value of new commodities, is higher.

But the much more smoothly-running engine of capitalist development in Norway--no more, and probably less, rich and productive than Argentina in 1900--has multiplied *measured* national product per capita there by a factor of nine. In 1900 Argentina was a rich First World nation: in 1913 Buenos Aires ranked thirteenth among the cities of the world in density of telephones *per capita*. Even as late as 1929 Argentina ranked fifth in the world in automobiles *per capita*, ahead of every nation save the U.S., Canada, France, and Britain. In 1900 Argentina ranked fourteenth richest out of the twenty-seven nations plotted in figure 1; in 1987 it ranked twentieth. Over the course of the twentieth century it has been overtaken by Finland, Japan, Korea, Norway, and Taiwan; and perhaps by Brazil and Chile.

For these 27 countries, for which the data are on a not-as-unsound basis as for many others, some countries have improved their standing substantially in relative wealth compared to other nations, while other countries have fallen behind. Fifteen nations have gained ground relative to the U.S. over the century. 11 nations have lost ground relative to the U.S., and have fallen behind--or fallen further behind.

Even more horrifying than the long-run failure of "convergence" to take hold is the economic performance of sub-Saharan Africa since independence. There is little good reason to believe that sub-Saharan Africa (excluding South Africa) has experienced *any* improvement in standards of living or national product per worker over the past third of a century. From the perspective of material wealth the years since the attainment of African independence from European colonial powers have, taken together, been a false start. This is a tremendous disappointment given the signs of increasing wealth and development seen in the colonial period, and given the high hopes that existed at the time of decolonization.

False starts and misdirected patterns of political economy appear to have extraordinarily severe consequences: the descendants of those who migrated from Sicily to New York or to Milan in the last years of the nineteenth century are today more than four times as well off as the descendants of those who migrated from Sicily to Buenos Aires. Relative economic decline is not confined to those nations that began the century far behind the industrial core in productivity. Great Britain, which in the nineteenth century played the same role in the world economy that the United States has played in the twentieth, has today a level of *per capita* national product perhaps two-thirds that of the United States, and noticeably below that of most western European nations.

Too great a focus on winners and losers in a relative economic growth race tends to eclipse the fact that the world economy is a positive-sum game. In the long run all are enriched by and benefit from the early success of a few.

Nevertheless, even a pattern of productivity growth that is rapid in very long-run historical perspective, like Argentina's, can appear heartbreakingly slow when compared to what, reasonably, might have been and was achieved by the world's industrial leaders. What is bad about falling behind, or falling further behind, is not that second place is a bad place to be—it is false to think that the only thing that matters is to be "top nation," and that it is better to be poor but first than rich but second. What is bad about falling behind is that the world's industrial leaders provide an easily viewable benchmark of how things might have been different, and of how much better things might have been. There was no destiny keeping Buenos Aires today from looking like Paris, Toronto, or Sidney. It was, but is no longer, a first world city—and it could have remained one.

Such enormous disparities in relative growth spring from patterns of mistakes generated by patterns of rule and of political influence. The principal producers of material wealth are an economy's workers, and not its natural resources. The presence or absence of a "culture of entrepreneurship" is not usually a deciding factor, for entrepreneurship can be found in many places. Consider the Chinese *diaspora*. Throughout South Asia emigrants from China play key roles in trading and manufacturing, while China proper remains one of the poorest countries on earth. It is hard to imagine that any force other than China's governors—from the Chien Lung Emperor to Mao Zedong and Deng Xiaoping—has kept China so poor.

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### **Determinants of *Relative Economic Growth*:**

Three factors appear to be most important in accounting for how a country has done in relative terms in its productivity growth over the past century:

***The productivity gap vis-a-vis the world's best practice.*** The further a country is behind the world's industrial leaders, the more scope there is for successful technology transfer. Poor countries that successfully industrialize can grow very fast indeed.

***The rate of investment.*** High *private sector* investment has two benefits. First, high investment means that the average worker has a better and more productive work environment: more structures investment means better work spaces, and more equipment investment means more machines to amplify productivity. Second, high investment--especially high machinery investment--is essential to use better technologies. A very large chunk of new and better technological knowledge is *embodied* in the machines that are the principal creation of the industrial revolution, in the sense that new and more productive technologies are impossible to utilize without the appropriate capital equipment. Many factors affect the rate of investment, including:

- national savings rates
- foreign investment rates
- tax systems
- the extent of "kleptocracy"--the extent to which the government is best described as "rule by the thieves"
- the real rate of interest
- the economy's relative price structure--are the goods that make up investment relatively cheap or relatively dear
- the degree of free trade

But many of these appear to affect economic growth primarily through their effects on the rate at which the stock of capital goods is built up, and not to have an independent effect working through other channels than the rate of investment.

***Whether market forces or bureaucratic commands govern resource allocation.*** Market forces exert pressure to allocate resources to their most productive uses. Bureaucratic commands exert pressure to allocate resources following other logics. A country like the Soviet Union or like Zambia can have a very large technology gap and a high measured rate of investment. But if investment is allocated and industries grow not by the profitability of its use but by the political power of its users, it will not do nearly as much good for productivity and economic growth.

The post-World War II period shows a clear and strong relationship between relative backwardness and productivity growth. Each one percentage point gap in productivity in 1960 carries with it an increase in the rate of productivity growth of between 0.02 and 0.03 percentage points per year over 1960-85. A country like Hong Kong--with an initial GDP per worker gap of some 70%--should "catch up" because of this factor alone and close of the gap from 70% to some 50-58%--between 1/6 and 1/4 of the total initial gap--over 1960-85.

Yet of all the factors associated with rapid growth, perhaps the most important is the rate of investment.

Why should investment play such a key role? It is, of course, no accident that the era in which European economic growth took off is called the *Industrial Revolution*. Blanqui, first to use the phrase *industrial revolution* in print, identified its beginnings in the

invention and spread of those "two machines, henceforth immortal, the steam engine and the cotton-spinning [water frame]." Ever since, qualitative historical discussions of growth have emphasized the role of machinery investment in augmenting labor power. Historians of technology have long argued that the capital goods industries are uniquely well-suited to serve as centers for technological diffusion to other sectors of the economy where such knowledge had practical applications.

This suggests a role for government intervention to advance industrial development: the government should step in because private investors do not face the right incentives to develop and invest early and heavily in modern machinery and equipment.

Of course that governments *can* does not mean that governments *will*. Over the past two decades, many have argued that the typical systems of regulation introduced in developing countries to accelerate development were in fact retarding development. First, they were preventing the economy from responding to international price signals by shifting resources to activities in which the country had a long-run comparative advantage. Second, they were inducing firms and entrepreneurs to devote their energies to seeking rents by lobbying governments instead of seeking profits by lowering costs.

When taken as a group, poor countries have *not* closed any of the gaps relative to the world's industrial leaders over the post-World War II period. Poor countries have relatively low shares of investment in national product: capital goods are relatively expensive, meaning that even a hefty savings effort translates into little increase in the capital stock; savings rates are relatively low; and taxes are siphoned off to maintain the incomes of politically powerful groups rather than to support public investment projects.

The general conclusion is one that either Adam Smith or Karl Marx would have found natural: market economies prosper and grow when they are managed in the interests of the business class. When governments intervene to shift prices and quantities in order to distribute income away from the productive and entrepreneurial classes--both current and prospective future members of the *bourgeoisie*--and toward others, whether urban consumers, bureaucrats, or small-scale inefficient rice farmers--economic growth and development suffers.

Poor countries could grow rapidly if their governments took a long-run view of their people's interest and followed appropriate policies. But what pressures are there to push governments--especially unelected, non-legitimate modern dictatorships--to take a public-spirited long-run view? W.W. Rostow recounts a visit by President Kennedy to Indonesia in the early 1960s; Kennedy talked about economic development, and a South Asian development bank to provide capital for Indonesia's economic growth. The Indonesian dictator Sukarno's response? "Mr. President, development takes too long. Give me West Irian [province to annex] instead." Sukarno got West Irian to annex; under Sukarno Indonesia's economy stagnated.

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## Slouching Towards Utopia?: The Economic History of the Twentieth Century

## **-VI. Policy and Prosperity-**

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January 1997; DRAFT 1.0

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- Social Democracy
  - Race
  - Governing the Economy
  - The Age of Keynes
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From one perspective, governments have been a major obstacle to economic growth in this century. Communism was a century-long economic disaster that has retarded the economic development of half the human race. Nazism and its tamer fascist cousins were nearly as inept as Communism at nurturing economic growth--and were worse than Communism in creating war.

But that is not all. The twentieth century has also seen governments--from Herbert Hoover's to Jimmy Carter's--that proved themselves singularly inept at managing market economies: inept at coping with the economic shocks that threatened to and did cause mass unemployment or raging inflation.

Among the developing countries, especially, a large number of governments appear to have possessed the inverse of the Midas touch: everything they touched turned to lead.

Some failures came about because economists did not know what to prescribe: the history of economic policy reads like alchemy, not chemistry. Proposed remedies made economic problems worse: consider Herbert Hoover's insistence--applauded by the eminent among economists of the time--on slashing government spending during the slide into the Great Depression. Some of it is that politicians did not like to follow their economists' advice, or at least sought for a more complaisant set of economists who would give advice that would be more politically pleasing and palatable to follow.

The net result was a set of economic policies and policymakers that have, taken all in all, done a lousy job at managing the business cycle--and a widely varied job (some excellent, some horrible) at encouraging long-run economic growth.

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**Social Democracy:**

Yet there is one sphere of activity in which the governments of modern industrial economies have been extraordinarily successful. Call this "social democracy"--the construction of the infrastructure necessary for the private economy to flourish, the provision of "rules of the road" that have kept the economy a positive-sum enterprise, and the construction of systems of "social insurance" to greatly diminish the vulnerability of individuals and families to the individual and collective economic catastrophes that might befall them.

In the United States today social democracy includes the interstate highway system, airport construction, air traffic control, the Coast Guard, the National Parks, government support for direct research and development through agencies like the National Institute of Standards and Technology, the National Oceanic and Atmospheric Administration, and the National Institutes of Health. It includes the antitrust lawyers of the Department of Justice and the Federal Trade Commission, the financial regulators in the Securities and Exchange Commission, the Office of the Comptroller of the Currency, the Federal Reserve, and the Pension Benefit Guarantee Corporation. It includes the National Labor Relations Board to regulate and guide the bargaining between workers and employers. It includes the promise by the federal government to insure small bank depositors against bank failures. It includes Social Security and all of its means-tested and non-means-tested cousins--Supplemental Security Income, Food Stamps, Aid to Families with Dependent Children, and Head Start. It includes (with much less success) farm subsidy programs.

None of these programs would be seen as a proper use of the government by even a moderate libertarian. None of them fit under the definition of the "night watchman" state.

Yet these programs--together with local provision of police and fire protection, and of public schools--*are* the government, or at least that part of the government that is not national defense. And over the twentieth century as a whole these government programs and their analogues in other advanced industrial countries have been remarkably successful.

They have been remarkably successful in two ways. First, they have been *politically* successful. Voters distrust politicians who seek to cut back on the major programs of the social insurance state. Voters find taxes earmarked to support social insurance programs less distasteful than taxes that flow into general revenues.

Second, the developed social insurance state has proven remarkably successful at providing social insurance, and reducing poverty in this century. The "safety net" has provided the middle class with substantial insurance that economic or personal disasters will not leave them wholly impoverished.

Whether called "mixed economy," "social democracy," or "social market economy," the major business of government has become social insurance: progressive tax systems, income support, and benefit provision programs to partially counterbalance the extremes of economic inequality produced by the market distribution of income, and to create

countries that are more middle-class societies--even though its redistributions of wealth have been primarily within the middle class, rather than to the relatively poor.

The existence of social democracy has played a large part in drawing the fangs of potential revolutionary movements. A standard nineteenth-century fear among the elite was that the possible arrival of universal suffrage would see the end of economic growth: redistributive and confiscatory taxation would destroy enterprise and provide "bread and circuses" to the working class--which would then succumb to the flattery of ruthless demagogues. Dire analogies with the Roman Empire were drawn. When the French dictator Napoleon III reviewed the army, the cavalry cried "Viva the sausages!", for Napoleon III had staged banquets for the army--he got credit for the banquets, but the taxpayers had paid for them.

Yet the social democratic regimes found in industrial economies in the second half of the twentieth century have exhibited remarkable stability in democratic institutions, and remarkable success in preserving incentives for entrepreneurship, investment, and enterprise. With the social insurance state in place, the risk of penury and destitution has been sufficiently diminished that further drives toward the confiscation of the wealth of the risk have not been on the political agenda. The ability of social democracy to deliver more-or-less constant economic growth has created a powerful consensus in favor of the status quo.

Thus the past fifty years in the industrial, democratic West marks one of the few eras in history in which the distribution of wealth and economic power has been to a degree the result of political choice, instead of the distribution of economic power largely determining political organization. Opposing pressures have balanced: populist calls for taking "unearned increment" from the rich balanced by an admiration for entrepreneurs and savers, and a realization that economic life is a positive sum game; compassion toward the poor balanced by resentment of those seen as trying to get something for nothing--even if the something is small by middle-class standards.

Pressures from the left that existing inequalities are "savage" have been balanced by pressures from the right that the mechanisms of the social insurance state are economically "inefficient" and have slowed growth. From my perspective the consensus is too far to the right--we tolerate much more poverty than we should in the name of "incentives" and "entrepreneurship". But even on the right there has been for more than half a century solid recognition that social democracy is *politically* necessary to maintain democratic support for the market economy.

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## Race

At the start of the twentieth century governments--governments that ruled practically everywhere, for Africa and Asia save China and Japan were colonies of European empires--were white men's governments. Australian and Californian voters alike

overwhelmingly agreed that a principal function of government was to keep Asians out. In the United States the federal government had long since withdrawn from its immediate post-Civil War commitment to "reconstruction", and more than acquiesced in the principle that state governments existed to keep African-Americans down. Segregated schools for African-Americans in the early years of this century met for fewer than one-third the hours that schools for whites met.

The principles of equal opportunity and meritocracy stopped at the color line. And the line separating those who were white from those who were not was very tightly drawn. Were people from southern Italy white? Maybe. Were people from Slovakia white? Probably not. Inhabitants of Calcutta or Bombay who wished to sit for examinations required for high office in the British administration of India could do so--but only if they traveled to London to take the exams.

At the turn of the century racial attitudes had taken several steps backward from what they had been half a century before. In the late 1850s Abraham Lincoln--debating Senator Stephen Douglas--could call, and find it politically popular to call, for equality of opportunity across racial lines: that while he, Lincoln, did not think that the Negro slave was Lincoln's intellectual equal, in the slave's right to earn his own bread by the sweat of his brow, "he is my equal, and the equal of all that have ever lived."

In 1900 few if any American politicians would have said that the government ought to be neutral between citizens of European-American and of African-American descent.

Yet by the 1960s everything had changed. In the United States, at least, and at the level of political rhetoric, at least, the commitment to color-blind equality of opportunity was absolute; and there was even some recognition that "affirmative action" would be needed to create a truly level playing field. And as President Lyndon Johnson recognized, true equality of opportunity would require affirmative action to repair deficiencies and gaps that had been generated by previous oppression and discrimination.

The--incomplete--creation of a multi-ethnic and multi-racial society in the United States, and the hesitant steps toward a truly multi-national Europe, are enormous--albeit partial--achievements. To some degree we owe them to the Cold War: it is difficult for a society practicing explicit racial apartheid to claim to be the "free world", and this tension undermined support among conservatives in the United States: fear of the Communists outweighed distaste for Africa-Americans. To some degree we owe them to the working-out of liberal principles: government by the people *means* universal suffrage; government for the people *means* equality of opportunity. To some degree we owe them to the political machines of America's northern cities, which had much experience at taking politically-unsophisticated migrants to the city and turning them into powerful and directed political forces by block-by-block organization: African-Americans in the southern United States were disenfranchised, but African-Americans who migrated to the northern cities in the twentieth century could rapidly become part of a political coalition to elect mayors and representatives.

But most of it we owe to political courage. Slavery proved compatible with America's democratic and republican values for ninety years (and would have proven compatible for much longer had not the defense of slavery become attached to the dissolution of the nation). Racial apartheid proved compatible with America's democratic and republican values for a hundred years. A few less brave leaders in the 1950s and 1960s, and American race relations today might well still be frozen in their 1950s pattern.

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### **Governing the Economy:**

The political and economic balancing act of social democracy appears possible only when economic growth continues. And the record of the twentieth century is that modern mixed economies are not stable, and require the most delicate management to avoid economic chaos. Much of post-World War II discussion among economists has been consumed by sterile debate over whether the market economy is "naturally" "stable" or not. The answer is obvious: that if the government acts properly to reinforce the stabilizing factors and counteract the destabilizing ones, then the market economy is stable. But if government policy is improperly tuned, then it is unstable. The proof of the pudding lies in what policies are stabilizing and what policies are destabilizing--not in whether the economy is stable "by nature", whatever that might mean.

Go to Wall Street. Look around. Wall Street is, in a very real sense, the investment planning department of the human race. Power to purchase commodities that owners of property have earmarked for savings flows into Wall Street and, in a complicated social and economic dance, is distributed to enterprises and bureaucracies seeking permission to invest, develop new enterprises, or expand old ones.

The future becomes visible only slowly: one day at a time. Our technological capabilities, individuals' preferences for spending and saving, and natural resources change very slowly. Thus Wall Street should be a quiet place. Financial prices are the shorthand that Wall Street-considered-as-investment-planning-department uses to assess the desirability of investment projects. They should move glacially, as an extra day's information causes forecasters to revise so very slightly their image of the economy's bottlenecks twenty years down the road.

But this is not how Wall Street works.

Today, for example, Mexico is fifty percent off: it has been fifty percent off since the end of 1994. The valuation of all things Mexican, whether the cost of employing a worker, the value of a house, the worth of Mexico's currency, or the long-term profits to be gained from investment in a Mexican enterprise, is today fifty percent less than what it was in the late summer of 1994. If you had wanted to buy insurance against a fall in the peso in the late summer of 1994, you could have done so extremely cheaply. Few saw a peso collapse of the magnitude seen in the winter of 1994-1995 as possible; no one saw it as likely.

What has caused such a change? In part, financiers now believe that they were over-optimistic about the economic future of Mexico. In large part, however, financiers concluded that other financiers' downgrading of Mexico meant that Mexico would be starved of capital and short of international means of payment, and that as a result of this shift in mood the Mexican economy would perform more poorly.

This is an old story: a regime that bet a large chunk of its chips on rapid industrial development financed by capital inflow from world financial markets finds itself suddenly subject to a panic. In the United States, 1873 saw British investors lose confidence that American railroads and infrastructure were that day's equivalent of investments in the Pacific Rim. The largest investment house in the United States--that of Jay Cooke, politically well-connected industrial visionary who financed Abraham Lincoln's armies, and whose picture the Treasury Department's antique custodians will not release for me to hang in my office--went bankrupt.

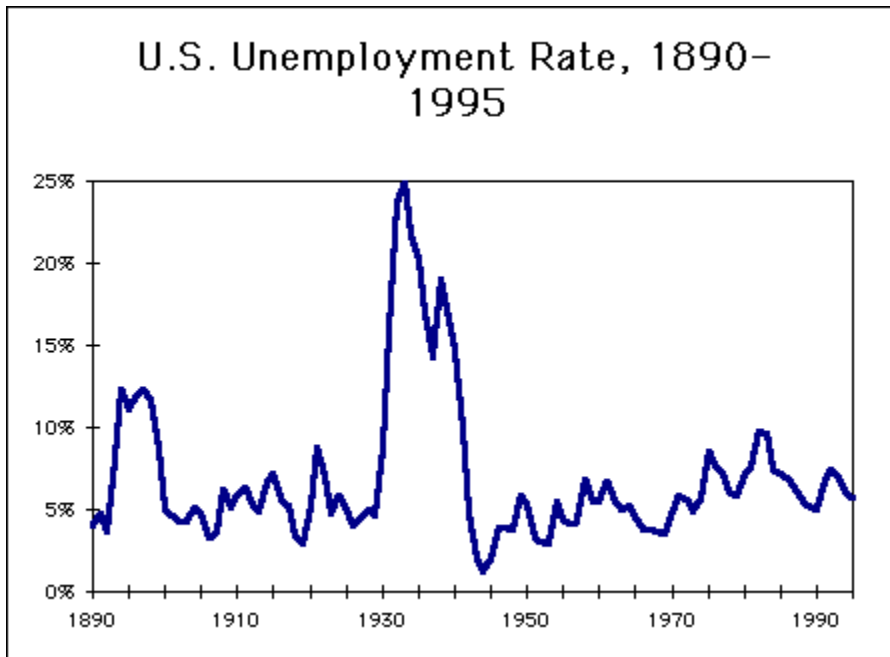
Then there was no International Monetary Fund, no Bank for International Settlements, no Exchange Stabilization Fund, no one willing to guarantee the liquidity of the financial system that had funneled capital to America from Europe. As a result of the collapse of Jay Cooke and Company the City of London sneezed. The U.S. economy caught pneumonia. The share of America's non-agricultural labor force building railroads fell from perhaps one in ten in 1872 to perhaps one in forty by 1877--a seven percentage point boost to non-agricultural sector unemployment from this source alone.

Now we have a keen awareness of what is lost when a crisis of confidence is allowed to lead to the unraveling of a financial network. We have governments and institutions willing to take action. Unlike the United States in the 1870s, Mexico in the 1990s will not undergo anything near to a great depression.

Nevertheless, for at least three centuries capitalist financial markets have been working their erratic will. No one has a preferable alternative to allowing financial markets to do our collective investment planning; Wall Street's vision of where investment capital should be directed is infinitely better than the vision any group of planners. All would agree that financial markets require the most delicate political regulation and management.

But it is rare that you find any two agreeing on exactly what form that political regulation and management should take. Moreover, the entire system can lose forward motion completely. It is possible to mismanage a capitalist economy so badly as to bring a halt to essentially all economic growth. Consider Argentina, on a par with France and ahead of Italy in GDP per worker, agricultural productivity, and some areas of industry in 1950. Yet Argentina today may have no higher a standard of living than it had in the aftermath of World War II. Consider the Great Depression, when U.S. unemployment hit 25 percent of the labor force, and stayed above ten percent for a full decade.

The world economic system *is* more fragile than anyone would wish and *has* gone completely off its rails once in this century.



*Note:* incorporates revisions to pre-Great Depression unemployment estimates suggested and calculated by Christina Romer.

*Source:* *Historical Statistics* (Lebergott unemployment series), *Economic Report of the President 1994*, Bureau of Labor Statistics January 1995 *Monthly Employment Release*, Christina Romer.

Governments balance conflicting goals: high investment to boost productivity growth, stable prices so that private economic planning decisions focus on productivity rather than on exploiting quirks in the price-adjustment process, and high employment. The terms of the tradeoff are lousy. Election cycles tend to emphasize short-term as opposed to long-term performance, removing incentives for irresponsible and diminishing the ability of responsible politicians to adopt policies that advance the long-run interests of the human race.

## The Age of Keynes

In the 1920s British economist John Maynard Keynes wrote a *Tract on Monetary Reform*, in which he distinguished two different macroeconomic dangers. The first was *deflation*--the possibility of a sharp fall in the price level and in the volume of total spending. The second was *inflation*--the possibility of a sharp rise in the price level and in the volume of total spending.

Consider the first danger, *deflation*. A fall in the overall level of prices and in the nominal flow of spending, Keynes argued, ought not to affect what is produced or how much is produced: for such "a fluctuation in the measuring-rod of value does not alter in the least

the wealth of the world, the needs of the world, or the productive capacity of the world." However, Keynes went on to argue, such a fluctuation *does* have important and destructive consequences because of the "peculiarities of the existing economic organization of society": because investors can always refuse to invest and store their wealth in cash, entrepreneurs must always pay a positive nominal interest rate for the capital they need; thus a fall in the price level carries with it very high *ex post* real interest rates that entrepreneurs must pay, leaving them potentially bankrupt. Because:

***...the fact of falling prices injures entrepreneurs... the fear of falling prices causes [entrepreneurs] to protect themselves by curtailing their operations; yet it is upon the aggregate... willingness to run... risk[s], that the activity of production and of employment mainly depends.***

Falling prices (and spending) or the fear of falling prices (and spending) are the principal sources of mass unemployment, idle capacity, and destroyed economic wealth. This was written nearly a decade before the nadir of the Great Depression. Yet its relevance to the Great Depression is complete, and the world is a worse place because those making policy in the 1930s did not keep this principle in mind and take steps to avoid deflation.

The second danger, inflation, is in Keynes's view a subtler--although not necessarily a less serious--threat. Inflation redistributes income away from savers who do not have the financial sophistication to invest in equities or indexed financial instruments. Inflation redistributes income away from anyone with a fixed income who has already exercised and used up his or her bargaining power in the market. Inflation redistributes income toward entrepreneurs, and toward those fortunate enough to owe fixed sums. Keynes sees three things wrong with inflation. The first is that it is "Injustice": an essentially random redistribution of income and wealth that causes more misery and want to those who lose than it gains happiness for those who win. The second is that of those groups harmed by inflation the one harmed most seriously is the class of *rentiers*: those who earn their income by loaning out their capital, the class of savers. Inflation thus discourages many kinds of saving; Keynes is a strong believer in the power of compound interest in the form of saving to eventually bring the human race to utopia; and inflation tends to delay the accumulation of capital and the process of compound interest.

The third danger that Keynes sees in inflation is the most serious, and shows Keynes at his most prescient. He wrote in 1919 that:

***...there is no subtler, no surer means of overturning the existing basis of Society than to debauch the currency [through inflation]. The process engages all the hidden forces of economic law on the side of destruction, and does so in a manner which not one man in a million is able to diagnose.***

In Keynes's mind, the first danger was that inflation confiscated wealth *arbitrarily*, thus not only undermining everyone's belief in their economic security but also providing a powerful object lesson that there was no justice or equity of any sort to be found in the existing distribution of wealth. Moreover, the class that lost the most from inflation was

the class of small savers who did not have the financial sophistication to guard against the depreciation of the currency. Such people are usually the firmest supporters of limited governments and pronounced opponents of arbitrary power; after all, they have done well under a constitutional order, and any left or right wing revolutionary regime is not likely to be in their interest.

Keynes concluded in 1919 that the European governments which had resorted and were resorting to inflation were "fast rendering impossible a continuation of the social and economic order of the nineteenth century. But they have no plan for replacing it." He was right: the confiscation of the wealth of Germany's upper middle class by the hyperinflation of 1923 is usually listed as a principal cause of the at best lukewarm support offered to the constitutional Weimar Republic in interwar Germany. Through the inflation of the early 1920s, the democratic government of this Weimar Republic did its natural supporters, the prosperous relatively small-scale savers of Germany in the professional and mercantile classes, a most grievous economic injury by confiscating most of their savings. The social democratic and Christian democratic politicians of the Weimar Republic did lack a plan for replacing the nineteenth century capitalist social and economic order. And in Germany the replacement turned out to be Adolf Hitler.

Which danger was most on Keynes's mind at any particular date depended on which danger was the greatest threat. In the immediate aftermath of World War I and through the mid-1920s, the principal danger was inflation as governments filled the gap between their revenues and spending expanded first by war and then by postwar reconstruction through the printing of money. From 1925 on--after the more-or-less complete restoration of the gold standard, and especially after the beginnings of the Great Depression--*deflation*, mass unemployment, and the fear of falling prices were the great enemy.

In either case the cure was much the same:

***The best way to cure... must be to provide that there shall never exist any confident expectation either that prices generally are going to fall or that they are going to rise; and also... that a movement, if it does occur, will [not] be a big one.***

The agent that is to provide this cure is sometimes the central bank (stabilizing price) and sometimes the treasury (stabilizing total spending) so that "whenever something occurred which, left to itself, would create an expectation of a change in the general level of prices, the controlling authority should... set... in motion some factor of a contrary tendency."

Politicians remember Keynes as a foe of unemployment and deflation, because unemployment and deflation were the principal problems in the times when he had greatest influence. It may be that he had a slight bias toward fearing unemployment more--he did write that "of the two [inflation and deflation] perhaps deflation is... the worse; because it is worse, in an impoverished world, to provoke unemployment [by allowing deflation] than to disappoint the rentier [by allowing inflation]." But he went on immediately to write that:

*...it is not necessary that we should weigh one evil against the other. It is easier to agree that both are evils to be shunned. The Individualistic Capitalism of to-day, precisely because it entrusts saving to the individual investor and production to the individual employer, presumes a stable measuring-rod of value, and cannot be efficient--perhaps cannot survive--without one.*

If you want to seek the legacy of Keynes it is in the willingness to accept that *macroeconomic management* is an important task of the government: "the regulation of the standard of value [must] be the subject of *deliberate decision*. We can no longer afford to leave it in the category [of]... matters which are settled by natural causes, or are the resultant of the separate action of many individuals acting independently."

There is some sign that there have been improvements in economic knowledge, or improvements in the structural resilience of the economy, that have moderated the destructive impact of the business cycle in the second half of the twentieth century. Christina Romer has constructed a consistent chronology of business cycles for the past century in the United States. According to her chronology, recessions have become rarer (although not shorter). There has been a clear and significant improvement in the share of the time that the economy is in recession compared to the 1916-45 interwar period. There may have been some--smaller--improvement comparing the post-World War II period to the pre-World War I years.

**Statistics on American Recessions: Duration and Frequency**

Period	Fraction of Time in Recession	Average Duration of Recessions	Number of Recessions per Thirty Years
1886-1915	0.22	9.9	8
1916-1945	0.28	12.5	8
1946-1975	0.19	11.2	6
1976-1996	0.12	10.3	4.3

## Average Level and Variability of American Unemployment

Period	Average Unemployment	Standard Deviation of Unemployment
1886-1915	6.6%	2.9%
1916-1945	9.6%	7.2%
1946-1975	4.8%	1.3%
1976-1996	6.8%	1.3%
1946-1996	5.8%	1.6%

However, even if the government accepts its responsibility to stabilize the overall economy, and to avoid inflation or deflation, the story of economic policy and economic reality is not necessarily a happy one. Governments can prove themselves incompetent at the task of macroeconomic management.

And even the best macroeconomic management is no guarantee that on average the business cycle will produce the levels of employment or of income distribution that you want. Structural policies to level out the income distribution and maintain a high average level of employment face their own tradeoffs. Structural labor market policies are expensive; if you try to do them on the cheap you wind up with an unfavorable distribution of income, or a high level of employment; if you commit the appropriate level of resources to education and training, to job search assistance and employment subsidies, you will surely hear complaints-sometimes justified-that taxes are too high to sustain growth and investment.

There are a number of rules-of-thumb for economic management: Run a government surplus to keep the government's hunger for resources from draining the pool of resources for society's non-governmental investments. Use "automatic stabilizers"--decreases in tax collections and increases in social welfare spending in recessions--to cushion declines in employment and increases in poverty that occur when financial market shifts trigger depressions. Guarantee the safety and soundness of the credit system as a whole in emergencies, even though it rescues many who made over-rash bets and provides some encouragement for future over-rash and over-speculative investments. Guarantee not just the domestic but the international credit system. Stabilize prices to the extent that the pursuit of price stability does not endanger more important ends, for price stability is a means to low unemployment, high saving, fast growth, and an equitable distribution of income.

But these remain mere rules of thumb. For the "science" of macroeconomic management has advanced surprisingly little beyond its level in the 1920s. There is very little that we could say about how to manage an economy that would surprise those who wrote about economic policy in the aftermath of World War I.

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