

Slouching Towards Utopia?: An Economic History of the long Twentieth Century

II. Themes

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2.0: Eight Themes

The well-worn grooves of our thinking lead us to focus on narratives—stories, plots of cause-and-effect or disturbance-and-new-equilibrium or transgression and retribution. The well-worn grooves of our thinking also lead us to focus on *morals*: themes, what the stories mean, what the elevator-pitch version happens to be. “The Boy Who Cried Wolf” is a (short) narrative, with the story adding punch to its moral, which William Caxton¹ put as: “For men bileue not lyghtly hym/whiche is knowen for a lyer”.² And the themes—the morals—direct our attention to what is or what someone, at least, are the most important elements of the narrative.

These themes are what you try to communicate when you have an unwilling audience trapped with you in an elevator, and you know that they are going to flee as soon as the elevator doors open. These themes are what you try to re-communicate to your class on the final day before the exam, in the hope that every exam that comes in will have some words on it that makes sense.

Suppose we cast ourselves forward in time a millennium, to 3000—a time in which we will appear as small and as distant to them as the conquest of England by William the Bastard of Normandy³ appears to us. Survey history courses in 2500—if they even have survey history courses—in universities—if they even have

universities—will then in their final lecture—if...—have at most one single paragraph to spend on the twentieth century. What will they try, one final time, to get into students' heads?

We cannot know. What will be important to them depends on who they will be, which depends on what happens next. But if I had to bet, I would bet that they would see eight most important themes to the economic history of the Long 20th Century. And as I assess their relative importance, they are:

1. **History was economic:** The Long 20th Century was the first century ever in which its history was predominantly economic history, for the economy was the dominant arena of events and change, and economic changes were the driving force behind other changes in a way never seen before in any single century.
2. **Explosion of wealth:** The Long 20th Century saw the material wealth of humankind explode beyond all previous imagining: we—at least those of us who belong to the upper middle class and live in the industrial core of the world economy—are now far richer than the writers of even previous centuries' utopias could imagine.⁴
3. **The arrival of feminism:** The Long 20th Century saw the substantial liberation of women from the role imposed by patriarchy enabled by biology Malthusian pressures. At the start of the Long 20th Century the typical woman spent about 20 years eating for two: pregnant or breastfeeding. At the end of the Long 20th Century the typical woman spent about 4 years. Should this be theme number one? Perhaps
4. **The cornucopia of technological knowledge:** Enabling the enormous increase in material wealth—its essential prerequisite, in fact—was the explosion in human technological knowledge. This required not just a culture and educational system that created large numbers of scientists and engineers, and means of communication and memory so that they could stand on each others' shoulders as well as those of earlier giants, but also that the market economy be structured in a way that made it worth people's while to funnel resources to scientists and engineers so that they could do their jobs.
5. **Tyranny:** The Long 20th Century's tyrannies were more brutal and more barbaric than those of any previous century—and these tyrannies were in strange, complicated, and confused ways somehow closely related to the forces

that made the explosion of wealth so great.

6. **Wealth Gulfs:** The Long 20th Century saw the relative economic gulf between different economies grow at an astonishingly rapid pace as the world became, relatively, a more unequal place than ever before—save possibly for the days when some East African Plains Apes knew how to make fire and others did not. It is a scandal and a disgrace that today one-quarter of the human race have lives that—save for public health—are not that distinguishable from the lives of our Agrarian Age predecessors
7. **Demography:** The Long 20th Century saw, we think, the approaching end of the era in which technology and biology increased human numbers: it looks like the world is headed for zero population growth at a population of roughly 10 billion in 2050. And during the Long 20th Century the population explosion that carried the earth from 1 to 7.5 billion people placed huge demographic burdens on poor countries—burdens now ebbing as the demographic transition to low fertility and extended lifespan finish their spread across the globe.
8. **Mismanagement:** The governments of the Long 20th Century had little clue as to how to regulate the un-self-regulating market to maintain prosperity, or ensure opportunity, or produce substantial equality.

We have already seen the first two of these. The other six, as well, are worth restating at greater length:

2.1: The Arrival of Feminism

In 1764 in Britain's Massachusetts colony Abigail Smith was 20, and had had no formal education at all: girls weren't worth it. In that year married a man she had known for five years: the up-and-coming 30-year-old lawyer John Adams. Their daughter Nabby was born the following year, in 1765. There followed John Quincy (1767), Suky (1768, who died at the age of 2), Charles (1770, who died at the age of 10), Thomas (1772), with high probability a couple of (very early) miscarriages from 1774-6, then the stillborn Elizabeth (1777), and (perhaps) another miscarriage afterwards—but I suspect not. She ran their Boston-Braintree household and property operations while he played his role on the large political-intellectual stage, becoming second president of the United States.

Death and disease were, as was the case in the Agrarian Age, omnipresent. One letter to her husband in 1776 contains: “our Neighbour Trot whose affliction I most sensibly feel but cannot discribe, striped of two lovely children in one week...”, “Betsy Cranch has been very bad...”, “Becky Peck they do not expect will live out the day...”, “The Mumps... Isaac is now confined with it...”, and “your Brothers youngest child lies bad with convulsion fitts...”⁵

Her letters tell us that she badly wanted to know what was going on in the world outside her household and the Boston-Braintree circle: “I wish you would ever write me a Letter half as long as I write you; and tell me if you may: Where your Fleet are gone? What sort of Defence Virginia can make against our common Enemy? Whether it is so situated as to make an able Defence? Are not the Gentry Lords and the common people vassals? Are they not like the uncivilized Natives Brittain represents us to be?...” and “I have sometimes been ready to think that the passion for Liberty cannot be Equally Strong in the Breasts of those who have been accustomed to deprive their fellow Creatures of theirs...”

And Abigail Adams was not happy about the position of women in society:

By the way in the new Code of Laws which I suppose it will be necessary for you to make I desire you would Remember the Ladies, and be more generous and favourable to them than your ancestors. Do not put such unlimited power into the hands of the Husbands. Remember all Men would be tyrants if they could. If perticular care and attention is not paid to the Laidies we are determined to foment a Rebellion, and will not hold ourselves bound by any Laws in which we have no voice, or Representation.

That your Sex are Naturally Tyrannical is a Truth so thoroughly established as to admit of no dispute, but such of you as wish to be happy willingly give up the harsh title of Master for the more tender and endearing one of Friend. Why then, not put it out of the power of the vicious and the Lawless to use us with cruelty and indignity with impunity? Men of Sense in all Ages abhor those customs which treat us only as the vassals of your Sex. Regard us then as Beings placed by providence under your protection and in immitation of the Supreem Being make use of that power only for our happiness...

Her husband thought this was a great joke:

As to your extraordinary code of laws, I cannot but laugh. We have been told that our struggle has loosened the bonds of government everywhere; that children and apprentices were disobedient; that schools and colleges were grown turbulent; that Indians slighted their guardians, and negroes grew insolent to their masters. But your letter was the first intimation that another tribe, more numerous and powerful than all the rest, were grown discontented.

This is rather too coarse a compliment, but you are so saucy, I won't blot it out.

Depend upon it, we know better than to repeal our masculine systems. Although they are in full force, you know they are little more than theory. We dare not exert our power in its full latitude. We are obliged to go fair and softly, and, in practice, you know we are the subjects. We have only the name of masters, and rather than give up this, which would completely subject us to the

despotism of the petticoat, I hope General Washington and all our brave heroes would fight...

In some ways Abigail Adams was not typical: literate, smart as a whip, upper class, married to a husband she could talk to. In other ways she was very typical: subordinated to her husband (and to other male relatives), many of her concerns given little weight, embedded in a social network in which aiding other mothers as they watched and desperately tried to stop their children get sick and die, pregnant (5 years; I don't know whether she nursed or not, but somebody or somebodies nursed her children for perhaps fourteen years), and, of course, desperate concern for "our own little flock... My Heart trembles with anxiety for them..."

Being female in the Agrarian Age back before the Long 20th Century was not for sissies.

Why male supremacy was so firmly established back in the Agrarian Age is something that is not obvious to me. Yes, it was very important that people who wished to survive should they reach old age—especially women who did not want to be burned as witches—to have surviving descendants. The pressure at all levels of society was immense: Queen Anne I Stuart (1665–1714), the last British monarch of the Stuart dynasty,⁶ was pregnant eighteen times: eight miscarriages, five stillbirths, George (who lived only minutes), Mary (premature: lived only two hours), Anne Sophia (who lived only nine months), Mary (died of smallpox before she would have turned two), and William (died at 11 of strep throat).

Anne survived all eighteen pregnancies. Many of her fellow-queens were not so lucky. Of the 45 queens and female heirs-apparent of England from the Norman Conquest through Victoria, seven died in childbed: 15.5%, more than one in seven, among the most cosseted and best-nourished women in England. In the horrible run from Isabelle de Valois in 1409 through Anne Hyde in 1671, six of twenty died in childbed. The last to die in childbed was Crown Princess Charlotte Augusta of Wales in 1817.

Yes, back in the Agrarian Age the biological requirements of obtaining a reasonable chance of having surviving descendants to take care of one in one's old age meant that the typical woman spent 20 years eating for two: 20 years pregnant and breastfeeding. Yes, eating for two is an enormous energy drain, especially in populations near subsistence. Yes, Agrarian Age populations were near subsistence—my great-grandmother Eleanor Lawton Carter's maxim was "have a baby, lose a tooth" as the child-to-be leached calcium out of the mother to build her or his own bones, and she was an upper class Bostonian born in the mid-1870s.

Yes, breastfeeding kept women very close to their children, and impelled a concentration of female labor on activities that made that easy: gardening and other forms of within-and-near-the-dwelling labor, especially textiles.⁷

Yes, there were benefits to men as a group from oppressing women—especially if women could be convinced that they deserved it: “Unto the woman he said, ‘I will greatly multiply thy sorrow and thy conception; in sorrow thou shalt bring forth children; and thy desire *shall be* to thy husband; and he shall rule over thee’...”⁸

But surely even in the Agrarian Age a shift to a society with less male supremacy would have been a positive-sum change: women who are not kept illiterate, barefoot, and pregnant as a matter of course can do more, and we—optimistic—economists have a strong bias toward believing that people in groups will find ways to become, collectively, more productive and then to distribute the fruits of higher productivity in a way that makes such a more productive social order sustainable.⁹ But not.

Being an Agrarian-Age woman was not for sissies.

There were signs of erosion in the bio-demographic underpinnings of high male supremacy even before the Long 20th Century began. But it was over 1870-2016 that these underpinnings dissolved utterly. The number of years the typical woman spent eating for two fell from twenty—if she survived her childbed—down to four, as better sanitation, much better nutrition, and more knowledge about disease made many pregnancies less necessary for leaving surviving descendants and as birth control technology made it easier to plan families. The number of babies per potential mother dropped by about two-thirds.

Thus reductions in infant mortality, the advancing average age of marriage, and the increasing costs of child raising together drove a decrease in fertility. And, after exploding in the Industrial Age, rate of population growth in the industrial core slowed drastically. The population explosion turned out to be a relatively short run thing. And so human population growth went from an approximate doubling each generation to a rate approximately consistent with zero long-run population growth in the advanced industrial economies, with the rest of the world now following along behind. I world that had had perhaps 750 million people in 1800, 1.1 billion in 1870, and 7.4 billion in 2016 now appears headed for a stable population of about 9.5 billion come 2050.

The path of within-the-household technological advance worked to the benefit of the typical woman in the Long 20th Century: dishwashers, dryers, vacuum cleaners, improved chemical cleansing products, other electrical and natural gas appliances, and so on, especially clothes-washing machines—all these 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 late twentieth century household could become more like a part-time job. And so much female labor that had been tied to full-time work within the household because of the backward state of household technology became a reserve that could now be used for other purposes.

My great-great grandmother Florence Wyman Richardson was born in 1855 in St. Louis, MO, a privileged scion of what then qualified as St. Louis's upper class.¹⁰ Unlike Abigail Smith Adams, she received an education—but not a college degree. Unlike Abigail Smith Adams, she was not limited to writing private letters to her husband asking him to please “Remember the Ladies”. 1882 finds her lobbying for raising the age of consent in Missouri, then 12. 1908 finds her on the executive board of the St. Louis Woman's Trade Union League. 1910 finds her, with her daughter and my great-grandmother Florence (“Fonnie”) Richardson Usher, organizing the St. Louis Women's Suffrage League. And the system... responded: the 19th Women's Suffrage Amendment, which had first been introduced back in 1878, was ratified on August 20, 1920.¹¹

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. In the United States female levels of formal education are now poised to soon surpass male levels.

The move of women from largely within-the-household, unpaid to largely outside-the-household, paid work catalyzed an increase in women's material welfare and social status. As Betty Friedan wrote in the early 1960s, women could advance toward something like equal status only if they found “identity...in work... for which, usually, our society pays.” As long as women were confined to separate, domestic, occupations which the market did not reward with cash, it was easy for men to denigrate and minimize their competence and accomplishments. As the labor requirements of running a household fell, the wide separation of men's from women's roles became harder to maintain—and with it the belief that biology imposed a different, lower status on the female half of the human race.

Institutions and practices derived under the assumption that the overwhelming bulk

of the labor force is male, attached to employment full-time over the long term, and has minimal child care and household-maintenance responsibilities held back progress toward something like full economic equality between men and women. Nothing like full equality has yet been established. 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 is still substantial discrimination visible, especially in the form of a “break in labor force participation” penalty. Today in Denmark—one of the most gender-equal countries in the world, mothers have a 7%-point lower chance of being employed, work an average of 7% fewer hours conditional on being employed, and receive an average of 7% less in compensation conditional on being employed and on working their hours.

In my intellectual discipline, economics, and in my labor market status group, tenured professors, we are now grappling with one of these institutions and practices: that, in the word of my friend and teacher ex-Harvard President Larry Summers, people deciding whether you are going to receive tenure expect that candidate professors in their 20s and 30s have “near total commitments to their work... a large number of hours in the office... a flexibility of schedules to respond to contingency... a continuity of effort through the life cycle, and... the mind is always working on the problems that are in the job”.¹² But requiring such total commitment up through one’s 30s does not fit easily or well with female parenthood. The response of universities was to give mothers extra time—extra years to prepare their portfolios for the tenure review. And then gender equality seemed to demand that universities give fathers—especially those who would certify that they had been primary caregivers—extra years on their tenure clocks as well.¹³

The effect of this facially-neutral pro-parent policy? Men whose wives gave birth and so got extra time on their tenure clocks saw their chances of getting academic tenure increase by 20% . Women who gave birth and so got extra time on their tenure clocks saw their chances of getting academic tenure decrease by 20%. The men had spent the extra time writing more articles. The women had spent the extra time eating for two under the heavy biological load of mammalian motherhood.¹⁴

I see the centrality of the *economic* and the extraordinary upward leap in prosperity as the principal news that the future will remember from the history of the Long 20th Century. But I am male. If I were female, would I see the demographic transition—the shift of the typical woman’s experience from one of eating for two for twenty years (and of having one chance in seven of dying in childbed) to eating

for two for four years—and the rise of feminism as the biggest news?

Quite possibly.¹⁵

Perhaps we move from “possibly” to “probably” when we reflect on the connections between the rise of feminism and the demographic transition. As the world became richer—and as knowledge about how to manage public health was slowly and painfully developed—the world saw first a population explosion: The world had grown from 170 million in the year 1 to 425 million in 1500—growth at the very slow walking pace of 0.06% per year that corresponded to the very slow pace of pre-Commercial Revolution technological development. The Commercial Revolution era of 1500-1800 saw population more than double and grow to 900 million. The British Industrial Revolution era of 1800-1870 saw population increase half again to 1.3 billion. And the Long 20th Century saw human population nearly sextuple to 7.5 billion. By and large, even as mortality fell men still wanted many, many children. Women, first, did not have the knowledge that changing public health meant that many pregnancies were no longer necessary to give at least some confidence of great-grandchildren. And women, second, did not have the social power to set their fertility at levels that seemed good to them. Feminism gave them both the knowledge and the social power.

Thus we now appear to be on track to a world with its population peaking at between 9.5 and 10 billion around 2050.

That feminism came late to the initially-poorer regions of the world has been a major cause of the Long 20th Century’s global divergence in living standards and productivity levels. It was not the most important cause: the most important cause was communist central planning—Vladimir Lenin’s belief that one should run an entire economy by generalizing what he saw and guessed about German mobilization for World War I was not the brightest light on the tree of humanity’s good ideas. It was not the second most important cause: that was the slowness with which modern industrial technologies were diffused around the world. But that feminism came late, and so the demographic transition came late, to the poorer regions of the world was the third most important cause: the demographic burdens placed on poor countries by the continued population explosion were heavy—but they are now ebbing, as we now see the demographic transition to not just extended lifespan but to low fertility finish its spread around the globe.

2.2: The Advance of Technological and Organizational Knowledge

Enabling and powering the enormous increase in material wealth—its essential prerequisite, in fact—has been the explosion in human technological knowledge, the creation of this explosion requiring not just scientists and engineers and means of communication, but also a market economy that made it worth people's while to funnel resources to scientists and engineers so that they could do their jobs. We, however, have had not just technological breakthroughs, but a breakthrough in the creation of the research laboratory—a breakthrough in that we have now routinized the process of creating constant and successive technological breakthroughs.

The consequences have been overwhelming.

Growth economists make truly heroic assumptions to construct very rough estimates of a quantitative index of the value of the human race's collective knowledge of technology and organization in the broadest sense—the value of the ideas about how to manipulate nature, about what people find useful for life or entertaining or useful for status, and about how humans either as individuals or production teams or societies can productively organize to make and distribute. In the framework I find most useful, they calculate output per worker Y/L as an increasing function of the capital stock per worker K/L —how much in the way of produced means of production the typical worker is assisted by—and the efficiency of labor E . Holding the capital-output ratio K/Y constant, a 1% increase in the efficiency of labor E drives a 1% increase in production per worker Y/L . Holding the efficiency of labor E constant, a 1% increase in the capital-per-worker K/L ratio drives an 0.4% increase in production per worker Y/L .

They—we—then posit that the efficiency of labor E is itself a function of the value of the human race's collective knowledge H and of the natural resources at the disposal of the typical worker N/L . The baseline assumption I use is that natural resources are half as important as knowledge: a fall of 3% in the natural resources at the disposal of the typical worker if balanced by a 1% increase in the value of knowledge leaves the efficiency of labor unchanged; and a 1% increase in both the value of knowledge and in resources per worker raises the efficiency of labor by 1%.

This strikes most people—this strikes me—as a somewhat odd way to proceed.

The real value of production per worker and of natural resources per worker seem to be somethings we could measure and get our hands dirty calculating.¹⁶ But efficiency of labor? Value of ideas? Eighty years ago John Maynard Keynes warned us economists against excessive quantification of the not properly quantifiable that would make a mockery of true quantitative analysis:

Approximate statistical comparisons depending on some broad element of judgment rather than of strict calculation... may possess significance and validity within certain limits. But the proper place for such things as net real output and the general level of prices lies within the field of historical and statistical description, and their purpose should be to satisfy historical or social curiosity... To say that net output to-day is greater, but the price-level lower, than ten years ago or one year ago, is a proposition of a similar character to the statement that Queen Victoria was a better queen but not a happier woman than Queen Elizabeth—a proposition not without meaning and not without interest, but unsuitable as material for the differential calculus. Our precision will be a mock precision if we try to use such partly vague and non-quantitative concepts as the basis of a quantitative analysis...¹⁷

Real scientists calculate quantitative values for abstract things that cannot be seen: the change in momentum is the force times the time over which it is applied; the change in kinetic energy is the force times the distance over which its is applied; an electron or positron absorbs or generates a photon (and a photon either splits into an electron and a positron or an electron and a positron collide and annihilate each other, producing a photon) in a process governed by the fine structure constant, which is a value estimated by experiment of $0.007297351 \pm 0.000000006$. These laws hold, as best as we can tell, exactly: they are inscribed in the deep structure of the universe, and hold for all forces, all momentums, all kinetic energies, and all photon-electron-positron interactions.

By contrast, the claim that output-per-worker Y/L varies systematically with capital-per-worker K/L with a quantitative coefficient of 0.4 is a rough rule of thumb. The claim that, holding the capital-output ratio K/Y constant, the efficiency of labor E is proportional to production-per-worker Y/L is a definition. The claim that labor efficiency E , the value of knowledge H , and natural resources per worker N/L are such that if the second and third grow at the same rate the first grows at the same rate as well is a definition. And the claim that knowledge H is thrice as important as resources N/L in advancing the efficiency of labor E is not even a rough rule of thumb: it is a guess.

There is no machine buried deep inside the earth emitting some kind of force field penetrating the universe that generates as a natural law the aggregate production function which growth economists like me like to write as:

$$\frac{Y}{L} = \left(\frac{K}{Y} \right)^{\left(\frac{\alpha}{1-\alpha} \right)} \left((H)^{\left(\frac{\phi}{1+\phi} \right)} \left(\frac{N}{L} \right)^{\left(\frac{1}{1+\phi} \right)} \right)$$

with $\alpha=0.4$ and $\phi=3$. And so any quantitative conclusions reached by using them should be taken with many, many grains of salt. Nevertheless, I find the framework very useful in organizing my thoughts, in generating questions to investigate, and, yes in producing very rough approximate magnitude. Queen Victoria does not appear to have been a much better queen than Queen Elizabeth. But from all historical accounts Gloriana appears to have been a much happier woman than the Widow at Windsor.

So set our quantitative index of the global value of human knowledge H equal to a value of 1 back 10000 years ago, at the end of the Gatherer-Hunter and the beginning of the Agrarian Age. Then by the year 1 this value index stood 3.5. By the year 1500 the index of the value of knowledge stood at 4.75: given similar resources, because of more knowledge about how to use nature and organize humans one worker in the year 1500 could produce things of the value it would have taken 4.75 typical workers of 8000 BC to produce.

Calculating the average rate of growth of the value of the knowledge gets us a growth rate of 0.02% per year—0.5% per generation—for the entire span years from 1 to 1500. We also see an average population growth rate for the world over this time span of 0.06% per year—1.5% per generation—as increases in technological prowess were soaked up by higher populations and thus greater resource scarcity, leaving little or none to improve humanity's lot.

From 1500 to 1800 to 1870 our quantitative index H grows from 4.75 to 9 to 16—average proportional rates of annual increase in H of 0.2% per year over 1500-1800 and of 0.8% per year over 1800-1870. These are vastly greater than the 0.02% per year of 1-1500 or the 0.035% per year of 1000-1500. However, even the 0.8% per year of growth in human knowledge over 1800-1870 did little to raise human material well-being. Humans were perhaps 40% better off in 1870 on average than they had been in 1800—a growth rate of 0.48% per year. And, as John Stuart Mill had observed, little of this increase in production per worker trickled down to the working classes of Britain, and still less trickled down to the working classes of the rest of the world.

To a large extent, Malthus still ruled the human world of 1870. World population

had grown from perhaps 900 million in 1800 to 1.3 billion in 1870—an average growth rate of 0.5% per year—and was about to grow from 1.3 billion in 1870 to 1.625 billion in 1900—an average growth rate of 0.75% per year. Contrast these population growth rates to the 0.25% per year of 1500-1800 and the 0.06% per year of 1000-1500, and see that the somewhat richer world of the Commercial Revolution and British Industrial Revolution eras was producing a substantial population response. People still had little access to effective family limitation planning. And for most people the need and desire to have surviving descendants was driving a plan to have many children—and in the richer world more of these children were surviving.

What would the world today look like if the British Industrial Revolution had not happened—if the rate of growth of the value of human knowledge H had remained after 1800 at its rate of 0.2% per year that it had attained over 1500-1800? We cannot *know*, but my view is that the balance of the probabilities is that the world today would look a lot like the world of 1800, or 1500, or even 1000. There would have been continued technological development at a pace four times that of 1000-1500: a rate of progress that took 100 years in the Middle Ages would have been accomplished in 25. But the world would never have become rich enough for people to begin thinking in large numbers and to substantial degrees that they should make more serious efforts to limit their fertility. And it is likely the global population growth would have reached the 0.6% per year at which essentially all of technological improvement would have gone to increasing human populations, and next to none to raising output-per-worker. Picture a world today of 3.3 billion people, a little less than half of our current population. Picture a world today with a value-of-knowledge index of 14: the level attained, historically, in 1865—a steampunk world. And picture a poor steampunk world: human real income per capita would then have been on the order of a thousand dollars per year. It would have been a world where the average person lived on 3 dollars a day, rather than our world where the average is ten thousand dollars per year and 30 dollars a day.¹⁸

What would the world today look like if the British Industrial Revolution had been what there was—if the rate of growth of the value of human knowledge H had remained at its rate of 0.8% per year that it had attained over 1800-1870? We cannot *know*, but we can project forward. We would then see a world today with a value-of-knowledge index of 50—the level of technology and organization that the world, roughly, attained in 1930: automobiles, not Ford's Model T but his Model A; rural electrification a pressing issue in the United States; home appliances—even washing machines—as unusual things; radio as high-tech; radar as the frontier; the build-out of public utility networks in an attempt to capture

economies of scale the hot sector for investment banking and Wall Street; no jet aircraft; no antibiotics.

How rich would such a world be? Perhaps the most relevant economist would still be Malthus. At living standards of two dollars a day with pre-industrial public health conditions human populations appear essentially stagnant. At the living standards of three dollars a day of 1800 or so human populations appear to have grown at 0.5% per year. At the living standards of four dollars a day of 1870 or so human populations appear to have grown at 0.75% per year. By the time average living standards hit 10 dollars a year after World War II the global population growth rate was 1.85% per year. Only thereafter, since 1975, have we seen population growth rates begin to slow.

In our counterfactual world with no acceleration in technological and organizational progress after 1870, does the world as a whole ever get rich enough for population growth to begin to slow? Perhaps. Perhaps not. We can construct scenarios, the more pessimistic of which would see a counterfactual world today with our value-of-knowledge index at 50 and with 6 billion people on it. That would generate standards of living averaging perhaps 6 dollars a day: the level of prosperity the world saw in 1900. And that world might then have a future in which subsequent growth in living standards was slow, as global populations continued to grow rapidly and yet technological progress was not fast enough to leap far ahead. At a rate of growth of the value of ideas of 0.8% per year and a relative salience of ideas relative to resources parameter ϕ , that rate of discovery, invention, and innovation would be neutralized in its effect on the efficiency of labor by population growth of 2.4% per year.

At the 1800-1870 rate of increase of the global knowledge stock, the world would not attain today's actual level of the value of knowledge until 2360. If the world had never grown rich enough to set the demographic transition in motion, what would the corresponding population be? How scarce would natural resources be? How rich could the world be?

But that is not the world we live in. In 1870, our economists' heroic-assumptions index of the value of knowledge index stood at 16 for the 1.3 billion people alive then. And human life was still overwhelmingly, in Thomas Hobbes's phrase: "nasty, brutish, and short".¹⁹ The Agrarian Age that had begun with the development of agriculture and the domestication of the goat 10000 was still a reality for most of the world.

Then came the explosion. Our 7.5 billion people today have a global value of knowledge index of 421 and an average income of 30 dollars a day—10000 dollars per capita per year. The value of knowledge about technology and organization grew at an average rate of 2.3% per year over the Long 20th Century. And it is still growing. Meanwhile, humans appear to be converging on a fertility of two children per potential mother, or fewer. And human population appears to be headed for a peak around 2050 of between 9.5 and 10 billion.

That something truly big was going on was not obvious to mid-19th century economist John Stuart Mill or to late-19th century economist Alfred Marshall. But it had become very obvious by the time early-20th century economist John Maynard Keynes sat down to write, looking backward from 1919 at the pre-World War I era 1870-1914:²⁰

After 1870... developed... an unprecedented situation.... The pressure of population on food... became for the first time in recorded history definitely reversed. As numbers increased, food was actually easier to secure.... With the growth of the European population there were more emigrants on the one hand to till the soil of the new countries, and, on the other, more workmen were available in Europe to prepare the industrial products and capital goods which were to maintain the emigrant populations in their new homes, and to build the railways and ships which were to make accessible to Europe food and raw products from distant sources.... In this economic Eldorado, in this economic Utopia, as the earlier economists would have deemed it, most of us were brought up. That happy age lost sight of a view of the world which filled with deep-seated melancholy the founders of our Political Economy.... Malthus disclosed a Devil. For half a century... he was chained up and out of sight....

What an extraordinary episode in the economic progress of man that age was!... The greater part of the population, it is true, worked hard and lived at a low standard of comfort, yet were, to all appearances, reasonably contented with this lot. But escape was possible, for any man of capacity or character at all exceeding the average, into the middle and upper classes, for whom life offered, at a low cost and with the least trouble, conveniences, comforts, and amenities beyond the compass of the richest and most powerful monarchs of other ages. The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth, in such quantity as he might see fit, and reasonably expect their early delivery upon his doorstep; he could at the same moment and by the same means adventure his wealth in the natural resources and new enterprises of any quarter of the world, and share, without exertion or even trouble, in their prospective fruits and advantages...

Keynes feared, in 1919, that World War I had broken this marvelous machine of economic growth and human happiness, and that the world might face a reversion to some Malthusian dystopia. 11 years later he had seen the demographic transition coming and was pleased by the progress of technology, and had veered to optimism. He then foresaw that we today would be—in material things—in utopia:²¹

Let us, for the sake of argument, suppose that a hundred years hence we are all of us, on the average, eight times better off in the economic sense than we are to-day.... The needs of human being... fall into two classes—those needs which are absolute in the sense that we feel them

whatever the situation of our fellow human beings may be, and those which are relative in the sense that we feel them only if their satisfaction lifts us above, makes us feel superior to, our fellows. Needs of the second class... may indeed be insatiable.... But this is not so true of the absolute needs.... Assuming no important wars and no important increase in population, the economic problem may be solved, or be at least within sight of solution, within a hundred years. This means that the economic problem is not—if we look into the future—the permanent problem of the human race....

Will this be a benefit? If one believes at all in the real values of life, the prospect at least opens up the possibility of benefit. Yet I think with dread of the readjustment of the habits and instincts.... To use the language of to-day—must we not expect a general “nervous breakdown”? We already have a little experience of what I mean—a nervous breakdown of the sort which is already common enough in England and the United States amongst the wives of the well-to-do classes, unfortunate women, many of them, who have been deprived by their wealth of their traditional tasks and occupations—who cannot find it sufficiently amusing, when deprived of the spur of economic necessity, to cook and clean and mend, yet are quite unable to find anything more amusing....

I see us free, therefore, to... once more value ends above means and prefer the good to the useful. We shall honour those who can teach us how to pluck the hour and the day virtuously and well, the delightful people who are capable of taking direct enjoyment in things, the lilies of the field who toil not, neither do they spin.

But beware! The time for all this is not yet. For at least another hundred years we must pretend to ourselves and to every one that fair is foul and foul is fair; for foul is useful and fair is not. Avarice and usury and precaution must be our gods for a little longer still. For only they can lead us out of the tunnel of economic necessity into daylight...

How did the world accomplish its further threefold leap, relative to what had taken place in the British Industrial Revolution era of 1800-1870, in the underlying fundamentals of economic growth? And how did what was originally a geographically-concentrated surge become global, albeit unevenly global? Why, instead of the British Industrial Revolution growth surge petering out and being followed by a return to the Commercial Revolution era—itsself a positive historical anomaly—did the rate of human progress leap ahead at a tenfold pace? Why does one year since 1870 see the relative technological and organizational progress of three years over 1800-1870, of ten years over 1500-1800, and of a hundred years over 1-1500? Just what happened around 1870 to make this shift? And what has happened between then and today to sustain it?

I see four factors as key:

1. Globalization in goods transport, in the form of the iron-hulled screw-propellered ocean-going steamship linked to the railroad network, and subsequent developments.
2. Globalization in communication, in the form of the global submarine telegraph network linked to landlines, and subsequent developments.
3. The development of the industrial research laboratory of Edison and Tesla, and its subsequent bureaucratization and generalization

4. The openness of the world—most important, perhaps, the open borders²² in migration, as one in fourteen humans changed their continent between 1870-1914. But also and closely linked to the other forms of openness that allowed transport and communications to produce globalization; that allowed research and development to diffuse throughout the world, albeit slowly; and that made the Long 20th Century the American Century.

The first two created the possibility of making the world economy, for the first time, a single system: the earnings of a rubber tapper in Brazil would be powerfully influenced by things happening continents away—by the economic growth and demand for rubber in North America and in western Europe and by the success of the British imperial project in Malaya and the Belgian in the Congo, to name four. The third greatly increased the pace of technological growth as inventors and innovators were no longer forced to be both lone wolves and to also be promoters, projectors, financiers, and managers. The fourth realized the possibility of an integrated world economic system. Moreover, it transformed the U.S. from likely fifth fiddle to lead violin among the Long 20th Century's global powers.

These all four together were, I think, more likely than not enough to be a tipping point. I wish that I could do more in this book to explain why they together were a tipping point, but I do not know enough to do so. I can, however, trace their consequences.

2.3: Tyrannies

The twentieth century's tyrannies were more brutal and more barbaric than those of any previous age. And—astonishingly—they had much of their origins in economic discontents and economic ideologies. People killed each other in large numbers over, largely, questions of how the economy should be organized. Such questions had not been a major source of massacre in previous centuries.

Twentieth-Century governments and their soldiers have killed perhaps forty million people in war: either soldiers (most of them 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: Genghis 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. Others do not make the list. Napoleon does not make it, and neither does Alexander the Great or Julius Caesar.

By contrast the twentieth century has seen five or six people join the Ten Million Club: Adolf Hitler, Chiang Kaishek, Vladimir Lenin, Joseph Stalin, Mao Zedong, and Tojo Hideki. Hitler, Stalin, and Mao have credentials that make them charter members of the Thirty Million Club as well—and perhaps the Fifty Million Club. A regime whose hands are as bloody as those of the 1965-1998 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? It seems at first glance that, while deplorable, it has little to do with the story of how people produced, distributed, and consumed the commodities needed and desired for their material well-being.

But it is not possible to write economic history without taking the bloody hands of twentieth century governments into account. 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 shooting or starvation was often part of the government’s “management” of its economy: the stick used to compel the people to perform service or labor as the government wished. The economies of the Soviet Union in the 1930s and of China in the 1960s cannot be understood without understanding how mass terror was used as a social discipline device.

Third, and most extraordinary, 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 slaughtered each other for the other reasons. People slaughtered each other over theology: eternal paradise or damnation. People slaughtered 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.

When you think about it, killing people on a large scale over what social mechanisms should coordinate economic activity is profoundly stupid: we want social mechanisms that will work in the sense of delivering prosperity, progress, and a reasonably egalitarian distribution of income.²³ Combinations of mechanisms that fail to accomplish this should be rejected; combinations that succeed should be approved; but the stakes are not overwhelmingly large.

Moreover, the power of tyrants and leaders does not depend on the balance of command or market mechanisms in the economies that they govern. Fidel Castro would rule in Havana whether farmers are allowed to sell their crops in roadside stands, or whether they are prohibited from doing so—forced to sell to government monopoly bureaucracies. The power or personal status of leaders or the eternal salvation of peoples had little to do with 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 along the lines dictated by ideology. Other twentieth century disasters had equally strong roots in economic ideology: it is hard to see World War II in the absence of Adolf Hitler's insane *idée fixe* that the Germans needed a better land-labor ratio—more “living space”—if they were to be a strong nation.

The last appropriate word here should be Aleksandr Solzhenitsyn's:

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.

And it is certainly one of the most bizarre—as well as one of the most important—things about the history of the twentieth century is that so many of these deadly ideologies were *economic* ideologies.

One might have thought that a richer world—the richer world made possible by the, for the first time, rapid outrunning of population growth by technology—would be a kinder, gentler world. One would have been wrong.

2.4: Wealth Gulfs

Those economies 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. 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. The gulf across which the world's rich and poor regarded each other exists in every dimension: how much people consume, whether they can read, what tools they use, and how they make their living.

This glass can be viewed either as half empty or as half full. It is half empty because we live today in the most unequal world ever. It is half full because 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, at least from the millennial perspective. However, the millennial perspective is one that human beings can adopt only when contemplating the long-dead past—not when thinking about their present or their children's future.

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. The median inhabitant of Africa has access to modern public health and to a village cell phone. But do they have higher real incomes than did their predecessors of two generations ago? It is not obvious that the answer is “yes”.

From an economist’s point of view, the existence, persistence, and increasing size of large gaps in productivity levels and living standards across nations seems bizarre. We can understand why pre-industrial civilizations had different levels of technology and prosperity: they had different exploitable nature resources, and the diffusion of new ideas from civilization to civilization could be very slow. Such explanations do not apply to the world today. 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 private property. Most of it is accessible to anyone who can read. 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” in living standards and productivity levels is another key aspect of twentieth century economic history: 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. Moreover, there seems to be every reason to fear that this “divergence” in living standards and productivity levels will continue to grow in the future. A number of factors have kept economic growth slow in today’s poor countries in the past: high rates of population growth that restrict growth in the capital-output ratio, high relative prices of capital goods that constrain investment, governments that (like most governments throughout history) take the short view in an attempt to maximize chances of survival and the perquisites of office, and traditional elites (religious and cultural) that fear what they will lose from a richer country more integrated into the twenty-first century world. These factors are still operating today, and likely to operate in the future as well.

This is a potential source of great danger, because today’s world is sufficiently interdependent—politically, militarily, ecologically—that the passage to a truly human world requires that we all get there at roughly the same time.

Small potatoes in global inequality but looming large in affected individuals' life chances and in political-economic stability is within-nation inequality.

2.5: Management—Rather, Mismanagement—of Economic Policy

The management of economies by governments in the twentieth century was at best inept. And, as we have seen over 2007-2018, little if anything has been learned about how to regulate the un-self-regulating market in order to maintain prosperity, or ensure opportunity, or produce substantial equality.

Before the start of the nineteenth century, there were markets but there was not really a market economy—and the peculiar dysfunctions that we have seen the market economy generate through its macroeconomic functioning were, if not absent, at least rare and in the background of attention. Wars, famines, government defaults were threats to life and livelihood. The idea that Alice might be poor and hungry because Bob would not buy stuff from her because Bob was unemployed because Carl wanted to deleverage because Dana was no longer a good credit risk because Alice had stopped paying rent to Dana--that and similar macroeconomic processes are a post-1800 phenomenon.

The problems of economic policy in the modern age are, speaking very broadly, twofold: the problem of managing fictitious commodities, and the problem of managing aggregate demand.

Policy: the management of economies by governments in the twentieth century was at best inept. Little was known about how to manage a market economy. Lessons learned from experience were often forgotten quickly. There was an extraordinary disjunction between the power of twentieth-century economies as social-calculating and behavior-conditioning mechanisms and the ineptness with which these economies were managed.

Management of growth; management of stability; management of distribution.

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

governments that appear singularly inept at managing market economies: inept at coping with economic shocks that threaten to cause mass unemployment or raging hyperinflation.

Some of it is because twentieth century economists did not know what to prescribe: the history of economic policy reads like alchemy, not chemistry. Often proposed remedies made economic problems worse. Many times one current generation's proposed solutions to the problems of how to manage domestic and international macroeconomic policy turn out to lay the groundwork for the next generation's problems of macroeconomic management. And it is not always the case that larger problems are replaced by smaller ones over time. As the salience of different problems—inflation, unemployment, unstable capital flows, unstable exchange rates, the sacrifice of domestic to international interests, the focus on domestic interests which means that the international system is left ungoverned and unmanaged—has changed over time, the movement of economic policy has looked less progressive and more circular. Theoretical doctrines like the Keynesian “liquidity trap” that were last applied to the U.S. in the 1930s, and thereafter dismissed as theoretical curios of no practical importance, are dusted-off and revived for the analysis of Japanese stagnation in the 1990s. When Argentinian technocrat Domingo Cavallo reassumes the post of Minister of Finance in early 2001, some of the policy proposals that he advances to deal with Argentina's then-macroeconomic problems appeared remarkably similar to policy proposals that John Maynard Keynes had advanced at the end of the 1920s to deal with Great Britain's similar macroeconomic problems.

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. And some of it is simply that while it may be true that those who do not remember the past are condemned to repeat it, this aphorism does not stress the fact that that means that the rest of us are condemned to repeat it with them.

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. Moreover, learning does not appear to take place—or if it does take place, it does not take place at more than a glacial pace. The inescapable image is of an ocean liner crewed and steered by chimpanzees. The failures and half-successes of economic policy together make up another key facet of twentieth century economic history: how governments have managed or mismanaged their economies, and how knowledge of how the

economic system works has been painfully gained and then painfully lost.

2.6: Other Themes

There are other themes as well: shifts in the distribution of relative wealth and economic power from rich to middle-class and back again, along with the advances and retreats of democracy, all as the waves of social democracy sloshed back and forth across the world in the twentieth century; the Great Depression, the defining moment of twentieth century economic history; the rise to economic preeminence of the United States, and the recent end of America's role at the leading technological and econo-cultural edge as "the furnace where the future is being forged," to name three.

All these other themes are important strands in twentieth century economic history. But from the perspective of a millennium hence, the most important aspects of twentieth century economic history cannot help but be those sketched above. Indeed: eight is almost surely too many themes.: 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.

But since we are narrative animals, our tolerances for thematic overviews are limited: it is time to tell the *story*.

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¹ William Caxton (1422?–1491?), perhaps the first printer in England <https://en.wikipedia.org/wiki/William_Caxton>

² **Laura Gibbs**: *Aesopica: Aesop's Fables in English, Latin, and Greek* <<http://mythfolklore.net/aesopica/caxton/610.htm>>

³ King William I of England (1028?–1087), Duke of Normandy from 1035, son of the unmarried Duke of Normandy Robert I and his mistress Herleva <https://en.wikipedia.org/wiki/William_the_Conqueror>

⁴ For a declaration that the history of monarchy *must* be more important than the history of menarche (though I can find no clear explanation of why), see Gertrude Himmelfarb (1987), *The New History and the Old* (Cambridge: Harvard University Press: 0674615816).

⁵ **Abigail Smith Adams** (1776): Letter to John Adams 31 Mar-5 Apr 1776 <<https://tinyurl.com/dl20180226a>>

⁶ In the Protestant line. The last Catholic Stuart dynasty claimant was Henry IX Stuart, died 1807.

⁷ See **Elizabeth Wayland Barber** (1994): *Women's Work: The First 20,000 Years : Women, Cloth, and Society in Early Times* (New York: W.W. Norton: 0393313484) <<https://books.google.com/books/?isbn=0393313484>>

⁸ Genesis 3:16 (King James Version) <<http://biblehub.com/kjv/genesis/3.htm>>

⁹ Or do we economists? See **Adam Smith** (1776): *An Inquiry into the Nature and Causes of the Wealth of Nations* (London: W. Strahan and T. Cadell) <<https://www.marxists.org/reference/archive/smith-adam/works/wealth-of-nations/book03/ch02.htm>>. Smith, at least, grappled hard with the question of why human elites resorted to what he saw as the extremely unproductive system of slavery. His answer was the “domination” was something humans enjoyed for its own sake: “In ancient Italy, how much the cultivation of corn degenerated, how unprofitable it became to the master when it fell under the management of slaves, is remarked by both Pliny and Columella. In the time of Aristotle it had not been much better in ancient Greece. Speaking of the ideal republic described in the laws of Plato, to maintain five thousand idle men (the number of warriors supposed necessary for its defence) together with their women and servants, would require, he says, a territory of boundless extent and fertility, like the plains of Babylon. The pride of man makes him love to domineer, and nothing mortifies him so much as to be obliged to condescend to persuade his inferiors. Wherever the law allows it, and the nature of the work can afford it, therefore, he will generally prefer the service of slaves to that of freemen. The planting of sugar and tobacco can afford the expense of slave-cultivation. The raising of corn, it seems, in the present times, cannot. In the English colonies, of which the principal produce is corn, the far greater part of the work is done by freemen. The late resolution of the Quakers in Pennsylvania to set at liberty all their negro slaves may satisfy us that their number cannot be very great. Had they made any considerable part of their property, such a resolution could never have been agreed to...”

¹⁰ Florence Wyman’s father, Edward Wyman, was a graduate of Amherst College and himself an educator. In 1848 he built Wyman’s Hall: a then “impressive four-story building” on Market Street opposite the courthouse, where now the Gateway Arch stands. The third and fourth stories of the building housed Wyman’s Classical High School. The first story was for retail. The second story held a concert hall, at which Jenny Lind “the Swedish Nightingale”, then the most prominent vocalist in the world, performed when she came to St. Louis in 1851.

¹¹ After the passage of the 19th Women’s Suffrage Amendment, Fannie turned her energy to Black civil rights as a prominent member of the St. Louis Urban League.

¹² **Lawrence Summers** (2005): *Remarks at NBER Conference on Diversifying the Science & Engineering Workforce* <https://www.harvard.edu/president/speeches/summers_2005/nber.php>

¹³ An example of how at times feminism came into conflict with social democracy: the desire to use women’s “specialness” to win regulatory benefits conflicted with the feminist principle that “special” was code for “low status”.

¹⁴ **Heather Antecol, Kelly Bedard, and Jenna Stearns** (2016): *Equal but Inequitable: Who Benefits from Gender-Neutral Tenure Clock Stopping Policies?* <<https://tinyurl.com/dl20180226b>> Using a unique data set on the universe of assistant professor hires at top-50 economics departments from 1985-2004, we show that the adoption of gender-neutral tenure clock stopping policies substantially reduced female tenure rates while substantially increasing male tenure rates...

¹⁵ **Shelly Lundberg** comments that I need "more skepticism about the 'institutions and practices derived under the assumption that...the labor force is male'" and to follow "Claudia Goldin... in her Presidential Address": <<https://www.aeaweb.org/articles?id=10.1257/aer.104.4.1091>> <<http://www.bradford-delong.com/2018/07/comment-of-the-day-shelly-lundberg-re-question-at-the-endhttpstwittercomshellylundbergstatus10179388396.html>>

Claudia Goldin (2014): "A Grand Gender Convergence: Its Last Chapter", *American Economic Review* 104:4 (April), pp. 1091-1119 <<https://www.aeaweb.org/articles?id=10.1257/aer.104.4.1091>>

¹⁶ However, do not underestimate the magnitude of the index number problem. More on the index number problem anon.

¹⁷ **John Maynard Keynes** (1936): *The General Theory of Employment, Interest and Money* (London: Macmillan), Chapter 4: The Choice of Units <<https://www.marxists.org/reference/subject/economics/keynes/general-theory/ch04.htm>>

¹⁸ Elite standards of living

¹⁹ **Thomas Hobbes** (1651): *Leviathan; Or the Matter, Forme, & Power of a Common-Wealth Ecclesiastical and Civill* (London: Andrew Crooke) <<http://www.gutenberg.org/ebooks/3207>>

²⁰ **John Maynard Keynes** (1919): *The Economic Consequences of the Peace* (London: Macmillan) <<http://oll.libertyfund.org/titles/keynes-the-economic-consequences-of-the-peace/simple>>

²¹ **John Maynard Keynes** (1930): *Economic Possibilities for Our Grandchildren* () <<http://www.econ.yale.edu/smith/econ116a/keynes1.pdf>>

²² Note that the temperate migration-receiving regions of Australasia, the southern cone of Latin America, and North America were, by and large, open only to migrants originating in Europe. This played perhaps *the* major role in making globalization over 1870-1914 a force making the world more unequal. See **W. Arthur Lewis** (1978): *The Evolution of the International Economic Order* (Princeton: Princeton University Press) <<https://books.google.com/books?id=FrNEAAAIAAJ>>.

²³ Graydon comments <<http://www.bradford-delong.com/2018/07/tyrannies-an-in-take-from-slouching-towards-utopia-an-economic-history-of-the-long-20th-century.html?cid=6a00e551f080038834022ad3828d2d200d#comment-6a00e551f080038834022ad3828d2d200d>>:

A reasonably egalitarian distribution of income, yeah, no, people do not want that.

It'd be a good thing if people did want that, but people want a stable hierarchy that they're not at the bottom of.

The events of the 19th century, culminating in the Great War, destroyed the legitimacy of pretty much every previous stable social hierarchy; nothing that could end in the Great War could possibly be legitimate, on the one hand, and the power relations and relative economic standing of societies, already disordered by economic development, got utterly scrambled by trying to continue prosecuting the war. It took... well, really, I can argue that people STILL can't cope with going off the gold standard/money is not a thing in any material sense, and that got done during the war in months. (This is much weaker in the US, the only major industrial power not involved. Japan wasn't a major industrial power for the Great War, wasn't much involved, and then had the roughly equivalent "all past is dust" experience when the US crushed them in the Great Pacific War.)

So there's a view of the 20th century as a scramble to establish a new basis for legitimacy. (I think this entirely failed, and that the problem has if anything become more acute in the present.) The various attempts try to be sciency; the various attempts try to use economic language because the thing that creates legitimacy is general prosperity, and there's this vague sense that getting the economy right will do that. But they're new, and no one involved knows a system from the hidden name of God, so no only are there no customary social constraints, no one is thinking in terms of needing constraints. (Old moral thinking has usually developed a few caveats as a consequence of persisting; new moral thinking is trying to enact absolutes.) Lack of constraints, post-industrial populations, and post-industrial resources in situations where there's an attempt to create legitimacy through force lead to very large death tolls. No one knows what they're doing in an if-this-then-that sense and no one knows how to stop.