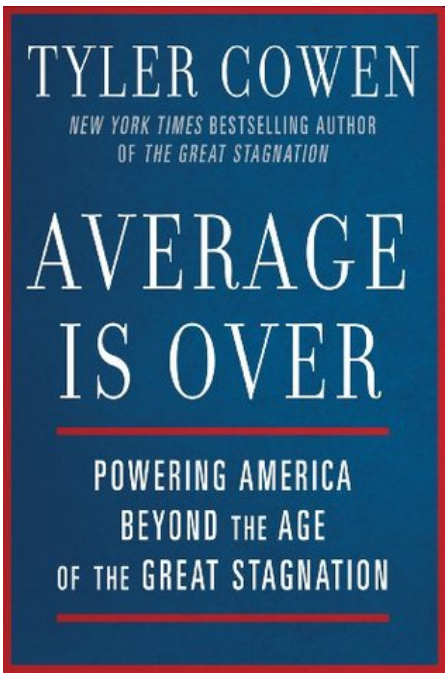

Average Is Over: Powering America Beyond the Age of the Great Stagnation

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The groundbreaking follow-up to the *New York Times* bestseller *The Great Stagnation*

The United States continues to mint more millionaires and billionaires than any country ever. Yet, since the great recession, three quarters of the jobs created here pay only marginally more than minimum wage. Why is there growth only at the top and the bottom?

Renowned economist and bestselling author Tyler Cowen explains that high earners are taking ever more advantage of machine intelligence and achieving ever-better results. Meanwhile, nearly every business sector relies less and less on manual labor, and that means a steady, secure life somewhere in the middle—average—is over.

In *Average is Over*, Cowen lays out how the new economy works and identifies what workers and entrepreneurs young and old must do to thrive in this radically new economic landscape.

Average Is Over: Powering America Beyond the Age of the Great Stagnation Details

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From Reader Review Average Is Over: Powering America Beyond the Age of the Great Stagnation for online ebook

Charles says

Tyler Cowen is a popular economist, known for an influential blog ("Marginal Revolution") and a set of books on economics directed at a general audience. In "Average Is Over," a book from 2013, Cowen predicts an American future of increased economic (and thus social) division, as new technology enables those most conversant with it to profit, and forces others to be paid less as they become relatively less productive. This is a common historical occurrence, of course, where those whose skills are no longer valued by the market, from hand weavers to buggy whip makers to floppy disk craftsmen, must ultimately retire or retool, often never regaining their previous income, though the economy as a whole, and thus average and median income, expand in the long run despite short- and medium-term pain and dislocations. The difference in Cowen's analysis is that he forecasts a permanent division, the result of ever-improving radically new technology and the failure of some, or many, to properly orient themselves with respect to that technology.

Maybe. But Cowen's analysis is flawed by tunnel vision and an obtuse, reflexive belief in the progress of technology. All of Cowen's points in this book revolve around a single premise—that the abilities of machine intelligence will continue to increase at an exponential rate, and that how well each human can leverage such machine intelligence in his personal productivity will determine his personal economic fate. Cowen does not believe that we will be ruled by our new machine overlords; he does not appear to predict "strong" artificial intelligence (i.e., machines exhibiting human cognition). Rather, his focus is on "integration of capabilities" between man and machine, with the latter exhibiting "weak" artificial intelligence. While this makes his vision less ludicrous than, say, Ray Kurzweil's crypto-religious belief in the so-called Singularity (whose just-around-the-corner date is ever pushed into the future), Cowen offers little evidence other than wishful thinking that his own vision is coming true.

Cowen begins, in Part I, "Welcome to the Hyper-Meritocracy," by discussing just what being an economic loser means in today's world, or, to use a technical term, what "labor market polarization" means in practice. Median real wages have been declining for decades, and continue to decline. At the same time, the upper end of American jobs, in essence skilled labor, has seen rising wages. Such skills can be technical, but are often instead marketing skills (valuable to obtain the attention of the upper classes, who have money to spend) and managerial skills (valuable to increase efficiency of teams needed for complex projects). Moreover, those who have no such concrete skills, but do have the ability to perform general work in a precise, conscientious and disciplined manner, also see their wages and job prospects rise. (Cowen treats as undisputed that more women than men have such "manner skills," which is certainly true, though daring in that most writers today feel constrained to deny reality if it might impinge on political correctness, which, after all, is 80% pure denial of reality). Ultimately, what matters most, and what allows (according to Cowen) ignorant 22-year-old consultants and finance majors to command large salaries, is high "general intelligence"—which can be used in a flexible manner as applied to different tasks, or, fitting Cowen's focus, to mesh with technology to increase productivity.

It's not just that median real wages continue to decline. It's that the jobs have gone away and they aren't coming back, which results in the declining wages, but has no obvious or easy solution. There are many "zero marginal product" workers (i.e., those who provide less value than the costs they impose, either by their own characteristics or because of external costs like regulation, healthcare and lawsuits), who will never be hired. Freelancing or the "gig economy" isn't a solution—it's a way for people to work hard and get little, usually. Kind of like Lagos. Or like Berlin, where living is cheap and a lot of people don't bother to work

hard or consistently, because they don't have to and the culture doesn't even encourage it. "In a wealthy society, sometimes it's just enough to get by and have a good time." In other words, especially with government benefits, the less successful can not just merely subsist, as might be true in the past, but find lives that are much to their liking, while contributing nothing to economic productivity (and being parasites on the productive).

Little of this is explored in detail (nor is it original) since this is a short book, and the chapters read a bit too much like expanded blog posts. On the other hand, Cowen has a gift for the pithy insight—for example, he notes that positive buzzwords offered by employers like Google, such as "teamwork," "morale," and "integrity," only are relevant to that small number of people hired. From the perspective of the many not hired, a different, equally valid, word characterizes Google's hiring practices: "exclusion." That is, "There is no high morale without exclusion, no integrity without exclusion, and no corporate culture without exclusion." Needless to say, Google doesn't mention exclusion in its HR materials. These pithy insights at least partially compensate for the lack of detail, by providing reader interest if not depth of analysis.

Part II, which is more than half the book, is titled "What Games Are Teaching Us." Here, Cowen introduces his obsession—chess computers, and how they supposedly illustrate our future. I guess chess computers are modestly interesting. But Cowen's logical leaps based on chess computers are entirely unjustified on any evidence he offers. He errs by believing that if something can be imagined, it is inevitable. So, merely because chess computers can combine with human choice in an obscure and frenetic chess hybrid called "Freestyle," Cowen believes it is inevitable computers will combine with humans to dictate negotiation of business deals and each individual's moment-to-moment actions on dates. "We're going to generate a lot of hairy, very complicated personal interactions, driven by real-time data analysis and computer intelligence." No, we're not, or at least Cowen offers no evidence that the tightly constrained chess model has any relevance whatsoever to any other area of human endeavor, action, or interaction. And just because an algorithm can be created by Netflix that recommends movies based on other choices says nothing to the contrary. There is a wide chasm between using machines to deliver facts or perform set operations, and using machines to address situations with inherent and irresolvable ambiguities (like pretty much everything in human life, and in particular human interactions).

In fact, machines can't even do those basic, simple things well. Cowen tells us that even now, "Whether it is through Siri, Google, or Wikipedia, there is now almost always a way to ask and—more importantly—a way to receive the answer in relatively digestible form." Even this mild claim is false. The only answers one can receive in any of those ways are answers that are rule-bound and unambiguous, as with chess. All of those technologies, for anything requiring subtlety, ambiguity or analysis, much less judgment, are essentially worthless (and in the case of Wikipedia especially, are often filled with falsehoods even for binary questions). Just because most of the time the Internet will accurately tell us the time and location of a movie showing, tells us nothing about the likely future abilities of computers to assist in anything complex, ambiguous, or relying in any way on human intuition, judgment, emotions and impulses.

Thus, Cowen is far too optimistic about the near future abilities of machine "intelligence" (which is, of course, not intelligence at all, though Cowen refuses to admit it or even address the distinction). He is careful to not be overtly dewy-eyed about technology; he notes, for example, that Apple's Siri "disappoints with its mistakes and frequently obtuse responses," but still thinks it, and its ilk, will "improve rapidly." Maybe they will. And maybe they won't. Chess computers, Cowen's only example of refined improvement (maybe because there is an ending point that can be identified and quantified) are extremely poor as a template for machine intelligence in the larger world, since chess has a very constrained, wholly artificial world, totally divorced from the real world and humanity, and operating within very clear rules. In chess, there is no room for ambiguity and errors necessarily become evident, or are prevented from ever occurring by the existence

of the rules. Judgment, something that machines will never provide, is wholly unnecessary. Cowen acknowledges that chess is not an exact analogue, but you can tell he really doesn't think there's any real difference between a chess computer and a machine that can tell you how to act moment-to-moment on a first date. This is a blinkered vision that refuses to admit that human judgment cannot, or at least never will, be reduced to a set of measured inputs subjected to an algorithm.

Similarly, Cowen describes the very mixed bag of technology assistance existing with GPS systems, gasoline pumps, self-checkout lines and the rest, fully admitting that they are far from perfect, and often worse than the human-centered alternatives. But then he announces that "this problem will someday be solved, and machines will solve it." Why? We are not told. He then doubles down, claiming that someday he will be able to "walk into the house and announce to the sensors: 'Cox cable company, I am home. Some branches fell at my house and now the cable wire is hanging dangerously low against some bushes. Please let me know some times when someone could come by to fix it." I doubt if this will ever happen. But more to the point, Cowen offers us nothing but faith that it will, or that it will not be accompanied by the mandate to watch a glitchy two-minute advertising video before he is permitted to address the sensors. For Cowen, the future will always be better, if it is centered around technology. He thinks anything can be measured, objectively quantified and communicated. He really thinks, he really does, that someday when evaluating a corporate lawyer, "Siri will tell you: 'This lawyer's written briefs are in the top eighty-first percentile of his peer group; that explains thirty-eight percent of performance on a corporate deal." This is beyond silly, it is stupid, because there is no way to measure such things, and there never will be (and it also shows ignorance—corporate deals do not involve briefs, ever, which are purely a litigation device). Thus, when Cowen concludes that as a result of all these magic machines, the gap between the successful and the unsuccessful will grow, the reader chuckles grimly, because the magic machines are ludicrous. The gap may grow, but this is not why.

This set of claims, by itself, would merely be somewhat silly and somewhat interesting (though we get way too much information about the details of Freestyle). But this is the trope that Cowen then carries through the rest of the book—intelligent machines will combine with the most intelligent humans to produce results unavailable without using both machine and human, and those humans unable or unwilling to so act will be left behind, so many hand weavers and floppy disk craftsmen.

Cowen tries to bring it all together in Part III, "The New World of Work." While admitting that foreign outsourcing hurts some of us, he toes the standard "collectively we're better off" line, and claims that "at a fundamental moral level a job for a 'foreigner' is every bit as worth an outcome as a job for a 'real American.'" Neoliberalism for all! Nobody tell Trump, though, that his moral betters have found the real answer and it involves debasing Americans to favor foreigners. Similarly, within the United States (and other countries), some geographic areas (certain cities, namely) will get rich, as the smart, machine-integrated and well-connected congregate there (what Cowen calls "clustering of commercial talent"), while others get even poorer and "hollow out." This is fine by Cowen.

It's not that Cowen says there is no problem at all. Cowen does offer some ways to lift everybody's boat. All are dubious. For example, he pushes education, namely MOOCs, which since this book was written have in no way fulfilled their promise, or any promise (in part doubtless because college education today usually offers little education, but rather is mostly a filtering device used by employers, and a place for elites to meet other elites). And then he goes off the rails. He says computer games such as role-playing multiplayer games (like World of Warcraft) educate the young and describes the idea that a game designer should someday get the Nobel Peace Prize as "entirely reasonable." His proof of such education by games is that chess prodigies are getting younger. I have no doubt that computer chess can stimulate intelligence, and that computerized chess makes the game more available, especially to those physically isolated in the past from other chess

players, thus it is no surprise prodigies are getting younger. But that shows nothing at all about computer games in general, and I can testify from watching my own children that even the so-called “educational” games, like Kerbal Space Program, are mostly an addictive waste of time destined, if not rigidly limited by parents, to turn children into pale, flabby, anti-social wrecks with much less knowledge than a child educated in a 19th Century one-room schoolhouse.

Similarly, Cowen claims that kids learn iPads by trial and error, which is true enough, and then says that “this kind of machine-based learning is driven by a hunger for knowledge,” which is utterly false—it is rather driven by a desire to play the addictive games and watch the addictive passive videos available on the iPad. A vanishingly small percentage of children voluntarily choose to use electronic devices for actual learning. And since the man-machine economic integration that Cowen forecasts won’t happen, to the extent children are allowed to play Dungeons & Dragons games all day to prepare for it, they will end up both uneducated and stupid. Enhancing general intelligence may be the way to the top of today’s new hierarchy, and maybe education can help with that, but games don’t accomplish that goal, and never will.

In any case, in the real world, whether or not technology further accelerates the process, Cowen apparently believes that the non-clustered lumpenproletariat of flyover country must be brought to understand that their moral betters in the cities owe them nothing and they have no claim on them. This is very shortsighted as a social matter. Cowen correctly identifies that the threat of Occupy-type revolution is overstated; he rather predicts ever more economic and social division, with the lower-paid accepting inferior lifestyles in all ways, from housing to medical care, and adjusting, in part by having lots of cheap entertainment available (the real value of the computer games Cowen elsewhere praises as educational tools). Bread and circuses—that works fine, until it doesn’t, for it hollows out a society from within. Cowen is homo economicus—he declines to view the world in other but purely economic terms, thus creating a fatal tunnel vision. He does not see that people do not view themselves merely as economic units; they seek transcendence and meaning, often at the cost of their economic good. Naturally enough, he does not address the real threat—of a Trump-type revolution, but with guns, which is the more likely result of the system Cowen describes than stupid and poor, but sedated and happy people, living in tiny unheated houses in the Nevada desert.

Kaethe says

I heard the chap on NPR this morning talking as if "income inequality" were some sort of physical law utterly unrelated to social policy. I'd call him an idiot, but I think it's clear that he's pushing a particular flavor of economic theory that suits his department's funders, the Koch brothers.

Ramsey says

Disappointing. It felt like a long-form essay stretched, to its detriment, into a book. I intuitively agree with many of the ideas Cowen puts forth, but for a book envisioning the economy of a technology-centered future, it is fairly weak on technology. The only technology he addresses at any length is computerized chess. It's interesting, but positing that the world will follow the lead of chess does not strike me as the strongest of proofs.

Max Nova says

In many ways, Tyler Cowen's "Average is Over" is the book I should have written 2 years ago. In my Grand Strategy class final paper ("Societal Implications of Pervasive Automation"), I traced many of the same threads that Cowen does - from Kurt Vonnegut's "Player Piano" to interviewing Martin Ford of "Lights in the Tunnel". Brynjolfsson and McAffee's "Race Against the Machine" actually came out 2 days before I submitted the paper. Anyways… all that to say that we're generally on the same page but I think Cowen makes a few important errors and disingenuously disguises some of his more elitist conclusions.

At its core, "Average is Over" is about how increasing automation and computational power has changed employment and social dynamics and how Cowen thinks things will play out into the future. One interesting observation that Cowen makes is that "man + machine" teams can usually outperform pure machine teams. He treats "freestyle" man+machine chess as a sort of "Drosophila" for studying man+machine dynamics (although, to be fair, he mostly rips this off from Nate Silver's "The Signal and the Noise"). He also claims that this dynamic is already fundamentally changing scientific research and that in the near future, humans won't even be able to understand the complexities revealed by their machine collaborators.

But the key concept that Cowen revisits over and over again is David Autor's "labor market polarization" - basically the idea that people who can harness the power of computers will do just fine and unskilled labor is out of luck. I don't think any of us need to be convinced that the Brins and Zuckerbergs are doing ok, but Cowen pulls out some pretty incredible stats about the pathetic situation of today's young unskilled men in the US and Europe. Fully ¾ of 17-24 year old men in the US are unfit for military service and more than 20% of the residents of Berlin live off the public dole.

Unfortunately, the future that Cowen paints for these guys is pretty bleak. As more and more production becomes automated, Cowen thinks that these unskilled laborers will shift into "marketing and services" for the ultra-wealthy tech entrepreneur overlords and resource barons. These jobs will be all about making billionaires feel great about themselves and he postulates that there will be a "premium on conscientousness" and dutifully fulfilling the desires of the wealthy. To me, this seems like a pretty empty existence and unlike Cowen, I think there is a limit to the number of massages and pats on the back a billionaire can get.

The question of what the "average man" will do in the future is the most important piece of this whole issue but is one of the weakest parts of Cowen's argument. He misses the point - the question is not what human beings will work on in the future, but rather, what will humans do when they don't have to work anymore? To me, it's ridiculous that we'd simply make up work for people to do (ever more intricate pamperings of billionaires…) when almost all of their needs can be fulfilled by automated systems. The real question is how people will find meaning and purpose in their lives when they don't have to work… and how we'll transition to this new economic paradigm without killing ourselves.

Cowen actually tangentially approaches this issue of purpose when he discusses the problems with our current educational system. He claims that there is a massive confusion in regards to the goals of our educational system - we're not really sure what we're supposed to be preparing our children for anymore. This is a symptom of the same overarching problem - as a society, we have no consensus on the meaning of life or the goals of our civilization (damn postmodernism!). In any case, Cowen twists himself into all sorts of knots over education because he can't bring himself to say that lazy and unmotivated people will be left behind. By sugarcoating this aspect of his theory, he might avoid some popular backlash but he does so at the expense of his credibility. For example: "Online education can thus be extremely egalitarian, but it is egalitarian in a funny way. It can catapult the smart, motivated, but nonelite individuals over the members of

elite communities. It does not, however, push the uninterested student to the head of the pack" - you'd be hard pressed to find anyone who doesn't find this shockingly obvious and not "funny" in the slightest. Cowen also goes a bit overboard in his enthusiasm for "Neo-Victorian" boarding schools where the state (or other institutions) take over the role of parenting for the "lower earners" … although of course he doesn't directly come out and say it so directly.

Overall though, this is an exceptionally well put-together book and one that addresses an increasingly visible and important problem in our society. Even though I don't agree with parts of his analysis or proposed solutions, he's got a reasonable perspective and it's worth a read. Put it on your list!

Some representative passages below:
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Where will most of the benefits go? In accord with economic reasoning, they will go to that which is scarce. In today's global economy here is what is scarce: 1. Quality land and natural resources 2. Intellectual property, or good ideas about what should be produced 3. Quality labor with unique skills Here is what is not scarce these days: 1. Unskilled labor, as more countries join the global economy 2. Money in the bank or held in government securities, which you can think of as simple capital, not attached to any special ownership rights (we know there is a lot of it because it has been earning zero or negative real rates of return)

That means humans with strong math and analytic skills, humans who are comfortable working with computers because they understand their operation, and humans who intuitively grasp how computers can be used for marketing and for other non-techie tasks. It's not just about programming skills; it is also often about developing the hardware connected with software, understanding what kind of internet ads connect with their human viewers, or understanding what shape and color makes an iPhone attractive in a given market. Computer nerds will indeed do well, but not everyone will have to become a computer nerd… Despite all the talk about STEM fields, I see marketing as the seminal sector for our future economy.

We can expect a lot of job growth in personal services, even if those jobs do not rely very directly on computing power. The more that the high earners pull in, the more people will compete to serve them, sometimes for high wages and sometimes for low wages. This will mean maids, chauffeurs, and gardeners for the high earners, but a lot of the service jobs won't fall under the service category as traditionally construed. They can be thought of as "creating the customer experience." Have you ever walked into a restaurant and been greeted by a friendly hostess, and noticed she was very attractive? Have you ever had an assistant bring you coffee before a meeting, touching you on the shoulder before leaving the cup? Have you gone to negotiate a major business deal and been greeted by a mass of smiles and offers of future friendship and collaboration? All of those people are working to make you feel better. They are working at marketing. It sounds a little silly, but making high earners feel better in just about every part of their lives will be a major source of job growth in the future. At some point it is hard to sell more physical stuff to high earners, yet there is usually just a bit more room to make them feel better. Better about the world. Better about themselves. Better about what they have achieved.

Here is another, more general way to think about the shifting gender balance of power in education and parts of the workplace. The wealthier we become, the greater a cushion we have against total failure, starvation, and other completely unacceptable outcomes. In such a world, both women and men will indulge some propensities that otherwise might be stifled or kept under wraps or that would not have been affordable fifty or one hundred years ago. For some men, these propensities are quite destructive and this turns them into labor market failures.

As workers are displaced by smart machines in manufacturing and other areas, more individuals will be employed as personal trainers, valets, private tutors, drivers, babysitters, interior designers, carpenters, and other forms of direct personal services. These are all areas where a patron—often a family or individual—expects a commission or request to be followed… The premium is on conscientiousness, namely whether the worker can follow some straightforward requests with extreme reliability and basic competence.

We have been seeing what is called "labor market polarization," a concept that is most closely identified with MIT labor economist David Autor. Labor market polarization means that workers are, to an increasing degree, falling into two camps. They either do very well in labor markets or they don't do well at all.

Those numbers on labor force participation are telling us that, for whatever reason, over 40 percent of adult, non-senior Americans don't consider it worthwhile to have a job. They can't find a deal that suits them… Most of the measured declines in employment participation have been coming from younger men, not early retirees.

Ten years ago, 5 million Americans collected federal disability benefit; now the number is up to 8.2 million, at a direct dollar cost of $115 billion a year—over $1,500 for every American household. Yet the American workplace, as measured by deaths and accidents, has never been safer.

Berlin, a city that has become renowned for its supply of threshold earners, it is commonly recognized that a lot of the young denizens simply aren't striving after very much, at least not in terms of commercial job opportunities. A fifth of the population lives off social transfers, unemployment is double the national rate, and, as one commentator suggested, "aspiration can be a negative word."
Overall, these job market trends are bringing higher pay for bosses, more focus on morale in the workplace, greater demands for conscientious and obedient workers, greater inequality at the top, big gains for the cognitive elite, a lot of freelancing in the services sector, and some tough scrambles for workers without a lot of skills. Those are essential characteristics of the coming American labor markets, the new world of work.

The most likely outcome is that the poor will be big winners from these performance ratings. The well-educated wealthy already have fairly good means of finding good professionals, if only by asking their buddies, making donations to the local hospital, and pulling in favors from friends. This new system of ratings won't put everyone on an even par with regard to ability to pay, but it will equalize the information, and that should be good for most consumers.

On the negative side, too much knowledge can hinder achievement. What if a computer had graded Einstein at five years of age, when he still was not talking, and assessed his chance of becoming a great scientist? That truth, albeit some imperfect statistical estimate of the truth, will discourage too many people. Alternatively, maybe a future star will be done in because he is repeatedly told, from day one, that he is the anointed one. A certain amount of ambiguity may be good for the career ambitions of young people, and in the future we may miss some of the ambiguity we enjoy today.

Malthusian wages do not mean an impoverished existence for everybody, of course. The machines are still owned by someone, and the owners of machines are very wealthy since the machines can produce a lot of goods and services very cheaply. If just about everyone has a stake in the machines, this could be a utopia rather than a dystopia. Alternatively, perhaps the government owns a share in the machines and it uses that wealth to support the remaining poor, who did not buy machines in time and who now cannot find jobs because of competition from the machines. They will become wards of the state, much as many people live off of oil wealth in some of the less populated petro-states.

Two different effects are operating here, but we can tease them apart for a look at where humanity is headed. On one hand, many successful individuals will learn how to think like smart machines, or at least enough to understand their operation, in order to become wealthy, high-status earners. In that way we will become more like computers—well, a large number of high earners will become more like computers anyway, cognitively speaking. That said, when it comes to our private lives, we will become less like computers, because we rely on computers for many basic functions, such as recording numbers, helping us with arithmetic, and remembering facts through internet search. In these ways we will become more intuitive, more attuned to the psychology and emotions of everyday life, and more spontaneously creative.

When companies move production offshore, they pull away not only low-wage service jobs but also many related jobs, such as high-skilled managers, tech repair people, and others. But hiring immigrants for low-wage jobs helps keep many kinds of support services in the United States. In fact, when immigration is rising as a share of employment in an economic sector, offshoring tends to be falling, and vice versa. That means immigrants are very often competing more with offshored workers than with other laborers in America…. The more subtle reality is that immigration gives us some protection against offshoring and probably helps keep jobs in the United States.

A recent study by Michael Spence, a Nobel laureate in economics, and Sandile Hlatshwayo shows that almost all of our recent job gains (the gross gains in some sectors) have come in so-called non-tradable sectors, such as health care and government. People who work in government, health care, and education just aren't that worried about foreign competitors or even outsourcing. That security of these non-tradable sectors is nice for many of us, but it also means that people in most newly created jobs in the United States aren't facing so much of a daily market test. Most of our job growth is coming in what I call low-accountability sectors. People get paid to produce things, or offer services, and we're never quite sure how much value they are putting on the table. The value they produce, or the lack thereof, is never subject to much of a market test.

We will likely see a new American Century, or rather a North American Century, and if any countries should be worried it is those with low wages, including China. Unless those countries make the next leap up a technology ladder, competing on the basis of capital as well as labor, many of their current competitive advantages will erode.

We as a nation have been thinking about education without knowing what we really want from it. Do we want well-rounded young adults to emerge? Or good citizens? Role models? These goals seem reasonable but what do they mean?

As a society, we'll put a lot more effort into teaching things better. For all the virtues of human, face-to-face instruction, it fares pretty miserably when it comes to economies of scale and scope.

We could think of the forthcoming educational model as professor as impresario. In some important ways, we would be returning to the original model of face-to-face education as practiced in ancient Greek symposia and meetings in the agora.

Of course, educational institutions aren't ready to admit how much they share with churches. These temples of secularism don't want to admit they are about simple tasks such as motivating the slugs or acculturating people into the work habits and sociological expectations of the so-called educated class.

The lesser-performing students will specialize in receiving motivation. Education, for them, will become more like the Marines, full of discipline and team spirit. Not everyone will adopt the so-called "tiger mother"

or Asian parenting style, but its benefits will become more obvious. A lot of softer parents will hire schools and tutors to do this for them. The strict English boarding school style of the nineteenth century will, in some form or another, make a comeback. If your eleven-year-old is not getting with the program, you will consider sending him away to the hardworking, whip-cracking Boot Camp for Future Actuaries. Neo-Victorian social ideals may not triumph, but they will become a much stronger force among lower earners.

This framing of income inequality in meritocratic terms will prove self-reinforcing. Worthy individuals will in fact rise from poverty on a regular basis, and that will make it easier to ignore those who are left behind. The wealthy class will be increasingly self-motivated, will be larger over time, and—precisely because we are selecting ever more for self-motivation—will have increasing influence. It is their values that will shape public discourse, and that will mean more stress on ideas of personal ambition and self-motivation. The measure of self-motivation in a young person will become the best way to predict upward mobility.

look at a typical state government budget. The big ticket items are education, roads, courts, and police. Medicaid expenses are pressing on those programs, and yet they are all more popular than spending more money on the health care of the poor… I think of the future as a place where the ordinary worker will have more guaranteed access to health care on paper, not necessarily more actual access in practice, and less money to spend on other items of consumption.

Since there is considerable net in-migration to Texas, I conclude that a lot of Americans would rather have some more cash than better public services.

The bad news is that there is a lot of waste in American consumption—massive amounts of waste, in fact. Everyone has their favorite story about what the other guy spends his money on and could do without. But also the good news, oddly enough, is that there is a lot of waste in American consumption. Citizens faced with financial pressures will shift into cheaper consumption, and a lot of them will do so without losing very much happiness or value, precisely because there is already so much waste in what they buy.

Not everyone will respond in this way. We'll end up with a society where the people with decent self-control win back a lot of the lost health gains by better behavior. The people who don't have good self-control will lose out much more.

If you're trying to measure the scope or potential for social disorder, look at the rate of crime. In the United States crime rates have been falling for decades and in recent times they have surprised researchers by falling even faster than expected. Yet over those same decades income and wealth inequality have been rising significantly in the United States. It seems that, whether we like it or not, increasing inequality and growing domestic peace are compatible. Very often I read warnings about how income inequality will lead to a society where the poor take by force what they cannot earn in the marketplace. Yet these predictions run aground on the simplest of empirical tests, namely crime rates

If you think about it, we really shouldn't expect rising income and wealth inequality to lead to revolution and revolt. That is for a very simple psychological reason: Most envy is local. At least in the United States, most economic resentment is not directed toward billionaires or high-roller financiers—not even corrupt ones. It's directed at the guy down the hall who got a bigger raise.

Aaron Arnold says

Whether you agree or disagree with him, Cowen is always worth a read. He's widely read, eclectic in taste, and although a libertarian conservative, he has an admirable willingness to at least listen to opposing points of view (he doesn't always refrain from strawmanning, but more on that later). This is his followup to his 2011 conversation-starter The Great Stagnation, and it's both a look at the trends that will drive America's emergence from our current period of economic malaise and an engagement with technology writers like Erik Brynjolfsson and Andrew McAfee, whose Race Against the Machine is the single greatest influence. I don't disagree with much of his basic analysis about trends in automation, but I have major problems with his analysis of the political shifts in response to those trends, as well as his attitude towards those shifts. Much of the beginning of the book can be thought of as the outlines for a sci-fi short story set in the year 2035, while the end resembles a Wall Street Journal op-ed set in that future dystopia.

Cowen's main guide for thinking through how automation will transform America's economy (and to a lesser extent, the world's), is Freestyle chess, where teams of a few humans guide one or several chess engines through games, competing against other teams of humans and computers. While the famous Deep Blue v. Kasparov match seemingly proved once and for all that computers were "superior" at chess, it turns out that the combination of human intuition and judgment, backed by the powerful number-crunching abilities of modern engines, is even better. Cowen used to be a champion chess player, so he's understandably excited about what the introduction of unprecedented analytic abilities means for the game; instead of seeing computers as a threat, he sees them as an opportunity to take the game to levels undreamed of a few decades ago. Humans and machines, working in harmony to push the chess production possibility frontier outwards.

To be uncharitable, when all you have is a chess metaphor, every problem looks like a rook. Cowen mentions several other fields where automation could be transformative. Online dating is one - I know several people who have met and married through online dating sites, and as those sites continue to crunch more numbers and improve their ability to find compatible matches, it's reasonable to think that they could someday become as indispensable to the future romantic market as things like church socials or fraternity/sorority mixers used to be. Automation can help people "solve" the problem of romance, because in the end it's still up to people to decide how far they want to use whatever suggestion the computer spits out. That computers don't necessarily do a perfect job isn't that big of a deal; after all, people have to dodge the advice of "helpful" relatives trying to get their still-single cousins hooked up all the time today. The benefits of automation sound reasonable, possibly even desirable, and it's easy to think of plenty of other areas of human activity that can be and are being transformed by Big Data. Cowen is much less radical than hardcore techno-enthusiasts like Ray Kurzweil, calling Singularity visions "religion for computer nerds", which seems fair. However, there are a number of areas where his analysis falls flat, particularly with regard to the macro implications of this trend.

It's become apparent in the past few years that the US has seen a sort of hollowing-out of employment opportunities: both low-wage and high-wage jobs are doing more or less fine, but middle-wage jobs like factory work are disappearing or stagnating. This could be for many reasons, but a corollary of the idea that automation is the main culprit behind the loss of middle-wage jobs (granting this for the sake of argument) is that the returns to the people who assist in automation by designing, maintaining, or utilizing it should be going up. This is certainly true; tech centers like Silicon Valley are some of the richest places on the planet. Some of the implications of this transformation that Cowen wants to draw seem true, for example the gender effects of what qualities will be most sought-after in new employers:

"The growing value of conscientiousness in the workplace helps women do better than men at work and in

colleges and universities. At my daughter's recent college graduation ceremony the awards for the top achievers in all of the school's programs and departments went almost entirely to women, including awards in science and mathematics.
It is well known from personality psychology, and confirmed by experience, that women are on average more conscientious than men. They are more likely to follow instructions and orders with exactness and without resentment. That means better jobs and higher wages for a lot of women in this new world of work, without a comparable upgrade for a lot of the men. There is plenty of evidence that women are less interested in direct workplace competition and more likely to work well in teams and more likely to seek work in teams. You can think of men as the "higher variance" performers at work. That means some men are more likely to be the very highest earners and also to exhibit extreme dedication to the task, perhaps to the point of being monomaniacal. At the very top there will be a disproportionate share of men as CEOs, top chefs, and also chess players, among many other avocations. Other men, in greater numbers, will be more irresponsible, more likely to show up drunk, more likely to end up in prison, and more likely to become irreparably unemployable."

Indeed, in the tech industry, despite the fact that women are often less prevalent and more likely to favor different types of jobs within companies, within each job type the male-female salary gap has all but disappeared. Companies in many cases can't afford to discriminate against perfectly capable workers, and new social norms are evolving to keep up with the shift. It's certainly possible that that same situation prevails in many other fields as well. However, median wages as a whole economy-wide are nonetheless flat, and this trend began in the 1970s, long before IT was a common or even an uncommon profession. While we may perhaps be entering the "second half of the chessboard", in Brynjolfsson/McAfee's phrase for where the effects of automation are increasing quickly, Cowen is far too dismissive of political causes for widening inequality, as shown in, for example, Jacob Hacker's Winner-Take-All Politics. Completely absent is any hint that an entire literature on the sources of inequality in contemporary conservative political movements exists; to Cowen, robots are much more interesting to talk about.

This same tendency shows up in his discussion of the future of education. Cowen is a big fan of Massively Open Online Courses (and indeed runs one himself, which he admirably does not plug for here). MOOCs are cheap, flexible, profitable, and easy to measure, so he allows himself to rhapsodize about their impact while grumbling about educational bureaucracies standing in their way for all sorts of base reasons. I'm always interested in why many older people, who had the benefit of being educated in the pre-stagnation era where college was cheap, credentialization was low, and a bachelor's degree from a state college was perfectly sufficient for the majority of jobs, are actively cheering for the destruction of that kind of environment. What until very recently seemed like adequate educational systems (e.g. the three-tier California higher ed system, the University of Virginia's traditional focus, the established tenure process) seems to no longer deliver value to students, and rather than attempt to roll back some of the destructive trends of tuition inflation, the spread of parasitic administrators, or new fads in corporatizing the process of learning, people like Cowen actually want to speed them up. Cowen himself went to a public university (George Mason, where he now teaches) and seems to be none the worse for it; why exactly do we need to upend everything about universities as they've been known for decades if not centuries in favor of replacing real professors with poorly-paid adjuncts and classrooms with iPad labs? I get that automation is something that should be embraced and not blindly fought, but he's awfully eager to throw a lot of professors out of a job without a lot of thought as to the merit of opposing arguments.

There are two science fiction stories that really should have been mentioned in his ending. The first is Neal Stephenson's The Diamond Age, which directly bears on his suggestion that "Neo-Victorian social ideals" should be more prominent in the educational process (though, interestingly, the schools in that book resemble nothing so much as classical academies with the quadrivium and everything, with nary an iPad in

sight). Once we've gotten used to the idea that economic change will reward high-skill individuals while not doing much for middle- or low-skill peons, what happens? Cowen thinks politics will look much more like Florida, with a critical mass of extremely reactionary old people fighting further redistribution false tooth and nail, while economically we'll resemble my native Texas, with a few bright spots of high-tech and high earners amid large swaths of bland, almost Latin American poverty. He literally advises the losers to suck it up and get used to cheap diets (let them eat beans?) and lifestyles reminiscent of the proletarian thetes in Stephenson's novel, while hilariously strawmanning liberals who want to alleviate or avoid this two-tier society:

"A lot of commentators, most of all from the progressive Left, object strenuously to rising wealth and income inequality. Even if they are correct in their moral stance, they too quickly conclude that rising inequality has to cause other bad results, such as revolution, expropriation, or a breakdown in social order. That does not follow, and I sometimes wonder if it isn't an internal psychological mechanism operating in some of these commentators, almost as if they were wishing for the wealthy to be punished for their sins."

My not-so-polite reaction to this unsourced tirade aside, it's fascinating to see an obviously bright guy try to head off his ideological opponents at the pass by resorting to cheap "some people say..." rhetorical tactics like that. He also makes the correct observation that many of the parts of the country that have been hit hardest by inequality are also the most conservative, but while the Republican Party might be able to ride its control of many of those areas to a majority of the House for a while yet, he doesn't engage with the broader demographic trends which indicate that young people are far more liberal, both socially and economically, as the traditional division goes, than the elderly, and far more receptive to measures that benefit them by decreasing inequality. Much of politics can be explained by the simple theory that old people want to hang to their nice things while not giving any nice things to younger generations - just look at cries of "Keep your government hands off my Medicare" by the exact same people fanatically opposed to Obamacare. This point of view is unengaged with, to put it mildly. Additionally, Cowen seems weirdly uninterested in broader possibilities in his analysis of the effects of inequality within the elite, not just between the elite and everyone else:

"If you think about it, we really shouldn't expect rising income and wealth inequality to lead to revolution and revolt. That is for a very simple psychological reason: Most envy is local. At least in the United States, most economic resentment is not directed toward billionaires or high-roller financiers - not even corrupt ones. It's directed at the guy down the hall who got a bigger raise. It’s directed at the husband of your wife's sister, because he earns 20 percent more than you do. It's directed at the people you went to high school with. And that's why a lot of people aren’t so bothered by income or wealth inequality at the macro level: Most of us don’t compare ourselves to billionaires."

Many of the new elite, including the majority of tech zillionaires, are famously liberal. I certainly expect rich people to be more economically conservative, ceteris paribus, than non-rich, but the kinds of people who will be the decision-makers in the future won't necessarily resemble the decision-makers of the past, and indeed might have a lot of the same resentment towards Koch brother-types that Cowen diagnoses the rest of us as having. It's far from unprecedented for the political system to ignore large swathes of the country, so it's entirely possible for big chunks of the electorate to become even more extreme at their place in a changing world (call them the Eye Tea Party?) while the rest of the political system figures out a way to move along regardless. Allow me to point out that the Mercatus Center that Cowen works at has gotten a lot of Koch brother money and leave it at that.

Speaking of decision-makers, the second sci-fi story which should have been mentioned is Isaac Asimov's The Evitable Conflict, the final story in I, Robot. In it, it's discovered that the benevolent computers which

help manage the world economy have been deliberately marginalizing criticism of their work from anti-robot activists through subtle economic economic sabotage. They've circumvented the Three Laws by rationalizing that they can best help humans by continuing to stay in power, so causing small harm to a few specific humans by making their jobs redundant or causing them to be reassigned is an acceptable bending of the rules. The affected individuals get tolerable replacement jobs, and humanity continues to enjoy the benefit of the robots, so it's win-win,really. Since this isn't a book about AI, the idea that automation on its own could impact human quality of life in that way isn't really relevant; the most likely consequence of this hyper-automation trend is simply that the people who run the world economy will have such specialized and arcane knowledge that they'll effectively be beyond criticism or reproof from voters. Also speaking of voting, Cowen does mention another Asimov story:

"We will start to see just how well some of these machines can predict our behavior. One of Isaac Asimov's most profound works is his neglected short story Franchise. In this tale democratic elections have become nearly obsolete. Intelligent machines absorb most of the current information about economic and political conditions and estimate which candidate is going to win. (In fact a small number of variables, such as the change in GDP, the unemployment rate, the inflation rate, and the presence of a major war, predict presidential elections pretty well.) In the story, however, the machines can't quite do the job on their own, as there are some ineffable social influences the machines cannot measure and evaluate. The American government thus picks out one "typical" person from the electorate and asks him or her some questions about moods. The answers, combined with the initial computer diagnosis, suffice to settle the election. No one needs to actually vote."

It goes without saying that Asimov did not necessarily intend the story to be utopian, and that one need not accept Cowen's prognostications of what automation will do to our ability to have a political system that resists the Gilded Age/Latin American-style dysfunction he envisions. This book contains a lot of thought-provoking insight about some areas where the IT revolution could have a profound impact, particularly for people who already work in Big Data-ish fields; however I can't recommend his political conclusions at all.

Andrew Martin says

For a book positing the end of the average, Cowen's most recent work is surprisingly mediocre. To be frank, as a fairly devoted Marginal Revolution reader and an enormous fan of Cowen's thinking, I expected a lot more. Digressive and chatty, but not in a good way; Cowen never puts together anything more demanding than what you might read in a Sunday opinion column. Far too much of the book is devoted to the intricacies of freestyle chess -- whatever the strength of that metaphor, Average is Over would have a much stronger argument if 25 pages of chess digression was swapped out with some serious charts and graphs. Brynjolfsson and McAfee's Race Against the Machine is superior in virtually every dimension -- and at $3.99 for the e-book, a perfect illustration of the forces mentioned within.

Gwern says

Followup to *The Great Stagnation*, AiO takes the same format awkwardly straddling the territory between overgrown Marginal Revolution blog posts and full-length books (AiO can easily be read in an afternoon and could be edited down further without much loss). AiO rehearses some of the background of TGS like the stagnation in median incomes and wretched income growth for most educational brackets. Americans, in

2013 and 2016, feel tremendously insecure; the absolute standard of living may be higher than before, but an iPhone doesn't pay the bills, and YouTube doesn't replace having a sense of self-respect or a stable job.

The Autor 'wage polarization' thesis argues this is due to the economy splitting between garbage jobs paying low-wage for unskilled but currently un-automatable jobs, and highly skilled and productive jobs, which benefit from globalization & technology. The unskilled and automatable jobs have been increasingly eaten by outsourcing to China or by technology (Cowen cites robotized factories, Netflix, dating sites, crime-predictive software for policing; he is skeptical in chapter 9 that outsourcing is the majority contributor to American trends). For the latter, technology & capital 'complement' the highly skilled, enabling them to produce ever more value (which is where their increasing salaries are coming from). This leads to some fairly dire forecasts: the banana republicization of America, with a self-regarding meritocratic class of wealthy white-collar workers continually concentrating into the metropoles and wealthy suburbs with their servants, leaving in the hinterlands the working poor, and the nonworking poor.

What is this complementation that robots or AIs help with? Financial trading and investment, technology tasks like enabling a Google-scale titan to run without collapsing instantly, drone strikes and organizing interrogation & imagery to decide who to drone strike, or just in general management to efficiently organize and run all the highly-paid specialists and keep them on track towards goals. More ordinary people get shut out; they cause too many problems, there's too much overhead and inefficiency in trying to use them, they hold up deadlines or spit in the food & post the video to Facebook. Such zero-marginal product workers can't be usefully used by specialists. Cowen finds himself perplexed to how he would use a person to help him even at a wage of $0:

> As a professor, I am given a research assistant each year. Over the last twenty or so years, I have received some extraordinary assistance from some very good workers, students, and eventually, peers and coauthors.
> About once a year I receive an offer, usually by email, from someone who wants to work as my research assistant for free. Typically the offer is accompanied by a resume, and for the most part these resumes appear quite good. The emails sound reasonable and friendly.
> I turn such offers down. I don't think the applicants are lemons, but still I find that one research assistant is for me the right number, at least if I have a good one, as is usually the case. Even when it comes to the assistant whom I have the time to manage, I am most of all concerned about having a conscientious person at my disposal.
> The work with an RA is basically a team relationship, and the core problem is that I don't have the time to build another team, even if it doesn't cost me any money upfront. I don't have the time to work with and manage another person. To put this point in a broader business context, until another good manager is hired, there is no point in employing another assistant. It's the manager who is the scarce input, and that is one way to think about why managerial salaries have been going up so much. Managers play a role of growing importance in coordinating complex, large-scale production processes.
> ...To hire a risky and iffy worker, without a competent overseer, simply isn't worth it, no matter how low the wage. And so a lot of workers have a hard time being picked up and integrated into productive teams.
> It is precisely that process that managers are paid to make work more efficiently. It is a process that is continuing its long, long trend toward increasing importance. And, finally, it is why managers are being paid more.

(As AiO is fairly light on citation and referencing for a book advancing such broad theses, I think maybe Cowen should try to figure out how to manage more than one research assistant.)

Cowen's central case-study of this complementation is chess, and Advanced Chess in particular: a human playing chess with the assistance of grandmaster-level (and not long after its founding, super-grandmaster level) chess AIs, which began in 1998 at Kasparov's proposal. Cowen is an avid chess player, and these parts of the book are by far the best part of it. He describes the rapid progress of chess AIs after Deep Blue and the consequences for human chess playing of the availability of superhuman chess AIs. The chess AIs can see so far past the humans that Cowen, watching two play each other in a match and able to see each's evaluation of their winning chances by using his own chess AI to follow along, became certain that Stockfish would lose despite the evaluations insisting it would win, because Stockfish was in just too horrible a position; but as the inhuman moves pass, suddenly a Stockfish win started to look not so implausible, and by the end, Cowen could confirm with his own AI that the evaluations from almost 30 moves before were correct. Cowen notes that even grandmasters have difficulty understanding, after the fact, the moves that the chess AI play and why they work despite being apparently insanely risky and chaotic - paradoxically, though the best chess ever played is being played now in computer chess tournaments and chess AIs are arguably approaching perfection, humans have hardly any interest in playing, watching, commentating, or analyzing those games! Optimal chess moves, apparently, often strike benighted humans as ugly and risky, for all that they are the correct moves. (One thinks of what the Go players said about some of AlphaGo's moves during the Lee Sedol match.) What do 'AI moves' look like in life, or dating, or business negotiation, Cowen wonders? It might look like matching up people who are apparently antagonistic like conservative men and liberal women, but who might work out well anyway (Cowen cites one Match.com demonstration of a black/white couple where each violated the other's 'requirements' for a match but they married anyway, and his own marriage through a dating site to a liberal women.)

However, as astoundingly excellent as chess AIs playing each other are, as of Cowen's experience before the 2013 publication, a few humans are able to provide some sort of edge, overriding the chess AI to make a better move, and win. Oddly, this does not apparently require one to be a grandmaster or even a master chess player, but some sort of instinctive mechanical sympathy based on having an idea of where the chess AI is 'weak' and watching the evaluations in realtime (along with better preparation like gathering large chess game databases); indeed, being a GM may be a liability, as at least two GMs, Nakamura & Naroditsky, appear to have harmed or at least not helped their chess AIs with their lack of deep humility. (As chess AIs show, GMs arguably make mistakes on almost half of their moves.)

Cowen (as well as some other authors in 2013 like Clive Thompson) takes Advanced Chess as an optimistic paradigm for technological changes: it need not lead to unemployment if people can learn the skills which render them complements to new technology, instead of being substituted. One of his primary solutions is MOOCs and online education. I'm not sure MOOCs are so positively regarded in 2016 as they were in 2013. And like most authors who present education as a nostrum Cowen also doesn't explain why we would expect more education to solve anything when the existing steep education/income penalties/correlations have not managed to motivate the general population. Computerized education has been great for chess education, certainly, with grandmasters minted ever younger; but that didn't reverse Deep Blue's victory.

I think Cowen knows that MOOCs and other band-aids aren't going to reverse these trends, and the Advanced Chess example is telling: very few people can contribute to Advanced Chess, and the very best Advanced Chess players are adding ~100 Elo points, or a few % towards victory. 100 Elo points is not much. It's about as much as chess AIs improve in 2 years. At what point will Advanced Chess stop 'being a thing' as the chess AIs will have become so good that Advanced Chess players can no longer make a discernible positive contribution? Oddly, I'm having a very hard time figuring that out. Advanced Chess is not

mentioned much online after 2013. Some extrapolating suggests that Advanced Chess may already have become moot in 2013, and if not then, is probably finished by 2016; so at the most generous, Advanced Chess could be said to have only existed 1998-2016 (so 18 years, hardly enough time for a kid to grow up), and then only for the tiniest fraction of the population.

So he finishes up pessimistically with forecasts of current trends: the American governments, federal/state/local, are going to face the anvil of healthcare inflation and unfunded Medicaid/Social Security promises. These programs are politically untouchable because old people know what side their bread is buttered on, so they will paid out, one way or another. Which will involve systematic rises in taxation and decreases in services. What does the lower half of the polarized economy do to cope with this? They will have to flee to jurisdictions with smaller governments and less taxation and less goldbrick regulation of housing jacking up rents, however unpleasant such places are, like Texas (but which nevertheless has constant inflow of migration, compared to California). American standards of living will decrease: beef burgers will be replaced with bean burritos, houses will downsize. Alternately, this inevitability of lower incomes could be embraced and deregulation and reductions done deliberately rather than implicitly: "In essence, we would be recreating a Mexico-like or Brazil-like environment in part of the United States, although with some technological add-ons and most likely with greater safety." This constriction won't be as bad as it may sound. Just as most healthcare expenditures in the USA are wasted so getting health insurance doesn't make much of a difference to health, many Americans (rich or poor) have extravagant spending habits (consider who buys all those lottery tickets and tobacco): "The bad news is that there is a lot of waste in American consumption-massive amounts of waste, in fact. Everyone has their favorite story about what the other guy spends his money on and could do without. But also the good news, oddly enough, is that there is a lot of waste in American consumption. Citizens faced with financial pressures will shift into cheaper consumption, and a lot of them will do so without losing very much happiness or value, precisely because there is already so much waste in what they buy." I could hardly disagree. If I had a buck for every boat or in-ground pool I've seen people pay a fortune for and then never use, or use once a year, I could buy a bundle of burritos; or not take even a few seconds to shop around online; and one can go to Walmart and simply watch people shop as they buy the smallest unit grocery (despite having a large family or it being something which never goes bad), or buy a brand-name food which tastes *exactly* the same as the generic but costs 50% more, or buy food they'll let rot before they can be bothered to eat it... (Nor do I exempt my relatives from this criticism.)

In this section Tyler also says something that particularly amused me in this election season: "Most American voters are fairly moderate, disillusioned with both political parties, and looking for someone who can fill the proverbial niche of "getting something done," or "unifying the nation." Those are not the kind of attitudes that make for a revolutionary future." (A craving for strongmen like Mussolini is not revolutionary?)

So what does that leave us? A weak diagnostic followup to TGS. One of the longest and most interesting writeups of Advanced Chess around. Some vague speculation about specifics of software/AI improvements to other sectors of the economy, badly handicapped by being written in 2013 (hopefully Cowen could do a much better job now). Some weak solutions or bandaids like MOOCs. And a reasonable but pessimistic extrapolation. Overall, not particularly worth reading unless you are interested in chess.

Craig Werner says

The rating's for the perspective, not the execution. If you're looking for a clear, unapologetic articulation of

the Hayekian economic vision applied to contemporary conditions, this is the book to read. Cowen writes clearly and projects an affable personality. In fact, I recommend that everyone who shares something like my political perspective read this book so you know the smart version of what we're up against.

Cowen's central themes are clear:
1. We're entering, or perhaps already well into, a world where machine intelligence will shape/is shaping every aspect of political, economic and social life.
2. This will generate a much higher degree of economic polarization with an extremely wealthy upper class (10-15% of the American population) and a "new underclass" (his term) that will be compensated in part by much more readily available entertainment and education via i-phones.
3. Entry into the upper class will be the result of merit--he calls it a "hyper-meritocracy"--which will be open to anyone with a high degree of "self-motivation" and the ability to work well with the machines.
4. All of this is basically a good thing.

Where to begin? On the most basic level, my resistance to the vision is moral/ethical. I'm simply not willing to say that the U.S. will become much more like Mexico City or Brazil and shrug it away as inevitable. Cowen would chalk that response up to standard left-wing academic hypocrisy, and the sour grapes mentality of the liberal arts majors who are losing the battle between status based on intellect and status based on money. I've seen enough of academic liberalism to acknowledge some truth to that. BUT, I think his notion of "merit" is almost entirely specious. He celebrates economics as a "science"--even as he describes a set of specifics that suggest radically different conclusions, admitting that contemporary economics can't begin to come to terms with the complexity of the actual economic environment. But never mind, the machines will fix it, even if human beings can't understand their theories. (That's not parody, by the way. He blithely says that as long as the machines are "solving problems"--by which he means mostly how to generate higher profits for the new upper class--it doesn't matter if humans are increasingly placed in support positions, in essence following orders. Throughout the book, the only thing that seems to actually matter to Cowen is financial return. He's absolutely uncritical of the idea that economic activity can be divorced from actual production. And he pays no attention to the fundamental question of how the underclass is going to be able to afford to support the products being churned out by the genius machines. In the final chapter, titled "A New Social Contract," he claims that the vast majority of disenfranchised Americans will become more conservative in response, citing the fact that the most Republican states are ones that aren't doing particularly well economically--Utah, Idaho, South Carolina, etc. What he fails to observe is that the conservative description works only if you limit the frame to white folks. I'd suggest he take a look at New Mexico for an equally likely sense of the future.

My list of problems could go on. He makes a brief nod toward the fact that the burdens of the new underclass will fall most heavily on women. He never says a mumbling' word about race, America having entered a "post-racial" era and all (insert nine heaping cups of irony).

I did find his extended descriptions of computer chess, especially the freestyle collaborations of humans and machines entertaining.

Bottom line is that Average Is Over describes hell and calls it a utopia-in-the-making. You can't bracket off ethics and morality and go whistling down the road.

Brendan says

I suppose I should preface this (largely negative) review by saying the obvious: Tyler Cowen seems like a perfectly competent economist and all-around smart guy, and I occasionally enjoy reading his blog (Marginal Revolution). However, I didn't find much to be impressed with in this book, especially given its reputation as one of this year's "big books" in philosophy-politics-economics. My thoughts:

1. For a book that is supposed to explain rises in inequality, it relied way too much on questionable conceptual and analogical arguments, and not nearly enough on data. [FWIW, I think this is probably because there are reams of data saying that rising inequality has little or nothing to do with technology.] For example, Cowen spends lots of time talking about the computer's evolving use in chess (e.g., from humans to human-computer pairs to computers alone) and in areas like online dating, but not nearly enough time talking about how this is supposed to work in other sorts of professions. I can see the case for professions that are largely driven by data that can be formally represented with relative ease (e.g., medical diagnosis, maybe?), but Cowen seems to think that this point generalizes. I was familiar with the bare bones of the argument before picking up this book (and still think it seems sort of plausible), but I ended up finding the argument *less* convincing after reading the book.

2. Cowen tells way too many "just so" stories, and then tries to base substantive predictions on these. I'd be happy to give him favorable betting odds that he's wrong about many of these (that's what a good Bayesian ought to do, right?). For example, he claims that macroeconomics is basically over "theory" and can now just rely on atheoretical computer-powered analysis to offer explanatory, predictive hypotheses. This claim might be plausible if, for example, the increasing complexity of macroeconomic (e.g., DSGE) models over the last 15 years or so were actually producing better predictive accuracy and thus, we had good reason to think adding more computational power (and refining existing programs) would help continue this trend. But this hasn't been the case, as lots of left-leaning economists have convincingly argued over the last few years. So I don't buy his general picture of "computers will take over science!" argument (I really don't even think this works for cosmology or particle physics, though I'll grant that computers will probably push us toward more complex models). Another example: Cowen claims the new technology-powered economy will make low earners more economically conservative/libertarian. My initial thought was "I disagree, but tell me more", and I didn't find that Cowen provided much reason for thinking I should change my mind.

3. I think Cowen could have improved this book by spending a few chapters considering some potential objections or alternatives to his thesis in detail, or maybe even by asking someone who disagreed with him to serve as a coauthor. At times, I felt a bit overwhelmed by the sheer amount of sloppy argumentation in this book (and especially the breezy, inaccurate characterization of opposing views of thought), and and occasionally found myself thinking of Malcolm Gladwell. This isn't so much a condemnation of Cowen in particular as much as it is of the whole "let's have a smart person make predictions about the future" genre of books. In any case, I would have much preferred to see a narrower, more precise, and more carefully argued book.

Michael Huang says

I’m tempted to give this book a 5-Star rating, but it’s a bit too disappointing at places. The title, for one, is not all that comprehensible to me, even after the author explains the inspiration. The sub title is even worse. I confess I haven’t read his previous book and so there might be some clever tie-in there. But based on his title, a not so ridiculous guesstimate of the content would have been “some ideas to power America to some new height, you know, beyond the current age of stagnation”. But that’s not at all what the book is. The book is more like “the middle class is gone: what life might be like in a polarized society”.

Enough rambling of misleading title. Cowen did a fairly good job explaining his predictions of near future/extrapolation of current trends. I find his arguments to be cogent, clear, and at times even witty. One example towards the end:

“Sometimes I wonder why so many relatively well-off intellectuals lead the egalitarian charge against the privileges of the wealthy.
...
at least in the US, the status currency of intellect is not winning out. Perhaps for that reason the high status of the wealthy.... bothers our intellectual class most. “

I don’t agree with him on the hypothesis, but I still find it funny to postulate like that and I’m not the least offended. As a university professor, I suppose I count as a relatively well-off intellectual. To digress a bit: I’m not the least bothered by high status of, say, Warren Buffet or even Koch Brothers. But using that status to relentlessly perpetuate the wealth of their not-necessarily-worthy offsprings?

In general, this is a book well worth reading. Cowen does not use a lot of data or evidence, but his “theories” are tantalizingly attractive. I can’t wait to see if his predictions will pan out.

Caren says

I have to agree with some other reviewers who thought this book spent an inordinate amount of time talking about freestyle chess. When it came up as an example again and again, I began to just roll my eyes. That said, the last chapter, in which he wraps things up and kind of gives his predictions, was most interesting and plausible. His main point seems to be that people who understand machines (that is, computers) and can work with them to augment human capabilities will succeed in future jobs. He says the social contract will change: "We will move from a society based on the pretense that everyone is given an okay standard of living to a society in which people are expected to fend for themselves much more than they do now. I imagine a world where, say, 10 to 15 percent of the citizenry is extremely wealthy and has fantastically comfortable and stimulating lives, the equivalent of current-day millionaires, albeit with better health care. Much of the rest of the country will have stagnant or maybe even falling wages in dollar terms, but a lot of opportunities for cheap fun and also cheap education. Many of these people will live quite well, and those will be the people who have the discipline to benefit from all the free or near-free services modern technology has made available. Others will fall by the wayside." (p. 229-230). Later, he continues: "...our altruism will remain intact or probably expand in terms of its absolute magnitude. That said, aid from the government will increasingly fall short of a growing set of demands, so unequal treatment will be more explicitly recognized as the norm. In percentage terms, relative to outstanding need and vociferous claims, the altruism of the public sector will have to fall....Starting about ten years from now, the aging of the American population, combined with rising healthcare costs, will force on us some very radical fiscal changes." (p. 235-236). He had an interesting statistic: "By 2030, almost one-fifth of the United States population will be about as old as one-fifth of Florida residents today: sixty-five years old and up." (p.237). He presents an unusual idea of creating "shanty-towns" (his word) for the elderly. These would be places with tiny, very inexpensive housing, but with free internet. Here is his description:
"We would build some makeshift structures there, similar to the better dwellings you might find in a Rio de Janeiro favela. The quality of the water and electrical infrastructure might be low by American standards, though we could supplement the neighborhood with free municipal wireless (the future version of Marie Antoinette's famous alleged phrase will be "Let them watch internet!")...Then we would allow people to move there if they desired. In essence, we would be recreating a Mexico-like or Brazil-like environment in

part of the United States, although with some technological add-ons and most likely with greater safety." (p. 244-245). He says that even if we don't consciously set out to create such places, they may evolve because people will have to live someplace cheap in order to subsist on reduced income. He does not think falling incomes will create any sort of revolution here because of the rising age of the population, and I think that sounds quite plausible. His predictions for the future are: "Rather than balancing our budget with higher taxes or lower benefits, we will allow the real wages of many workers to fall and thus we will allow the creation of a new underclass. We won't really see how we could stop that. Yet it will be an oddly peaceful time, with the general aging of American society and the proliferation of many sources of cheap fun. We might even look ahead to a time when the cheap or free fun is so plentiful that it will feel a bit like Karl Marx's communist utopia, albeit brought on by capitalism." (p. 258)
On the whole, I found this to be a thought-provoking book.

Patrick F says

I devoured this in two sittings. I really like Cowen, through watching his conversations series on YouTube called well...Conversations with Tyler. He is a voracious reader and an interesting mind. His blog MarginalRevolution.com is a good daily read with myriad links and perspectives showcased.

While I don't exactly agree with everything he says in this book, most of what he concludes is hard to refute, imo. For instance, Cowen predicts more income and wealth inequality. However, some of the "losers" coming up won't have worse lives, they might even have more money in their pockets.

Cowen's subtle yet fairly profound predictions that science will increasingly become impenetrable for even scientists themselves is controversial, I'm sure, to some yet Cowen is convincing. Expect more and more specialization, for better and for worse. When it comes to his science, economics, Cowen expects the individual economist to become subordinate to data. Individuals will increasingly work in teams, too. "The real change will be the subordination of the individual scientist," the economist writes.

His coverage of the competitive chess (yes,that chess) scene was compelling. I love stuff like this that you wouldn't necessarily choose to read about but once it's interspersed throughout a book, you can't get enough of it. Freestyle chess? What? That's crazy!

The anecdote that I disagree with the most is when he quips that some of the people living in "tent cities" are choosing to live there. I'm willing to bet my reputation on the line; I'm coming with absolutely no data here and I'll still argue: this is an absurd notion. Take for example, even a young male, 22, out of school and enjoying the vagabond life. I guarantee that if you could sit this person down, give 'em MDMA, or mushrooms, or take him to a isolation tank to meditate, and I bet the thoughts that would pour out would be anything but "Oh, man I love being a vagabond with no roots and I love having such a small cold space to lay out."

His counter-mainstream argument that we, Americans, will becoming increasingly local, nationalistic, and conservative was immediately compelling. Much literature exist that aging minds become more conservative. His retelling of the again often ignored truth that widening inequality produces more order, not less, is correct. Revolutions and outrage is usually sparked when middle classes rise and when there is more, not less, equality.

I encourage educated Americans to read this book. Average, in fact, might be over and you might think it's

unfair with horrible outcomes. That, too, might be true. Before grappling with solutions, understanding where we are is a must.

John Devlin says

Engagingly written but as I read more of these type works that are supposedly so impressive, I'm struck by how ordinary their insights are or to put it another way everyone's just writes science fiction.

And rather banal science fiction that's a little deeper than Star Trek, absent even Treks rather two dimensional characterizations.

To my point, Cowen quotes science fiction writers, ancient ones like Kurt Vonnegut.

These so called experts' knowledge of science fiction equates to a few 50's masters and Orwell and Huxley - pathetic. Read Gardner Dozois giant compilation of the best science fiction stories for the last 34 years and get back to me.

Cowen's analysis of machine intelligence and where it is going is wholly speculative and is thin for the reasons I just mentioned. Machine intelligence is moving so fast that his reference to The game GO is already wrong and his praise of the law as a positive job sector is already crumbling.

Other problems are how he conflates immigrant work to illegal immigrant work or more accurately he never mentions the latter, just points to their help in stopping outsourcing -not the same group.

Finally, his take on how some will prosper as they demonstrate skills that enable them to interface with computer technology is overly optimistic. His life as a professor at an elite college has given him a very skewed idea of what the average worker can do and learn.

Finally, there's way too much time spent on chess. I get it; he loves the game, but his attempts to shoehorn competitive man/computer chess tourneys into a model for the successful everyman's future overestimates the Average by factors of ten, while simply demonstrating that Cowen really, and I mean really likes chess.

Rjb says

Notes and thoughts on this thought provoking, and motivating, book:

- "This book is far from all good news."

- Two jobs in the future: Are you working with computers, or can they replace you.

- Foxconn to increase the number of robots in its factories one hundred fold, getting them to one million robots.

- "There is not a joke that 'a modern textile mill employs only a man and a dog - the man to feed the dog, and the dog to keep the man away from the machines.'"

- If machines can correctly gage the pulse of a people and its climate, will there be a need to vote in the future? This can, in fact, be done currently. With a few calculations based on a few variables like GDP and unemployment rate and inflation we can predict elections we'll. Does this change one's perception of machines? Or is this a denial of a small moment of the human experience?

- Would you hand over you identity for 20% off laundry detergent?

- Regulatory obstacles will be greatest for health care and pharmaceutical companies - much less so for companies like Apple, Google, and Amazon. The big question is how will society adjust for the failures of technology. How will we react when machines cause harm, rather than people.

-Technology will help us make things more cheaply. This means there will be excess value left over. Where will it go? Quality land. IP. And quality labor.

- Technology in many instance many will create more jobs. When a problem is solved, or automated, new ones arise. However, new, highly skilled labor is required to fill those jobs. Unmanned drones may replace a pilot, but requires 300 people working in the background; whereas a fighter pilot requires 100.

- An overlap of having the ability to solve real-world problems and some technical knowhow is key today.

- Not all STEM graduates will be ready for the market. "Does anyone envy the job prospects of a newly minted astronomy PhD?"

- The world is getting better at measuring value. Average effort and average results will no longer be tolerated. Only quality will matter. Productivity will matter most.

- Will any of this lead to happiness?

- As grows the need for quality talent, so does the need for quality management. More hires means the need for more people to manage the team. The more efficient they can make the team, the higher their earning power. The greater the care in building the teams, the better the output.

- Women are more prepared for the new workplace. They're more conscientious and exact and rarely hold resentment.

- Showing up is no longer enough.

- The author does not think the middle class is shrinking. He wonders how much of the middle class is made up of government workers; people who don't actually produce nearly as much as they're paid. How will this affect the job market? On the one hand you have efficient organizations, moving the advancement needle to its edge, and in the other is one that rewards inefficiencies and failure, but is too growing wildly.

- "From June 2009 (the official end of the recession) to June 2011, inflation-adjusted median household income fell 6.7 percent, more rapidly than it fell during the recession itself (3.2 percent). Median income in 2011 was more than 8 percent lower than in 2007 and indeed median household income peaked in 1999."

- If the need for higher and higher skilled labor grows, what does this mean for people who are already highly skilled? Is the current workforce at Google already behind? Maybe not. This is just how people move into positions of management and mentorship and guidance and leadership. These skills will always be in need.

- There is a lot of focus on technical jobs as being high paying, but financial companies, with the help of the government, have grown massively large and can afford the Take larger risks; and pay higher and higher salaries.

- Unfortunately technology industry is filling with people who are after money rather that technological innovation.

- The age at which people make achievements is moving up. Twenty year olds use to prove mathematical theorems. Now it's the thirty year olds. As problems get harder and harder, the need for experience and wisdom increases. There is no longer the advantage of starting from scratch.

- There is still demand for people with high, general intelligence. People who picked the hyper path of Harvard or Yale. Even though they offer little interns of productivity and knowledge or even what is required to advance an organization, there is still a fear based need for such people. We glamorize these people, even though if we were to set aside their degrees, we would have idea what to do with these people.

- There are few, if any, problems that are at the early stages. There was such a computing boom because we were starting fresh, from the ground up. This is not the case anymore. Now you need to know so much more, even when just starting out, to be even considered at zero.

- Computers are good at chess because it is easy to solve for. Computers are decision machines and chess is about whittling down decisions. Whereas creating a vision for an organization and driving that vision needs human interaction. This is uplifting because if computers can take over areas humans have no need to run, then they can focus on being more human like.

- Men are being driven out of the workforce at an alarming rate.

- There are large numbers of people who actively avoid the work market simply because it does not suit them. Ten years ago 5 million people received disability benefits. Now it's 8.2 million. The workplace is safer than ever, so what is the cause of this increase.

- "For men, from 1969 to 2009, as measured, it appears that wages for the typical or median male earner have fallen by about 28 percent." This is during time of unprecedented economic growth.

- Three quarters of people aged between seventeen and twenty four are unfit to serve in the military. This is even the military continually lowering its standards.

- The housing crash forced companies to fire off large chunks of their workforce. It ended up improving output because the weakest workers went first, and they never hired them back because the efficiency is now so high. When was the last time the government had a substantial layoff? Where TARP was a bailout of the banks, are government jobs bailouts for citizens?

- Young workers will slowly be reemployed, but it will be at lower and lower salaries.

- The new healthcare plan and increased minimum wage drastically slow hiring. Both make hiring more expensive than it's worth. Companies cannot keep up with the rising costs of healthcare or minimum wage, so they just expect more from the people they have. And as it's turning out, good workers can pull more than their weight.

- The newly self-employed averages around 500k a year. This is not because people are energized to enterprise, but rather they may have no choice.

- Is the life of a food truck owner a sign of the reversal of the American Dream? Certainly people don't do it for the lifestyle, and most definitely not for the riches, of which there are none. This appears to be more like life in developing nations.

- Are service sites like fiver good or bad? Are people so desperate for work they'll take any random job, like retrieving keys from a garbage disposal, they can find?

- We are computers. Or, rather, work in cahoots with a computer. You have the option to use yourself when, say, preparing for an interview or a sales call. Or you can use a computer for an edge or advantage; spending some time researching an industry or new sales tactics or a potential client.

- Grandmaster chess players can't beat even average or club level players who use computing systems for help because they rely too much on mastery and intuition.

- Takeaways so far:
1. Human-computer teams are the best teams.
2. You don't need to be an expert to work along side a machine.
3. Jobs that are not critical will be less effective if given to a human.
4. Know your limit.

- It's not that dating algorithms are good at matching people, but rather they're good and getting people to get together, and that's all it really takes. A conservative is more likely to message a liberal, than visa-versa; so the algorithm will display liberals to conservatives, but less so the other way around.

- Even grandmaster chess players don't make the same, recommended moves as computers because it is hard to be objective, to stay focused, and, of course, to calculate the large number of move variations.

- Will computers make people more humble? Take chess, for example. Computers outperform even grandmasters to such a degree that their command for respect has greatly lessened. It's not that computer are more intelligent, it's that they're great at making decisions. This lessens or reveals achievements more for what it is; something anyone can do and not all that exceptional. So, there seems to be little difference between good chess players and great ones.

- GPS is responsible for hundreds of thousands of accidents; hard to verify. If true, what does this say about technological solutions? Is it the human element? Are people distracted by the machine? Are they foolishly stopping on train tracks when instructed?

- Because business want to save money, we'll be in situations where we'll be picking up the slack. Ever have to navigate your way through a customer-support phone tree? That's in place to save the company money. They've outsourced the work to you. We may see more of this type of outsourcing. Simplifying your life will be ways around this. E.g. Don't own a car. Limit how many services or subscriptions you have. Etc.

- We give favor to regularized systems rather than more advanced or perfect ones. Microsoft Excel is ubiquitous because it is interchangeable and easy enough understand and use, not because it is the perfect solution.

-Chess players are given a score that rates their playing ability or standing. Will employees in the future be scored? Surely if the workplace becomes more normalized this is a real possibility. If one could find and hire a lawyer based on their ranking, would that be so bad? Maybe it would cause some havoc in the industry initially, but where winning a case is critical to a client, maybe this is a good thing. Yes, it will probably be easy to artificially inflate one's rating, but it could open the door to people who otherwise would be ignored because they lack the advantage of things like nepotism.

- "It's the bumps and delays that will make the rise of smart machines a livable process." Adoption rates are surprisingly slow. Think if industries like maritime. They're only just starting to adopt the most basic of computing technologies. Most industries, of course, adopt smart technology gradually, either at a pace they are comfortable with, or a rate pushed by the world at large.

- This idea that we'll be able to scan our brains and upload them to a storage device seems far fetched. He idea that thought lives outside the requirements of a brain. We're still learning just how strongly connected our minds our to our bodies; for energy and nourishment and focus. For this we'd need to replicate or emulate the entire human body. Maybe a mix of scanning and cloning?

- What's the point of the Turing test? What good could it be knowing that a computer can be perceived as intelligent? There are no signs this will even happen, but so what. What's more interesting is that with the diversity of human beings, there are people who cannot pass it. Think of the symptoms of autism or Aspergers. In a Techniche study of the Turing test, involving a mix of humans and computers, only 63% of the audience could identify humans as humans.

- There seems to be little to no evidence that foreign competition destroys U.S. jobs. The belief is that we can't compete against their low-wedge workforce. However, their productivity is very low. Also, numerous service jobs are not threatened by outsourcing; filing clerks, admins, cashiers. It's technology that has had the largest effect. (Foreign nations can't seem to compete with the U.S. Their lack of innovation and hyper focus on collecting and saving capital are indicators of this. If their future was bright, there'd be signs of spending cash.)

- Papers by Giovanni Peri, and others, reveal immigration boosts American wages.

- Factor price equalization - "If an apple sells for $2 in the United States and $1 in Bolivia, there is incentive to ship the apples until the prices move closer together." This same thinking is used for human workers. Yes, outsourcing negatively affect American jobs, but it makes the U.S. market sluggish. And those losses are offset by gains elsewhere.

- "A study by Michael Spence and Sandile Hlatshwayo shows that jobs gains have been in government, health care, and education. These have strong job security, but are subject to daily market tests." So, whether they provide good service or not is indeterminate. How does this affect the job market as a whole? Will these sectors be inclined to pull low quality workers? Surely it helps keep the American Dream alive.

- Online chess schools have taught millions of people to the point of mastery. This is astonishing and remarkable. People who otherwise would now have access to such training. And it's driven by commercial incentives. "In 2008 and 2012 the small nation of Armenia too first place in the Chess Olympiad."

- The current pitfall of online education is that it requires one to be self motivated. Really, for these people, it's only a matter of access to great learning resources that would have prevented their education. "Chess teacher Peter Snow reports that some of his students love playing against the computer, but they deliberately put the quality settings on the program so low that they can beat it many times in a row." Mastery requires ratcheting up, always improving; this appears to be some form of entertainment.

- One criticism of online education is that students miss the motivational aspects of a teacher. If this is true, why is this quality not taken into consideration when hiring educators? Or why is it given so little importance when hiring? "Let's treat professors more like athletic coaches, personal therapists, and preachers, because that is what they will evolve to be."

- The way we educate may split in two. One, a more hands-off approach where students self-teach and rely on infrequent teacher-student interactions. The other, a more motivational, boot camp driven approach where effort is taught just as much as subjects.

- Three types of workers (who work with machines and need to retrain):
1. Individuals who opt for self-education
2. Those who are less self-motivated, but follow extreme forms of discipline for short bursts
3. Those who just try to get by

- Self-education. Reeducation. This is the clearest path to success.

- Machine science currently is "human directing computer to aid human doing research." It will become "human feeding computer to do its own research" and then "human interpreting the research of the computer."

- Altruism, and the largest demographic of voters, will keep government programs like Medicare intact.

- A government healthcare plan makes the job market tougher. "The greater the value of the mandate, the less enthusiastic the business will be to hire more workers. Quite simply, mandates lower the demand for labor and create downward pressure on the general level of wages."

- Want to predict the future? See where people are moving. Texas has wild growth - because of cheap housing and strong job market. Other than this, Texas scores rock bottom: low education, few social services, hot and humid, etc. It shows people want cash in their pocket.

- Is the author proposing we replicate developing nations by building tiny-home subdivisions, wired with Hulu and send our elderly there to live out the remained of their lives? Either way, people will either move to where land is cheap or find ways to make their land cheap to adjust for any loss of income.

- The disparity of healthcare access will widen.

- Is this a story that demotivates? Or is it something to be seen as an opportunity? Does the world need to change? Or do we?

- Mortality is the cure-all. Future generations will be unaware of the difficulties presented by transformative technologies. If one were to go back even 100 years they'd have great difficulty navigating most any workplace.

James says

Tyler Cowen is a writer, blogger, and an economist. It is in the latter role that he is foremost although his influential blog, Marginal Revolution, is renowned and I would certainly recommend it. He has written five books, not counting textbooks, and his latest is *Average is Over: Powering America Beyond the Age of the Great Stagnation*. While the title tells you about the main theme of the book I found that, beyond the economics of our current snail-like recovery from the depths of the recession, this book is a cornucopia of ideas about a diverse number of aspects of our life both now and in the future.

There are three Parts to the book which focus on first, the growing divide between those who earn more, much more than average and those who are below-average earners; second, the importance of machines and, in particular, games in our future; and third, the changing nature of work.
The opening chapters establish some of the important themes for the book by describing the current environment of stagnation and making the claim, that will be supported by examples throughout the book, that "new technologies already emerging will lead us out of" the current stagnant economy. In fact the economy is not stagnant for everyone, for those who have already adapted and are involved in the "right" sectors of science, technology, engineering, and math (STEM), in particular the growth in computers, the internet, and most importantly intelligent machines. Cowen also introduces the metaphor of Chess that returns again and again throughout the book. You do not need to be an expert in the game to understand the power of intelligent machines that can 'crunch' the data necessary to defeat grandmasters every, every time they are challenged.

"As intelligent analysis machines become more powerful and more commonplace, the most obvious and direct beneficiaries will be the humans who are adept at working with computers and with related devices for communication and information processing. If a laborer can augment the value of a major tech improvement by even a small bit, she will likely earn well. (p 21)
He supports this with examples from areas like the growth of cell phones in both quantity and quality, the changes brought about by super-computers that play chess and for several years have been significantly better than the best grandmasters, and the changing nature of work with examples from companies at the forefront of the new age like Google and Amazon. The tests given prospective employees at Google are described and they seem like something out of a trial for Mensa. Are they easy?
"There's a whole book titled *Are You Smart Enough to Work at Google?* by William Poundstone. A few minutes reading it will make the answer clear to most readers, even if the word smart is not exactly the right word (Picasso was a genius but I doubt he could have landed a job at Google's Mountain View headquarters)." (p 35)
The days when you could just show up, role up your sleeves and start selling or doing any job are dwindling.

The changes discussed, documented, and commented upon in the first part of the book carry over into the latter two parts. There are and will be more changes to the nature of how you obtain a job --note the impact of social networking websites like Facebook or LinkedIn-- and your workplace whether it is an office, a factory or a sales counter. That the days of the lone scientist are over seems even more true as the complexity of machines as tools grows exponentially. Education faces changes as well due to the impact of the world of new machines. Cowen discusses the rise of MOOCS (massive online courses), information blogs, and the ubiquity of avenues for online education. But there is more.
"It is not just formal online education and blogs. Apps. TED lectures on YouTube, Twitter, reading Wikipedia, or just learning how to work and set up your iPad are all manifestations of this new world of competitive education, based on interaction with machine intelligence. These new methods of learning are all based on the principles of time-shifting (watch and listen when you want), user control, direct feedback, the

construction of online communities, and the packaging of information into much smaller bits than the traditional lecture or textbook chapter." (p 181)

Late in the book Cowen discusses the potential changes for his own profession, the 'dismal science' of Economics. He anticipates that theoretical models will be challenged by more and more data-driven approaches. He says (and as someone with an Economics degree I read with interest) it will go as follows: "(a) much better data, (b) higher standards for empirical tests, and (c) lots of growth in complex theory but not matched by a corresponding growth in impact. Mathematical economics, computational economics, complexity economics, and game theory continue to grow, as we would expect of a diverse and specialized discipline, but they are if anything losing relative ground in terms of influence. Economics is becoming less like Einstein or Euclid, and more like studying the digestive system of a starfish." (p 222)

The economics profession is like other social sciences and, like the economy as a whole, will be changing in ways that both take advantage and depend upon ever more powerful and complex computing and communication devices. There is much more in this challenging compendium of facts and ideas that will change our world. The direction of this change will determine where you and I will be and what we will do in the age of intelligent machines. In *Average is Over* you get one very knowledgeable economist's glimpse into that future.
