CHAPTER 12

# The Golden Age Filter

If you pay attention to the news, you are assaulted with one dire warning after another about how the world is barreling mindlessly toward doom. It is easy to lose sight of the big picture: the world is doing well by historical standards, and the rate of improvement is increasing.

In this chapter, I'll give you a quick tour of what is already going right and what is likely to continue going right. I do this to help you recognize how often you can be in a mental prison of negativity while things are actually going quite well.

I'm an optimist by nature, and I confess to putting that bias on this chapter. But you don't need to buy into all my optimism to see the larger point that you have been sold a negative view of the future because of the business model of the press. If the press has a choice of scaring you or telling you everything is fine, one of those paths is more profitable. Fear sells. I hope this chapter helps you to keep the fear stories in context.

## POVERTY AND OVERPOPULATION

In 1966, half of the world lived in extreme poverty. By 2017, the number had fallen to 9 percent.[1] Once you get people out of extreme poverty, they tend to have smaller families, which means you get population control for free.

The middle class has not done so well lately because the cost of living is rising faster than incomes. When an imbalance of this sort happens in an innovative, capitalist system, you can expect new

companies to spring up in response. There is always a time lag, of course, so you won't see all of this right away. I'll give you a brief tour of the innovations you can expect in the near future to lower the cost of living.

## Inexpensive Homes

We are in the early stages of seeing entirely new home-building systems, but you can already see where things are heading. We're seeing small but successful tests of 3-D-printed homes, factory-built homes, kits for assembling your own home, and nonstandard living arrangements, such as college students being roommates with senior citizens for mutual benefit. It is too early to know which of these approaches will dramatically lower the cost of a good home, but with this much attention on the problem, the smart money says we will soon have low-cost housing options of the type no one can yet fully imagine.

## Education

Traditional education involves one instructor teaching a class of students who are in the same room. That's an expensive model, and a bad one if you live in a place with poorly funded schools and no other options. Online learning is rapidly growing and is already cost-effective, but it is fairly primitive compared to where it is likely to evolve in a few years. Most online learning is limited to one teacher droning about a topic while the video camera is running. But eventually, and inevitably, you will see more of a Hollywood film model for online education, meaning teams of qualified people will get together to add their contributions to the product. The "teacher" might simply be a good presenter, similar to an actor. The course content might be the product of graphic artists, CGI artists, gifted writers and directors working together. Now add the tech industry's ability to measure what gets the most clicks and who gets the highest

test grades, and you have a way to continuously evolve to better and more effective forms of online teaching.

At the moment, online learning is inferior to a physical classroom experience for most subjects. But that gap will shrink rapidly, and eventually the online experience will be far superior, more widely available, and much less expensive than college. Someday we might see public schools replaced by online courses and augmented by social get-togethers for the students.

I recently bought a virtual reality (VR) system for entertainment and also to learn what is ahead for VR technology. In its current form, the content for VR is limited, and wearing the VR headset for several minutes can give users headaches and motion sickness. But as primitive as the technology is, it is already completely obvious that virtual experiences will eventually rival in-person experiences, and surpass them in many ways. This is especially important for online learning. If you can put yourself into the scene—let's say, attending an historical event as a spectator, or assembling a virtual machine from virtual parts—your learning experience will be extraordinary compared to anything a classroom can provide.

One VR title I used at home involved taking a tour inside the *Hindenburg* airship that was famously destroyed by a fire in 1937. I could walk through the control room, the crew's quarters, the public spaces, and all the interior engineering spaces at my own pace. This was full-body learning, and I remember the inside of the *Hindenburg* as vividly as if I had been there in person.

Probably the biggest obstacle to nontraditional learning is the value of the degree or certification one gets when done. If you have a degree from a top college, employers know approximately what they are getting. But if you learned a variety of useful skills online, and there is no degree program involved, how would anyone know your value? I expect this to change over time as credible business leaders and companies start endorsing certain collections of online classes as being degree-equivalent.

**END OF UNSOLVED CRIME**

Have you noticed that nearly 100 percent of high-profile crimes seem to get solved? That's not an accident. In the United States and other developed countries, we have the technology to solve nearly any crime that merits enough resources. You are probably familiar with most of the crime-solving tools available to law enforcement. But when you see them listed together, it creates a powerful picture in which the rate of unsolved crime will approach zero.

## Video Everywhere

Most businesses, and an increasing number of private homes, have video security cameras inside and out. If you are running from a crime you've just committed, all law enforcement needs to know is where the crime happened and approximately when, and they can usually find video of you leaving the scene.

I assume most self-driving cars of the future will have video capabilities both inside and out, meaning anything within sight of an automobile is likely to be recorded. And self-driving cars will reduce drunk driving, speeding, road rage, and most other types of vehicle-related crimes.

With the ubiquity of smartphones, you can almost guarantee that any crime in a public space will be recorded. And if the perpetrator makes the mistake of talking anywhere near a smartphone or home speaker, law enforcement might be able to find that audio file.

## Digital Trail

If you own a smartphone—and nearly all criminals do—law enforcement can know where you have been, what you have been saying, with whom you have been communicating, and where you purchased what kind of goods. Unless you live off the digital grid, which is rare, you're likely to leave a clear trail.

## DNA

We have long been able to match DNA with evidence found at crime scenes. But this capability is taking a huge leap forward as more people voluntarily submit DNA samples for personal testing and for tracing their family trees on genealogical websites.[2] What's new is that a perpetrator's DNA can now be used to locate a cousin or other relative. And once you have a family member, you can usually find the perp. Just ask cousin Bob if he has any relatives living in the town where a crime has happened. That's often enough information to find the criminal, and this exact process has already been successfully used. As more people voluntarily submit their DNA for various personal reasons, any DNA from a crime scene is likely to lead to identification of the criminal via family connections. And once you have a suspect, that person's digital trail will give them away.

Humans will always be tempted to commit crimes, but it usually only happens when people feel they can get away with it. The days of getting away with crime are almost over. Expect crime rates to continue falling.

## WORLD PEACE

Experts disagree on whether we are experiencing a trend of declining war in recent decades.[3] Like most things, it depends how you measure it. And comparisons of war dead over time are complicated by improvements in treating the wounded. But in my opinion, a number of forces are aligning to make wars far less likely in the future.

1. Mutually assured destruction keeps working.
2. Conquest is no longer economical.
3. Guerrilla resisters have access to better weaponry.
4. Economic war is a better substitute for physical war.

In olden times, it often made sense to conquer a neighboring country to plunder their resources. It could be a good investment.

Today, there is little opportunity for making money from war because the conquered country would inevitably produce a well-armed guerrilla resistance to destroy pipelines, roads, and other economic assets of the conquerors. And we know the aggressor country will suffer staggering economic pressure from the rest of the developed world. In our increasingly connected global economy, making war is bad for business, and the aggressor can know with certainty they will not come out ahead.

If countries will no longer start wars for economic gain, you still have the kinds of wars in which an irrational leader brainwashes his own citizens to fight for irrational reasons. But even the most irrational leaders need to believe they have a chance of winning before they commit to battle. Hitler was crazy, but he invaded other countries only when he thought he had a good chance of winning, both militarily and economically. And in those days, when resistance forces were armed mostly with rifles, you had a good chance of occupying and holding conquered territory. None of that is true in today's world. Conquering your neighbor in this day and age is economic suicide.

If you look at the two alleged "craziest" leaders in today's world who also have substantial militaries—Iran's Ali Khamenei and North Korea's Kim Jong-un—we observe both of them responding rationally to economic pressure and military threats. Keep in mind that the press routinely describes our international adversaries as unhinged, which is almost always an exaggeration. When dictators do evil things to their critics and adversaries, it is generally in a rational, albeit immoral, pursuit of self-interest. In other words, even "crazy" dictators are not full-on crazy.

Given human nature, a dictator who crosses the line into full-on irrationality would soon be removed by his own inner circle and military. While the odds of dictators being labeled crazy by adversaries are 100 percent, the odds of a completely irrational leader staying in power long enough to wage war seems vanishingly small in this day and age.

I'll round out my optimism about the direction of war by looking at some of the main types of military conflicts.

## Nuclear Powers

We have never seen two nuclear powers go to war against each other, and in my opinion we never will. The threat of mutually assured destruction is clearly effective. The minimum requirement for starting a war is that the aggressor has to think there is a legitimate chance of winning, and no one believes a country can win a nuclear war in any sense that "winning" means something. So that's good news.

## Nuclear Powers Attacking Nonnuclear Powers

The lesson of the past few decades is that large military powers can easily crush countries with smaller militaries. But the victor can't easily occupy and hold the defeated country for the long run because of the high cost of containing the inevitable guerrilla resistance. So we will probably see fewer wars of conquest simply because they don't work out for the conquering power.

## Proxy Wars

Big countries like to take sides in wars fought by small countries, including revolutions, whenever it suits the larger country's national interest. We call those proxy wars. For the larger countries supporting fighters in smaller countries, the benefits of having your side prevail can outweigh the risks. Or at least that has been the case in the past. But here too we see a trend toward economic punishment of the larger countries backing a warring faction. For example, at this writing, both Iran and Saudi Arabia are experiencing economic pressure to end their proxy war in Yemen.[4]

## Special-Case Wars

We will still see smaller wars for years to come in which there is some kind of special case involved. For example, if a conquered country's citizens are neutral or positive about the conquering country's intentions, and they dislike their own leaders, that situation might be economical for the conquerors. But over time, we should expect the number of special cases to shrink toward zero as those few situations are exploited.

## Radical Islamic Wars

I see no end in sight for radical Islamic terror attacks because the normal cost-benefit analysis of life on earth doesn't apply to people who believe their payoff comes after martyrdom. But the brief tenure of the so-called ISIS caliphate in Syria shows us what happens when overachieving terrorists try to hold territory: it turns them into easier targets. The advantages of being a secret terror society evaporate when you try to hold territory.

We also observe that the psychological situation in the Middle East is evolving in a positive way. The old thinking was that Israel was the common enemy of its Muslim neighbors and susceptible to some kind of eventual conquest. The newer thinking is that Israel is too strong to conquer in any rational military sense, and Iran is emerging as the common enemy of both Israel and other Muslim countries in the region. Israel has made tremendous progress in improving relations with its neighbors and has made a public campaign of friendship directly to the Iranian people, offering to help them with water purification, for example.

Put all of this together and the Middle East might be only one ayatollah away from something that looks like peace. And that ayatollah, Iran's Supreme Leader Khamenei, is in his eighties, with a crumbling economy thanks to sanctions and military spending, and a relatively pro-Western population. For perhaps the first time ever, conditions are ripe for major progress in eliminating war in the Middle East.

## Miscellaneous Wars

Afghanistan will probably be at war with itself, with the help of various outside entities, for another hundred years. But most of that will stay within its borders. And it is reasonable to assume plenty of underdeveloped countries will have civil wars and wars with neighbors, complete with genocides and atrocities. But as countries in that category develop their economies and become tied into the global economic system, their odds of war will plummet.

For the developed world, as well as their less-developed allies, the risk of war is declining every year because economic sanctions are the better weapons of choice.

I won't argue with anyone who tells me I am too optimistic about the future of major wars. But I am certain that the historical reasons for war have nearly evaporated, at least in terms of the largest military powers. Today, economic war makes far more sense, and I don't see that changing.

# CLIMATE CHANGE

In 2018, the Intergovernmental Panel on Climate Change (IPCC) released a "dire" prediction that climate change could depress GDP by 10 percent in eighty years. That might be the best news you have heard on the topic, albeit disguised as terrible news. In eighty years, the world is likely to be five to ten times wealthier, assuming normal trends, and we wouldn't even notice we were 10 percent worse off than we might have been without climate change.

But let's say you don't believe global warming is economically trivial. You still have reason for optimism because of the technologies that are already in the pipeline. And one can hardly imagine what we will see over the next eighty years. Here are some interesting developments in that space.

## Fusion Power

Fusion power has been the “flying car” of energy conversations for many years. Futurists have consistently predicted it is coming soonish, only to leave us disappointed as the future comes and goes without it.

The dream is that fusion will be the nuclear technology that overcomes a number of limitations with older fission technology. The potential of fusion power, should it ever be solved to a commercial level, is immense. Fusion would provide clean, uninterrupted power at a cost that would annihilate all competing sources. If scientists and engineers can commercialize that technology in the next twenty years, you can worry a lot less about climate change over the next eighty.

But is fusion ever going to be practical?

Recently I spoke to a brilliant investor in this field who told me the challenges for fusion power have moved out of the realm of science and into the realm of engineering. By that I mean fusion reactors work on paper, and it should work in the real world too, so long as we can engineer a sufficiently powerful set of magnets to contain the plasma, or some other engineering work-around. And there have been big breakthroughs in materials science that should allow us to experiment our way to a stable engineering solution. There are a number of other engineering obstacles, but at this point they all seem to be in the realm of the solvable. At this writing, ten funded startups are pursuing different paths to what they see as the best fusion engineering solution. Would you bet against all ten, knowing they are staffed by some of the smartest people in the world?

## Generation IV Nuclear Power

We might not need to wait for fusion technology. So-called Gen IV nuclear reactors are designed so there can be no meltdowns even if nearly everything goes wrong at the same time. Bill Gates called attention to the potential of these “new-wave” reactors in his 2019 list of breakthrough technologies.[5]

Meanwhile, in 2019 the U.S. Department of Energy announced a Versatile Test Reactor site for rapid testing of new nuclear fuel solutions. One of the biggest problems with nuclear power designs is that it is impractical to iterate from poor designs to good designs—the way nearly every other technology evolves—because of the risk, cost, politics, and long planning cycles of anything involving nuclear power. The new rapid-testing facility will address some of that problem.[6]

But what about storing all the nuclear waste from those Gen IV nuclear sites, you ask? Some of the Gen IV designs convert that spent fuel into power.

Anecdotally, I don't know a single smart person who understands the nuclear industry and who also opposes Gen IV nuclear plants. And that includes people who are concerned about climate change and those who are not. Gen IV nuclear seems to be the smart path in either case. And the obstacles to it are falling away quickly.

## Air-conditioning

One of the bigger risks of climate warming is that more people will die from heat. Billionaire entrepreneur Richard Branson has teamed up with the Indian government to offer a $3 million prize to whoever can invent a better air-conditioning system—meaning a less expensive one. This sort of concentrated effort has produced good outcomes in the past. In a few decades, we might see new forms of low-cost air-conditioning at the same time as cheap electricity from fusion or Gen IV nuclear power. And more generally, eighty years is a long time in which to figure out how to beat the heat. Humans are good at solving problems they can see coming for decades. The smart money says fewer people will be dying from the heat in eighty years, even if temperatures rise as predicted.

## $CO_2$ Scrubbers

Climate change skeptics remind us loudly and often that $CO_2$ is good for plants, and science agrees. Greenhouses use $CO_2$ generators to improve plant yields. The big question is how much $CO_2$ is too much, warming-wise or otherwise. I'm not qualified to address that question, so for our purposes here I will describe some technologies under development for cleaning $CO_2$ out of the air. I take it as a given that, should we become so good at removing $CO_2$ from the air that the plants start gasping for it, we will see that problem coming with plenty of time to avoid overshooting the mark. No matter what you believe about the dangers of $CO_2$, it can't hurt to have technologies that can scrub it out of the air should we feel it is necessary. Here are some things coming our way.

## Carbon Engineering

Carbon Engineering is a Canadian company funded in part by Bill Gates. They report having a breakthrough technology for scrubbing $CO_2$ out of the air and converting it to a type of jet fuel. Their technology already works in a pilot plant, and their big claim is that they have reduced the cost of the process to the point of being economical.

One must be appropriately skeptical of any claims coming from new companies and new technologies. But Bill Gates's involvement suggests the company's ambitions are solidly in the not-so-crazy category.[7]

## Climeworks

Climeworks is another company working on scrubbing $CO_2$ out of the air using giant air-sucking engines and controlled chemical reactions. The company can build these relatively small facilities today, but obviously at a higher cost per unit than if they were implemented on a larger scale. And one assumes the efficiency will

improve over time. Adding some cheap nuclear energy to the cost structure would help a lot.[8]

## CarbFix

CarbFix is a project run by an international consortium, led by Reykjavik Energy and with funding from the EU. They claim to already be able to scrub $CO_2$ from the air and store it permanently in rocks. Here again, we must be skeptical about the economics of this sort of thing. But with multiple projects operating to scrub $CO_2$ out of the air, and an assumption of improved efficiency and lower cost per unit over time, this could be promising.[9]

## Global Thermostat

A company named Global Thermostat has developed technology for using the heat generated by existing industrial processes, such as metal smelting, cement production, and petrochemical refining, to collect $CO_2$ out of the air. The $CO_2$ can then be used by indoor farms, in oil well rejuvenation, and to make carbonated drinks, for example.

Now imagine using inner-city land that has been cleared of blight and is available at almost no cost because cities own the foreclosed land and want to use it productively. There are tens of thousands of blight-cleared urban properties available across the country. Now imagine you build a data center that generates lots of excess heat and put it next to an indoor farm. Use that excess heat for the indoor farm in the winter, and perhaps also use the heat to warm sidewalks and parking lots so they don't need to be shoveled. Then add the Global Thermostat technology to use the heat from the data center to generate $CO_2$ for the connected indoor farm. Greenhouses already pipe in $CO_2$ because it is essential for healthy plant growth.

I won't claim this particular idea is a winner, but it might help you see how unpredictable the future is. Humans have an exceptional track record of solving big problems they can see coming

from a long way off. And a "systems approach," in which you design neighborhoods and businesses to work in harmony with each other, has tremendous potential for solving a wide variety of society's problems.[10]

## Strata Worldwide

Strata Worldwide also makes a stand-alone commercial product for scrubbing $CO_2$ out of the air.[11] By now you get the idea. Capitalism is doing its thing.

---

I'M NOT QUALIFIED to compare any of the $CO_2$-scrubbing technologies, or to predict which, if any, will be commercially successful. But I liken this situation to the dawn of personal computing. In those days, you couldn't easily predict which companies would come to dominate the market for personal computers, but you could predict with confidence that personal computers were here to stay, and that they would improve dramatically over time. Given the high priority of climate change, and the huge amounts of money that will be funneled in that direction, an optimist such as myself would predict that direct scrubbing of $CO_2$ from the air will be economical and scalable in time to make a meaningful difference in $CO_2$ levels on the planet.

In February 2019, Energy Secretary Rick Perry announced $24 million in funding to support eight identified projects in the field of carbon capture. We can't know that any of those projects will succeed, but the energy and attention being applied to carbon capture tells us that plenty of smart people see this as potentially productive.

## END OF UNEMPLOYMENT

Most futurists see a world ahead in which robots take all the low-skilled jobs, and even many of the high-skilled jobs, creating massive unemployment. That's one way the future could go, but humans are plucky and adaptable, especially when the problem is so clear and we all agree it's coming. The robot-caused employment crisis is easy to see coming, and I observe some helpful trends that could save us from runaway unemployment.

The first trend is that we are likely to see big innovations that could lower the cost of living. I predict big strides over the next two decades in lowering the cost of healthcare, transportation, energy, education, Internet access, and housing. And that means lower-paying jobs will be sufficient for enjoying a quality life.

I've mentioned that energy costs could drop fast when fusion or Gen IV nuclear power becomes doable. And the energy industry keeps improving its efficiency in every domain. New homes with efficient solar panels and lots of green construction methods will approach zero-net-energy use, on average, in the coming decades.

Self-driving cars will someday make individual car ownership unnecessary. The cost of owning a vehicle could be spread across multiple families as efficient ride-sharing apps are developed. And self-driving cars will be almost accident-free, which means insurance costs will eventually drop.

Education will continue to move online and improve in effectiveness, and that means the cost of training workers will drop. It will soon be practical and easy to retrain unemployed people.

As I mentioned earlier, I've been looking into low-cost home construction trends, and there is a lot happening in that field. The next five years will see inexpensive homes built by 3-D printers, robots, and even homeowners doing construction themselves using snap-together kits.

Collectively, these trends suggest that a worker who loses a high-paying factory job to robots could have a perfectly good lifestyle on half the income working at a different job. That might require relocating from an expensive location to one that has been developed for low-cost living, but that can be done.

Low-cost living is also critical for senior citizens on fixed incomes. That demographic can't rely on the government to tax its younger citizens enough to give everyone a safety net forever. As an optimist, I expect capitalism to do what it does best: namely, identify a market opportunity and rapidly innovate to create low-cost living options.

The biggest advantage job seekers will have in the future is the ability to find work anywhere in the country—or perhaps in the world—and move there on demand. At the moment, physical mobility is deeply limited for people who have no money. But you can expect normal continuous improvement in that area, just as we see in every other field. Future employers are likely to offer job relocation solutions for low-income people, including better matching of people to jobs, video interviews, inexpensive transportation, and low-cost housing upon arrival. For companies to do otherwise would mean not having access to the best workers.

I also predict a massive job market for renovating existing buildings to make them more energy efficient and more suited for modern living. Robots will soon be able to build new homes by following directions, but they will have a tough time navigating all the decisions that go into a renovation. The renovation market should produce an increasing number of jobs for humans for a long time.

## HEALTHCARE INNOVATIONS

The healthcare field is too massive to cover in this sort of book, but we see incredible breakthroughs happening in every area. I'll describe a few trends that promise to lower the cost of healthcare, which addresses one of the biggest problems in the United States.

### Telemedicine

My healthcare provider was one of the first to allow patients to do doctor "visits" by email. About 80 percent of the time I get a full

solution, including drug prescriptions, within an hour of emailing my doctor. Other healthcare providers are offering similar services. Using email obviously lowers the cost of doctor visits while being more convenient and efficient at the same time.

If email isn't fast enough, or you want a more personal touch, you can now contact a doctor on short notice via a video call on your phone, at a discounted cost to an in-person visit. For people with no healthcare insurance, this is often a big money saver compared to visiting an emergency room for something that isn't an emergency. My startup's app, called Interface by WhenHub,[12] is one of a growing number of platforms for connecting to doctors (and any other kind of expert) by video call. By the time you read this book, I expect the number of telemedicine options will be far greater.[13]

## Smartphone Health Tests and Lab Tests

Devices for testing your health are shrinking in cost and size and becoming consumer products. Startups are making smartphone accessories that can test your urine, blood, blood pressure, hearth rhythms, temperature, and blood oxygen, to name a few. You can even diagnose your own mole. By the time you read this book, I expect startups will have announced dozens more inexpensive health sensors that work with your phone.

I've invested in startups that use technology recently developed by government military labs to test skin and blood samples on tabletop devices in the doctor's office and give results in minutes. That eliminates a lot of the cost of sending samples to labs. Meanwhile, medical lab startups are looking to disrupt the lab-testing business and dramatically bring down costs. All indications are that the cost of lab testing—at least for the most common tests—will plummet in coming years.[14]

## Innovation and Technology

In 2018, Berkshire Hathaway, Amazon, and J.P. Morgan teamed up to create a better healthcare solution, at a lower cost, for their U.S. employees.[15] That effort is in its early stages, but it looks like it is the right team to innovate and attack some of the toughest cost problems in healthcare. You can expect some or all of the innovations they come up with to eventually benefit the country at large. Amazon's expertise in online selling, data management, and efficient delivery are the obvious places to expect improvement. But I would expect far more from this team. I don't believe a more qualified and well-funded group has ever focused on the problem of healthcare expenses.

## MRI Scanners

In the United States, MRI scans are expensive procedures, costing anywhere from a few hundred to a few thousand dollars, depending on the type of scan. Newly developed technologies for making MRI scanners are expected to lower the cost of the devices by half. This is part of a larger trend of startups targeting high-cost medical device markets and building low-cost devices to compete.

## Removing Regulatory and Legal Obstacles

The healthcare situation in the United States is burdened by a tangle of rules and regulations that have evolved over time to choke out the benefits of free markets and competition. One assumes that healthcare lobbyists, the natural complexity of the topic, and an inefficient government are the base problem. But there is reason for *some* optimism, as the Trump administration is making a major push to modify federal laws and processes to improve competition in all areas of healthcare. It is too early to know how all that will shake out, but efficient market competition is generally good for consumers.

We might also see some benefits coming from the competition among major political parties in how they propose to address healthcare. Democrats want some sort of taxpayer-funded universal healthcare while Republicans favor improving market competition to increase access and affordability. From a political perspective, the Democrats have the stronger case because their plan is easy to understand and the average voter isn't concerned that the rich will be overtaxed to pay for it. Here I am intentionally oversimplifying, because that's how voters will see it.

Republicans are in a weaker political position on healthcare because their preferred approach of improving market competition probably sounds to voters like vague promises. And it is hard for Republicans to get credit for changing laws and regulations that voters didn't know were problems in the first place. Still, I expect Republicans to push hard at streamlining regulations and laws to defend against the Democrats' plan for universal healthcare. They need to show concrete results from their policies. Competition is good, even in politics.

## Big Data

The more we know about the everyday choices and health details of individuals, the better equipped we will be for understanding which actions improve health and which ones do not. As a country, we already collect massive data from fitness sensors, personal apps, DNA tests, and healthcare records. The usefulness of that sort of data starts small but increases rapidly as you add data. I'll give you a few examples to make the point, but don't put too much stock in the specific examples. I'm making a broader point.

For years I had been taking one baby aspirin every night before bed because doctors said it could help me survive a heart attack. But a recent study found that older people who do not have any special cardiovascular risk get no benefits from the aspirin and, on average, it might slightly increase your risks of other health problems. At the moment, we can only learn this sort of correlation (if not causation)

by funding studies. But at some point in the near future, we might have enough patient health data in one database to know whether or not the aspirin takers have longer or shorter life spans, all other things being equal. Broadening the point, the more we know about people's actions and health outcomes, the easier it will be to find out what *combinations of things* are good for you.

As I write this chapter, I am on a working vacation at a site 8,300 feet above sea level. I am told by one of the staff at the hotel that about half of the people who come here will experience flu-like symptoms from the altitude, for a day or two. Wouldn't it be useful to know what makes some people experience those symptoms and some people not? Do we differ in DNA, or in lifestyle, or weight? If I knew I was in the half of the population likely to have bad symptoms (which I did), I could have spent a day in the town halfway down the mountain to acclimate before going higher, which I learned is a common practice here.

My examples might be unimpressive, but the larger point is that with enough data on people's health and actions, we can unlock enormous healthcare value. The potential for saving money by having better patient data is enormous.

## Medical Breakthroughs

Medical science has moved forward for centuries, but in recent years the pace of that change is accelerating. We're seeing breakthroughs in gene therapy, stem cell therapy, cancer treatments of all kinds, and vaccine delivery systems, to name a few. Some of our most horrible and expensive medical problems will soon have routine fixes.

If your body were an automobile, we are leaving behind a time in which all you could do for upkeep was to add gas and rotate the tires, and we are entering an age in which we can rebuild every part from scratch. The changes we already know are coming are not incremental in nature. They are game-changers.

The trends I've mentioned above have the collective effect of lowering future healthcare costs dramatically. New healthcare solutions for things we previously couldn't treat will add to healthcare costs, but that trade-off is acceptable for solving previously unsolvable problems.

## RACE RELATIONS

If you make the mistake of paying attention to the news, you might think race relations in the United States have deteriorated to an alarming degree. I believe that is mostly an illusion caused by the business model of the press. Bad news sells, and bad news about the Trump administration sells better than anything, according to CNN boss Jeff Zucker. The fire hose of biased news coverage blinds us to any positivity we might otherwise notice.

My favorite example of that was when the press hammered President Trump for what they claimed was his habit of criticizing African-American women. This, they said, was clear evidence of his alleged racism and disrespect for women. The president did criticize several high-profile African-American women within a few weeks, and that was enough to create a pattern in the mind of the president's critics. What they left out of their analysis was that President Trump insults 100 percent of his critics, no matter what demographic group they are in. The very next week he was tweet-slamming several white males, and anyone else who needed it.

My interpretation of this situation was that the reason so many black women were being targeted by the president was because those women were extraordinarily successful in their careers—so much so that the president of the United States had to address their criticisms. The women Trump criticized were playing the blood sport of politics at the very highest level. One of the greatest success stories in race equality you will ever see was widely reported as the opposite. If the president of the United States is attacking you for your criticisms, you're doing a lot right in your career.

The week I was writing this chapter, President Trump tweeted that his fired secretary of state, Rex Tillerson, the former CEO of Exxon, was "dumb as a rock" and "lazy as hell." Old, rich white guys are not safe from the president's counterattacks. The proper context here is that Trump attacks anyone who attacks him first.

Personally, I found it inspiring (and I mean this literally) that so many African-American women had achieved the same target value as Rex Tillerson. A lot of black women in America are experiencing sensationally successful careers, and that is a deeply positive sign.

I live in California, and I won't pretend my experience is typical of the rest of the country. But from my perspective, race relations on a person-to-person level are better than ever. There is more interracial marriage, historically high employment rates for all minority groups, and a generally improved comfort with each other as friends, mates, and neighbors.

If it seems to you there are more racist groups in the country lately, keep in mind that the people who track those things, such as the Southern Poverty Law Center, are paid to find it. If you pay me to track the number of racist groups in the country, I'm not going to skip the three guys in South Dakota with a website they made all by themselves. If you pay someone to find ghosts and eradicate them from your home, the service you hire will probably tell you they found those ghosts. Don't trust data from people who have a financial incentive to find lots of whatever it is you are tracking. And never, ever believe the bad news you hear in the press is as bad as they say when there is a political dimension to the story, because in those cases the press is generally just taking sides.

If you see an increase in racism in your daily experience, that is a big red flag and you should not ignore it. But if the only place you see an uptick in racism is on the news or as reported by groups paid to find a lot of it, maintain some skepticism. In my opinion, based on living for several decades, racism in America has declined every year of my life. And next year looks good too.

—

IN SUMMARY . . .

In this chapter, I've tried to frame several global challenges as being not as scary as you originally thought. You can disagree with my optimistic opinion in a number of places, and I'm sure you will, but that would still leave enough of my examples to make you wonder why you were worrying as much as you were.

---

**The business model of the press guarantees you will see more negativity than the facts support. Things are often better than they seem, especially in the long run.**

---

As I mentioned earlier, fear is a great motivator, and when humans fear something, they get to work trying to solve the problem. In my optimistic opinion, our current biggest problems are likely to go the same way as our past biggest problems—meaning we'll figure out how to deal with them.