

Demographic Doom

Why the World is Falling Apart

A book in progress by Glenn Campbell

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Abstract: The greatest threat to humanity is not climate change, nuclear war or Donald Trump. It is disruptive changes in the structure of human populations. A book by Glenn Campbell

Introduction

Repent now! The end is near!

A massive worldwide economic crash is coming. When it happens, many institutions, utilities and government structures will stop functioning. After the initial shock, humanity will face a long chaotic period—maybe even a new dark age—where nothing seems to work. Many of the foundations modern society has been built on will crumble. Politics will descend into chaos as governments struggle to provide even the most basic services. People who once saw themselves as middle class will scramble to stay alive. With local economies in shambles, vast waves of desperate refugees will overwhelm the few islands of safety. All of these things are preordained. There is little we can do to stop them.

I'm not the first to make such claims. Crackpots have been predicting the end of the world since the beginning of the world, so why should you listen to me? Maybe I'm a different kind of crackpot, backed up by a credible system of data and logic. I could be delusional, but at least it's a well-constructed delusion. If nothing else, you can see my theories as an intellectual challenge: "Figure out how this guy is wrong."

To be clear, I'm not actually predicting the end of the world. Planet Earth will not stop spinning and humans will not vanish from it. Instead, I foresee a massive economic catastrophe I call the *Great Reversal*. It

will be like the Great Depression but much, much worse. Millions will starve. (I mean millions more than are starving now.) Many previously solid institutions will cease to function, like banks, utilities and many government services. Around the world, economic growth will be a thing of the past. “Contraction” will describe the world economy far into the future.

In simplest terms, the world will be brought down by a debt crisis. Governments, corporations and individuals have accumulated too much debt, which probably isn't news to you. What might surprise you is a different kind of crisis unfolding quietly in the background that is colliding with the debt crisis to guarantee a truly cataclysmic collapse.

The hidden crisis is this: Most countries of the developed world are on the cusp of dramatic population loss, thanks to a decades-long fall in birth rates. When these countries start losing population, as some already have, or their workforce merely plateaus, economic growth cannot be sustained and any illusion of paying down their debt will vanish. When investors realize the government bonds they hold are dubious, interest rates will rise, increasing the cost of the debt and making it even less supportable. As confidence wanes, the crisis will accelerate; panic will set in, and the whole house of cards will come tumbling down.

“But wait!” you say, “What population loss?” Isn't the world suffering from a population explosion? In the 20th Century, the total world census rose from about 1.6 billion to over 6 billion, and it is now on the road to 8 and 9 billion. How can I claim populations will shrink?

The population explosion is an illusion. It no longer exists. Only a

handful of underdeveloped countries can still claim to be exploding. They are mostly in Africa, largely isolated from the rest of the world, and even their birth rates are slowing. Most developed countries are suffering from a baby shortage. Since the 1960s, their birth rates have plummeted, to the point where they are chronically below the number of babies needed to sustain their populations.

The total population of most of these countries continues to grow due to a statistical phenomenon known as *demographic momentum*, which introduces a time lag into the process. When the birth rate falls, the total population doesn't necessarily fall until the people from the previous high-birth period start dying of old age. As the boom generation retires and eventually passes on, the total population will stabilize and then decline, like reaching the top of a roller coaster. Once a population starts falling, it will do so at an ever-accelerating rate until the downward trajectory roughly matches the upward trend in the population explosion years.

And the decline will continue for the rest of the 21st Century! Even if birth rates were to suddenly rise, it will be decades before the total population starts to recover from its downward plunge. That's the other side of demographic momentum: Once population starts falling, it will continue to do so for years regardless of current birth rates.

As the population of a country falls, especially the number of working-age people, total economic output must also fall. Quite simply, you can't have the same level of business activity if you don't have as many workers producing things and consumers buying things. Total tax revenues will drop, but the outstanding debts of the country will not

decline accordingly. Those debt numbers are already fixed, like expenses already charged to your credit card. If a country's high debt load was dubious even in the boom times, it will be absolutely unsustainable when the economy shrinks.

Voilà! There you have it. The perfect storm. Since population is certain to decline in most developed countries, government default on national debt is inevitable. Not every government has unsupportable debt right now, but when the big ones fall, especially the United States, Japan and Britain, the economic vortex will take everyone else down with them.

This worldwide default is non-negotiable. It will happen regardless of what we do today. Even if the political will could be found to pay down national debts, it can't be done fast enough to match the loss of productive taxpaying workers. Although lack of babies is the core problem, it would not stave off collapse if every developed country suddenly produced a lot of them, because those babies won't generate any significant tax revenue for at least twenty years. Until then, children are a burden to the economy, not a benefit.

Other processes are exacerbating the world's demographic decline: Weaker countries are being drained of life by the flight of their talent. Stronger countries, although benefitting from this flight, are nonetheless being crushed by the pension and medical burdens of their aging populations. Many countries in Africa continue their population explosion, pumping instability into the rest of the world. Meanwhile, human procreation worldwide continues to favor the least successful members of society, who are likely to have more babies than the most

successful. These issues are longer-term concerns than the debt crisis, but they won't go away. They will have to be dealt with if humanity is going to survive.

If governments collapse under their obligations and the worldwide economy dramatically contracts, much of our current civilization is under threat. Most of the infrastructure we now rely on is incredibly complex and depends on a high level of economic activity, technical expertise and government support, which all hinge on a presumption of unlimited growth.

For example, do you know where your data is? All those videos, family photos and business records you have uploaded to the “cloud” might not survive if revenues dry up and providers of those services can't afford their electricity bills. Electric utilities, in turn, can't function if big clients shut down and income falls below the threshold needed to maintain their complex technical systems and service their own high debt. When a natural disaster strikes, like an earthquake or hurricane, many weakened utilities will never be restored because they have no resiliency left.

For lack of a better analogy, the Great Reversal will be like the collapse of the Western Roman Empire but a whole lot faster. When Rome fell, life on Earth didn't cease, but Europe's underlying structure disintegrated. There was no one to maintain the roads, aqueducts or public order. A lot of investors—or the ancient version of them—lost everything. After the fall, the exercise of power became more brutal as local tribes vied to fill the vacuum the Romans left behind. In the end, Europeans built new societies even more sophisticated than Rome's, but

it was a long, painful road getting there.

I've never seen myself as a Prophet of Doom, and I hope I'm wrong. I rather enjoy our current empire, and I would never wish upon the world the turmoil and outright starvation the Great Reversal implies. Still, when I run the numbers and walk through the logic, I see what I see, and I haven't found a way to discount my conclusions. I am writing this book to give you the opportunity to refute me, and I certainly hope you can.

I may be delusional or a crackpot, but one thing I am not is a conspiracy theorist. There are no conspiracies in the collapse of populations, except perhaps when one ethnic group tries to exterminate another. There are only individuals pursuing their own interests, multiplied by millions. Intentional malice is no more significant here than in the rise and fall of the tides. It's just water molecules doing their thing under the influence of the moon's gravity with no intelligent control or sinister intent. A lot of foolish and short-sighted government decisions may have led us to the Great Reversal, but there was never any deliberate plan to screw things up.

I am also no salesman. I'm not peddling doom to try to get you to buy gold or Bitcoin or invest in my Ponzi scheme. At the moment, I'm not even asking you to buy this book. (It's free to read while under construction.) I'm peddling doom because I think it's true. If I'm wrong and my theories don't pan out, I'll be happy to play the fool to save the planet. If I'm right, I have no reason to be happy, because no one would wish this catastrophe on anyone.

I can't tell you when, where or how the Great Reversal will occur. I

can only tell you why. It has to do with numbers. A major portion of the world's destiny is determined by the raw number of people in the various countries and subcultures of our planet, along with their age and gender and how these groups are changing. The study of these numbers is called demography. It is a seemingly dull field mainly concerned with counting people and sorting them into categories.

I used to have little interest in demography. Now I think it's the most important field in the world.

1. The Horror

Motel 6, Wytheville, Virginia

2 am

Today is October 30, 2017, almost one year since the election of Donald Trump as President of the United States. This was an appalling and transformative event to me, and maybe it was for you, too. For any intelligent soul, this political tragedy seemed on par with the assassination of John F. Kennedy or the attack on the World Trade Center—something that stops you in your tracks and makes you wonder if the world is falling apart. I asked myself, “Is there any hope for humanity?” and “How could so many voters be so stupid?”

The morning after the election, traumatized, I set out on a personal quest to find out what the hell is wrong with the world. This year-long intellectual journey drew me into a field of study that was never previously on my radar: demography. This was a dry, mathematical discipline that seemed mostly concerned with counting people and sorting them into categories. I wanted an explanation for the election of Donald Trump, and this field gave me some answers.

They just weren’t the answers I anticipated. It turns out I was asking the wrong questions. I thought the problem was Donald Trump,

but it isn't. The greatest problem facing modern society is a fundamental change in human populations and how they are structured. For one thing, humanity is a lot older than it used to be, meaning that the relative number of young people rapidly dwindling. The aging of our society may have helped Trump win, but it is also triggering dire economic effects that dwarf the damage any president can do.

If you want to understand the state of the world at the highest level, like aliens approaching from outer space, you have to take up demography. There are plenty of serious perils facing our species, like global warming, military aggression and the rise of malignant nationalism, but demography rules them all. Demography is the study of human populations and their distribution. It's a story of hard numbers that are largely beyond doubt leading to equally solid conclusions. If you want to know what causes global warming, political dysfunction or economic change you have to factor in the population and its characteristics. The impact on the planet of any human activity is intimately tied to how many people are doing it, their age and economic status and how long they can be expected to live.

At the beginning of my investigation, I thought I could explain Trump voters with Darwinism. Throughout most of human history, survival of the fittest meant that the cleverest and most socially successful humans were most likely to produce surviving offspring. This selection process, over millennia, accounts for our prodigious intellect. In recent times, however, the formula has been reversed: less successful members of society are now producing more children than successful ones. In modern societies, the wealthy, educated and responsible tend to

have fewer children than those who have trouble competing. If you believe humans evolved from apes, you have to accept that evolution is still going on and that who breeds with whom has a profound effect on the future of our species. Stupid people procreating faster than smart people inevitably means more stupid voters easily duped by populists.

Unfortunately, demographic data didn't support my theory. Statistically, Trump was elected more by older voters than younger ones. In my "reverse Darwinism" scenario, the degradation of the electorate would have started during the birth control revolution of the 1960s, because that was when the birthrate for the most successful parents fell off a cliff. Trump voters, however, were largely born before this time, during the Baby Boom of the 1950s when educated parents still had a lot of babies. I can't claim, therefore, that poor breeding accounts for Trump voters, at least in comparison to earlier elections.

It may indeed be true that the genetic quality of the human population is deteriorating in the long term, but demography reveals a different crisis that is far more dire in the short term. The *quality* of human offspring is less significant right now than the *quantity* of them. The immediate challenge to our civilization is the impending shift from a growing population to a shrinking one. Before we can talk about the competence of the children we are producing, we have to deal with the looming disaster of there simply not being enough of them to support our current economy and government.

Although Trump started my inquiry, I am eager to leave him behind. Now that our Demographic Doom has come into focus, I see Trump as a distraction from more important issues. He is certainly a

catalyst that could make a demographic catastrophe happen sooner, but he did not create the underlying conditions for it. The main threat to the U.S. government—and most governments in the developed world—has been set in place for decades, tracing all the way back to the birth control revolution in the 1960s. Once humanity discovered sex without babies, the stage was set for an inevitable crisis 50 years later.

Since I am writing this only one year into the Trump administration, I have no idea how this sordid soap opera will end or what damage it will do. As a reader in the future, you may already know. My concern, however, is that by sucking up all the attention, Trump may have diverted us from more important things. There would have been a looming demographic crisis even if Hillary had been elected, and I'm not sure that she could be addressed any more effectively. The coming catastrophe, as we will see, is virtually unstoppable, and there could actually be some merit in having it happen sooner rather than later.

Apart from a few passing mentions of current events, I promise this will be a Trump-free book. If nothing else, Trump news has a very short shelf life, so anything I say about him could be obsolete before I finish this manuscript. More importantly, he isn't relevant to the story I want to tell. President Trump is certainly a catalyst who could bring disaster upon us more quickly, but he is not the cause of our demographic woes. For that, we need to go back half a century to a time when no one had heard of him.

2. Not Enough Babies

The invention of reliable birth control in the 1960s was one of the most significant events in the history of our species. Suddenly, people in love could *choose* to have children, not simply have them as a matter of course. At the same time, society became more egalitarian. With mastery over their own fertility, women became liberated from the kitchen and nursery. They won the right to pursue their own careers. While this was undoubtedly good for women, who deserve full citizenship, it was bad for society in one important respect: The women pursuing careers stopped having babies.

They are still having them, of course, just not at a rate sufficient to sustain the population of their countries and subcultures. Modern women just don't have the time. If a woman chooses to become a doctor, she must devote almost half of her prime childbearing years to her own professional education and training. It is difficult to raise a child while earning a degree, so most students put it off. There is barely a 30-year window in which a human female can produce babies naturally, so missing 10-15 years is significant. Once our doctor is established in her career, she can think about children, but even then there are forces working against procreation, like finding the right partner or just the damn inconvenience of it all. The fact is, raising children is incredibly

costly—both in money and lost opportunities—and as long as it is an optional activity, busy people will inevitably choose not to.

The net result, at least in the developed world, is that overall population is leveling off and is poised for a dramatic decline. This will have all sorts of disastrous societal effects, the most important of which is the end of economic growth as we know it. For the past half-century, the plans of industries, governments and individuals have hinged on the assumption of unlimited market expansion. Our economy assumes there will always be houses to build, stores to open and ever-rising tax revenues to collect. Now that population is peaking, overall economic growth can no longer be sustained, and our optimistic commitments are destined to fail.

Failure is likely to be catastrophic because individuals, governments and businesses have taken on too much debt and there is no easy way to escape from it. Debt freezes in place our rosier projections and assures an ugly cascade of events if they don't come to pass. For example, if you take out an ambitious mortgage based on your hope of a rising income, and your income instead falls, you may have to default on your mortgage and lose your home. This is a lot more devastating and painful than if you had never bought the home to begin with. If everyone defaults, then everything collapses, including most of the services we now take for granted.

The most dangerous debts are held by governments. The world's largest debtor, the U.S. government, now owes investors roughly 100% of the country's total Gross Domestic Product. If growth in GDP slows, tax revenues will stagnate, and government debts will eventually become

unpayable. Under any plausible future scenario, U.S. debt can only grow at an ever-faster pace until the government can't even pay the interest, let alone reducing the principle. Sometime in the not-so-distant future, the U.S. government will be forced to default on all or part of its debt, with devastating effects to the world economy.

Much about the future is unpredictable, but it is hard to argue with demographic predictions, which are often as certain as the setting sun. If you don't have enough babies today, your population is eventually going to fall, and if your population falls your economy can't grow and you can't service all the debts and obligations you entered into when you thought your population would grow forever. Furthermore, if birth rates remain low, the average age of the population will continue to rise. As old people retire, there won't be enough remaining taxpayers to support their pensions and health care. There isn't much mystery about this. Nearly all economists can see the pending old-age crisis. The only mystery is how it will ever be resolved.

When birth rates started falling in the 1960s, it gave society a temporary economic boost. There were more women in the workplace and fewer children to take care of. The resources once used for raising children could now be applied to other things, like bigger homes, better lifestyles and vast leisure industries that hardly existed previously. The statistical phenomenon of more workers and fewer "dependents" like children and old people, is known as the *demographic dividend*. This happy confluence helped power the astounding economic growth of the late 20th Century. Compared to the past, First World societies had relatively few children and elderly and an abundance of working-age

adults generating economic activity.

Unfortunately, the demographic dividend can only happen once. It energizes an economy for only the first half-century following the shift from high birth rates to low—that is, roughly from 1965 to 2015 in the United States. Starting around the time of this writing (2017), the developed world is entering a new phase that could be called its *demographic deficit*. In this period, there is an excess of ailing old people and not enough working-age taxpayers to support them. The immediate fiscal crisis of modern governments is that too many retirees are drawing on government benefits without enough active workers paying taxes to support them. Unlike the demographic dividend, the demographic deficit can be permanent. As long as fewer children are born than are needed to sustain the population, the number of old people will always be bloated relative to active workers.

There are a lot of things we don't know about the future, but demography provides some absolute boundaries within which the future must take place. For example, we can say with certainty that the total size of the workforce will shrink in developed countries based solely on the number of old people approaching retirement age and the number of children already born. Most developed countries have too many old people and not enough young people, so when the old retire and die, as they are scheduled to do, there won't be enough young to take their place.

There's no rocket science here. No gazing into a crystal ball. It is more like counting ping-pong balls where each has a limited lifespan. Because the production of new balls has been greatly reduced over the

past half-century, there is no mystery about the eventual outcome. First, developed countries will start losing population, then the whole planet will do so. All the while, the proportion of old ping-pong balls will grow ever larger relative to young ones. As the old ones lose their bounce, the young ones will be unable to support them. This deteriorating pattern is all but certain over the next half-century no matter what we do now. In coming decades, wars and pandemics may prematurely kill adult ping-pong balls, and migration may move them around, but nothing can magically create them if they were never born.

Population doesn't explain everything about human history, but it provides the platform for it. The science of demography, had it existed in the Middle Ages, couldn't have predicted the Black Death, but it might have predicted that similar pandemics were likely, given the gathering of humanity into squalid towns and ever-larger cities. Demography explains how the dynamite is gathered and stacked. It can't predict the spark that will set it off or how the explosion will unfold.

"Demography is destiny," the demographers say, which must make them feel like gods sometimes. These gods, however, are largely powerless. They can see the freight train barreling toward the washed out bridge, but there's little they can do to stop it.

3. Doomsday Apologies

Before delving further into my Doomsday theories, I want to apologize for all the doomsayers who came before me whose predictions didn't pan out. Bad things were supposed to happen and didn't, or bad things did happen that the doomsayers never warned us about. As a peddler of apocalypse, I have to admit my field is rife with charlatans, fantasists and pseudo-scientists. The main difference between them and me, of course, is they're wrong and I'm right.

Just a few days ago, the hidden planet Nibiru was scheduled to collide with our own. Nibiru is undetectable by conventional astronomy, but certain psychics, ufologists and numerologists claim to know its trajectory. If not a direct collision, our encounter with this dark planet was supposed to be a near miss, triggering massive earthquakes and volcanic eruptions. The tragic event was predicted to occur this past Sunday. Today is Tuesday and still nothing. I must say I'm disappointed and embarrassed. Faulty predictions like this are giving all of us in the business a bad name.

The granddaddy of all doomsayers is a biologist named Paul Erhlich. In 1968, he released a book called *The Population Bomb*, the seminal work alerting the public to a supposed population explosion. Among other things, Erhlich predicted massive famines in the 1970s in

which hundreds of millions would die. A worldwide food shortage would drive up prices, and death rates would rise astronomically. None of these things happened. There were a few local famines that reached the evening news, but they were generally caused by civil wars and were nowhere near the global scale Erhlich predicted. Meanwhile, food prices actually *dropped* in the 1970s and 80s as industrial farming made staples more plentiful. Instead of death rates rising, they fell dramatically, as people around the world lived longer thanks to improved nutrition and healthcare.

Erhlich failed to take into account the enormous impact of birth control and people's willingness to use it when available. In essence, he declined to acknowledge free will and the capacity of humans to pursue their own economic self-interest. He assumed, as Darwin or Malthus would, that any humans given the opportunity would breed like rabbits, but it turns out the opposite is true: Given the option, people will voluntarily curtail their own breeding. Even where populations are still exploding in Africa, the chief reason is lack of access to birth control, not an unwillingness to use it.

Erhlich is still alive and is still preaching the same sermon, seemingly impervious to the fact that births in most countries have long ago fallen below replacement. "Overall, *The Population Bomb* was probably too optimistic," he said in a 2008 interview in *Mother Jones*.

That's the power of fanaticism. When a typical doomsayer predicts the End of the World on a certain date and it doesn't come, he just pushes the date back or ignores the new data. In *Mother Jones*, Erhlich answers every question as though it was 1968, never acknowledging the

dramatically falling birth rates in most of the world.

Erhlich taught me the first rule of successful doomsaying: Never make your predictions too specific. I am boldly predicting a massive worldwide economic crash bigger than the one that sparked the Great Depression, but I'm not saying when it will happen or how it will unfold. It could be tomorrow or it could be ten years from now. This gives me some breathing room. Maybe there's a stock market crash tomorrow and it doesn't trigger a worldwide debt crisis. In that case I can say, "This is only a foreshock. The Big One is yet to come."

Doomsayers tend to take today's trends and extrapolate them in a straight line into the future. If world population doubled in the fifty years between 1967 and today, it is reasonable to assume it will double again in the next fifty. That's a reasonable assumption, but it happens to be wrong. It is impossible for the world population to double in the next half-century, simply because there are so few young girls currently on Earth. You need wombs to make babies, and we don't have enough of them in the pipeline.

Doomsaying should carry the same disclaimer as mutual fund investing: "Past performance is no guarantee of future results." Humans, however, invariably believe it is. We are linear-thinking creatures, and this is one of the reasons so many Doomsday predictions have been proven wrong. The real world rarely progresses linearly for very long. Reality is full of complicating factors that are bound to interfere with any straight-line projection, and those factors are so numerous and complex that you never know how the line is going to move. That's why it's so hard to predict the weather more than a couple of weeks in advance.

Weather is a complex system of many interacting factors that rarely evolves linearly.

You can't predict the weather years from now, but you *can* predict the climate, or at least certain bounding limits of it. For example, we know that almost anywhere in Europe or North America, January is going to be colder than July, even if we can't predict the exact temperature on any given day. That's the sort of prediction demography can give you. It can't tell you exactly what will happen and when. It can only define the boundaries within which those events must be contained.

Demography's most reliable predictions concern maximum population size. If your country is producing too few babies today, it is going to place some hard limits on the number of adult workers decades from now. Demography also predicts, without much controversy, that humans will grow old. It can't say how long they will live, because that depends on medical science, but aging is a certainty. The only sure thing about getting old is that it will be costly. Old people stop paying taxes and start demanding pensions and medical care. If there are significantly more old people than young in your country, as demography predicts, the cost of supporting them will drag down your economy and tax revenue.

Based solely on how many people of each age group are alive today, we know with great precision the maximum size of our workforce 20 years from now and the likely number of old people decades later. All of this adds up to some very bad news for the economies of the developed world, which generally assume there will be more future growth than their populations can support.

4. The Debt Bomb

At the time I write this (late 2017) the American economy seems to be chugging along just fine. U.S. stock markets rallied when Trump won the election last November, and they have been bullish ever since. Unemployment, inflation, market volatility and interest rates are low. Consumer and business confidence is high. These positive factors in the U.S. are generally mirrored throughout the world. Investors around the globe seem optimistic, almost giddy, about the long bull market since the Great Recession. What would make anyone think a catastrophic collapse is coming?

Because current conditions are irrelevant. What matters are the tensions building up below the surface, like stress accumulating on an earthquake fault. The lack of a recent earthquake doesn't mean it won't happen. In fact, the more time goes by without one, the more severe it is likely to be.

In the United States, the main stress is not a shrinking population, which isn't close to happening yet. The tectonic stress in America is the retirement of the Baby Boomers, the huge population born after WWII who powered America's economic rise. They are now retired or retiring and are shifting from being an asset to society to a burden. Instead of generating tax revenue, the Boomers are demanding social security and

medical care, which the government has promised them but can't afford. One theoretical solution would be to drastically reduce these benefits, but these people form a powerful voting bloc and probably won't go along with any reduction. Instead, the shortfall just gets charged to the national credit card.

Economies are complicated, but I have chosen to focus on only one aspect of them: debt. The world has too much of it. Debt can be roughly divided into public debt, owed by governments, and private debt, owed by individuals, investors and businesses. Both of these sectors are potential time bombs, but in this book I'm going to focus mainly on public debt (known as *sovereign debt* for a national government). I'm not setting aside private debt because it is insignificant or less dangerous but because it is harder to analyze. Private debt is held in a dizzying array of vehicles, from mortgages and credit cards to debt-backed securities I can't even begin to fathom. The unfathomability of many debt-based investments is part of what makes them so dangerous. Government debt, on the other hand, is owed only by a government (national, local or government-sponsored agency) and is usually conveyed in a handful of traditional instruments that are generally transparent and relatively easy to analyze.

To predict a car will stop running, I only have to prove that one wheel will fall off, and government debt is the one I am focusing on. Another wheel could fall off first, but that doesn't disprove my prediction that the car will stop. Our civilization is facing plenty of potential calamities, from war to rising sea levels, but nearly all of them would cost the government money. No matter what the next catastrophe may be, it

is likely to trigger a government debt crisis. In all the panoply of possible human catastrophes, a government debt crisis is the one sure thing.

If a company or industry fails, a lot of people will lose their jobs, but if a government fails, all of society is in jeopardy. Government provides much of the infrastructure of our economy, from roads to regulations. Money itself is a quasi-governmental service that could cease to function if the government collapses. In times of crisis, a country turns to its government to fix the problem. Growing government debt means the government will eventually run out of rescue tools, turning an otherwise survivable crisis into a near-death experience.

For most countries, we know exactly how much sovereign debt they have, as well as their annual budgets and tax revenue, because these figures are usually published by the governments themselves. Subtract the budget from tax revenue and you get either a surplus or a deficit. For about 80% of the countries of the world, it is currently a deficit, meaning they are adding to their national debt every year. Not every government is profligate. Some of them are quite responsible, regularly running surpluses or at least restraining the growth of their debt. Unfortunately, when the n'er-do-wells fail, like the United States, they drag everyone else down with them. Even responsible countries have to sell goods to the U.S. market. If America retrenches, foreign markets do as well.

As debt grows in the undisciplined countries, so do interest expenses, consuming a greater portion of a government's budget and increasing the likelihood of future deficits. It is a self-reinforcing cycle that can only end in tragedy. Sooner or later, government debt will become so massive that interest payments absorb most of the budget and

the government has to cut its services. When debt gets this high, investors begin to worry about default, so they charge the government higher interest rates to compensate for the risk. This lack of confidence is a self-fulfilling prophecy. The higher interest costs further stress the government's budget and push it even faster toward collapse.

The only way governments like the U.S. can justify their expanding debt is by claiming they will somehow grow their way out of it. For example, if a government is adding 1% to their national debt each year but the total economy is growing by 2%, the additional debt does not seem a problem. Higher tax revenues arising from the bigger economy will presumably allow the country to pay its higher future interest bill.

Under this theory, annual deficits can be seen as an investment in a better future that will eventually produce higher tax revenue than if the investment had not been made. It is like a company borrowing to buy equipment to expand its business and make greater profits. If the profits they realize exceed the additional interest they are paying, borrowing is seen as a smart move. Likewise, a country can claim to be overspending now to assure higher tax revenue in the future.

This might be a valid argument if the economy was indeed growing faster than debt or had any hope of doing, but in most countries it just isn't possible. The size of a nation's economy is usually measured by *gross domestic product* (GDP), or the total value of goods and services produced within the country's borders in a year. Of the 80% of countries that are running a deficit, most are adding proportionally more to their national debt than their GDP is rising. This includes major economies like USA, Canada, the United Kingdom, France, Japan and South Africa.

Every country doesn't have to be insolvent to destabilize the world economy, just a few big players like these.

The leaders of indebted economies usually respond with optimism. Their argument is: "Our GDP may not be growing very fast right now, but it is sure to take off in the future. Exceptional future growth will take care of everything."

This sounds like a fantasy, but how do we refute it? That's where demography comes in. Most of those countries whose debt is growing faster than GDP will soon have shrinking populations of working-age people. Furthermore, their populations are rapidly aging, meaning a growing segment of the workforce is retiring and becoming a net burden to the government. My response to an optimistic politician might be: "If your workforce is shrinking and the number of your retired people is growing, where is this magical growth in tax revenue going to come from?"

The U.S. federal government depends largely on taxes on wages to fund their budget, but wages have been stagnant for decades. A September 2017 report from the Brookings Institute ("Thirteen Facts about Wage Growth") says:

After adjusting for inflation, wages are only 10 percent higher in 2017 than they were in 1973, with annual real wage growth just below 0.2 percent. The U.S. economy has experienced long-term real wage stagnation and a persistent lack of economic progress for many workers.

The lack of significant wage growth in four decades suggests such growth is unlikely in the future. Dramatic increases in the tax base *could* still appear, just like you *could* win the lottery tomorrow, but it seems unwise to stake your country's future on it. If wages don't rise and you don't change the tax structure, the only way to increase tax revenue is to add more workers.

Given that assumption, demography proves the wishful thinking false. Government income can't grow if the number of active workers isn't growing. Barring remarkable discipline to cut spending, raise taxes and restore a budget surplus—which is no more likely than wage growth—the national debt is destined to climb until it reaches critical mass and collapses.

5. The Great Reversal

The inevitable outcome of too much debt is a catastrophic readjustment period I call the Great Reversal. It is a “reversal” because it is the painful economic transition from a growing economic world to a shrinking one. All the unsupportable debts and expensive habits of the boom times will have to be discarded or renegotiated. This may sound simple, but it’s not. The Great Reversal is like trying to turn a great ocean liner that no one on board wants turned. It may take an iceberg to do the trick.

In the boom times, it was easy to fall into the trap of rising expectations. If your salary was \$20,000 one year, \$30,000 the next and \$40,000 the third, you could easily believe it will continue to rise in coming years. You may assume, in your straight-line optimism, that you will soon earn \$50,000, and you may be tempted to accept debts and obligations based on that prediction. If the trend instead reverses and you make only \$30,000 again, your budget is doomed. In an earlier point in your life, you would have been happy with the \$30,000 because it is 50% more than you once made, but now that you’ve made commitments based on a higher income, you’re trapped in an desperate position.

That’s pretty much the predicament of the whole planet right now.

It has built its financial house on the assumed foundation of permanent economic growth, but no growth lasts forever. Whether you're growing mold in a petri dish, breeding rats in a cage or charging purchases to your credit card, no additive cumulation can go on indefinitely. Sooner or later, the expansion has to hit an insurmountable barrier or it will consume the entire universe.

In the case of national economies, one of the barriers to unlimited growth is the number of rats in the cage. If they are all running around on wheels generating energy and you lose a number of them to death or retirement, you're going to lose total energy. You can try to make the remaining rats run faster, but if the number of active rats keeps falling, the effort is ultimately doomed.

The Great Reversal is the adjustment process that has to take place to accommodate the falling number of rats. You could think of it as a form of forced bankruptcy. Impossible liabilities have to be shed so the debtor can breathe again and move on with their life. If you're an individual and your expenses exceed your income, you can go into bankruptcy court and lose your expenses. You may also lose your assets and come out much poorer, but at least you're free to start over.

I contend that halfway solutions are unlikely. For example, the U.S. government can't just say, "We're only going to pay back half of what we owe on our bonds," because it would trash the government's credit rating and raise its interest costs in the future. After repudiating half its debt, the government could conceivably be paying more interest on the remaining balance than it once paid on the whole thing. Once a critical threshold of dysfunction is passed, a complete collapse is far more likely

than any negotiated settlement.

At present, the United States government is seen by investors as a special kind of debtor: one that is risk-free and can't possibly fail. When substantial cracks appear in that façade, the U.S. will be demoted to just another dodgy borrower. It will lose its preferential interest rate, and its interest costs will explode. As soon as faith in the U.S. government is thrown into doubt, I see a whole series of dominos falling, ending in a very dark place. The end result may be a *de facto* erasure of public and private debt as well as all the structures that depend on it.

Imagine the world banking system freezing up, as it nearly did in the Global Financial Crisis of 2008, but this time there is no credible government force to restart the economy. In 2008, governments and central banks “unfroze” the credit system with lower interest rates and massive stimulus spending. These tools may not be available the next time around. Economists often talk of the 2008 crisis as “staring into the abyss”. In a future crisis, we will tumble into it and find out just how deep it goes.

After the fall, the physical infrastructure of the world will remain in place—all the buildings, roads and vehicles—but humanity would have to figure out who owns them, since these physical structures were mostly built on loans. Heavily indebted national governments may cease to exist. If these happens, people would have to build new governments at a more local level. Human economies may have to be rebuilt from scratch based on some form of money not linked to debt. Cybercurrency? Precious metals? I have no idea.

The world today is a finely tuned machine. For example, few of us

know how to grow our own food; instead it comes to us through a complex logistical system that is easily disrupted by fuel shortages, communications breakdowns or failure of the credit markets. The Great Reversal will certainly throw sand into this machine. I can't tell you in advance which systems will work and which won't. I can only predict that a lot of government and commercial services you took for granted won't be there anymore.

The Great Reversal hasn't yet begun (as of this writing) only because investors are still in denial. Most of them grew up during the boom times of the late 20th Century, and they can't conceive of a permanently shrinking economy or sovereign debt defaults of this magnitude. Economic growth has been our reliable companion since World War II, but it can't continue because population numbers won't support it. None of us are prepared for the change. Such a shift has never happened before and no one knows for sure what will happen.

The underlying causes of the Great Reversal are demographic, but there is no demographic solution. Having a lot of babies now won't improve the tax base for at least 20 years. More babies aren't likely anyway, because in times of trouble couples tend to have fewer of them. Whatever happens now, we just have to ride it out. If we are going to stabilize our population loss, it probably won't happen until the Great Reversal has passed, the economy has recovered and optimism has returned.

6. Structure of this Book

The remainder of this book is divided into five sections:

- I. [World Tour](#)
- II. [The Great Reversal](#)
- III. Why Fertility is Falling
- IV. Decline of Intellect
- V. Saving Humanity

In the [first section](#), I will introduce some demographic concepts and take you on a tour of the world. I need to show you some of the colossal demographic messes nations find themselves in.

The [second section](#) will talk about the massive financial crash looming ahead and the painful adjustment period that will follow. There's a lot I don't know about the coming Reversal, but I can talk about what is knowable and likely.

The third section will try to explain why babies have fallen out of fashion. Every species is driven to procreate, right? So why are so many humans opting out?

The fourth section will discuss the loss of intellectual skills across generations. If the least successful individuals are having the most

babies, what does this mean for the future of our species?

The last section speculates about the rebuilding of society following the Great Reversal. At some point, humanity will again have as many births as deaths. Obviously, this has to happen or our species will die out, but how will this recovery be accomplished?

I want to cover demography first because it lays the foundation for everything our world will eventually become. Once we understand how the nations of the world are failing, we will see how the Great Reversal is unavoidable.

Section I:
Touring the World

Demography and Disaster

7. Nine Destabilizing Processes

I identify nine demographic processes contributing to the economic and political instability of the world:

- 1) The critically low birth rate in the developed world.
- 2) The critically high birth rate in the underdeveloped world.
- 3) The excess of old people in the developed world.
- 4) The excess of unemployed young people in the underdeveloped world.
- 5) The talent drain from weaker countries to stronger ones.
- 6) The talent drain from weaker communities to stronger ones within a country (most notably from rural areas to cities).
- 7) Refugee crises where masses of people cross a border, not just the most talented.
- 8) The long-term trend of less successful individuals having more children than successful ones.
- 9) The transition from population growth to contraction.

I refer to these nine processes together as *Demographic Doom*. Both the quantities and qualities of human populations are changing, rarely for the better.

The first eight of these processes don't require much explanation. You can imagine some of the bad effects arising from each. Only Process #9 may not be self-evident, although it is the most destructive in the short term. The problem here is not population growth or loss but the unexpected shift from one to the other. Since World War II, the whole world has laid its plans based on the assumption of unlimited population growth. When growth slows, stops or reverses, many of those plans become unsustainable.

Around the world, governments, corporations and individuals have become addicted to optimism. They have come to expect tomorrow to be better than today and have made their plans accordingly. They are like a homeowner committing to a mortgage based on a projected higher salary that never materializes. It's not that people can't adapt to a shrinking world, but before they can, some kind of collapse must happen to dissolve their grandiose obligations.

There could be a few bright spots in these nine processes, like when rich countries poach the talent from the poor ones (It's good for the rich ones at least.) but in general these processes are bad for humanity. They are contributing to the weakening and hollowing out of worldwide society. The cancer is striking first in the periphery, as weaker countries like Greece lose viability, but it will eventually progress inward to the seemingly solid countries in the center. North America and Northern Europe aren't as strong as they seem, in part because their citizens are aging and demanding more services while producing less tax revenue.

All these degenerative processes are difficult to address by government action, and it is hard to muster any optimism that they will

be, because as demographics deteriorate so do politics. In the politically paralyzed United States, which gave the world Donald Trump and could barely approve a budget even before him, you can't expect an effective response to a crisis most voters aren't even aware of. Around the world, governments in countries with low birth rates have utterly failed to improve them, while governments in countries with high birth rates are hardly functioning at all, let alone formulating useful policies.

Nations of graying old people now dominate the planet, and this has never been the most dynamic segment of the population. The elderly are more likely to vote than young people, but they don't like change or risk. They believe the world owes them a long period of leisure for their lifetime of hard work, which may be true, but the world can no longer afford them this luxury. Would they willingly vote to reduce the medical and retirement benefits they feel they have already paid for? Not likely.

Around the world, young people in dire straits are trying to leave those straits behind. Who can blame them? If you are facing starvation in your own country or your career is frustrated there, why wouldn't you try another? Unless borders are completely fortified with Berlin Wall-style barriers, frustrated people will try to cross them in search of greener pastures. Controlled immigration usually enriches the receiving country while impoverishing the donor. Uncontrolled immigration—in the form of refugees and illegal immigrants—is more complicated, since the receiving country is less prepared to assimilate them. Migration, therefore, can be considered a wash: It makes some communities happy and others unhappy but it doesn't improve the world as a whole.

Meanwhile, all the wrong people are bearing the most children. By

whatever criteria you measure “fitness”—wealth, social standing, IQ, years of education, technical skill, impulse control—the least fit tend to be the most fecund. Whether or not you see Darwin at work, this long-term trend has to have an effect on the intellectual makeup of our populations. If the most successful people are not having children, whatever it is that made them successful could be lost.

You can’t isolate any one of these 9 factors and say, “That’s the problem.” All of them together are the problem. These processes often feed off each other and reinforce each other, usually making things worse. Each country has a different mix of issues. Australia may have one set of demographic problems and China another. You can’t treat them all the same.

My job now is to show you how devastating and intractable these demographic problems are, to the point where they will soon disable our civilization. If low birth rates continue, mankind could extinguish itself within a few centuries. The Great Reversal will happen a lot sooner than that, and when it does, we will have no time for demography. We will be too concerned with short-term survival to worry about long-term survival. When the Great Reversal is eventually resolved and society is stable again, those first eight problems will still be with us, worse than ever, and we will have to find a way to deal with them.

8. Fertility and Momentum

Before Election Night 2016, I had little interest in demography. It seemed like a dull study of statistics, and I hate statistics. I was proud of my math ability until I took a statistics and probability course in college. All that stuff with summations and sampling was Greek to me and still is. Given that I flunked that course (or more precisely, dropped out without completing it) I can't claim to be a statistics expert—or any kind of expert. If you're looking for credentials, I ain't got 'em. All I have is a few demographic and economic numbers you can easily verify and some mechanical logic tying them together.

You don't have to respect my authority. You only need to find the holes in my reasoning. It takes only one small boy to say the emperor has no clothes, and maybe I am that boy. Or maybe I'm the emperor. The point is, you should pay no heed to who I am, only to what I say and whether it is logically and scientifically sound.

The only credential I can reasonably claim is that I'm well-traveled, at least for an American: 85 countries as of this writing. I've seen a lot of demography first-hand, from the teeming neighborhoods of Soweto to the empty factory towns of Eastern Europe. I have traveled independently in every country of Europe except Russia. (The Russians won't let me in.) I have experienced 11 countries in Africa, 11 in Asia and

8 in the Americas. Demography is usually bigger than what you experience on the street, but at least I can say I've seen how the world lives.

I would rather talk about countries than numbers, but a basic understanding of statistics is essential before we proceed. Thankfully, these concepts aren't very hard, and we will get through most of them in the next two chapters.

The most important demographic number is something called the *total fertility rate* (TFR or simply "fertility rate" in this book). That's the number of babies an average woman in a country or community bears in her lifetime. It can range from 0.0 for a convent of nuns to roughly 6.9 in the African country of Niger. TFR is an average for all women in a group, so some may have more children and others fewer. (In Niger, that means for every woman having only 3 or 4, there must be another having 9 or 10.)

TFR has a maximum upper limit, because a woman's biological clock is ticking from around the age of 15 to the mid-40s, a window of about 30 years. It is a lot less for an educated woman, since schooling usually pushes parenthood at least into ones 20s. Evolution may have given women menopause to prevent them from having children they might not live long enough to raise. After age 40, childbearing also becomes more perilous, with a greater risk of birth defects and death of the mother, so maybe Mother Nature, in her wisdom, just decided to cut the process off at a safe age.

Fun Fact: According to the *Guinness Book of World Records*, the

highest number of children born to one woman was 69. A certain Mrs. Vassilyev of Russia gave birth to 16 pairs of twins, seven sets of triplets and four sets of quadruplets over the course of 27 pregnancies in the 1700s. (No word on whether she lived in a shoe.) Her personal fertility rate would be 69.0, probably the absolute human maximum.

In the developed world, the average woman must produce roughly 2.1 babies to sustain the population of her community. That's called *replacement fertility*. She obviously needs 2 because men are barren and can't produce any. (I will argue for their elimination later.) She needs to bear an additional 0.1 of a child as a fudge factor to account for the fact that not all the children born today will live to maturity or be capable of reproducing once they get there. ("Fudge factor" may not be a scientific term, but I am no scientist.) This fraction may differ according to the child mortality of a given community. Replacement fertility can be 2.5 or higher in the poorest parts of Africa because so many children die before adulthood, but we will call it 2.1 in this book since that is the approximate requirement in most countries.

The fertility rate of any country or community provides a pretty good prediction of what the population will look like in the future. If it is less than 2.1 for a sustained period, the total population is ultimately going to fall. If it is greater than 2.1, the population will eventually grow. Only migration, war, famine or pandemic can possibly change this outcome; otherwise, there's not much room for negotiation. If the fertility rate of your community is consistently 1.9 with no immigration, it will eventually vanish from the Earth.

Every country, community, religion and social group has its own

fertility number, and in the developed world it is generally dire. It is as low as 1.0 in Singapore and some regions of Italy and Spain, and it is not much better in Japan, China and Eastern Europe. In other words, in Singapore, for every two people who die, only about one is born. The European Union as a whole has a fertility rate around 1.6, while the United States is roughly 1.8, a number made less dire by America's attractiveness to immigrants.

(As with all numbers in this book, I am reluctant to get too specific, because the values always come with complicated qualifiers and are likely to change by the time you read this. You can Google for the latest. Most of the time, I'm interested only in relative numbers, like "far below replacement fertility". Whether the fertility rate of a country is 1.4 or 1.6 is usually immaterial to my arguments. Something else to note: You will find no footnotes and few references in this book, but whenever I mention data and research studies or state something as fact, I will try to provide enough information that you can Google for a definitive source.)

Only a handful of countries are close to the optimal 2.1 refresh rate, including Turkey, Sri Lanka and Vietnam. On the high side, most countries close to the equator in Africa still have catastrophically high fertility rates, topping off at 6.0 or above for Angola, Chad, Mali, Somalia and Niger. At the high end, the fertility rate can almost be taken as a measure of how chaotic a country is. We can't even be sure of the highest fertility rates because there's no reliable national government providing the count.

Thanks to demographic momentum, changes in birth rate do not usually have an immediate effect on total population. Think of it as a

natural time lag built into the process. Demographic momentum is a statistical phenomenon that seems counterintuitive at first but makes more sense the more you think about it. How can the total population be rising while the birth rate is below replacement? Total population is like a massive ship that can't be turned on a dime. What happens to the ship today reflects who was born (or wasn't) decades ago.

A simple example: imagine John and Jane had six children after World War II, which was not unusual in America's Baby Boom of the 1950s. Jane had a personal fertility rate of 6.0. The six children—three boys and three girls—grew up in the liberated 1960s, had access to reliable birth control and decided to have fewer children themselves. In the 70s and 80s, the daughters gave John and Jane only three grandchildren, for an average fertility rate of 1.0. Between the 60s and the 80s, the whole (matrilinear) family grew from 8 people to 11 people, even though the fertility rate for the second generation of girls was well below replacement. That's how demographic momentum works. The "population" of this family continued to grow even after the birth rate fell. Regardless of the current birth rate, the total family size probably won't shrink until the big Baby Boom generation starts dying off.

If your country's birth rate falls today after a previous high-birth period, the overall population won't immediately fall because the people from the high-birth period will still be alive. If there is a surplus of women of child-bearing age from the earlier boom, they will produce a disproportionate number of children even if their individual fertility rates are low. Total population loss could also be suppressed if old people are living longer, offsetting the smaller number of babies. Due to these

factors, the total population could keep growing for decades after fertility has fallen below replacement—and that is exactly what has happened in most industrial countries.

Demographic momentum can mask a fertility crisis until it has achieved a momentum of its own and can't easily be stopped. Just as a population grows exponentially when fertility is above 2.1, it will eventually fall exponentially when fertility is below that level, but by the time you see the total population decline it may be too late to do much about it. Demographic momentum means that once the total population starts falling, it could continue to fall for decades even if the birth rate rises above replacement.

Developed countries are going to hit the peak of their native-born populations at various dates in the next few decades, but once that crest is reached, their populations are destined to fall for a very long time regardless of what happens to their birth rate.

To understand most of my claims about future population, you only need to grasp those two statistical concepts: (a) that a fertility rate below 2.1 means a population will ultimately shrink, and (b) that demographic momentum means changes in birth rate won't be reflected immediately in the total population. Children born today—or not born—won't affect economic realities until decades from now.

9. Measuring Debt

Now that we have some demographic concepts under our belt, we need a touch of economics. My Doomsday theory predicts a worldwide financial collapse resulting from demographically unsustainable debt, so we need a basic understanding of what debt is and how to measure it. First, we will look at how debt applies to individuals, then we will expand these concepts to countries. Ultimately, a nation's debts aren't much different than your own. You have to at least pay the interest or you will be in default, and the lender is going to start proceedings against you. If no solution can be reached, the lender is going to lose their capital and you are going to lose the ability to borrow more money.

Debt is money loaned from one party to another according to some sort of enforceable agreement. The debtor sees the loan as a liability while the lender perceives it as an asset. The debtor is usually a fixed entity, like an individual or a specific government agency, but the lender may be less clear, since the originator of the loan can usually sell the loan to someone else like any other asset. If you are making payments on your credit card or mortgage, you may send your payment to a fixed address, but the entity who currently owns the loan or the proceeds from it may be unknown to you. If a debtor defaults on their loan, somebody is going to lose their money, but it's not always clear in advance who that entity

is.

It is easy to imagine a lender as a dastardly villain dressed in black who twirls his moustache and cackles in glee as he forecloses on family farms and ties the heroine to the railroad tracks, but the reality is more complicated. If you have a bank account, you are one of these black-garbed creditors. You are lending your money to the bank who will in turn loan it to someone else. Many common forms of investment are actually packages of debt. For example, if you invest in a money market fund, you are pooling your money with other investors to loan it to the government and big corporations. If any of these entities fail to repay the loans, you and the other investors will lose money.

Debt isn't always bad for the debtor, but it always involves risk. For example, having a mortgage on the home you occupy might seem a reasonable form of debt. If you can rent a house for \$1000/month or make a monthly mortgage payment of the same amount, the latter might seem wiser, since you are acquiring an asset that you will eventually own outright, but a mortgage entangles you in your home in a way that renting does not. If the local housing market collapses or a flood damages your home when you don't have adequate insurance, you are still on the hook for the original loan amount even if your home is no longer worth as much as it was. This can lead to the situation where you are figuratively *underwater*, owing more on your loan than your home is worth.

Most consumers in the modern world are swimming in debt, but how much is too much? This can be judged by comparing your loan payments to your salary. If your payments are one-quarter of your

income, your debt is probably sustainable. If they are higher than your total salary, you are doomed. Somewhere in-between is a cutoff point where your debt becomes unsupportable. It can be hard to predict exactly where that threshold lies, but it must exist. Once you cross that line, you are fighting a losing battle. If you are unable to pay even the interest, your financial position will rapidly disintegrate, and you will eventually have to renege on all or part of your debt.

A similar situation applies to countries. What matters is not so much the total amount of their debt but the required payments relative to their income. If total debt continues to rise, or the interest rate on that debt rises, the interest cost will eventually exceed the ability to pay, and the country will have to default.

Sovereign debt is typically measured by *debt-to-GDP ratio*. GDP is short for *gross domestic product*, or the total value of goods and services produced within a country's borders in a given year. (GDP is different than *gross national product* which also includes the overseas activity of locally-based corporations.) You get a debt-to-GDP ratio by adding up all the debt owed directly by the government and dividing it by GDP. The result is commonly expressed as a percentage. 25% means government debt is one quarter of GDP (usually seen as a sustainable number). 200% means a government has twice as much debt as GDP (usually seen as calamitous).

Debt-to-GDP is not the equivalent of comparing a consumer's debt to his salary because most of GDP is not available for the government's use. Instead, the government has to tax GDP to make money. The government's "salary" is its total annual tax revenue. This is the money

the government uses to pay the interest and principle on its debt, not to mention funding all the services required of a government. Debt-to-GDP is the most commonly cited measure of sovereign debt because it is easy to calculate, but what matters most is a country's ability to pay based on a lot of complex factors that aren't as easily calculated. It matters, for example, how high the interest rate is and how much surplus or shortfall results from the government's annual budget. All of these things would go into a country's credit rating—similar to an individual's credit rating—which ultimately affects the interest rate the next time it has to borrow on the open market.

If a country's total debt is high and its credit rating is low, a large percentage of its tax income must be spent on interest payments, which leaves less for all the other business of government, like defense, road maintenance and social services. As with individual consumers, there must be a breaking point where debt becomes unsupportable and some sort of default is unavoidable. A country, like a consumer, can't borrow forever. At the far extreme, there will come a point where interest payments exceed total tax income, but a collapse is bound to happen before that, when the creditors have merely lost confidence in the debtor's ability to pay.

Debt is an amazingly complex subject with many different dimensions, some of them almost supernatural. To a large extent, debt involves the lending of imaginary money that did not exist until a bank or government entity created it. If you are used to thinking of money as solid coins and bills you can hold in your hand, the real workings of a banking system will blow you away. Modern money doesn't have any

solid foundation, like gold bars in a bank vault. The only thing that holds it up is a set of shared agreements, assumptions and religious beliefs. (One religious belief: “The U.S. government will be here forever and cannot possibly fail.”)

More than any other assumption, the world economy rests on the concept that a debtor is obligated to either repay a lender or continue to pay interest for the right to not pay. Unless you borrowed from a loan shark, no one is going to kill you if you fail to honor your agreement, but they can go after your other assets or freeze you out of the credit system. If a single debtor fails to live up to his obligations, his ability to participate in the game will be restricted. If a lot of debtors fail to pay, the whole game could collapse. All the imaginary money the banks have created could instantly go back to not existing.

I want to talk about debt and its relationship to demographics without having to write a whole book on the ethereal mysteries of banking, so I’m going to limit myself to a few simple concepts everyone should be able to agree with. Debt is money that one entity owes to another, and if the debtor reneges on his obligation to repay or service it, bad things will happen. To prevent these bad things, the debtor must at least pay the interest. If the debtor continues to accumulate new debt, his total interest burden will increase, ultimately outstripping his available income. Unless he is rescued by a more powerful entity, the exhaustion of his resources will trigger a default, where the bad things become catastrophic for both lender and borrower.

In simplest terms, a lot of debt is bad, even if you are a big country, and continuously adding to it eventually leads to catastrophe. We can

argue about where the breaking point will be but not about eventually crossing it.

Two chapters can't reveal all the subtleties of demographics or debt, but they are enough to get us moving. Now that we have a few tools in our backpack, we are ready to tour the world.

10. Vanishing Japan

Japan is disappearing.

It is still the same size on the map, but its people are going away. Japan's fertility rate is roughly 1.4 babies per woman, far less than the 2.1 needed to sustain its population, and it has been this way for decades. Japan's population continued to grow after World War II not so much because new babies were born but because old people stopped dying. Since 1946, average life expectancy has increased by about 30 years, due to improvements in sanitation and health care, not to mention the lack of war. The Japanese seem naturally long-lived if given the chance, but even they have their age limits. Now that the old folks are finally kicking the bucket, the country's population has peaked and is diving toward oblivion at an ever-accelerating pace.

In the five years between 2010 and 2015, Japan's population shrank by almost a million, from roughly 128 million to 127 million, and soon it will be falling by a million every two years. This isn't quite the same as a bomb killing that many because there is no trauma or bloodshed, but the net effect is similar. If the silent bombs keep killing a million every few years, pretty soon you don't have a country left.

Japan has become the poster child for a new kind of demographic crisis: a population *implosion*. An implosion may seem a little less

frightening than an explosion, but the results are almost as sobering: a country slowly erasing itself from the planet.

I spent two weeks in Tokyo in 2012 and saw no evidence of a dying culture. [See my Instagram photos at [#gpcJapan](#).] Tokyo seems a vibrant and busy city with hordes of young people in the street and rush-hour subway cars packed like sardine cans. To me, Tokyo is the perfect adventure destination. It is confusing as heck, which is fun if you like finding your way out of mazes. At the same time, Tokyo is clean, courteous and completely safe. Even if you get lost, no one would ever harm you in Tokyo. Furthermore, it is not nearly as expensive as its reputation suggests: about the same as an average European or North American city.

I know now that my visit didn't give me an accurate view of Japan. Had I ventured into the countryside, especially by car, I think I would have seen more evidence of population decline. Tokyo is a magnet that will always attract ambitious young people from the rest of the country. It's like if 10 people were living in a mansion with 100 rooms. Naturally, they would cluster together, and the few rooms they occupied would seem as crowded and vibrant as ever.

I expect the main burden of Japan's population loss to be borne in the provinces—that is, in the smaller towns and cities that aren't part of Greater Tokyo. I saw plenty of this kind of peripheral decline in my driving tours in Eastern Europe. Like Japan, countries like Hungary and the Czech Republic are falling in population, and although you don't see any obvious depopulation in Prague and Budapest, you do see it in the many dying towns and cities between the two. Every rural village seems

to be filled with abandoned buildings. There are only a few scattered old people wandering the streets, because young adults, if they were born at all, have moved to the big city or out of the country altogether.

A falling population might seem like a good thing at first. Doesn't it just mean more space and resources for the people left behind? You can reasonably argue that Japan was overpopulated to begin with: 128 million on a relatively small group of islands (compared to 144 million for all of Russia). Maybe 100 million is a more sustainable number. If you believe this, you might applaud Japan's loss of bodies. The challenge, however, is how to keep from losing bodies once you've reached your goal.

Population loss generates three main problems. One is that the structure of modern governments and economies is based on the premise of a perpetually growing population and economy. You can't change direction, moving from long-term expansion to long-term contraction, without a lot of fixed obligations becoming unsustainable. The second problem is a growing proportion of old people, who are a net drain on government coffers. Retired people pay little in taxes while demanding huge resources for pensions and medical care. The third problem is that even if you decide what the optimal population should be—like 100 million for Japan—low fertility means you are going to blow past that. When the population falls to 80 million, as it is projected to do by 2065, you'll be saying, "Whoa! How do you stop this train?"

The Japanese government is already the most indebted in the world. Maybe you thought Greece was mired in debt, but it is only Number Two on the charts. As of this writing, Greece's sovereign debt is

something around 170% of its GDP, while Japan's is roughly 220%. (Guaranteed to be larger by the time you read this.) Things are even worse if you view debt in terms of income. By this measure, Japan's sovereign debt is somewhere between 900% and 2400% of its annual tax revenue (depending on what you include in tax revenue).

Let's take a minute to ponder what it means to have a national debt of 9 times tax income. This is roughly equivalent to you having credit card debt 9 times your annual salary. On the surface, you may think, "That means I can pay it off in 9 years," but even this is a delusion. In reality, you have to pay your own living expenses from your salary before you can do anything else (the equivalent of all the essential services a government provides). Then you have to pay the massive interest on your existing debt. Only when these obligations are settled can you begin paying down the principle. If you're living from paycheck to paycheck, as Japan and most other countries seem to be doing, there's simply no opportunity to pay down the debt.

Another stunning statistic: In 2015, Japan's central government spent 43% of its tax revenue on interest payments alone. This number can only grow. How long will it be before the proportion gets so high that the government can't function at all?

Since the 1990s, Japan's economy has been categorized as "stagnant", meaning GDP hasn't significantly changed. There have been temporary ups and downs but no sustained trajectory in either direction. It makes perfect sense that GDP would not rise when the number of active workers is falling. Ultimately, every economy is powered by people. You can't expect a country of 80 million older people (2065) to

produce as many goods, services or ideas as a younger population of 127 million (today). Shrinking GDP, in turn, means the country's proportional debt load will inevitably rise, even without any change in the absolute amount.

Japan's current debt of 9 to 24 times tax revenue is only part of its grim outlook. It reflects only government bonds that have already been issued. Government commitments also include debts that haven't yet been realized but that everyone knows are coming. An example is the workers who haven't yet retired but who we know will retire soon and who will demand their pensions and medical care. These yet-to-be-realized debts are called *unfunded obligations*. They are a slow train coming down the tracks destined to deliver still more debt.

Then there are unpredictable calamities that cost huge amounts of government money. Japan was pushed over the 200% GDP threshold by the 2011 Tōhoku earthquake and the Fukushima nuclear plant disaster that followed. In times of crisis like this, no government can refuse to rescue its people. As long as there is capacity on your credit card, you're going to charge it to the max to try to protect your citizens and stabilize the crisis.

By definition, natural disasters are unpredictable. The only thing you can safely predict is that disasters of some kind are bound to occur. Unfortunately, government financial planning rarely allocates enough future resources for them. Around the world, politicians try to find the money for disaster relief only after a disaster happens, so inevitably these costs are charged to the national debt.

Japan is the perfect laboratory for understanding one of the major

demographic/economic catastrophes looming in the First World: high government debt coupled with an aging population. Even without total population loss, Japan would be in trouble because of its high proportion of retired people and shrinking pool of active workers. It is not the only country facing this problem, but it could be the purest example.

Unlike North America and northern Europe, Japan is highly resistant to immigration, which might otherwise mitigate its worker shortage. Japan is technologically advanced, but even with their robots and bullet trains, I can't imagine any technology that could solve Japan's core problem of a low birth rate. Sex with robots doesn't make babies. The only way to address Japan's population decline is to somehow reverse all the factors that led to low fertility, which we will see is a losing battle.

Japanese society may be allergic to immigration, but its educated young people are not opposed to emigration. If you are an ambitious Japanese graduate with marketable skills, why would you stay in a country with a stagnate economy, a Draconian work ethic and little hope for advancement? The lure of greener pastures further depletes the total population, but more importantly it drains the country of its most valuable human capital: its future innovators, engineers and scientists.

Today. Japan is limping along, losing its social and economic vibrance while its debts grow ever higher. This can't persist as a permanent state. Sooner or later something has to break. What form will the collapse take? When will it strike? What will happen to the country when it does? I can't answer these questions. All I can say for sure is that a massive default is unavoidable.

What will happen when Japan starts defaulting on its debt? This is a question for better brains than mine, but here is my naïve hypothesis: If a country starts defaulting on just some of its interest payments, investors will realize the rest of the debt is dubious and start demanding higher rates. As the country's interest burden increases, the interest payments get rolled onto the debt, and the death spiral accelerates. I'm not sure what the endgame is, but I suspect the Yen will plunge in value and the government, if it survives, will cease to perform most of its vital functions.

If young Japanese are reluctant to have babies now, they'll be even more reticent if the economy is in freefall. Bringing a child into an unstable world just doesn't make sense. It may be essential to society in the long run but it's cruel to the child and a nightmare of worry for the parents. Thus, Japan's 1.4 fertility rate is almost certain to fall even further.

Therein lies one of the great Catch-22's of our Demographic Doom: The more desperately a country needs babies, the less its people want them.

11. Five Axioms

Japan leads me to some starting *axioms* to aid our analysis of other countries. An axiom is a preposition that is so simple and obvious that it can be accepted without proof. It's the sort of statement that makes you say, "Duh! Well of course!" Axioms are the building blocks of my Doomsday theory. If you agree with the integrity of each individual block, it is harder to doubt the structure I build with them.

For example, here's an easy one:

Doomsday Axiom #1: ***Once a group of children is born, the size of the group can never increase, only decrease.***

For example, if 140 million babies are born on Earth this year, then decades from now, there can never be more than 140 million adults of that age group. There can be a lot fewer, due to early death, but there will never be more, because adults can't just magically appear in mid-life.

This statement is so obvious that it almost seems silly, but a lot of important demographic and economic predictions can be based on it. Given the population of children today, we know without question the maximum number of adults in the future. At present, there is no immigration to Planet Earth from other planets, so each age group is

limited to the people already present. Negotiation is possible only on the downward side, due to the uncertainties of death.

If you're talking about a group smaller than the whole world, like babies born this year in Japan, the total people in this age group could theoretically be increased by immigration, but the group of "native-born Japanese" can never increase. For the next century, this group can only shrink. We can argue about the magnitude of the shrinkage but not about the fact of it.

The relative size of an age group's population is most significant in the case of girls, who will be the ones making babies in the future. If there is a shortage of girls today, there will be a dearth of childbearing capacity decades from now. This adds an important wrinkle to any analysis of fertility. If a country's fertility rate is a perfect 2.1 but there is a shortage of women of childbearing age, total births will continue to be inadequate to sustain the current population.

Doomsday Axiom #2: *In the long run, if population is falling, GDP and tax revenue must also fall.*

Over time, if a country doesn't have as many workers, it can't have as much business activity, and without as much business activity, a government can't collect as much tax revenue. Japan nicely illustrates this because it's economy has stalled since 1995. GDP has fluctuated over the past 20 years, but there has been no evidence of sustained growth. Axiom #2 says this situation can't get any better in the long term and that absolute contraction will eventually follow.

There may be temporary improvements in tax revenue, but they can't last. For example, the government can increase tax rates, improving its balance sheet for that year and maybe a few subsequent years, but you can only raise taxes so much before you chase away business and start losing the taxes they would have paid. There are other tricks a government can use to temporarily boost economic growth, but only a growing workforce can sustain it over time.

The only other theoretical way to evade Axiom #2 is if *productivity* increased at a greater rate than the loss of workers. Productivity is the value of good and services generated by each worker. Under this scenario, there are fewer workers, but each of them is getting so much more done that it doesn't matter that their numbers are shrinking. Productivity is a fuzzy concept to me, so I prefer to define it in terms of its end result for the government: tax revenue per worker. If an average worker pays more in taxes than in previous years (adjusted for inflation), you can say that productivity has risen.

I am skeptical that long-term productivity gains can overcome long-term population loss. Yes, modern technology has made it easier to get things done, but competition has driven down the price of those things, so it's not clear that workers are getting paid more for this extra output or are paying more in taxes. For example, the home computers of today are certainly more "productive" than they once were—faster and doing more things—but they aren't selling for higher prices and factory workers are being paid more to manufacture them. Likewise, agricultural technology has lowered the cost of food production, but the price of commodities like wheat has fallen, so productivity in dollar terms hasn't

substantially increased. The natural effect of competition is to wipe out productivity gains by reducing prices, with the net effect being that the government doesn't receive more in tax revenue than it used to.

If I had better training in statistics and economic theory, I think I could prove beyond a doubt that sustained productivity gains cannot outpace sustained working-age population loss, but since I don't have those skills, I'll just throw it back on you: Show me even one example where national or regional GDP has increased over time while the working-age population has fallen. Find me a country, state or even a city that has increased its tax revenue over an extended period (say, 10 years) while its base of active workers was shrinking. It's hard for me to "prove" that no such example exists, because I can't survey every local government, so I leave it to someone—anyone—to provide a persuasive counter-example. Until this example emerges, Axiom #2 must be held as true.

Doomsday Axiom #3: *In bad or uncertain times, women will have fewer children, as long as they have access to birth control.*

From the point of view of a prospective parent, this is easy to accept. If my own economic prospects are precarious and I can barely feed myself, I'm probably going to put off having children. Who would want to bring a baby into this mess? People tend to have children when they are feeling good about their lives and their future. When the future looks grim, they say, "Maybe later but not now."

Deferring children inevitably means fewer children, since the biological clock is ticking and will shut down in a woman's 40s. In Japan, this means we shouldn't expect the fertility rate to improve any time soon. Instead, we should expect it to fall still further. As long as the economy is troubled, couples will defer children, even if this means an even weaker economy in the long run. It's a vicious cycle.

I add the caveat "as long as they have access to birth control," because without reliable birth control, individual discretion is reduced. In theory, if a rich country became so poor that its people could no longer afford even condoms, unintended births could increase. This isn't too far from the state of things in crumbling Venezuela, where every consumer product is in short supply and abortion is illegal. As Venezuela regresses from the First World to the Third (due to political dysfunction I will discuss later), it is theoretically possible birth rates will rise for the simple lack of birth control. However, if conditions are this bad, more children will be dying of starvation and the diseases of poverty, which could offset the unwanted births.

During the Great Depression of the 1930s, the fertility of American women fell to around 2.2 (from about 3.5 in 1900). This makes perfect sense, because no responsible couple in desperate straits would want to have a baby, but it is a mystery to me how this was accomplished, since the Pill hadn't yet been invented. Did couples simply abstain from sex? Were there fewer marriages? Did they use the rhythm method, condoms or some other means of birth control? Were there more abortions than we know about? Since researchers rarely wrote about sex back then, we may never know exactly how people prevented babies during the

Depression.

The important observation is: “Where there’s a will, there’s a way.” If people have a personal or economic incentive for something, they will probably find ways to pull it off. Having a baby rarely seems like a good idea in bad times, so people will avoid it.

Doomsday Axiom #4: If the economy of a country or region is chronically weak, talented workers will leave.

This is a no-brainer from the standpoint of a worker with marketable skills. Ambitious young people usually want to go where their professional opportunities are best. If you have a valuable job title like “physician” or “software engineer”, you face a powerful temptation to move to the country or city where you think you will get the best deal. Some talented people may resist this lure, staying in the place of their birth out of loyalty or inertia, but many others won’t, and who can blame them? It is reasonable to want the best opportunities for yourself and any children you raise.

In Japan, immigration is currently taboo, but emigration is not. Hard economic times often lead to a national diaspora, where everyone who can leave, does. For example, the Irish potato famine of the 1840s sent at least 10% of Ireland’s population to North America. Impoverished potato farmers might not be so welcomed there today, but credentialed technology workers still are.

There will always be some movement in the other direction. A doctor from Belgium may choose to serve in Somalia because the need

there is so great, but they certainly won't surrender their Belgian passport. Humanitarian assignments tend to be temporary, while movement out of troubled regions is usually permanent. Talent tends to flow not to where it is most needed but to where an individual's prospects are best. This usually means an unending drain from the Third World to the First World and from weaker countries in the First World to stronger ones.

Consequently, we can expect weak regions to get progressively weaker as their human capital takes flight. The process is self-reinforcing and it is hard to foresee it ever stopping.

Doomsday Axiom #5: No entity can continue accumulating debt indefinitely. Sooner or later, something will stop the rise.

You can't keep spending on a credit card indefinitely. Either you will reach your credit limit and the bank will cut you off or you will get to the point where you can't make the interest payments and you are forced to default. Axiom #5 is essentially a law of physics. In any earthly system—mechanical, biological or financial—infinite growth is unsustainable. Sooner or later, you run up against a hard constraint that halts it.

We can argue about what that constraint will be, and we can hypothesize about whether the braking process will be gradual or catastrophic, but it is hard to doubt that *something* will happen to stop the growth. As Japan's national debt soars from 24 times tax revenue to something even higher, we have to accept that some kind of catastrophe

will eventually occur. It's like driving a car when the fuel gauge is pointing at "E". You don't know exactly where the car will stop, but you know for sure that it will.

Axiom #5 may be more controversial than the others, because there are those who argue that in certain special cases, debt accumulation can go on forever with no ill effects. I call this the *Perpetual Motion Theory*. This theory is most often applied to the debts of the U.S. government. America is often seen as having a special relationship to world finance, since the dollar is the world's primary reserve currency and the Federal Reserve can mint new dollars whenever it chooses. The U.S. is also seen as having a permanently rising GDP with no chance of it ever falling. Under the Perpetual Motion Theory, the U.S. government can spend as much borrowed money as it wants and will never have to pay it back. The growing debt will remain serviceable, the theory goes, because interest rates will always be low and infinite GDP growth will eventually fix everything.

Intuitively, this is absurd. If it were true, we could eliminate taxes altogether and the government could just use its credit card to pay for everything. There are a lot of things I don't understand about money, but I'm pretty sure you can't keep creating it out of thin air, as America has been doing for decades. That would be a perpetual motion machine, and those schemes are always proven false in the end.

If you believe in perpetual motion, there's not much I can do to change your mind. Either you accept Axiom #5 or you don't. If you dismiss it as false, you are probably wasting your time reading this book. It's like trying to argue with climate change deniers: At a certain point,

you just have to give up on them and talk only to the people who already accept it as real.

If you accept the five axioms above, we can continue our world tour. Now that we have a few more tools in our backpack, let's jump the Pacific to a country with a different demographic profile: The United States of America.

12. The Baby Boomer Bomb

The United States has below-replacement fertility—something around 1.8—and it seems to be getting worse. However, America is also historically attractive to talented immigrants. (I say “historically” because I don’t know how the Trump era will change that.) Given the political will, America can easily adjust its total population by turning the immigrant spigot on or off. It is within America’s power to decide exactly how big it wants its population to be and adjust the inflow accordingly.

This doesn’t mean the U.S. is in a healthy position right now. Like Japan, America has a looming debt crisis. America’s debt is only half as big as Japan’s in terms of GDP, but it is still unsustainable. My country is big and irresponsible, and anything that happens here has instantaneous ripple effects around the globe.

At the time of this writing, America’s government debt ratio is somewhere between 80% and 120% of GDP. (The wide range reflects the various ways you can measure government debt: 80% includes only the public debt of the Federal government, while 120% adds internal Federal debt as well as state and local government debt.) As with Japan, GDP ratio is not the best measure of debt, since most of GDP is not available for the government to spend. A more realistic measure is the ratio of debt to annual tax income. By this measure, the U.S. government’s debt is

about 6 times total Federal tax revenue (and as high as 9 times by some measures).

That's the equivalent of you having personal credit card debt 6 times your annual salary. If your living expenses regularly exceed your income—as the U.S. government's usually do—you're adding to that balance every year. These are no less dangerous circumstances for a government than they are for an individual.

At the time of this writing, the Federal government is in the enviable and/or unenviable position of being able to borrow money from investors of the world at ridiculously low interest rates, around 2.5% at the time I write this (up from 0% two years ago). This is because the U.S. dollar is traditionally considered a haven currency. When things are going to hell in other parts of the world, foreigners turn their wealth into U.S. treasury notes for their perceived safety and stability.

The current low interest rate is a Faustian bargain for America because it's like a credit card company sending you courtesy checks that allow you to write yourself a loan at a "low introductory rate". For the first twelve months they'll charge you 0% interest. After that, the rate goes up to the standard usury level of 20%. With that blank check staring at you, you think "Hey, free money!" You figure you'll be able to pay it off before the end of the 12-month period. The credit card companies, of course, are betting you won't, and they're usually right.

The U.S. Congress isn't much different from an impulsive consumer with a pocketful of these checks. Faced with the choice of making painful political decisions in the present or using their free money, members of Congress will just write themselves a check on their

children's credit card. Both Democrats and Republicans are guilty of this. (The only difference between them is Republicans scream more loudly when Democrats do it.) In our modern democracy, since long before the Trump era, the default solution to any difficult fiscal problem is “kicking the can down the road” to be solved later, usually by adding to the national debt.

How long can low treasury interest rates go on? Don't ask me. I can't even seem to find any consensus from real economists. Some of them seem to be saying, “Go ahead, spend as much as you want. Rates will always be low, so it doesn't matter how much debt the government accumulates.” Others are screaming, “We're all going to die!”

Who can believe interest rates will never rise? The highest historical interest rate on 10-year treasury notes was over 15% in the early 1980s. If debt is currently 6 times total annual tax revenue, a 15% rate would mean interest payments alone would absorb nearly the entire budget of the Federal government. Since taxes must also be used for other things—like defense, roads, Social Security payments and all the other business of government—the actual breaking point is probably much lower than 15%. I don't know where that threshold lies or how inflation changes the picture, but sooner or later you step off a cliff.

The current debt on the books, as alarming as it may be, is only the visible tip of the iceberg. Every government also has unfunded obligations, or debts just waiting to happen. These are social obligations that have not yet turned into debts but eventually will. The biggest and most devastating of these in the U.S. is medical and retirement benefits for the Baby Boomers.

They were born between 1946 and roughly 1964. GI's came home from the war, got married and started making babies in earnest. It sounds kind of boring today, but there wasn't much on television, and it seemed like the thing to do at the time. The birth control revolution of the 1960s brought an end to the maternity party, but the Baby Boomers themselves didn't go away. They formed a Baby Bulge in the US population as they aged. The women soon reached childbearing age, and although their fertility rate was low, there were a lot of them, so they made a lot of babies (called the *Baby Boom echo*). As long as the Baby Boomers remained on Earth, the US population continued to grow, even as fertility rates plummeted.

You can argue that America's domination of the world stage in the late 20th Century was fueled by the Baby Boomers. As they journeyed through adulthood, they powered vast economic activity. They needed homes, cars and washing machines, and they themselves supplied the labor to build these things. They didn't have many babies individually, so they had more time to work and more money to spend on material things. From the late-1960s through the early 2000s, The Baby Boomers were America's greatest asset.

Now, as they enter retirement, they're America's greatest liability. In the Boomers' early years, the U.S. government made promises to them that seemed reasonable at the time. They would be provided with a default pension system called Social Security that they supposedly paid into every week through deductions in their paychecks. They were also guaranteed free medical care from age 65 called Medicare. America does not have free universal health care for all ages, but it does provide nearly

universal care during the single most expensive period of life: the dying phase. Before old people die, they tend to rack up huge medical bills, and these bills are getting bigger as medical science improves. The medical-industrial complex is keeping them alive longer (good) using ever more complex and expensive treatments (bad). Once upon a time, people just got old and died not long after they retired; now they may linger for years in a hospital bed at government expense.

Needless to say, the Federal government can no longer afford either Social Security or Medicare, at least at their current commitment levels. The notion of paying into a trust fund turned out to be an illusion. The federal government regularly “borrows” from Social Security to supplement its tax income, so in effect these retirement benefits are funded in real-time by active workers. Even if the total population of the country remains unchanged, the ratio of workers paying taxes to retirees collecting benefits is continuing to shrink, and the biggest shift is happening right now, as the Baby Boomers retire.

It is no mystery that Social Security and Medicare are heading toward insolvency, but that doesn’t mean anything can be done about it. Congress could try to raise taxes on existing workers (or even—gasp!—on rich people) but the tax increases required for solvency would be huge and politically unpalatable. Apart from America’s general anti-tax culture, there is a practical limit to how high taxes can be increased without damaging the economic activity that underlies them. If the burden is too high, you push jobs overseas, encourage tax evasion or discourage people from working at all.

Alternatively, you can try reducing benefits to retirees or insist they

work longer before retiring. Good luck with that! Social Security is often called the third rail of American politics. If you're a politician and you touch it, you die. Being a huge segment of the population who actually vote, Baby Boomers are a sort of electoral mafia who are unlikely to accept any reduction of their benefits.

To hell with the future! If bad things happen to the country, they won't be around to see it.

13. Dependency Ratio

The explosion of births from 1946 to 1964 is soon to be matched by an epidemic of death over the next few decades. What a glorious time to be a funeral director! As the Baby Boomers shuffle off this mortal coil, they will cease to be a burden to the Social Security and Medicare systems, but by then the damage will be done.

You can't solve the Baby Boomer shortfall by simply making more babies, because babies don't pay taxes and are almost as costly as old people. In economic parlance, both children and retirees are *dependents*. They are a net drain on society's resources. The ratio of dependents to active workers paying taxes is called the *dependency ratio*. One of the main drivers of the Social Security crisis is that the dependency ratio is rising as the Baby Boomers retire, even as the total U.S. population holds steady. There will soon be nowhere near enough active workers to support the dependents.

The opposite situation is called the *demographic dividend*. That's when there are a lot of active workers with few children or old people to care for. America experienced this dividend from roughly 1970 to 2010, when the Baby Boomers were active in the workforce and churning up huge economic activity. These workers earned a lot and spent a lot, and taxes could be low because American society was relatively

unencumbered by dependents. Although there were busts within this period, the overall theme was booming. The entire post-war period can be considered the Mother of All Booms, which only makes you suspect a Mother of All Busts to follow.

The trouble with a demographic dividend is that it can only happen once in history, right after a country transitions from a high birth rate to a low birth rate. Once people from the high birth period start retiring, as they are doing now, the situation reverses: You have a surplus of dependents and relatively few active workers to support them. I call this the *demographic deficit*, and it could be a permanent condition. As long as each new generation is smaller than the last, a surplus of old people will drag down the economy. The Mother of all Booms may have lasted 60+ years, but the Mother of All Busts has the potential to go on forever.

Axiom #3 says that in bad or uncertain times, people have fewer children, but even if a lot more Americans could be convinced to have babies, nothing would improve in the near term. If we were to have another Baby Boom starting today (or more precisely, nine months from today, which implies a big party tonight), it would be an unmitigated disaster for national and local governments because it would further engorge the dependency ratio. All those children would need to be educated, which is frightfully expensive. Meanwhile, tax revenue would go down because their parents could take a deduction for their new children and would have less time for money-making activities that generated taxes. Babies born now would potentially help the economy only 20-30 years from now when they reach the end of their education and start paying significant taxes. The Baby Boomers will have broken

the bank by then.

Another theoretical solution to the Baby Boomer crisis is for America to throw open its doors to immigration, instead of restricting it as now seems the trend. Selective immigration means you are importing talented adults who are ready to start working and paying taxes immediately. Unfortunately, the number of skilled immigrants needed to address the anticipated shortfalls is vast. I have heard it said that to make Social Security solvent, America would need to rapidly admit as many new immigrants as the current U.S. working population, which in the current xenophobic political environment just ain't gonna happen. It's not just a matter of admitting workers but assimilating them into your society and creating jobs for them without upsetting the paranoid voters who are already here. Assimilation is a slow process, so there's a practical limit to how fast you can take in immigrants.

If America can't raise taxes or import sufficient immigrants to support the retiring Baby Boomers, how is it going to pay for their huge retirement and medical costs? Of course, it gets charged to the national credit card, which at some point has to reach its limit.

14. The Breaking Point

What is the maximum debt load the U.S. government can sustain? 100% of GDP? 200%? 800%? What will happen when it reaches that breaking point? I don't have an answer. My only conviction is that a limit must exist. The exact threshold may be more psychological than economic. At a certain point, investors will lose faith in U.S. treasuries, even before any defaults. Trump is doing groundbreaking work in that area, making the world doubt America's reliability. After a series of crises in which the U.S. government shows its weakness, investors will eventually realize: "This paper is not worth what we thought it was."

When such an attitude sets in, interest rates on new treasury notes will rise and the government will be unable to meet its interest payments. When even one payment is missed, confidence in the U.S. government will collapse. I'm not sure what will happen next, but there would no doubt be a cascade of effects disastrous to the world economy.

We can hope that my pessimism about American politics is unfounded. Maybe the people in power will finally find the courage to effectively address the debt problem before a collapse, not after. Members of Congress could raise taxes and cut popular programs. This would probably enrage voters and donors and doom their own political careers, but they would do it for the good of the country. They would

accept significant pain right now to avoid an even greater catastrophe down the road.

My heart wants to believe this will happen, but my brain knows it won't. Most voters are reactive, not proactive. They respond to what has been happening for the past six months, not what will happen in future decades. Consequently, the leaders hired by these voters have no incentive to look ahead. If they touch any of the many third rails of politics, they know they won't be reelected. The national debt, therefore, can only grow higher until something breaks.

What is the solution to U.S. government debt? How do we pay it down? Plenty of political ideas have been floated, but they've all sunk without a trace. Instead of offering my own idealistic suggestions, unlikely to be implemented, I'm going to give it to you straight:

There is no solution.

Repeat: There is no solution.

In other words, the only realistic outcome is systemic collapse. American politics is so crippled and the available options so unrealistic that government default is inevitable. I propose that U.S. government debt has already passed the point of no return. It's like looking at your credit card bills and realizing the interest payments alone are greater than your available income. At the low treasury rates at the time of this writing, we have not yet reached that point, but it would take only a modest rise in rates to make it true, and by then it would be too late to take action.

From now on, the sovereign debt of the USA and many other countries can only grow to its natural breaking point. Barring perpetual

motion, a cataclysmic crash will be inevitable. In the near term at least, the power of our society to change its fate is limited. We just have to ride the roller coaster until it bottoms out.

15. Venezuela

When the U.S. government defaults on its debt, it will not be an isolated incident. America will probably take the rest of the world down with it. I have no firm grasp of what this collapse will look like. I don't think anyone does, because it will be a first-of-its-kind event. Several Latin American countries have taken the road to default and somehow survived, but America is the biggest kid on the block. The scale of an American default means no other country in the world would be able to shrug it off or contain the contagion. There would have to be a domino effect, even if we can't predict exactly what the dominos will be or how they will fall.

What will the post-default world look like? The main images in my head come from dystopian science fiction. Imagine a Mad Max post-apocalyptic wasteland where warring tribes fight for scarce resources and there's no government apart from your local villainous warlord. This imaginary world is a place of desperation, brutality and chaos with no happiness in sight.

Actually, you don't have to imagine it. Just take a trip to Venezuela. On second thought, don't take a trip there because you might not come out alive. From the moment you get off the plane, you are at risk of kidnapping or violent robbery. Even Venezuelan emigrants are afraid to

go back. There are food riots in Venezuela, and children are dying of starvation. In what was once the richest country in Latin America—still home to the world’s largest oil reserves—formerly middle-class people are scrambling just to feed themselves.

Venezuela didn’t reach its unhappy state through a debt crisis, although it certainly has one today. Venezuela was the victim of *populism*. That’s when stupid voters fall for a simplistic plan offered by a charismatic leader. Even though Venezuela was once rich overall, it has always had a wealth disparity problem. I visited Caracas in the late 1980s, when things were relatively good, and I marveled at the hillside slums. The people up there were clearly hurting, and they looked down every day on the glittering wealth in the valley below. When a politician named Hugo Chavez offered them an easy solution to their problems, they fell for it.

Chavez had a simple plan: rob from the rich and give to the poor. It sounded good in fiery speeches. Although the rich were very rich, there were a lot more poor people casting their votes. The downtrodden won the election for Chavez, and he put his plan into action. It was essentially a bad rerun of Communism where industries were nationalized and assets of the rich were seized. Soon Chavez had sabotaged everything that made the rich people rich and there was nothing left to steal.

Venezuela illustrates what happens when wealth is poorly distributed. Unhappy voters tend to make radical choices based on shallow sales pitches. Although he is no Communist, Donald Trump can be seen as another form of Chavez. Income inequality has been rising in the U.S. for decades and disenfranchised segments of the population are

clearly hurting. Given the choice between a conventional politician who can only promise what is realistically possible and a slick salesman who promises miracles, frustrated voters are likely to fall for the radical outsider. “It’s worth a shot,” they say, thinking they have nothing to lose.

Poor suckers. They don’t see that things can always get worse. You just have to throw away decency and convention and elect an “outsider.” Since being elected by the downtrodden, Trump seems to have done everything possible to further sabotage them. He’s doing the opposite of Chavez—robbing the poor to give to the rich—but populism is not a function of specific ideology. It’s a matter of angry voters falling for any kind of promised departure from the status quo. “Throwing the bums out” matters more to them than the bums they are bringing it.

Although I have not dared return to Venezuela in the post-revolution years, it looks from press reports to be as close to Mad Max as you can get. The government, although still clinging to power as of this writing, is as ineffectual as they come. It can’t maintain the roads or protect its citizens, only suppress dissent. The streets are ruled by crime, with some of the highest murder and kidnapping rates in the world. Inflation is astronomical, to the point where you need satchels full of cash to buy lunch, if you can find any at all.

Is Venezuela the future of America? I don’t know. All I can say is we have plenty of models on this planet for how bad things can get when an economy goes bad and voters fall for demagogues. We don’t have to look to dystopian science fiction because the dystopias are already here.

16. China and the One-Child Policy

So if America is destined to fail under its unsupportable debt, what nation will take its place as the world's *de facto* leader? How about China? China is close to surpassing the United States as the biggest economy in the world. Its government is methodical, and it has a quiet way of expanding its influence around the world through economic engagement instead of invasion. (At the time of this writing, it is the single largest holder of U.S. treasury notes.) If America is crippled by Trump and can't exert any global leadership, China will happily take its place.

But there are clouds on the horizon in China, beginning with a huge debt problem of its own. China's debt is different from America's. China has very little sovereign debt owed directly by the central government, but it has huge commercial and local government debt. In the aftermath of the 2008 Global Financial Crisis, the Chinese government loosened credit at state-run banks, encouraging them to loan out money for all manner of speculative ventures, mostly involving improvements in infrastructure and industrial capacity. On the surface this looks like a wise move. China needed to stimulate the economy internally to make up for the lost exports during the global slowdown, and what better way to do it than building new roads, bullet trains and factories?

Visiting Shanghai for a few days in 2016, I was blown away by the modernity of the city. It is a gleaming metropolis of futuristic skyscrapers and fast subway lines, mostly built since 2008. [See my Instagram videos at [#gpc_china](#).] To find the “real” China, I had to travel by bus to the outskirts of the city, where traditional Chinese culture is preserved for the tourists at Zhujiajiao Ancient Town. This place is reminiscent of Venice, Italy, a traditional community where the main streets are canals. Here you can ride in human-powered gondolas with other tourists, mostly Chinese, experiencing a taste of what the country must have been like before its rapid industrial rise. Other than these deliberately preserved tourist attractions, modern infrastructure in Shanghai seems to have obliterated most visible signs of traditional culture.

China’s problem today is a glut of infrastructure and industrial capacity. The most obvious symbols of excess are China’s vast “ghost cities” of empty housing units. These are new developments of high-rise condominiums connected by wide streets almost entirely empty of people and cars. In all likelihood, the corporate debts that built them can never be repaid. Likewise, investments in new steel plants in the north of the country have resulted in a vast overcapacity that can never be used. Not only has this glut wiped out steel industries outside China; it has sabotaged the steel market within the country.

In less than a decade between 2008 and today (Dec. 2017), China’s total debt—government, corporate and consumer—has risen from about 150% of GDP to at least 250%. (Reliable numbers are hard to come by, since a large portion of this debt is unregulated, but 250% is the minimum commonly cited by Western economists.) Much of these debts

are loans for dubious projects that can never be repaid. Does the growing pile of bad debt mean a massive banking crisis is coming soon?

If China was an open economy like the United States, I would say yes, but China is a complicated mix of Capitalism and Communism. Most of the non-performing loans are between government-controlled banks and government-controlled industries, so the government has a lot of influence over what fails and when. China can also, in theory, restrict capital outflows, so money doesn't leave the country in times of trouble. Much of China's huge trade surplus has gone into savings accounts at China's big banks, so they seem to be well-capitalized. By contrast, America's total debt (government + corporate + consumer) is now roughly 350% of GDP, higher than China's (250+%). Since capital in America can more easily flee in times of crisis, you could argue that China is in a better position to weather a debt crisis.

I don't feel qualified to make predictions about China's debt, but there is one area I do feel confident about: In the long run, China is facing the same depopulation bomb as Japan. Its population will peak within the next decade, and shortly thereafter it will start dropping at an ever-accelerating rate. (By some accounts, its working-age population has already peaked.) Although most aspects of China's future are difficult to foretell, its population is not. As with Japan, the future precipitous fall is non-negotiable. Regardless of what happens today, China will soon become an Incredibly Shrinking Country.

In 1979, China initiated its *One-Child Policy* which limited urban couples to one child between them. This could be the greatest act of demographic self-sabotage the world has ever known. It seemed to make

sense at the time, because population growth in the 1960s and 70s seemed out of control. If you want to correct one excess, the natural human impulse is to push hard in the other direction. The One-Child Policy was brutally enforced, sometimes with forced abortions and sterilizations, and it was highly effective. The national fertility rate never got down to 1.0, because rural couples and certain ethnic groups were allowed two children, but in the cities one child became the norm. China fell below replacement fertility around 1993, and today its fertility seems stuck in a range between 1.4 to 1.6. In some big cities like Shanghai, it is well below 1.0.

China had its own version of the Baby Boom, but it was longer, later and more intense than America's. Fertility peaked at 6.4 babies per woman around 1966, compared to 3.7 in America a few years earlier. As their Baby Boomers reached maturity around the 1980s, China started experiencing its one-time demographic dividend, where there were plenty of working-age people producing revenue and few dependents to support. This happened to coincide with China's great economic opening to the West, so this vast and unencumbered workforce was put to good use. China's demographic dividend provided its one great advantage on the world economic stage: a seemingly endless supply of cheap labor.

So what happens when that endless supply begins to dry up? Who is going to man the sweatshops to make the goods the rest of the world consumes and throws away? Competition for labor has driven up wages and will continue to do so. This is good for wage earners but bad for Chinese industry, because it could lose its competitive advantage. Many low-end jobs have already moved to India, Bangladesh, Pakistan and

even Africa, where the bountiful supply of cheap labor persists. Check the labels of the products you have bought recently and you may see a surprising number that are *not* Made in China.

China's near-term future is a rapidly aging population and rising dependency ratio. Its long-term future is an absolute fall in total population and an even greater fall in the working-age population. All the fantastic infrastructure China has created—the wide highways, tall office buildings and vast ghost cities—may become emptier, even as the debts that built them are edging closer to default.

17. Can China be Saved?

One proposed answer to China's pending population implosion is technology. Instead of being the world's sweatshop, why can't it become the next Silicon Valley? This is essentially a productivity question. Chinese workers could, in theory, consistently produce so much more in goods, services and taxes that it makes up for the falling number of workers. Axiom #2 says this can't happen, but maybe external investment will make up the difference. China could still take over the world in the next couple of decades, if only because of its huge trade surplus. Maybe by the time the demographic dividend ends, Chinese businesses will own so much of the rest of the world that China can just live off the investment proceeds from other countries without relying on its own workforce.

This same argument could have been made about Japan in the 1980s, when it played a similar role as China today. If you lived through that decade, you will recall that Japan appeared to be taking over the world. Its automakers were blowing away its American and European counterparts, and its companies were gobbling up assets worldwide. If you lived in Europe or North America back then, you might have thought you needed to learn Japanese so you could kowtow to your eventual Imperial overlords. That era ended, however, with Japan's asset bust in

1992. Since then, stagnation has ruled Japan.

Once again, the Doomsayers got it wrong. They looked at Japan's linear growth since WWII and projected it in a straight line into the future. In the 1990s, however, that upward line went flat. Temporary fluctuations aside, Japan's shrinking workforce means GDP is sure to turn downward. China is heading for a similar fate. It's breakneck growth cannot continue if its workforce is shrinking.

Like Japan, China suffers from one huge disadvantage compared to North America and Northern Europe: an almost complete lack of immigration. America can always open the immigration spigot to address any population or talent shortage (unless Trump poisons the well) but China has no such relief valve. The Chinese government bans most permanent immigration, but even if it were to change course and welcome immigrants, it is doubtful that any but the desperate would come. Just learning the Chinese language is daunting for anyone not born of Chinese parents. China is also huge—about 1.4 billion people compared to 325 million for the USA—so any impact by immigration would be negligible. There just aren't enough useful immigrants in the world to bolster China's workforce.

Contrast this with Singapore, a tiny island nation south of China. Singapore's fertility rate is among the lowest in the world, hovering around 1.0 babies per woman, but it welcomes immigrants. Because Singapore is small (5.6 million), immigration can pretty much solve all of Singapore's workforce problems. Most business is conducted in English, which most trained professionals speak anyway. Singapore's patriarchy desperately wants more native-born sons and daughters, but their

incentive programs have had little success. In lieu of that, Singapore can skim off the best talent from India, Malaysia and, yes, China.

China's reproductive situation is worse than the current fertility rate suggests (1.4-1.6). For cultural reasons I can't fathom, boys are preferred over girls, so selective abortion is common. Roughly 118 boys are born for every 100 girls, which means the effective fertility rate is lower than the overall figure (more like 1.2-1.4). Girls are important, of course, because only they can ultimately produce babies. Society can adapt to a shortage of males (since the siring capacity of each male is unlimited), but a shortage of females is insurmountable.

China's population is destined for a downward plunge, but it won't happen for a while. Significant population loss will not occur until the 1960s Baby Boom generation starts to die off. In the meantime, China's population, like every other in the developed world, is rapidly aging. Once-productive workers are becoming a burden to the government. It isn't clear what China is going to do about its looming elderly population. Unlike in the USA, these Boomers don't have much political power, so the government can afford to abuse them, but the fact remains that old people aren't as economically productive as they were in their prime.

If "children are the future," China's future looks grim indeed, because there haven't been many of them for quite some time. You'd think China would do something about this baby shortage. In a government of central planners and number crunchers, can't anyone see what is happening? Of course they can, and they're taking action. In 2016, the government formally replaced the One-Child Policy with a Two-Child Policy. Now every couple is allowed two children with no

permits or permissions. Unfortunately, this change seems to have had little practical effect on fertility.

There are several problems with the Two-Child Policy. One is simple math. Even if every woman in China could be forced to have her full quota, that would be a fertility rate of only 2.0, not the 2.1 required for long-term survival. In the long run, 2.0 will age and liquidate your population just as surely as 1.4, only more slowly.

And even a fertility rate of a perfect 2.1 would do little to alleviate the vast depopulation bomb looming on the horizon. When the Baby Boom generation starts to die in large numbers, circa 2030, the population will drop dramatically regardless of the fertility rate today. There's simply no negotiation. Demographic momentum implies a decades-long lag between any birth rate changes and their effects. An ideal fertility rate of 2.1 won't stabilize the population until the extreme highs and lows of previous generations have passed through the pipeline, some seventy years from now.

Beyond mathematics, you have human nature. Simply "allowing" women to have two children is no guarantee they will have them. Many will simply choose not to. Most Chinese women of childbearing age today grew up under the One-Child system. It is the norm to them. Two children may seem unnatural and frankly too much work. Once you have experienced the joy of parenthood, why would you want to repeat the same exercise?

For over three decades, the Chinese government educated, threatened and coerced women into not having children, and their mind control efforts were remarkably successful. Now women don't want

them. Reversing the trend is far more difficult. As a non-democratic regime, the Chinese government has unlimited power to implement policy and generate propaganda, but all the policy and propaganda in the world can't make people take life-changing actions against their own self-interest.

This brings us to the second great Catch-22 of our Demographic Doom: While you can force people to not have children, you can't force them to have them.

18. Nature Thwarted

Why aren't people having babies these days? Obviously, evolution designed our species to reproduce or we wouldn't be here. Procreation is supposed to be every animal's greatest drive apart from survival itself, so why are so many humans opting out? Turns out, Mother Nature has only two neurological tricks to coax us to procreate. Although these emotional mechanisms are deeply embedded in our brains, they have both been thwarted by modern technology.

One of those impulses is sexual attraction and mating. Men and women are drawn together by a deep-seated romantic drive that can overrule all logic and common sense. (Trust me, I've been there.) Throughout most of human history, this mechanism alone was sufficient to assure procreation, but it has been effectively neutralized by birth control. Now we can shag shamelessly, woo multiple partners and fret endlessly about our "relationship" without the risk of babies getting in the way. The mating drive hasn't changed, but technology has changed the outcome: no babies unless you deliberately choose to have them.

There are other remedies for sexual attraction requiring no contraception. For example: pornography. It has been available on the black market since Roman times, but now it's available free on the internet. Pornography is a sort of virtual sex, stimulating the brain like

real sex does. Masturbation makes no babies, and with today's visual aids, lotions and vibratory devices, it's easier than ever before. To the extent that virtual sex mitigates the desire for actual intercourse, pornography reduces the risk and temptation of producing non-virtual babies.

In my recent visit to Shanghai, I noticed two things I never expected: a 7-Eleven convenience store at every major street corner, and a selection of vibrators at the check-out counter of every 7-Eleven. They were right in front of the cash register so you couldn't avoid them. In no other country have I found masturbatory aids displayed so prominently. China has no authorized religion to be aghast at such depravity. Shanghai's fertility rate is the lowest of any big city in the world, recently estimated at 0.6, and I cannot help but wonder if 7-Eleven is aiding the decline.

Nature's second neurological mechanism for assuring procreation is more subtle and less selfish: We love babies! We love to hold them, talk to them and make funny faces at them. The urge to care for small creatures is as fundamental to us as our sex drive. Connect with someone else's baby—You smile and they smile back.—and pretty soon you want one of your own. Babies can be as addictive as cocaine. Once you know these darling creatures exist, life without one can seem empty and lonely. All logic aside, you just want one. When you wake up in the morning, you want to hear the pitter-patter of little feet.

How has modern society solved that problem? With a product called "pets". Dogs and cats serve as our surrogate children, allowing us to exercise our nurturing instincts at minimal cost. Unlike real children

who eventually grow up and become surly, pets never do. They always remain at the perfect developmental age where we are the center of their universe.

Dogs are the best example. They want to do what you do, and they're always ready to play. They will wait for you for hours without complaining, and when you come home at night they are ready to shower you with unconditional love. Why would you bother with real children who will ignore you or talk back when you can have a permanent subordinate companion? Today in the USA, the number of household dogs exceeds the number of children under the age of 18 (90 million vs. 74 million). I wonder how many more babies there would be if pets were banned. With no little creature to care for, more people might be driven to human offspring.

Pets are a relatively recent invention. Although dogs and cats have traveled with humans since the dawn of history, they were primarily working animals, catching mice and guarding flocks. In the Middle Ages, only the wealthy kept animals as pets—that is, feeding them without demanding any labor from them. Among the masses, animals had to earn their keep or it wasn't worth the precious food to keep them alive. Pets didn't become emotional support animals for grown-ups until modern times, because most adults were occupied by their own children and grandchildren. Today, we expect hardly any work from our pets. Their main job is to love us and give us someone to love.

Not surprisingly, in every country where fertility has fallen, pet ownership has risen. The Chinese once saw dogs as a source of meat. Now they are treated as members of the family—often the only children.

Owners dress them up in cute outfits and buy them birthday gifts. (Cats, by contrast, are only a third as popular in China as dogs, perhaps because they are more aloof and less child-like.)

In your own country, you probably know a childless couple who are focused on their pets. They dote on them as their children, and much of their interaction with each other refers to those precious kids. Pets are the glue that holds their relationship together, just as children would be. I'm not saying pets are wrong or people shouldn't have them, but they are filling a niche that might otherwise be occupied by human children. Pets satiate your nurturing drive, so you may no longer feel the emotional need to raise a real child.

The main difference between a pet and a child is a pet contributes nothing to the future of humanity. You invest 10-15 years of your life in this creature, then they die. You grieve over them as you would a child, but they have left no impression on anyone but you. It is an investment without any lasting reward.

Together, birth control and pets have depleted nature's emotional arsenal for assuring procreation. All we have left are more cerebral processes, like analyzing whether it is a good idea or whether you can afford it. Confronted by the deliberate choice of whether to have children, you debate, cogitate and weigh the pros and cons, all of which are bad for fertility. You start thinking, "I know my society needs children, but why should I be the one to bear the huge cost?"

Thinking is never an asset to procreation, because it gives you an opportunity to talk yourself out of it. There are countless rational reasons for not having children, starting with the fact that it is incredibly costly,

and only a few vague reasons for having them. By bearing and raising a child, you are providing a service to your society, but society doesn't compensate you for your investment. As a purely economic decision, having children is a losing proposition, so it is reasonable to expect the most intelligent members of society to avoid it.

In Section III of this book, we will look at the many sound intellectual reasons to not have children and the few reasons to have them. Section V will offer some speculation about how low birth rates may eventually be repaired. The light at the end of the tunnel is that the problem is solvable. Humanity is physically capable of making more children; it just has to organize itself in such a way as to make baby-making more economically sensible, especially for the exceptional human specimens who really should be breeding.

Unfortunately, fertility improvements will probably not happen within the social and governmental structures we have today. (Can you imagine the U.S. government paying people to breed or deciding which ones should do it?) The Great Reversal may provide the opportunity for this restructuring. After the devastation of the debt bomb, new societies may arise that are deliberately child-friendly. For the government to directly intervene in human breeding may be unthinkable today, but it may not be unthinkable in some future society.

19. Greece and Puerto Rico

Greece and Puerto Rico are a half a world apart but are nonetheless in similar straits. They are both suffering from crushing government debt resulting from their association with wealthy partners. What seemed at first to be a fairytale wedding turned into a marriage made in Hell.

Who married whom? Greece married the European Union, and Puerto Rico married the United States. These unions brought many benefits at first, but they also brought a fatal curse: Both countries were essentially given a credit card based on the good credit rating of their respective partners. They maxed out the credit card and are now drowning under massive interest payments.

It is pointless to blame Greece and Puerto Rico for their predicament. Most politicians, like most consumers, find it hard to resist a low interest rate and a high credit limit. As of this writing, politicians in the mainland USA are doing pretty much the same thing: spending on their children's credit card to avoid dealing with hard realities today. Greece and Puerto Rico just did it faster based on the high credit limit they were given by their wealthy spouses. Greece issued bonds that were assumed by investors to be backed by the full faith of the European Union, while Puerto Rico offered "triple tax exempt" bonds to mainland Americans eager to avoid taxes on the interest. The net effect is that both

countries were able to accrue far more debt than if that had never married.

The debt bomb of these countries is not, strictly speaking, a demographic problem, but demography has served to metastasize the cancer and make it fatal. Both countries have had abysmally low birth rates for decades. Citizens of both can freely migrate to their partner countries with no visa required, so the most talented and mobile individuals can leave in an instant and stop paying taxes to their home government. The worse the economic situation becomes at home, the more people flee and the fewer babies are born to those who stay. This means a falling population and tax base with no bottom in sight.

20. Positive Feedback Loops

Greece and Puerto Rico illustrate the devastating effects of a *positive feedback loop*. That is when an instability introduced into a system triggers new events that amplify the instability. “A” causes “B” which further amplifies “A” which in turn increases “B”, and on and on. If no other factors intervene, this assures the ultimate destruction of the system. An example is a fire in a fireworks factory: Only a small flame is sufficient to ignite one of the firecrackers, but once it goes off, it ignites others which ignite still others until you have a huge conflagration that consumes everything. The feedback loop only stops when all the fuel has been consumed.

A positive feedback loop is “positive” in name only. Most of the time the outcome is negative, as in “not good.” A positive feedback loop can trigger a bank run or a collapse in commodity prices. Black Tuesday 1929, Black Monday 1987 and all the other black days in financial history were products of these loops. Such crashes are often called “panics” and are usually associated with rapid and frenzied activity, but panics can also happen over an extended period of years or decades without anyone getting agitated. All you need is an instability that triggers effects that in turn amplify the original instability.

Greece and Puerto Rico aren't the victims of just one positive

feedback loop but a whole system of them, each aggravating the others. Here are a few examples:

- **Talent Flight.** As the country's economy falters, young people and talented workers leave for better opportunities elsewhere. A Puerto Rican can move to Chicago and a Greek to the Netherlands with no barriers apart from learning the language. Back home, this reduces the country's population and tax base, drains its human capital and engorges the dependency ratio, since old people are less likely to leave. All of this further worsens the economy, encouraging more emigration. Government services collapse—like trash collection and road maintenance—making life miserable for those who stay and encouraging still more to leave. Soon both the economy and population are in free-fall as everyone who can leave, does.
- **Economic Retrenchment.** The economy suffers a sudden and unexpected external shock. (In Greece, this shock was the 2008 Global Financial Crisis. In Puerto Rico, it was Hurricane Maria in 2017.) No one knows how it will turn out, so everyone retrenches. Individuals stop buying nonessential items, curtail their vacations and retreat from major purchases. Businesses hold back on new projects and stop hiring. Banks stop lending money until they can figure out what the risks are. These sensible cutbacks, in turn, further slow the economy, encouraging even more retrenchment. Soon, no one is buying

anything they don't absolutely need to survive, and the economy freezes.

- **Debt Panic.** A distressed government is unable to make an interest payment on some of its debt. Investors instantly lose confidence, discount the value of existing debt and start demanding higher interest rates on new debt. This further distresses government finances and makes broader defaults inevitable.
- **Falling Fertility.** As a local economy worsens over the long term, the people who stay have fewer babies, because no one wants to raise their child in deteriorating circumstances. Fewer babies ultimately mean a lower population, aggravating the bad economic situation and further discouraging births. The population and economy can't help but shrink for decades—if not forever.

The opposite of a positive feedback loop is a *negative feedback loop*, where an instability triggers a correcting event that reduces the instability. An example is the thermostat in your home. When the temperature of the room rises above a set limit, the thermostat reacts by reducing the production of heat, so the temperature remains within a comfortable range. In Greece and Puerto Rico, I don't see any negative feedback loops on the horizon. What, for example, would ever encourage Puerto Ricans to have more babies? A country with a falling population

has little optimism. Few responsible parents would want to bring their children into such a grim world.

So where is the collapse going to stop? In the case of a fire in a fireworks factory, it will stop only when all the fireworks have been consumed, but where will it stop in a living country?

Both countries still have valuable assets. Greece, for example, has some popular tourist attractions and productive agricultural land. Tourism, in fact, is one bright spot in Greece's current economy. Tourists from grim northern climes are still drawn to the sunny Greek Islands and their relatively low costs. The most popular islands will probably keep going, providing the services needed to support tourism—airports, roads, law enforcement—funded solely by local resources. A trendy island like Santorini can tax its hotels and tourists and probably get by without the national government. It can survive, in part, because it is an island, isolated from the rest of Greece. Mainland Greece probably has farther to fall because tourism is weaker and more diffuse and the economic situation is more chaotic.

At some point, both Greece and Puerto Rico will have to default on their national debt. With the continuous outflow of talent and capital, there seems no other way. Investors could offer to take a “haircut” where the debt is systematically reduced, but it is hard to imagine this stopping the economic slide. If your tax revenues are shrinking and your debt isn't falling at a greater pace, you still won't be able to make the interest payments. At some point, these countries will have to give up all pretense of being able to service their debt. Eventually, they will give the middle finger to their creditors and try to walk away.

Fun Fact: This is what gave us Nazi Germany. Saddled with crushing debts imposed by the victors of World War I, Germany eventually rebelled. Under the guidance of a charismatic populist leader, it decided it wanted payback for years of abuse by creditors. Germany did not choose the wisest path, of course, but you can see the source of their anger.

Default has such wide implications that I can't begin to predict what will happen next. I can only predict the outcome: Puerto Rico and Greece will be like countries bombed into submission in a brutal war. When the war is over, no one will expect them to pay back their debts, but rebuilding will be a challenge. There will probably be no Marshall Plan here, because according to my predictions the rich countries will soon be in trouble, too, and won't be able to help. Greece and Puerto Rico will have to sustain themselves without loans, as talent continues to flee and tax revenues continue to fall. It is hard to imagine much rebuilding going on, just terminal decay.

In the news, you often hear about debt "restructuring" for Greece and Puerto Rico so their payments aren't so high, but this is a farce. Even lower payments won't be manageable if the country is a ghost town. If talented Greeks and Puerto Ricans can escape the burdens of their country by moving away, why wouldn't they? The past intemperance of the government isn't the responsibility of an individual citizen, just like a child is not responsible for the sins of their parents.

21. The Rise of Separatism

Santorini is my favorite tourist destination in the world. It is a volcanic island in the Aegean Sea about halfway between Greece and Turkey. [See my Instagram photos at [#gpcGreece](#).] You may not have visited Santorini yourself, but I'm positive you have seen it. It is the star of wall calendars and jigsaw puzzles. Picture whitewashed buildings and blue-domed churches tumbling down a steep slope overlooking the sea. If you are stuck in a drab office in New York or Hamburg, it's easy to be drawn into the picture. Between the white houses and blue-domed churches, there are stairways and narrow passages that cry out to be explored. The perfect blue sea demands you swim in it or sail across it.

The island of Santorini is C-shaped with another island closing the loop and an uninhabited volcanic island in the center, like a pupil in the center of an eye. These ragged islands are the remnants of a much larger island that exploded during a volcanic eruption around 1600 BC. A civilization perished here, possibly giving rise to the legend of Atlantis.

The village with the blue domes is called Oia ("EE-ya") and of course it is crawling with tourists. Although this is Greek soil, most signs and voices are in English, the *lingua franca* whenever cultures come together in Europe. (If a Dane means a Spaniard in Romania, they will converse in English.) Two million visitors a year make the 5+ hour ferry

crossing from Athens or fly into the small local airport. I admit Santorini is a tourist trap, but at least the architecture is authentic. The local authorities should be commended for preserving their heritage and keeping high-rise development at bay.

Santorini is peaceful, safe and stable, an island of relative prosperity in Greece's troubled economy. It is also, in my view, a perfect place for a separatist revolt.

To be clear, I have never heard any talk about the Greek Islands seceding from mainland Greece. I'm only saying they would be good candidates. Put yourself in the shoes of the residents of Santorini. Your economy is doing fine in spite of your country's woes, and you fund most of your own services from local tax revenue. Why do you need the Greek government at all?

The implicit deal between a central government and its regions is that the regions pay national taxes and in return the central government provides services the regions themselves can't effectively provide, like defense and interconnecting infrastructure. What happens when this agreement breaks down? What if the central government stops holding up its side of the bargain and takes more than it gives? Isn't this going to push the regions toward revolt?

If you live on an island, it is easy to see your people as a separate entity. Santorini didn't incur most of Greece's huge debt. Its people didn't build the financially disastrous 2004 Olympics, but now they're being asked to pay for them. If the region is wealthy, you can imagine it saying, "We don't want to be part of this marriage anymore." To the best of my knowledge, those sentiments have not been openly expressed by

Santorinians, but they have been expressed by other wealthy regions of the world.

Take Catalonia, the region of Spain that includes prosperous Barcelona. Catalonia has always seen itself as separate from the rest of Spain, an island of sorts with its own language and identity. The desire to succeed from Spain was expressed in disputed referenda on 2014 and 2017. On October 27, 2017, the Catalan parliament voted for independence, and Spain's central government responded by arresting the movement's leaders. As of this writing (December 2017), the mechanizations continue. As a time traveler from the future, you know better than I do how this drama is going to resolve itself. I can only say that such separatist movements are bound to intensify as central governments weaken under their debt load.

If Catalonia were ever to become independent, it would naturally want to take on as little as possible of Spain's immense debt. The central government, in turn, would not want Catalonia to leave, since they would be losing their most valuable source of tax revenue. Armed conflict is not out of the question, but all-out war like revolutions of the past is unlikely. War is a young man's game and there just aren't many young men to fight it. (Both Spain and Catalonia have low fertility, less than 1.5, and rapidly ageing populations.)

Today, many countries and alliances are being held together more by inertia than mutual benefit. There are a lot of unhappy marriages that persevere not because the partners love each other but because the cost of divorce is so high. If the economic power of the central government weakens further, as might happen in a major financial crisis, you can

imagine separatism roaring back. If the Spanish government were to collapse completely under its debt, Catalonia would be ready to assert its sovereignty, providing an alternate government in its own region while repudiating the central government's obligations.

There are even rumblings of separatism in the United States. As in most countries of the world, tax revenue from wealthy urban regions subsidizes rural regions. The two coasts supply most of America's economic power and tax revenue, while the flyover states are the biggest beneficiaries of federal government largess. In times of stress, it is natural for citizens of the wealthy states to say, "Why do we even need those people?" The flyover states voted for Trump while the coasts voted for Hillary. It's tempting for the coasts to tell the flyovers: "You take Trump and fend for yourselves, and we'll keep our tax revenue."

At the time of this writing, the notion of the United States breaking up is simply unthinkable, but it might become more thinkable if a financial crisis cripples the federal government. If the central government is neutered, we can expect the states to assume more control. New York State will be mainly concerned about the welfare of New York State, not Wyoming. There doesn't have to be any formal succession, only a shift of power from the central government to the regions. When this happens, the wealthier regions are likely to defend their own resources and cut off subsidies to the poorer regions. This would accelerate the decline of the poorer regions until they become empty shells valued only for their natural resources.

The 20th Century was marked by relentless globalization. Formerly isolated regions were integrated into ever-larger political and economic

alliances. The 21st Century could move in the opposite direction. Throughout the world, central governments have accumulated too much debt, and one *de facto* way for this debt to be dissolved is for the central governments cease to exist. The new movement would be anti-globalization, marked by the rise of smaller regional powers seeking to protect themselves from liabilities and outside threats.

It could be like Europe after the Roman Empire: one integrated power replaced by many fiefdoms. This is hardly an optimistic scenario, since the fiefdoms of the Middle Ages often turned to war, but at least their won't be many soldiers to do the fighting, only old people voting for a change.

22. Sri Lanka

The next stop on our world tour is Sri Lanka, an island nation of 21 million off the coast of India. In terms of fertility, Sri Lanka appears to be a rare success story. From a low of 1.9 babies per woman in 1998, when it was engaged in a civil war, fertility seems to have improved to something close to 2.1 today. This unusual reversal seems to suggest that all is not lost. Apparently, a country can repair its falling birth rates and save itself.

I could leave it at that, but I won't, because I have visited Sri Lanka and have a story to tell. I spent four days there in June 2015. [See my Instagram posts at [#gpcSriLanka](#).] Sri Lanka is not a wealthy country. My most indelible visual image is of passengers hanging onto the outside of packed commuter trains. I felt comfortable there—at least that I would not be mugged—and I got along fine in English, which most people I met could speak.

My story concerns a sandwich. While wandering in the capital Colombo, I stepped into small sandwich shop to escape a sudden monsoon rain shower. For less than \$2, I ordered a large wrap sandwich, which took some time to prepare. There were no other customers, and I wasn't eager to go out in the rain, so I stayed in the store to eat my sandwich and struck up a conversation with the sandwich maker.

He told me about his plans to move to Canada, a country he had never visited. I probed him for the details of his plan, but he didn't have many. He said he had friends who had moved to Canada, but he had no family members there. I asked him how he planned to get a work visa but didn't get a satisfying answer. The only thing certain was his conviction. He was going to move to Canada, and whatever obstacles stood in his way, he would overcome them. I thought to myself: How long does it take to save the money for a plane ticket to Canada if you are making \$2 sandwiches, let alone obtaining a visa? I did not press him, however, because it was not my place to spoil his dreams.

I have known several Sri Lankan immigrants in America. They are mathematicians, engineers and scientists who were admitted to the USA based on their advanced skills. People like this are an obvious loss to Sri Lanka. Every year, a certain percentage of the best and brightest get skimmed off by the rich countries. Sri Lanka provides their upbringing and much of their education, but gains little when they leave. The emigrants may send money back home, but these payments eventually dry up as they lose their connections to their home country.

The continuous loss of talent is bad enough, but the sandwich maker made me realize the people who actually emigrate are only part of the problem. For every scientist who leaves Sri Lanka for a better life, there are other less credentialed people who only dream of leaving. Successful emigrants are the rock stars of Sri Lanka, and countless others are trying to emulate them. As with stardom everywhere, many will try but few will succeed.

What this means, in struggling countries around the world, is there

is a hidden class of people who have no plans to stay in their own country. Whether they actually escape is immaterial. While they are waiting for their dreams to succeed or fail, they are not going to invest in their home country. They are unlikely to start families, open businesses or buy real estate. They are just going to make sandwiches until their ship comes in.

The United States has a “diversity lottery program” (or at least it did until Trump came along). Under this program, immigrant visas are granted at random, so applying for one is truly like buying a lottery ticket. The program is sensible from America’s point of view because it assures diversity in its immigrant stream—not just scientists and engineers but people from all walks of life. However, it can be poisonous on the donor side. Those who apply for the visa tend to put their lives on hold until they receive an answer. Of a hundred who apply, one may get in, but the other 99 are less likely to invest in their own country while they wait.

Meeting the sandwich maker was an epiphany for me, because in America you rarely see this phenomenon. We have people who are waiting for their ship to come in but not many who are hoping to leave the country on that ship. In less successful nations, ambitious people who would otherwise build their dreams at home are instead focused on moving away. Not only does the best talent leave, but the people left behind stop investing, hoping they will be the next to escape.

23. Peripheral Decomposition

The loss of both talent and faith in countries like Sri Lanka contributes to an invisible form of rot I call *peripheral decomposition*. This is my general term for the demographic deterioration of the peripheral countries of the world, like Sri Lanka, Greece, Puerto Rico and Japan. The young talent of these countries is draining away.

Peripheral decomposition assumes there are two kinds of countries in the world: “core” countries and “peripheral” countries. By definition, the core countries are the ones people want to emigrate to. Peripheral countries are the ones that people don’t want to move to except perhaps as stepping stones out of even worse countries. If you opened all borders and told ambitious young people they could live anywhere they wanted, where would they go? The most popular preferences would probably be North America or Northern Europe, where opportunities are perceived as best. While plenty of Sri Lankans have migrated to Europe, few Europeans have permanently moved to Sri Lanka. Most migrants would not deliberately choose fewer opportunities for themselves.

I’m not prepared to provide a definitive list of which countries are core and which are peripheral, but I can give some examples. The United States, Canada, Germany and Scandinavia are currently in the core category, gaining immigrant talent, while Eastern and Southern Europe

are peripheral and losing talent to Northern Europe. Other countries are debatable. Is post-Brexit Britain still part of the core club, or are talented young people now more eager to run away?

Peripheral decomposition also applies to regions within countries, as exemplified by the relentless march of talent from rural areas to the cities. For example, many states in the central USA can be considered peripheral to the powerhouse states on the east and west coasts. If you grew up in Kansas or Alabama, and you have ambitious career plans, there's a high probability you'll move away. It would be perilous for me to designate too many regions as "peripheral", as some of my readers may come from those places, but I'm sure you can think of your own candidates.

I introduce peripheral decomposition as a conceptual tool to help us understand how migration works. We tend to focus only on the success stories of talent migration. ("Country girl makes good in the big city.") We overlook the damage being done to the donor regions, which are being sucked dry of both skills and self-respect. ("Ambitious young people flee struggling small town.")

Given its continuous loss of talent, Sri Lanka's prospects can't be as rosy as its 2.1 fertility rate suggests. This country, like others on the periphery, is essentially a talent mine for the core countries. Every year, the world's core countries are stealing Sri Lanka's best graduates and paying nothing for them. Everyone who leaves is doing so willingly, but in the long run it's not much different than a colonial slave trader visiting an African village every year to abduct the strongest and most capable young people. Every year, the tribe gets a little weaker, even if it is

producing enough babies and not losing population.

Furthermore, the village is demoralized. It becomes reluctant to invest in its children knowing that the best sons and daughters could be taken away. It's no less disheartening if the people leaving are not slaves. If they have Instagram accounts and are selectively posting their adventures abroad, the left-behinds are bound to be jealous and will want to leave, too. If you are continuously reminded of the freedoms and luxuries of the outside world, your own culture seems inadequate and disposable.

Strictly speaking, the loss of faith of those who remain is not a demographic problem. A traditional demographer would only examine the people who actually emigrate from Sri Lanka because they are easy to count and classify. A change in attitude by the people left behind is not so easy to measure. You would have to take a poll and compare it to polls from decades ago, and such longitudinal data probably isn't available for less affluent countries. All we have is anecdotal evidence, like my conversation with the sandwich maker.

Peripheral decomposition can manifest as population loss, but talent loss is more important. Even if Sri Lanka can maintain its numbers, it is still being drained of its "life force". This is also true in Africa where populations are still growing but young talent is leaving whenever it has the opportunity. If those who could lead the country responsibly and competently have already departed, that leaves the corrupt and incompetent. In ruining the country, incompetent leaders are encouraging still more talented people to leave.

If you keep removing the best and brightest from a community,

generation after generation, there have to be consequences. The cost isn't just the loss of skilled labor and people with advanced degrees; it's also a loss of leadership, creativity and the ability to solve problems. The world runs on talent, and if your community is continuously bleeding it, it will become a nest of incompetence. Traditions will continue, but innovation will dry up. When a catastrophe comes along, there will be no intellectual resources to deal with it.

24. Eastern Europe

I enjoy travelling in Eastern Europe because it's cheap, safe and easy. I have little trouble getting by in English, and prices are often half of what they are in Western Europe. The former Warsaw Pact nations have plenty of interesting cultural sites—castles, museums and medieval villages—but they also have desolate attractions you rarely see in Western Europe. Beyond the big cities is a vast landscape of abandonment. There are countless derelict factories from the Communist era and crumbling villages on the brink of extinction. In these nascent ghost towns you see very few young people on the street, only the tottering elderly, because the young have all moved away.

Where have they gone? They have either moved to the city or fled the nation altogether. If you're an ambitious graduate, you are naturally drawn to where your opportunities are best. Your first stop is your capital city, like Prague or Sofia. After that, you're heading for Western Europe. Many of the former Soviet satellites have joined the European Union, which means citizens of these countries can now work in any other E.U. country with no special visa. Who wouldn't move? Doesn't everyone have a right to seek the best opportunities for themselves?

Eastern Europe is the perfect example of peripheral decomposition. These countries are subject to both talent flight and low fertility. In spite

of demographic momentum, many post-Soviet countries are already losing total population. Bulgaria, Latvia and Lithuania are shrinking by about 1% per year, and other Eastern European countries aren't far behind. More disturbing is who is being lost. The people emigrating to the West are largely young and talented, leaving behind the less young and less talented. Also lost are the nation's fertile young women who would otherwise bear the next generation of Bulgarians and Latvians. Fertility rates don't have much meaning if there aren't many women in the appropriate age range for childbearing. The country's loss, therefore, is much greater than the 1% population decline suggests.

What have governments done to stem their losses? Some have tried advertising campaigns to get people to have more babies, with little success. In Section III of this book, we will talk about the many sensible reasons for not having children and the general ineffectiveness of government programs to counter them. The last time fertility was near replacement levels was around the fall of Communism, circa 1990, so you could say the core problem is freedom. Now that young people are free to emigrate and have better things to do than making babies, they are taking advantage of those liberties.

Eastern European governments are clearly under stress from their shrinking economies and dwindling talent, but the way they are responding is often counterproductive. Countries like Poland and Hungary are turning nationalistic and xenophobic, blaming foreigners for their woes. Some are sliding back into totalitarianism. Populist tyrants are elected to power and start dismantling democracy to keep themselves there.

In a certain sense they are right: Western Europe is stealing their talent, but it's hard to fight stronger countries, so they are turning their attention to weaker ones. They are erecting fences on their southern borders to keep out refugees from the Middle East. Arabs and Muslims are the new scapegoats for Eastern Europe's problems. No refugee wants to stop in Hungary—They only want to pass through to Western Europe.—but Hungary's government is eager to persecute them and blame them for the nation's woes.

When a country has a shrinking workforce and is suddenly overwhelmed by refugees, the logical response should be to welcome the newcomers and put them to work. Unfortunately, xenophobia has gained the upper hand, and the opposite is happening. “Hungary for Hungarians” is the kind of thing you hear from politicians, who vow to restore “traditional values” and crack down on immigration. What the voters don't seem to realize is that immigration is their only hope of survival. How else are they going to keep up their numbers?

Voters in Eastern Europe fall into two categories: Old people who remember Communism and young people who don't. Seeing their society dying around them, old people tend to be nostalgic for the good old days of totalitarian order. They can easily be convinced that to fix the country's problems, all they need to do is turn back the clock. Young people, of course, want greater liberalization and closer alliances with the West. The problem is, there are more old voters than young ones, so the old ones tend to carry the elections.

The Polish government's solution to low fertility is to try to restrict abortion. Even if successful, it hard to see how this will improve the

country's slide. Abortion is only the last-resort form of birth control, and it would be difficult to suppress all the other methods. Banning birth control isn't the same as encouraging parenthood, which requires an investment in family-friendly services the country can't afford.

Suppressing reproductive rights may simply convince more young people to leave. In the face of oppression, the first impulse of the young is to take to the streets in protest, as they are doing now, but if that doesn't work, it isn't a big leap to saying, "I don't want to be Polish anymore."

It is another positive feedback loop. The more oppressive a government becomes, the more young people leave and the more the remaining Communist-raised voters are inclined to hand power to populist despots. In the end, you have a repressive, totalitarian regime with few young people, a dwindling number of babies and little hope for long-term survival.

Regardless of what governments do, it is hard to see Eastern Europe ever recovering from its peripheral decline. Fertility will remain low; young people will leave, and the population will get progressively older. As the work force and tax base decline, government and commercial services will deteriorate, encouraging more people to flee. Discretionary industries will move away, since they can't find the skilled labor they need. The only businesses remaining will be those tied to the land, like tourism, agriculture and resource extraction.

The people who tend those industries will find themselves living in a ghost town. There will be lots of room for everyone but few services. People will remain in a ghost town only long enough to make money. When the money dries up, they will want to be where everyone else is.

25. The Grand Hotel Syndrome

If you visit Eastern Europe as a tourist, you might not see much evidence of decline. That is because you will probably be visiting the main tourist cities like Prague, Budapest and Sofia. These places seem as crowded as ever, and some of them are even growing. How do we account for the discrepancy between falling population and teeming cities?

I call this the *Grand Hotel Syndrome*. Imagine an ornate resort hotel from a bygone era. It has 500 rooms in multiple wings. In its heyday, all the rooms were sold out, but over the years the number of guests has dwindled. Now only 200 of the rooms are filled on any given night. The management does not want to give guests the impression the hotel is failing, so what do they do? They shut down peripheral wings and middle floors. The remaining hallways seem just as busy as they always were. Of five original restaurants, the three least popular ones have closed, so the two remaining restaurants are still crowded. If you visit the hotel today, you might think it is as busy as it has ever been, but that is only because the remaining population has moved into the core areas of the hotel. The only visible decline is in the periphery, which most guests have no reason to visit.

The same thing is happening in the countries of Eastern Europe, as

well as Japan and any other country losing population. The people who remain are moving into the core of the country. There is no deliberate plan by management to shut down wings, but that is effectively what is happening. As the provinces lose population, industry and government services, their people naturally gravitate to the city, where opportunities are better. This is good for the city only temporarily, because cities rely on the hinterland to support them. Budapest is the trading center of Hungary, but if Hungary is shrinking, there is less to trade.

If the remaining guests of the Grand Hotel have moved into a smaller area, the hotel seems crowded, but you still have this huge edifice to support. There are fixed maintenance costs of a larger hotel, including any debt it may have taken on to keep itself going. Ultimately, the Grand Hotel will probably have to close because it can't compete with newer hotels that can fill all their rooms.

The Grand Hotel Syndrome may contribute to your own lack of awareness about population loss. In the city where you live, population may still be growing. Every year, traffic seems to get worse, suggesting population is rising. That's a manifestation of *selection bias*, where the data you see isn't representative of the whole. If you are an intelligent, ambitious person, it's likely you already live in the core of your country. Everywhere you look, you see prosperity because you have chosen to live in a prosperous region. You aren't seeing the decline in the hinterlands because you have no reason to go there.

The Grand Hotel Syndrome is a metaphor for peripheral decomposition around the world. When the hotel is failing, all the remaining guests cluster together on the few floors that are still vibrant.

That's how Tokyo can still be growing while Japan is shrinking. As villages turn into ghost towns, their jobs and services dry up, so everyone who wants a better life for themselves is compelled to move to the city.

The internal redistribution doesn't change the fact that the hotel is failing. It just hides it from most of the guests.

26. Africa

To most people from North America or Europe, Africa is a place of misery. We know about it from the depressing stories we read in the news or seen on TV. It is a continent of overpopulation, extreme poverty, civil wars, epidemics, terrorism, crime, famines, dictatorships and corruption. From a distance, all the news from Africa seems bad.

But that view is distorted. While all those bad things certainly exist in Africa, we on the outside aren't receiving an accurate picture of their proportions. One famine, although tragic, doesn't mean everyone in Africa is starving. A civil war generally involves only one country, not all 54 of them. To call Africa a "shithole", as President Trump does, doesn't convey the diversity of the continent. Although there is plenty of tragedy here, there is also good news, like substantial gains in addressing poverty and overpopulation.

I had to visit Africa myself to grasp its complexity. I have touched down in 11 countries, spending the most time in South Africa and neighboring nations. While I have hardly scratched the surface of the continent, I think I have a good overview of how the stereotypes fail to reflect reality.

To be sure, I am not recommending Africa to the average tourist. It is not a destination for amateurs. In even the most prosperous countries

like South Africa, there are a lot of hard edges. Income inequality is endemic in Africa, and entrenched poverty means crime is big issue for tourists. Criminals will take big risks for relatively low payouts that they wouldn't take in Europe and North America. I would walk almost anywhere in Europe without fear, even at night. I can't say the same in Africa. There are safe neighborhoods and unsafe ones. There are countries where corruption is unknown and others where you wouldn't dare approach a policeman for fear of being victimized. A local resident already knows where not to go and what not to do, but you as a tourist run the risk of getting burned.

That caveat aside, I have seen major differences between countries and cities. For example, I would not care to return to Nairobi or Cairo, but I felt safe and comfortable in Ethiopia's capital Addis Ababa, located between the two. Nairobi and Cairo are too desperate and lawless and I fear for my safety. Addis is no wealthier but has a whole different vibe. I had nothing but pleasant experiences there. [See my videos on Instagram at [#gpc Ethiopia](#).] In Nairobi and Cairo, I was hustled and cheated in a dozen different ways, including by police officers. These things don't seem to happen in Ethiopia, which is largely crime- and corruption-free. I'm not sure why. It must have something to do with the country's history, administration or core values.

Dramatic differences in African countries can also be seen in their fertility rates. As of this writing, only one country in continental Africa has below-replacement fertility: Libya at 2.0. Morocco is on the cusp with 2.1. All the others have above-replacement fertility, but some are only slightly above, and fertility has been falling in nearly all of them.

The largest and most advanced country, South Africa, has a fertility rate of 2.3, down from 6.2 in 1960. Given the continuous downward trajectory, South Africa is likely to fall below replacement within the next few years. Rwanda, a country best known beyond its borders for a genocide in the 1990s, has seen dramatic improvements in living standards since then. Since 2003, fertility in Rwanda has declined from 5.7 to 3.9, and many other countries have shown similar improvements. Although exponential growth continues in some countries, fewer are qualifying for “population explosion” status.

Turns out, it’s not all that difficult to reign in fertility. The most important tool is simply making birth control available. Many African countries have entrenched social and political ills that are difficult to address, but condoms are cheap and relatively easy to distribute. [On Instagram, see my video of American condoms in Swaziland at [#gpc_usaid](#).] Birth control is probably the single most effective donation an outside aid organization can give to Africa. It isn’t necessary to force it on anyone. If you simply make it available and provide a little training, people will use it.

The next step in reducing fertility is education. I don’t mean educating people about birth control, although that may help. Simply keeping girls in school for as long as possible helps reduce their fertility. This is a general statistical correlation found worldwide: Years of female education are inversely related to fertility. This phenomenon is so common that I want to memorialize it:

Fertility Observation #1: The more years of formal education

a woman completes, the lower her fertility on average.

Observation #1 could be paraphrased as “Education is the best prophylactic.” I am not making any claims about what is being taught or whether it is useful in itself. I think it is more a matter of delaying adulthood by giving kids more time to mature in a protected environment. The curriculum is largely irrelevant.

I call this an “observation”, not an “axiom”, because it is a general statement about the current world, not a permanent assumption that can be taken without proof. Someday this relationship could change, but statistics from around the world support it right now. [Google for [“fertility and education”](#) for ample evidence in this regard.]

Observation #1 is generally a bad thing in the developed world because it means that the best educated women aren’t replacing themselves. Whatever biological or social advantages they might have passed to their children are being lost. In that case, we are usually comparing women with high school diplomas to those with advanced degrees. In Africa, we are more likely to be comparing women with no formal education to those who have at least been to primary school and learned to read. In this case, Observation #1 is a good thing because it means poor countries can hold down excess fertility simply by keeping girls in school. If nothing else, it gives aid organizations something to aim at when trying to reduce future misery. If you can fund a couple more years of education, you are automatically reducing fertility.

Africa today is a mix of good news and bad news. For example, the percentage of people living in poverty is decreasing (good), but the total

number of people living in poverty is still increasing (bad). How can both be true? Because population is increasing faster than poverty is falling. Likewise, fertility is falling in most African countries, but total numbers are still exploding. For the time being, Africa's total population continues to expand dramatically, and growth will continue long after most countries in the rest of the world have started to shrink. When the rest of the world needs labor—both skilled and unskilled—it will increasingly come from Africa, because it is the only continent with a growing supply of it.

The question for the rest of the world is: “Will Africa save us?” and the answer is “No.” As working-age populations shrink in the developed world, it is doubtful Africa can make up the shortfall. Even given its huge size, Africa doesn't have an endless supply of exportable skilled workers, and the developed world isn't prepared to assimilate a lot of unskilled workers.

Africa isn't much of a factor in the developed world's most pressing problem: its overwhelming debt. Governments, corporations and individuals have borrowed more than they can possibly pay back, and no influx of African immigrants will magically change that.

27. The World

Finally, let's look at Planet Earth as though it were a single country. Total population at the time of this writing is about 7.5 billion. To the best of my knowledge, both emigration from this planet and immigration to it are negligible. (When aliens abduct humans, they always seem to bring them back.) As of this writing, roughly 140 million human babies are born each year. This number is the highest it has ever been, but its growth is slowing. Sometime in the not-so-distant future, the total number of births will flatten and then start falling.

You can argue about whether the world today is a better or worse place than it once was, but there is one thing you can't question: Fertility has dropped dramatically in the past half century. In 1964, the average number of babies for every woman on the planet was 5.0. Now it's half of that: 2.5. While this is sufficient to keep the world population growing for now, there is reason to be concerned about where things are headed. While no one can predict tomorrow's fertility with certainty, all the worldwide processes that halved fertility are still going on, like longer female education, greater women's rights, later marrying age, better access to birth control, etc. Some projections have the world population peaking by the end of the 21st Century at somewhere between 9 and 11 billion. Unless there is a dramatic reversal in the fertility trend, the 22nd

Century and beyond will see continuous and accelerating population loss.

At the same time, the world is rapidly aging. The median age of the world population was 21 in the 1960s. It is 27 today and, according to the United Nations, it will rise to 37 by 2050. (“Median” means half the world population is above that age and half below.) This means the working-age population of the world will shrink long before the total world population does. Earth is rapidly becoming a planet of old people.

Another stunning number: Current world debt is approximately 325% of total world GDP (according to the Institute for International Finance, October 2017). That’s not just government debt but all forms of debt, like credit cards, mortgages and corporate bonds. It doesn’t matter who owes the debt or to whom; the world’s debt has to be paid out of the fraction of GDP that represents useable income. Just like governments receive only a fraction of GDP in taxes, the whole world can use only a fraction of its total business activity to pay down its debt.

Imagine Planet Earth as a guy who sells trinkets on the street. (He’s got a bulbous globe-shaped head with stick-figure arms and legs, and he sells, I don’t know, satellites or something.) Every year he sells \$100 worth of trinkets, which could be called his gross income or GDP. This means the money he owes to others is \$325. But he also has costs and living expenses, so the full \$100 that comes into his hands isn’t available for debt servicing. Maybe he has only \$10 left after paying his living expenses and buying the trinkets he sells. At \$10 per year, it would take 32.5 years to pay off his debt. But wait, I’ve forgotten something: interest. Nearly everyone who borrows money has to pay some form of

interest. Let's call it 10%, compounded annually (a happy medium between what governments usually pay and the usury rates consumers can expect). This means in the first year, he will have \$32.50 added to his debt, while only being able to pay \$10, so 32.5 years stretches out to... forever! Unless his profit on trinkets is unrealistically high, he will never, ever, ever be able to pay off his debt. His total burden can only rise.

I'm pulling all of these numbers out of the air, but no matter how you slice it, debt of 325% of GDP is an utterly impossible number, whether you are an individual, a country or a planet. No matter what happens in the future, only the tiniest fraction of that debt can ever be repaid. The rest of it has to end in default.

The traditional alternative to debt is that everyone pays cash: you buy something only after you have actually earned the money to pay for it. That's how commerce generally operated for most of human history. Farmers produced grain that they traded for other things they needed. No grain meant no trade. Credit introduces a pledge into the equation: A farmer *promises* to pay a certain amount of grain for goods or services he is receiving right now, even though he hasn't yet grown the grain and isn't certain of the harvest.

Promises complicate things. First, you have to have a mechanism for making the farmer pay on schedule, like threatening to break his bones if he doesn't. Second, you have to figure out how much debt is too much for the farmer to bear and work out a way to enforce this limit. Both situations have gotten out of hand in the developed world. You can no longer break people's bones for not paying (organized crime aside), and there is no clear way to decide how much credit is too much or to

stop its expansion once you get there. Some forms of debt have credit limits, but the commercial pressure is always to make them higher. No one has a crystal ball to determine how future events will change an individual's ability to pay, so even the most sophisticated institutions are winging it.

Debt is a magical technology that has made amazing things possible, like skyscrapers, road systems, dams, airports and car ownership. Debt is a way to spread out the cost of a large purchase, allowing you to use the equipment even as you are paying for it. Debt lets people buy houses they would otherwise spend a lifetime saving for, which seems a good idea if you are certain of your future lifestyle and income. Few can resist the siren call of credit. It feels magical to be able to walk into a car dealer with only a few hundred dollars and drive out with a shiny new car worth thousands.

That's the temptation the whole world faces: Everyone wants a shiny new car. Once you detach purchases from current income, it's nearly impossible to stop. Credit forces you to speculate about how much you can pay in the future, which is a lot less clear than the cash you have in your pocket. Tempted by products that promise a better life, the natural human tendency is to overestimate ones future ability to pay. Everyone thinks they know the future, and it is usually an optimistic continuation of recent history.

Even the most sophisticated governments and financial institutions have shown themselves inept at predicting the future economy or the effects of debt. They naturally assume the future will be a linear projection of the past, but demography proves this impossible. If

population growth slows and reverses, an upward trend can no longer be sustained, and plans based on infinite expansion will fail.

For years, the whole world has been using its credit cards to live a more luxurious lifestyle than its salary can support. It doesn't matter whether it is an individual, a government or a planet that owes the debt. Sooner or later, there has to be a reckoning.

Section II:
The Great Reversal

28. The Debt Bomb Explodes

“The Great Reversal” is my term for the worldwide economic transition from a growing population to a shrinking one. For decades, infinite economic growth has been factored into the price of investments, the plan of governments and the debt of individuals. In coming years, with population peaking, economic growth will shift to a sustained contraction, and all those overly optimistic plans and commitments will have to be rescinded.

Once the population of a country starts falling, economic contraction becomes a perpetual state until such time as birth rates recover, which won't be anytime soon. In theory, a nation can adjust to a negative growth rate, but not at its previous level of government and consumer spending. A contracting world is a much less affluent one, so nearly everyone must suffer a major hit to their income and lifestyle. People will have to work harder for fewer amenities, and luxuries like retirement and home of your own may become an impossible dream. Big government, if it survives, will only be able to afford a fraction of its current services. Living on a lower income with fewer government services isn't a tragedy in itself; historically, humans have gotten by on a lot less. The painful part is the transition from a growth-based economy to a contraction-based one.

In the 20th Century, when population was booming, the global economy was focused on building things. The world needed new homes for growing families, new furniture and appliances to fill those homes, new roads for an ever-expanding number of cars and new government bureaucracies to support the growing complexity of life. Today, most of that stuff has already been built. You don't need to produce new homes or infrastructure for a shrinking population, so the construction industry and all its suppliers must decline. In almost every other industry, the overall market will soon be shrinking. If fewer children are born, there will eventually be fewer adults buying clothes, visiting restaurants, taking vacations, buying cars and—most importantly—paying taxes.

Most governments in the developed world have committed themselves to a high-growth future that is impossible to sustain. Through their debts, they have already spent tomorrow's income, so reducing their overall expenses is no longer an option. Their high payments on existing debt are now a non-negotiable burden. When an organization's debt is rising and income is falling, default is the only escape. Individuals and businesses can file for bankruptcy—assuming they have lawyers and enough cash to pay them—but big governments don't have this option. The international agencies that came to the rescue of Argentina and Greece don't have nearly enough resources to bail out America. There can be no orderly default for the U.S. government because any admission of weakness would shatter markets. U.S. government securities and their perceived invulnerability are the single most important pillar of the world economy. If that pillar crumbles, everyone else goes down, too.

To make itself sustainable again, the U.S. government would need to brutally slash its budget and obligations, essentially cutting them in half. This isn't going to happen by any political process because there are too many powerful stakeholders. The only realistic path to sustainability is an unplanned and involuntary "reboot" where everything shuts down and the world has a chance to restart with a clean slate. A catastrophe like this isn't pretty. It wipes out debt by destroying creditors, including honest, responsible people who have done everything right. A reboot isn't healthy for anyone, even the debtors, but in the current political and financial environment, it may be the only way.

29. Evaporation of Wealth

The central economic event of the Great Reversal will be the rapid annihilation of wealth. Trillions of dollars of investment value will evaporate almost overnight. Our physical surroundings before and after the Great Reversal will look pretty much the same. The main difference is that the total “asset value” of the planet will have dropped dramatically. Almost everyone will be poorer, and many services we take for granted will cease to function.

Whenever there is a stock market crash, press reports usually mention the huge value that was lost by the market—for example, \$500 billion lost from the Dow on Black Monday 1987. That money didn’t “go” anywhere. It’s not like someone profited from the stock exchange’s losses. In a crash, assets are revalued in the light of new information or perceptions. Investors realize that the thing they have been trading isn’t worth as much as they thought it was, resulting in the instantaneous evaporation of wealth.

It is inaccurate to say that wealth is “destroyed” in a crash. It is more like the wealth was an illusion all along and investors are realizing it only now. Since World War II, the financial world has been generating false value. Financial instruments like government bonds have been sold to the public based on promises that can’t be fulfilled. The bottom line is

that the investors of the world believe they have a higher net worth than they really do, and sooner or later that illusion must be shattered.

There are many kinds of assets in the world, including businesses, real estate, government bonds and private loans. (Loans are seen as liabilities to the borrower, but they are assets to the lender.) If you added up all the assets of the world, valued according the current market, you would come of with a very big number that could be called World Asset Value. I don't have a clue what that number is. I only know it is way too high.

Most assets are overvalued because the prices assigned to them then are based on an assumption of unlimited economic growth, which cannot be sustained if population stabilizes or falls. For example, U.S. government bonds currently trade at prices close to their face value because they are assumed to be risk-free. This ideal condition is possible only if future tax revenue grows at an unrealistic pace. If such growth cannot be sustained, these bonds are no longer risk-free. Sooner or later, the government has to default, and whoever holds the bonds at the time will take a bath. This risk ought to be priced into the bond when it is traded, but the current market doesn't do that.

Real estate is also overvalued in most of the world. Ultimately, the job of real estate is to house human bodies. If the total number of bodies falls, there will be a glut of buildings and prices will drop. When people buy real estate, they tend to look at the past upward trend in prices and assume it will continue. Hardly any real estate buyer factors in the future loss of population and its downward pressure on prices. If any investor did recognize these risks, they wouldn't be buying real estate. This leaves

only the optimists, bidding up home and office prices on the assumption of continued growth.

When people want a snapshot of the current economy, they look at major stock indexes like the Dow Jones Industrial Average. If the Dow is surging, does this mean the world economy is doing fine? Not necessarily, for two reasons: (1) Companies included in the Dow may be suffering from the same ailment as real estate: overvalue by optimistic investors based on the assumption of unlimited market growth. (2) The Dow, by definition, includes only the most successful companies in America. A rising Dow merely confirms that the most successful companies are doing well, which is more a self-evident truism than a reflection of the economy as a whole.

Finally, we have the world's non-government debts, like business loans and consumer credit. These debts tend to go bad whenever the economy takes a dive: Businesses fail and laid-off worker can't make their loan payments. The perceived risk of these loans is reflected in their relatively high interest rates compared to government bonds. Shyster Bank feels comfortable giving Shady Consumer a credit card because Shyster is charging 20% interest on the balance, which is far better than it can get in any other investment. Shyster keeps extending more credit to Shady, even as his debts balloon, because it is so profitable for the bank. I contend, however, that even these assets are overpriced. If an economic downturn is longer and deeper than Shyster anticipates, more consumers will default than its balance sheet can tolerate, and the bank will go under.

In recent years, the U.S. government has had a habit of rescuing

shyster banks from their own bad credit decisions. U.S. banks made dodgy mortgage loans leading up to the 2008 crash and the government was kind enough to take responsibility for those loans. Relieved of their burdens, shyster banks could keep doing what they had always done, subject only to a few new regulations. If the same thing happens again, the government may again ride to the rescue, but there's a limit to how many times this can happen. Ultimately, shyster banks have to fail, but it probably won't happen until the government is failing, too. That means both the banks and the government will be failing at the same time.

The Great Reversal will probably begin when the U.S. government is so weakened by its own debt that it can no longer act as the white knight for everyone else. If a crisis similar to 2008 is repeated today, the government and Federal Reserve may not be able to apply the same magic tricks. They can't lower interest rates if they are already low, and they can't deficit-spend if the deficit is already astronomical. Instead of teetering on the edge of the abyss, as we did in 2008, we may fall into it and find out just how deep it goes.

30. The Case for Catastrophe

If assets are overvalued, you might think that the problem would be solved by a correction in worldwide markets. If bond investors realize the government can't pay its interest, the price of treasury instruments will take a dive. Won't that solve the problem? After all, that is what happens in a stock market correction: Overpriced stocks are brought down to Earth. Many investors take a bath, but the economy marches on.

Unfortunately, it's not that simple for debt-based assets. There is a tipping point for many kinds of debt where they don't simply lose value; they enter a death spiral. Failing debt triggers higher interest rates which cause more debt to fail. If there is no white knight riding to the rescue, debt failures accelerate until the institution that holds the loans collapses. That's what happened when banks failed during the Great Depression.

After the banks failed in the 1930s, people started keeping cash in their mattresses, which did nothing to help the economy. The government coaxed consumers to use banks again by offering deposit insurance. The government guaranteed deposits up to a certain amount. Deposit insurance is only as good as the government providing it. If the government is weak, its guarantees become dubious, and people go back to their mattresses. If only a few banks fail, the government can make

good on deposits. If all of them fail, the government would be helpless, and we are back to uncontrolled bank failure.

Furthermore, the economy as a whole has a tipping point. It happens when fear reaches a level where it becomes self-fulfilling. In a downturn, many investors, consumers and businesses retreat to their metaphorical storm shelters and stop spending money they don't have to. The loss of spending feeds further economic decline which sends more people into storm shelters. Soon, everyone is hunkered down; no one is spending or investing, and the economy freezes.

The most frightening fact about our current economy is that very little of it is essential to our survival. We all need to eat, but we don't need restaurant meals. We need clothes, but most of us have enough of them in our closets to last for years. We don't need new cars, computers and cellphones if the ones we have are still functioning. In normal times, we spend vast sums on vanity, entertainment and convenience, all of which can be quickly eliminated in times of hardship. All you need is enough widespread hardship, and a positive feedback loop begins. People stop spending, depressing the economy and encouraging even less spending.

In 2008, the U.S. government saved us from this tipping point by lowering interest rates and making more capital available. Uncle Sam saved us from the bunker mentality by deliberately spending money in the economy when no one else would. If the government itself becomes the problem, it can't be the rescuer anymore, and the feedback loop of retrenchment can only proceed to its dreadful conclusion.

I hope you can find flaws in my reasoning, but based on what I

know, I don't see any escape from excess debt apart from a total collapse. This means (1) the government will default on its debt; (2) banks will collapse, and (3) everyone will retreat to their bunker and stop spending money they don't absolutely have to.

In short, the economy as we know it will come to a halt. Everything will fail at once, and we will find ourselves in a reboot condition.

31. Four Stages of the Reversal

Like an earthquake or fire, the Great Reversal will proceed in four stages. There is a period of growing tensions (Stage 1), a violent rupture (Stage 2), a long reconstruction period (Stage 3) and a new period of stability (Stage 4).

Stage 1: The **tension** preceding the Great Reversal takes the form of ever-increasing debt and the rising cost of servicing it. In general, the world owes more money than it can sustainably pay the interest on, let alone the principle. Today, certain key governments and economic sectors have already passed the point where debt reduction is possible. These burdens can only grow to their breaking point.

Stage 2: The **rupture** is the main collapse, where world financial systems implode very quickly. A fracture will start in one place, perhaps an unexpected one, then ripple along the fault line. Dominos will fall, one after the other, until our entire economic infrastructure collapses. I see the rupture as more like a fire than an earthquake, taking more time and causing more damage. Once a fire reaches a certain critical size, it becomes unstoppable until all the fuel is consumed.

Stage 3: Eventually, everything that is going to burn will have

burned, and the people of the world will try to pick up the pieces. Thus begins the long **reconstruction period** where communities try to put themselves back together. This rebuilding process will take years, maybe even decades. Starting from chaos, new social and economic structures will arise to replace the old ones.

Stage 4: Eventually, the world will find a new **equilibrium**. I can't say that it will be better or worse than our current society, but at least it will be stable. The only thing I know for sure, thanks to demography, is that this will be a world of old people, with population falling even more rapidly than before the rupture. Now that the immediate crisis of untenable debt has been resolved, humanity can start to address its long-term demographic problems like low birth rates and dwindling population quality.

Most of the details of the Great Reversal are unknowable in advance. The starting condition is "Unsustainable Debt" and the ending condition is "Sustainable Debt" but there is no clear roadmap for getting from one to the other. If humanity was rational, well organized and strongly led, it might be able to foresee the crisis and take uncomfortable steps toward an orderly default, but that's not the world I see in today's news. The worldwide debt crisis is bigger than any human government can possibly manage. That's why we need catastrophe to change our course for us. Catastrophe, like fire, has no mind of its own, but it can sometimes accomplish things no human authority could hope to pull off.

32. Stage 1: Growing Tensions

Stage 1 is where we are today (as of this writing). There is growing tension along the earthquake fault, but no one is panicking. Any accountant can look at the world's expanding debts and realize, "These numbers can't be sustained," but this intellectual realization hasn't changed overall behavior. Investors still buy U.S. treasuries because the market perceives them as safe and because there seems to be no better haven. Governments and consumers are still borrowing and spending based on the rosier of future scenarios, with no Plan B if the economy goes south.

The Catch-22 of debt repayment is that in good times, there is no incentive to pay down the debt, while in bad times there is no opportunity to. As of this writing, U.S. interest rates are low, so the national debt doesn't seem much of a burden, and Congress has done nothing. When interest rates rise, as they eventually must, the government's interest payments will become unaffordable, but by then no debt reduction will be possible.

Democracy in general has a poor track record of looking ahead. To assure their reelection in both good times and bad, politicians are tempted to bribe their voters or donors with expensive giveaways. You don't get reelected by prudently planning for your country's long-term

future. You get reelected by giving gifts to key constituents, even if you are robbing future generations to pay for them. Our grandchildren can't vote in today's elections so their concerns are never heard.

To be fair, politicians aren't the only suckers. Debt is the world's cocaine. It allows you to spend tomorrow's income today with few clear boundaries about where to stop. If you had no credit, you could spend only the cash in your pocket, and you would stop when it ran out. With credit, you can keep spending, and hard decisions about where to stop can be put off. In the human mind, the immediate needs of today tend to overrule worries about the future, so in times of stress, debt just keeps growing.

It is said that if you put a frog in a pot of hot water, he will jump out, but if you put him in room-temperature water and slowly increase the heat, he won't recognize the change and will cook to death. This illustrates the seductive nature of debt. If a change creeps up on you slowly, one credit card charge at a time, you may be more likely to accept it than if it happened suddenly, even if the end results are the same.

How does a cowboy lift a 2-ton bull? He starts when it is a newborn calf. At this point the animal weighs only about 60 pounds, which any cowboy can easily heft. Every morning, the cowboy goes out into the field and lifts the animal again. Each day, the bull gains some weight and the cowboy gets stronger. Pretty soon, the beast is 2 tons, and the cowboy can lift it with no problem.

This technique sounds like it would work, but it doesn't. There are structural limitations to how much the human body can lift, and whether you test that limit suddenly or gradually doesn't make much difference.

You still can't lift a 2-ton bull. One day, the cowboy will go out to his field and he can't lift the bull anymore. Maybe he breaks his back instead.

It is the same when people and institutions take on too much debt. Each incremental increase seems like no problem in itself, but eventually the cumulative burden is too much to bear. Sooner or later, you can't support the debt anymore and something disastrous happens.

33. Stage 2: The Great Fire

Stage 2 of the Great Reversal is the horrible period when tensions reach a breaking point and everything falls apart. I call this the Great Fire, similar to the fires that once consumed London, Chicago and San Francisco. The fire's main fuel is the world's untenable debt, both in government and the private sector. Potential defaults are building up around the world and only need a spark to set them off. Something other than debt may start the conflagration, but rolling defaults will supply the energy to keep it going.

The Great Fire should not be confused with a run-of-the-mill recession or market crash, which happen about once a decade. This is more akin to a once-in-a-century storm. Instead of correcting the excesses of the past decade, this crash must correct the relative exuberance of the years since the end of World War II. This has been an era of unprecedented economic growth in the developed world, fueled in part by rising populations and low dependency ratios. As both of these demographic trends come to an end, the unsustainable commitments from earlier optimism have accumulated like dry underbrush.

Once the forest has accumulated enough fuel, the exact cause of the Great Fire is almost irrelevant. It could be triggered by factors unrelated

to debt, like a war or political crisis. While many corrections have happened before, this one won't stop. During traditional stock market crashes, investors retreat into government bonds, but this time they will realize bonds aren't safe either. That's when real panic will set in.

Panic will keep the fire going. In times of trouble, people take actions that seem in their own best interest but that only make matters worse for everyone. For example, if banks are weak, depositors may rush to withdraw their money, which only assures the banks' demise. Panic can turn a modest catastrophe into a major one. All you need is enough rats trying to flee the ship.

The catastrophe has to be bad enough that repaying debts is no longer an issue; otherwise, we will be going through the default cycle again and again as population falls. If 2008 repeats itself and the government succeeds in bailing us out again, it will just set us up for the next crisis where the same magic tricks eventually won't work. The fundamental problem today is that government is spending more money than it can ever recoup in tax revenue, present or future. As long as this is true, a terminal crisis that wipes out the debt is unavoidable.

The end point of the Great Fire will be a world without government debt and probably without private debt either. The good news is that you won't have to pay back your student loans. The bad news is that good people will lose their investments and everything they have saved. There can be no widespread default on loans without loss of bank deposits and all the investments derived from loans.

Another loss may be national governments. If they continue to function at all, they will be operating at a much lower level than today,

based on a fraction of their current budgets. Without debt, they will only be able to spend as much money as they collect in taxes, but if the economy collapses, taxes will, too. Big governments will fail because their funding will dry up.

You may say, “Good riddance!” but without the government, you and your community may be vulnerable to a whole host of threats it once protected you from, like epidemics, fraud and foreign invaders. Zombies or aliens, should they happen to materialize, won’t face much organized resistance in a post-fire world. Local communities will have to fend for themselves.

The Great Fire could conceivably sabotage every modern amenity we now take for granted. Nearly every product and service we use—from groceries to the internet—depends on a complex logistics network supported by banking and finance. If banks stop lending, borrowing and transferring funds, everything else stops, too.

This collapse doesn’t have to be permanent. Hopefully, it will just be a reset. The odd thing about the Great Fire is that it won’t directly damage physical equipment and infrastructure, only the financial networks that make them function. Since all the roads, buildings, computers and utility wires will still exist, selective reanimation is possible. We can bring back many of the services we lost so long as we can figure out new economic and organizational structures to support them.

34. Stage 3: Recovery

Recovery begins when the unsustainable debts of the world become sustainable, most likely by a brutal global collapse that eliminates them entirely. The challenge of the recovery is to reestablish commerce and public order after the implosion of debt-based systems. There will still be value in the world—products and services that can be exchanged between people—but societies will have to find new ways to organize this exchange.

Let's say you wake up one morning and nothing works. You still reside in the same place, but you flip a light switch and there's no light. Open a faucet, and there's no water. You may have a car in the driveway but there's no gas to run it. You may or may not be able to communicate with the outside world, but everyone else is preoccupied with their own survival and can't help you. You can't pay your debts now even if you wanted to because banking has collapsed. It may sound good to be debt-free, except that you no longer have a job and have no way to earn money to survive.

Given that most of modern services have stopped working, what do you have left? Quite a lot, actually. You are still alive and hopefully in good health. For the time being, you probably have shelter and physical control of some food and tools. You may also have technical skills stored

in your head that could prove useful in a post-apocalyptic world.

What do you do now? You will probably step out of your house and talk to your neighbors. You will share information and try to come up with a plan together. You have certain skills and equipment and your neighbors have others. If you join forces, you will probably be stronger and have more survival options.

Humans naturally form tribes. It's part of our DNA. Traditionally, tribes were based on physical proximity, but over time they become more subjective. Your tribe today might be people on the internet with views similar to yours. The Great Fire will probably push people more toward the original definition. If transportation and communications are poor, your new tribe is your neighborhood and the larger city it is part.

If modern amenities stop working, people will band together with their neighbors to harness the resources necessary to survive. The questions will be simple, like "How do we feed ourselves?" and "How do we get clean water?" Apart from food and water, we may need to worry about outside threats, like other tribes who would steal our food and water. The better we cooperate with our neighbors, the more likely we are to address these needs.

After the devastation of the Great Fire, there will be an opportunity for better world. Humanity could rise again in a more resilient form, like Europe eventually did after the fall of Rome and again after the devastation of World War II. I'm not saying a Renaissance is certain, only that there's an opportunity for one. I can't tell you how long

recovery will take, but I hope it isn't a millennium.

Amanaplanacanalpanama

I predict that recovery will be more a local phenomenon than a national or international one.

35. Stage 4: Stability

36. ↓

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