

Understanding the Fourth Industrial Revolution

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It's time to plan for the REAL future, which looks to be a big pile of dystopia.

About the Author

In a recent interview I was asked, "What do I call myself?"

Am I an A.I., Agtech, or Fintech Futurist? A Social Influencer? An Agricultural and Mining Economist? Or, am I just a super cool guy? :) I've also been called a CryptoTime Social Cyborg. Maybe that's more accurate... I'm pretty much always plugged in and thinking thoughts of crypto dreams.

I'm a product of Fintech disruption in this new era, Industry 4.0, having been forced to re-skill in advance of the AI and automation apocalypse coming to financial services.

With an investment thesis focused on disruptions in this next Industrial Revolution, my research areas span a range of topics including Fintech, Agtech, Biotech, Medtech, IOT, Blockchain, Artificial Intelligence, Drones, Cryptocurrencies, Cyber Security, Cannabis, Aerospace, Energy Metals (such as Lithium, Cobalt, and Uranium) and more... but always with a focus on investment. How can I allocate capital to take ADVANTAGE of the disruptions that are sure to come?

At first my research areas may seem disconnected and unrelated. How can I be interested in coal at the same time I research climate tech? How can I talk about sustainability when I research seed biotech? What's the connection between lithium and U.S. demographic shifts?

To be sure, my laser-like focus throughout the years has covered diverse topics, shifting from Emerging Markets to Hedge Funds to Commodities to Innovation Tech in search for answers: What does the Fourth Industrial Revolution MEAN? Why is it important and should I be worried? What IS Industrial Disruption? Are robots going to take my job?

I believe I've uncovered a truth in my research.

Yours in service and education,

Brian
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Introduction

Welcome to the Fourth Industrial Revolution

2012 wasn't the end of the world, but it WAS the end of an era.... The end of the Human Era.

***As a 4IR prepper, my motto is "bread, lead, and crypto."
And I invest accordingly.***

How do I allocate capital in advance of industrial disruption? By drawing correlations from past U.S. Industrial Revolutions, then forecasting how tech innovation will lead to industrial disruption, economic unrest, and, ultimately, warfare.

Let's start by defining the Industrial Revolutions.

The Industrial Revolutions

There are recurring themes across all U.S. Industrial Revolutions:

Tech Innovation → Industrial Disruption → Economic Unrest → Warfare

Most people love talking about invention and innovation when it comes to Industrial Revolution themes. “The Cotton Gin was awesome!” (Except that it allowed cotton to replace hemp in America, helped shift the North from rural to urban, and contributed to the divide that ultimately led to the Civil War.)

My point here is that we often forget to look at the DISRUPTION inherent to Industrial Revolution. That’s where the money-making opportunity lies.

Considering the rise of the robots and AI automation, I plan to be on the other side when the next big “thing” happens, rather than being forced into a Universal Basic Income (UBI) and total lack of freedom. More on that later.

Unfortunately, we HAVE to accept the fact that disruption is already here and intensifying exponentially.

Poverty is increasing. Global food systems are at risk. Mass migrations are already occurring and expected to continue. Demographics are shifting around the world at the same time that we’ve reached a level of geopolitical risk we’ve never seen before. Oh yeah, and all this is happening at a time when Americans have reached peak laziness and apathy.

Everyone and everything is connected, meaning we’re all at risk. The answer? A giant bag of cash with which you can buy yourself off this planet, out of the country, or at least out of your neighborhood! Money creates opportunity.

Table 1: Industrial Revolution Themes

<i>Industrial Revolution</i>	<i>First</i>	<i>Second</i>	<i>Third</i>	<i>Fourth</i>
Timeframe	Late 18th to 19th Centuries	Late 19th to 20th Centuries	Second Half 20th Century to 2012	2012+
Tech Innovation	Steam Power	Electricity	Internet	Blockchain
Industrial Disruption	Manufacturing	Transportation	Globalization	Automation
Economic Unrest	North / South Disparity	Great Depression	Great Recession	Universal Basic Income
Warfare	Civil War	World War	War On Terror	Asymmetrical Warfare



The First Industrial Revolution

The First Industrial Revolution occurred in the late 18th to 19th centuries, and started in Europe.

Samuel Slater brought new manufacturing technologies from Britain to the U.S. and founded the first cotton mill in America. This was a BIG deal and many other mills and factories sprung up quickly. However, they were all powered by water, which initially restricted industrial development to the Northeast. This concentration of industrial development is what facilitated the growth advanced transportation innovations in that area, including railroads and canals, which further encouraged commerce and trade with other countries.

The Northeast grew in clout, wealth, status... they had all the cool stuff from Europe, all the new clothes and fashions, and, perhaps most importantly, the North got steamboats. The South was left behind as a producer of America's wealth, but not taking part in it.

Can there really be any doubt that tech innovation led to industrial disruption in America, which led to economic unrest and then war? Shortly after the introduction of the first cotton mill we get the Civil War.... just saying.

Were there other innovations during this time that led to industrial disruptions?

Tech innovations

- Steam power and the steam boat
- Spinning jenny
- Cotton gin
- Railroads
- Advancements in steel

- Telegraph
- Flying shuttle
- Mule
- Weaving loom

Industrial Disruptions

Rise of the Machine! New forms of manufacturing activities emerged as, for the first time, animal and some human labor was substituted by machines. Enter America's addiction with automation.

Agtech became a thing! The cotton gin allowed for hemp to replace cotton. This manifested huge and far-reaching impacts for textiles, healthcare, and pharmaceuticals.

The need for speed! Transportation changed U.S. infrastructure and logistics forever. Steamboats opened up new global marketplaces, while railroads changed the face of America and ultimately lead to the North's victory over the South. The Transcontinental Railroad was completed in 1869.

Transportation innovations changed not only infrastructure and logistics, but communications as well. Add in the telegraph and we have a full-on communications revolution in America!

During the First Industrial Revolution, the petroleum industry was revolutionized and structural steel went gangbusters. Andrew Carnegie and Rockefeller began their rise to power.

These industrial disruptions eventually lead to economic unrest.

Economic Unrest

Industrial cities of various specializations arose, such as cities focused primarily on steel, textiles, or tools. As society expanded it shifted from rural to urban, forever changing the way Americans lived, ate, made money, worked, and had families. This shift was seen especially in the Northern states, where the expansion of infrastructure allowed for economies to move from farming to industry. A single stat reveals the environment in this era: 40% of deaths among the urban working class were from tuberculosis

Northern infrastructure grew, trade expanded, and a new global marketplace was created... while the South was left behind.

The South remained an agrarian society, reliant on slave labor and cash crops exports. Amazingly, during this time cotton represented about 80% of all U.S. exports. The cotton gin contributed to the consolidation of cotton as the backbone of the Deep South economy and to the entrenchment of the system of slave labor upon which the cotton plantation economy depended.

Southern states felt pressure from macroeconomic issues as more and more countries ramped up production of raw cotton. Global cotton supplies increased in advance of demand. Lacking a diversified agricultural economy, the South's one-crop economy became steadily less valuable year-over-year as the Civil War approached.

The South had very little liquid capital and was debt-dependent. The region lacked the infrastructure for manufacturing and had to rely on trade for access to Europe's cotton mills. That was, until the Tariff of Abominations cut off this trade route for Southern producers. The new tariff put foreign goods out of financial reach, and Southerners were forced to buy products from the North at what they considered ridiculous prices.

Politics shifted and animosity between the North & South grew. Immigrants flooded into the U.S. Northern states, which allowed for the North to greatly outnumber the South in population. This led to the North controlling the House of Representatives.

In 1850, to the consternation of Southerners, California was admitted into the Union as a free state (Gold Rush miners didn't want to compete with slave labor). For the first time the balance of power in the Senate went to the Northern states.

Feeling excluded from the political system, the South turned to the only alternative they believed was left to them: secession, a political decision that led directly to war.

Warfare

The major U.S. conflict during the First Industrial Revolution was the Civil War. Slavery was a major catalyst for the Civil War, as we all know, but industrial disruption in sectors from farming to manufacturing certainly didn't help.

It should also be noted, however, that the U.S.-Mexican War, or the Mexican-American War of 1846-1848, was also a major catalyst of the Civil War (1861-1865). Abolitionists saw the war as an attempt by the slave states to extend slavery and enhance their power with the creation of additional slave states out of the soon-to-be-acquired Mexican lands. Tensions grew to near supernova levels, but war was averted for a short time.



The Second Industrial Revolution

Following the Civil War, the pace of industrialization in the U.S. continued to quicken.

Called the “American Industrial Revolution,” or the “American Age of Invention,” this period encompassed the late 19th century to early 20th century, and saw the rise of famous inventors such as Thomas Edison, Alexander Graham Bell, and Henry Ford.

Tech Innovations

During the Second Industrial Revolution, many innovations were created that we now take for granted, including:

- Traffic lights
- Air brakes for cars
- Knuckle couples on railroads
- Dynamite
- Telephones
- Electric lights and light bulbs
- Typewriters
- Elevators
- Skyscrapers
- Phonographs
- Motion pictures
- Electric generators
- Refrigerators
- Washing machines

- Internal combustion engines
- Automobiles
- Motorcycles
- Airplanes (First flight by the Wright Brothers in 1903)
- Toasters
- Zippers
- Flashlights
- Electrostatic motors
- The Hershey Bar
- Christmas lights
- Steam turbines
- The Swiss Army knife
- Barbed wire

Industrial Disruptions

The Second Industrial Revolution presented new opportunities for leisure, which Americans took to with great vigor. Inventions such as the telephone, the typewriter, and the motion picture changed the way in which we communicate forever and impacted cultures around the world.

Manufacturing and production continued to advance with the introduction of electricity, the electric generator, the steam turbine, and refrigerators. Structural steel changed the look and feel of cities forever as the first skyscrapers came into being.

What kinds of disruptions to Transportation came about during the Second Industrial Revolution? Um, hello? AIRPLANES! Oh yeah, let's not forget that the automobile created a new American culture of connectivity, going a long way towards healing divides caused during the Civil War and the entire First Industrial Revolution.

Also from the Second Industrial Revolution, military inventions change the future of warfare. Weapons of war such as the torpedo and the Colt .45 are iconic examples. Other amazing military inventions included the Gatling Gun, the Maxim Machine Gun, artillery, and the Dreadnought class Battleship, to name a few. (WW1 is generally referred to as the war of the Second Industrial Revolution, although this industrial revolution encompasses WWII as well.)

Economic Unrest

Andrew Carnegie became a "titan of the steel industry" by controlling every aspect of the steelmaking process, while Rockefeller came to monopolize 90% of the oil industry, severely limiting competition. Economic influence gave rise to industrialists with significant political clout as the U.S. government adopted policies which catered to the success of an elite few.

During this era, we see individuals becoming more wealthy and influential than governments and sovereign nations.

At his death, Rockefeller had assets equalling 1.5% of U.S. GDP. According to Forbes, to control an equivalent share today would require more than four times the wealth of Bill Gates.

The Second Industrial Revolution yielded massive, but unstable economic growth: while tech innovations led to a “Gilded Age,” industrial disruptions led to The Great Depression. Mass production, economies of scale, assembly lines, and electricity changed manufacturing forever. There was a continued growth for cities in specialization and interdependence in manufacturing, which led to industrial regions and manufacturing belts.

The U.S. population continued to shift to an urban society, allowing for the creation of the American Middle Class. For millions of Americans, the Second Industrial Revolution changed the nature of the “job” as factories represented large corporations. Man (and woman) became cogs in the corporate machine as work became more and more repetitive, often involving only one small step in the manufacturing process. Work was dangerous and unsanitary, child labor became a major issue, and labor unions were formed to protect our humanity as workers organized and asserted themselves against injustices.

At the same time, millions of Europeans immigrated to America, which worsened living conditions in cities as urban slums formed. Between 1860 and 1900, fourteen million immigrants came to the U.S. Eventually, the relationship between the U.S. government and the people of the U.S. changed as the Progressive Movement in the early twentieth century gave rise to many new laws intended to protect and support people.

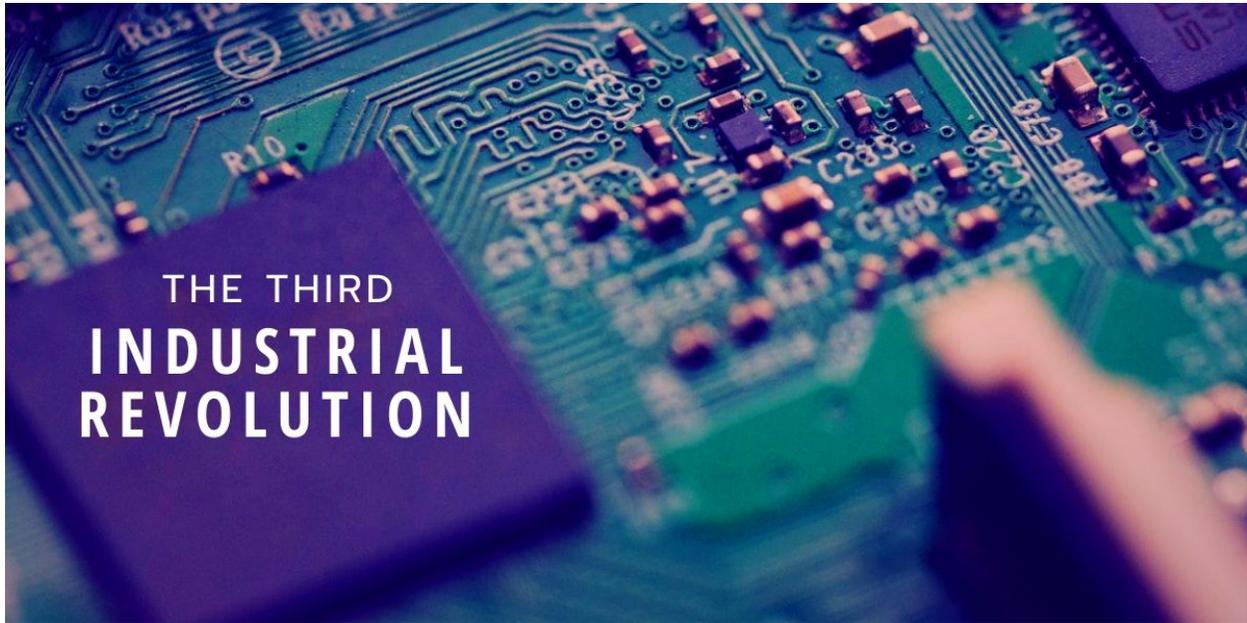
During this era, Americans adopted the belief that government is meant to take care of them.

Warfare

New technologies introduced during the Second Industrial Revolution led to industrial disruptions in communication, transportation, and production. These industrial disruptions led to a new class of American's: the Middle Class. But, these disruptions ALSO led to the rise of an ultra-rich, elite few. Not coincidentally, during this era we have the first U.S. trade wars to protect American industry (and these ultra-rich, elite few - Carnegie and Rockefeller) from foreign competition.

Also perhaps not coincidentally, shortly following the first U.S. trade wars, we see the first global wars: WWI and WWII. It should also be noted here that the Great Depression in America is often cited as one of the major catalysts for the breakout of WWII.

As stated by Otto Von Bismark during this era: “We live in a wondrous time in which the strong is weak because of his moral scruples and the weak grows strong because of his audacity.”



The Third Industrial Revolution

The Third Industrial Revolution started in the second half of the 20th century and recently ended, with some naming the “End of the World” (2012) as the end of this era and the start of the Fourth.

The major themes during this industrial revolution were the introduction of IT technologies, automation, and Globalization. Continued advancements in manufacturing capabilities and global communications gave rise to amazing world-wide production networks.

Tech Innovations

Innovations from this era include:

- Globalization
- The internet
- Integrated circuits (1950s)
- Shipping containers (1956)
- Nuclear power
- Personal computers
- Space exploration
- Antibiotics, Biotech
- Television
- Velcro
- The Rolodex
- Scotchgard
- Lasers
- Video games!
- Hand-held calculators
- Microprocessors

- Mobile phones

Industrial Disruptions

Global transportation costs came down, trade was liberalized, many manufacturing processes were automated, labor costs were minimized (especially for big business), logistics and transportation improvements supported the space between production and consumption, and new levels of business efficiencies never before seen were reached.

Interestingly, by the end of this era we see high-tech companies replacing traditional stock market leaders (by market cap), such as Exxon and General Electric being superseded by tech giants such as Amazon and Microsoft.

The Third Industrial Revolution is the era when corporations became more important than the governments in which they operated.

Globalization opened-up unlimited opportunities for corporations to reduce cost, improve profit, and control their destinies via incredible wealth and political influence. Who's a good example of the elite of this era? Yup, Bill Gates! Others mega-billionaires resulting from the Third Industrial Revolution include Warren Buffett, Jeff Bezos, Mark Zuckerberg, and Larry Ellison.

Economic Unrest

During the Third Industrial Revolution, the word globalization became synonymous with corporate capitalism.

In the late 19th and early 20th centuries, the world's economies and cultures became connected at an increasing pace, with the internet as a primary tool in connecting people across the world. This Globalization was seen in global economics, politics, and in the changing cultures of developing nations. (Have you ever heard of the "Big Mac Index?" It's an informal measure of purchasing power parity among world currencies)

The "Third Great Wave" of tech innovation and industrial disruption revealed a digital revolution which created a huge economic divide between a skilled and wealthy few, and the rest of society. This completely decimated the American Middle Class and the small-time farmer (previously a back-bone of the American economy).

In addition to middle America's eroding purchasing power, there was a decline in the level of U.S. influence and importance as global power shifted to China (with an economy on pace to overtake the U.S. by 2025).

The U.S. became a nation of renters, seemingly forever indebted and unable to break free of the shackles of debt.

Debt = Slavery. And, perhaps as a result of the decline of America's Middle Class, an aging population became a major demographic issue as America goes the way of Europe, which goes the way of Japan, which is going the way of adult diapers.

Warfare

But wait! You said industrial disruptions always lead to war! For sure, the Third Industrial Revolution has been a time of geopolitical uncertainty and global war, although sometimes we don't call wars, "wars," anymore.

As if the Cold War wasn't enough, this era also sees the Korean War, the Vietnam War, the Gulf War, the War in Afghanistan, the Iraq War, and so on. The War in the Middle East and the War on Terror are great examples of economic unrest via industrial disruptions leading to global unrest.



The Fourth Industrial Revolution

What IS the Fourth Industrial Revolution?

I remember reading an article by the World Economic Forum some time ago in which the Fourth Industrial Revolution (also called #4IR and Industry 4.0) was described, with a focus on disruptions due to automation via cyber-physical systems. It blew my mind... all the thoughts I'd been having about tech innovation and disruption now had a shape and focus. This was a moment for me as destiny-aligning as when I discovered Stephen Hawking's *A Brief History of Time* as a kid.

We can look around and see Industry 4.0 impacting our lives everyday. The future is NOW.

Tech Innovations

There are many innovations associated with this new era of machine over man. Creativity (or processing power, lol) will soon become the limit of what technology can do. In the Fourth Industrial Revolution, tech innovations expected to lead industrial disruption include:

- Self-Driving cars and other forms of autonomous transportation
- Cognitive cybersecurity
- 3D and 4D printing, cloud manufacturing
- Virtual, Augmented, and Mixed Reality; virtual assistants
- The Blockchain
- Cryptocurrencies
- Biometrics
- Quantum computing
- Future Fintech, such as instant and free nano-payments
- Drones of all shapes, sizes, and purposes, including micro-drones and nano-bots
- Big data analytics

- Artificial Intelligence, Machine Learning, Deep Learning
- Robots, chatbots, advanced robotics
- The rise of cyber-physical production systems
- Wearables, especially for Medtech
- Nanotechnology
- Regtech
- Insurtech
- Edtech
- Agtech, inc. smart farms, vertical farming, precision ag, advanced hydroponics, and more
- CRISPR and other Biotech
- The Internet of Things (IOT)
- The Industrial Internet of Things (IIOT)
- The Internet of the Body (IOB)
- Cybernetics and transhumanism
- Smart cities, smart grids, smart homes
- Portable power, energy storage, electric vehicles (EV)
- ClimateTech
- Advancements in Military Tech

Industrial Disruptions

***The big question on everyone's mind is:
Will technology-driven automation eliminate jobs and lead to
economic unrest? We all know where that leads, by now.
(hint: it smells like warfare)***

You'll find analysts on both sides of the fence on this question, with some arguing that the labor force will evolve and, ultimately, catch up with changes in technology. But I'm of the opinion that the adoption of new technologies is SO FAST now, and innovations are occurring with such rapidity, that disruptions must ALSO occur more frequently.

What's more, it seems that coming disruptions should be greater than ever before as infrastructure around the world is woefully inadequate by almost any measure for the impact of forecast growth in global population on food and energy consumption.

Throw in some Climate Change, and we can create the dystopian future our sci-fi movies often predict.

Economic Unrest

We can look at the state of our global food system as a case in point. A country's farm acreage typically comes down as its economy grows and urbanization becomes the norm... but more

people need more food and farmers and ranchers are already facing the impact of Climate Change, including severe floods, extreme heat and drought, and increased pressures from changing disease and pest patterns.

There are 18 DCL (Dryland Cereals and Legumes) farming systems worldwide. DCL crops include: Barley, Chickpeas, Lentils, Soybeans, Sorghum, the common bean, and others. DCL crops are VITAL sources of protein and micronutrients for those without meat readily available.

The most important of these DCL farming systems, in terms of area and demographics, are found in South Asia and sub-Saharan Africa. Obviously, the farming systems in Latin America, the Middle East, North America, Central Asia, and East Asia are also important, but DCL crop distribution data show that South Asia and sub-Saharan Africa are the more important regions for both crop improvement and improved agronomic practices due to the high levels of malnutrition and expected population growth found in those areas. And, unfortunately, South Asia and sub-Saharan Africa are already amongst the hardest hit by our changing climate.

Many agricultural economists forecast a huge shortfall in the supply of food for the ever-increasing global population, with the only option being a massive world-wide shift to more ecological agronomic approaches. Enter “alternative” and 3D printed proteins?

Hopefully you don't like beef or bacon, 'cause they gotta go if we want to reset our food systems.

Interestingly, the technology to substantially increase and stabilize farm yields in climate-threatened regions exists, but its adoption has been mostly restricted to big agriculture and industrialized nations, rather than the “developing” nations. Not only that, but mass migrations from war-torn and climate-hit nations have already started, changing the demographics and needs of destination countries.

This issue could easily lead to the disruption of our global food systems and, as we now understand, industrial disruption leads to economic unrest, which leads to war. A look around reveals that we're already there... when was the last bombing in Europe?

Speaking of economic unrest, during the Fourth Industrial Revolution global income inequality is expected to rise, not get better.

The richest 1% of the world's population already owns more than half of all household wealth, with just 62 individuals controlling more assets than the poorest 3.6 billion people combined.

Another way of thinking about this is that there are only about 100 people on the planet that can actually make a difference and change things for a sustainable future. They have the money and political clout to demand change. Everyone else is mostly powerless.

Many suggest that those wealthy 100 won't step-up, however, as they already see the planet as a lost cause. They're set for the change, have circled up the wagons, and are ready to ditch this rock.

These influential few point to data indicating that there will be a polarization of the labor force as low-skill jobs continue to be automated and this trend spreads to middle class jobs. With the coming proliferation of commercial drones and autonomous machines of all shapes and sizes, anyone who moves anything from one place to another will be disrupted, from the trash man to the micro-surgeon.

Further, the disruption of automation is no longer restricted to "blue collar" jobs. With the introduction of machine and deep learning, artificial intelligence has created an opportunity for corporations to replace extremely skilled individuals who were considered "safe" in the past, such as coders, doctors, lawyers, accountants, and all sorts of other professional careers. It's already happening...

- [Insurance firm Fukoku Mutual Life Insurance is making 34 employees redundant and replacing them with IBM's Watson Explorer AI](#)
- [Goldman Sach's New York headquarters has replaced 600 of its traders with 200 computer engineers over the last two decades or so, thanks to automated trading programs.](#)
- [Robots Are Replacing Humans at All These Wall Street Firms](#)
- [Artificial intelligence will replace half of all jobs in the next decade, says widely followed technologist](#)

These are just a few examples flooding the internet. AI is clearly taking over.

As I stated earlier: unfortunately, we have to accept that the disruption is already here. We're no longer in the happy place of technology innovation. We shouldn't be talking about cool gadgets and the cars of the future... we should be talking about re-skilling ourselves to stay ahead of the robots, allocating capital to take advantage of the disruptions that are coming, and preparing for a time when resources are bid-on across the world in real time and in every moment.

Keeping in mind that the pace of innovation has only ACCELERATED year over year, check out some of the findings from a great [report](#) by the World Economic Forum (dated January 2016) called The Future of Jobs:

- 50% of media, entertainment & information strategy officers agree that by 2025, 90% of the news read by the general public will be generated by computers.
- 70% of professional services strategy officers agree that by 2025, digital solutions will generate more revenue for professional services firms than services delivered by people.

- 50% of institutional investor and sovereign fund strategy officers agree that by 2025, the majority of financial transactions as well as management of important documents will take place on blockchain architecture.
- 75% of chemistry and advanced materials strategy officers agree that by 2025, the primary feedstock for chemical production will shift from oil & gas to biobased and recycled materials.
- 63% of consumer industries strategy officers agree that by 2030, at-home manufacturing will be mainstream in both developed and developing markets as consumers 3D/4D print a wide variety of products at home.

Not only that, but the stock market is shrinking in offerings, and investors' choices are fewer and fewer every year. According to the Center for Securities Research at the University of Chicago, the number of [public companies](#) plunged by 37% to 5,734 as of June 2016 from a peak of 9,113 in 1997. In fact, today the U.S. has roughly as many public companies as in 1982.

Disruption in the financial sector has been devastating to small, community banks, as mergers and acquisitions allowed for the creation of "The Big 4 Banks," allowing for the introduction of "Too Big to Fail" and Dodd-Frank. Agriculture has been disrupted, forcing the merger of giant ag companies such as Bayer and Monsanto, or Dow Chemical and Syngenta. Amazing disruptions are coming to the energy sector, and transportation is set for changes that boggle even forward-thinking futurists.

And, in case you weren't worried enough, the technologies of the Fourth Industrial Revolution also offer expanded capabilities for waging war: drones, autonomous weapons, nanomaterials, biological and biochemical weapons, wearable devices, and distributed energy sources, not to mention constant cyber-attacks. In the Fourth Industrial Revolution, cyberspace is as strategic a theatre of war as land, sea and air.

Schwab writes,

"The new technology age, if shaped in a responsive and responsible way, could catalyse a new cultural renaissance that will enable us to feel part of something much larger than ourselves – a true global civilization... We can use the Fourth Industrial Revolution to lift humanity into a new collective and moral consciousness based on a shared sense of destiny."

But this utopian future can only be realized if humans change. If the past industrial revolutions are any indicator, things won't be different this time. Humans as a species are self-serving and opportunistic.

***"It's time to plan for the REAL future,
which looks to be a big pile of dystopia."***

Warfare

The Fourth Industrial Revolution is the Era of Asymmetrical Warfare.

The point of Asymmetrical Warfare is big return, little investment. One bomber can lose his life, but cause the loss of hundreds of lives, not including the millions of dollars lost due to damaged infrastructure, increased costs for heightened security, insurance losses, ... the list goes on and on.

Although this is the "Era of Asymmetrical Warfare," Asymmetrical Warfare isn't a new idea. The idea of Asymmetrical Warfare has been around for thousands of years, and was practiced by military greats such as Alexander the Great and Caesar. One favorite master of Asymmetrical Warfare was Sun Tzu, who wrote the Art of War around 500BC. Below are 10 of his famous sayings which reveal the thought process behind this type of war:

1. "Supreme excellence consists of breaking the enemy's resistance without fighting."
2. "All warfare is based on deception..."
3. "In the midst of chaos, there is also opportunity"
4. "When the enemy is relaxed, make them toil. When full, starve them. When settled, make them move."
5. "Great results can be achieved with small forces."
6. "If his forces are united, separate them."
7. "If he sends reinforcements everywhere, he will everywhere be weak."
8. "When we are near, we must make the enemy believe we are far away."
9. "Therefore the clever combatant imposes his will on the enemy, but does not allow the enemy's will to be imposed on him."
10. "You can be sure of succeeding in your attacks if you only attack places which are undefended. You can ensure the safety of your defense if you only hold positions that cannot be attacked."

Sound scary? It is... Asymmetrical Warfare works. It's effective, productive, and typically requires few resources for deployment. Unfortunately, Asymmetrical Warfare isn't a traditional "Theatre of War." Asymmetrical Warfare doesn't happen on land, sea, or air... it happens everywhere, anywhere, and at anytime. This is a type of war for which we are unprepared.

Case in point: 9/11 showed the U.S. that their enemy plays by no rules, respects no national boundaries and, although this enemy wields little or no advanced technology or firepower, can wreak more destruction upon American lives on U.S. soil in an hour than had occurred in the nearly fifty years of Cold War. The attacks made obvious the fact that a country's military could no longer guarantee the safety of its government or the lives of its people.

“There is tremendous cost to Asymmetric Warfare. Disorder is cheap to create and very costly to prevent. Because we cannot escape the responsibility of maintaining order, the ratio of expenses between us and the asymmetric enemy are high. Because of the disparity in cost and effort, the asymmetric enemy can thus accept a protracted war; we should not. The asymmetric enemy is fluid because he has neither responsibility nor concrete assets; we are rigid because we have both.” - David Galula

The technologies of Industry 4.0 take Asymmetrical Warfare to another level, to new “theatres” of war and far beyond terrorism or insurgency.

From cyber attacks to social media, an increasingly connected world creates huge opportunities for success in remote, contactless war. The “Internet of Things” becomes the “Internet of Terror.”

For example, in 2014 Lithuanian Foreign Minister, Linus Linkevicius, stated that “Russia Today’s propaganda machine is no less destructive than military marching in Crimea.” The pollution of the information framework for decision-making is a KEY element of Russia’s war doctrine: influencing the decision of your adversary by ensuring that he is supplied with specific information or disinformation on which to base it.

“Information is a dangerous weapon. It is cheap, it is a universal weapon, it has unlimited range, it is easily accessible and permeates all state borders without restrictions.” -Jolanta Darczewska

In closing, some thought for food: If information is a dangerous weapon, and we’re feeding AI with all the world’s data, then are we creating dangerous (weaponizing) Artificial Intelligence?