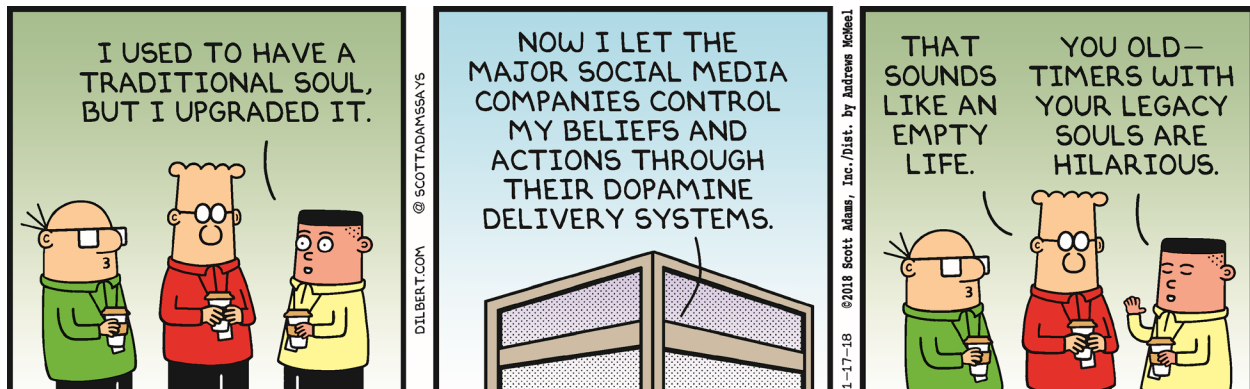




## THE RENAISSANCE AND THE ENTROPIC ARROW OF TIME

I was well on my way to finishing a tome comparing and contrasting the current era to that of a half-century ago, when it paradoxically occurred to me that the similarities and differences to a half-millennium seemed more urgent. In ways, the two distant eras - the beginning of the renaissance and the contemporary beginning of “the singularity” era - are similar. And yet, the case can be made that **the two periods couldn't be more different**. Back then, men weren't allowed to think, at least not in a creative, independent way. Before delving further into that topic, let's posit the second point that, **in the modern era where thinking has never been easier, mankind has chosen not to think**. We have data, algorithms, social media, other media, and dogma to do the thinking for us. Much more to come on this disquieting reality.



### The Renaissance

In the early 1500, Mikolaj Kopernik, aka Nicolas Copernicus, put forth the observation that the earth was not the center of the universe, but instead, orbited the sun. This belief was not well received; in fact, it was dangerous. It was still perilous almost a century later when Giordano Bruno was burned at the stake for espousing Copernican ideas, amongst others, which the Church considered heretical. A decade later, Kepler was excommunicated from the church, and Galileo famously recanted his beliefs under threat of torture or death. A synopsis of the movie/play, *The Life of Galileo*, by Bertolt Brecht can be found in the appendix of this commentary. It discusses Galileo's life, the conflict of intellectual freedom; between individual freedom and authority; ultimately between liberty and death. Following that story is a brief excerpt on Bruno. For a more encompassing discussion of the intolerance and folly of that era, *Extraordinary Popular Delusions and the Madness of Crowds*, by Charles Mackay, is an excellent book. Written several hundred years ago, in addition to 100 excellent pages on financial manias, it discusses witch hunts, the Crusades, and other examples of mankind's intolerance of new ideas and of differences. Literature is rife with examples of hardships and misfortune endured by those who dared think independently. Nonetheless, many persisted, leading the Western World into a period of cultural, scientific, political and economic rebirth.

*“Therefore, when I considered this carefully,  
the contempt which I had to fear because of the novelty and apparent absurdity of my view,  
nearly induced me to abandon utterly the work I had begun”.*

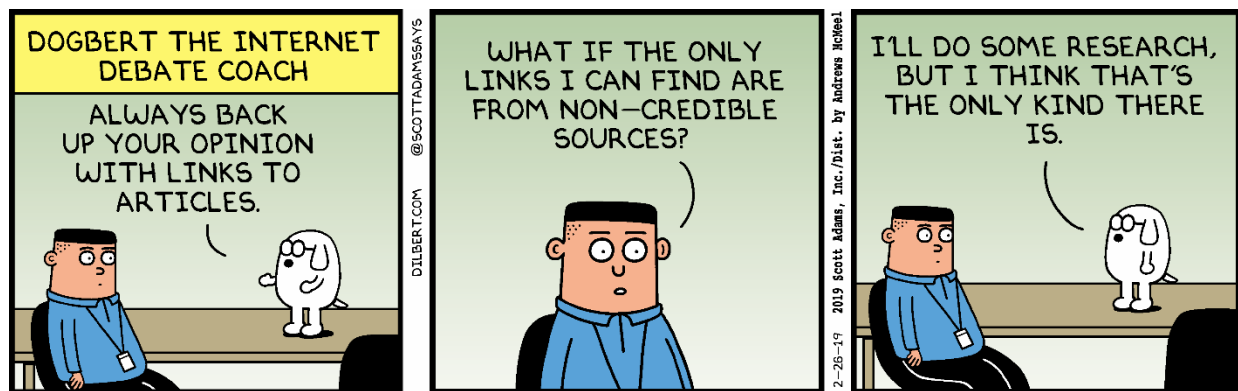
*- Nicolaus Copernicus*

### The Anti-Renaissance?

What a different world we live in today. Following 500 years of thought, exploration, and technological advancement, we now have almost unlimited access to data and ideas. The past 200 years, in particular, have championed individual liberty and freedom of expression. Libraries, websites, universities, and more, are available to quench anyone's thirst for knowledge; perhaps doing so with the volume and velocity of a “firehose.” And yet, this barrage of information seems to be pushing mankind in the direction of simplicity. We have never had greater choice when shopping, but Amazon figured out we preferred ease. Many people no longer even look beyond Amazon. People can choose to do rigorous research, but it's easier to google a subject. We can visit people, but Facebook and texts are so much more convenient. We can venture to foreign places, but traveling is often uncomfortable, and virtual reality has gotten pretty damn good; and



it's improving rapidly. We can play sports, but staying in shape is a pain in the butt, and video games are a lot of fun. It is hard to fathom, but enterprising entrepreneurs are making millions from just being watched while they play video games. Elsewhere, there are now virtual sports leagues, complete with gambling and fantasy leagues. We have a democracy, with the right to vote for anyone we choose. This is true for much of the world now, yet to use the States as an example, most people don't choose to vote. Those who do vote, don't venture beyond the choices allowed them by the entrenched party duopoly of Democrats and Republicans. This proved true even in the recent presidential election, when a lot of people professed to dislike both of the candidates put before them. News-wise, the potential sources are unlimited, but people have chosen to cordon themselves off from the world, allowing themselves exposure only to a news source that will spoon feed them what they would like to hear; whether that source be CNN, Fox, Facebook, or another. It appears to be too painful to have to mull over alternative viewpoints. Politicians, once elected, increasingly will vote solely along party lines, regardless of the merit.



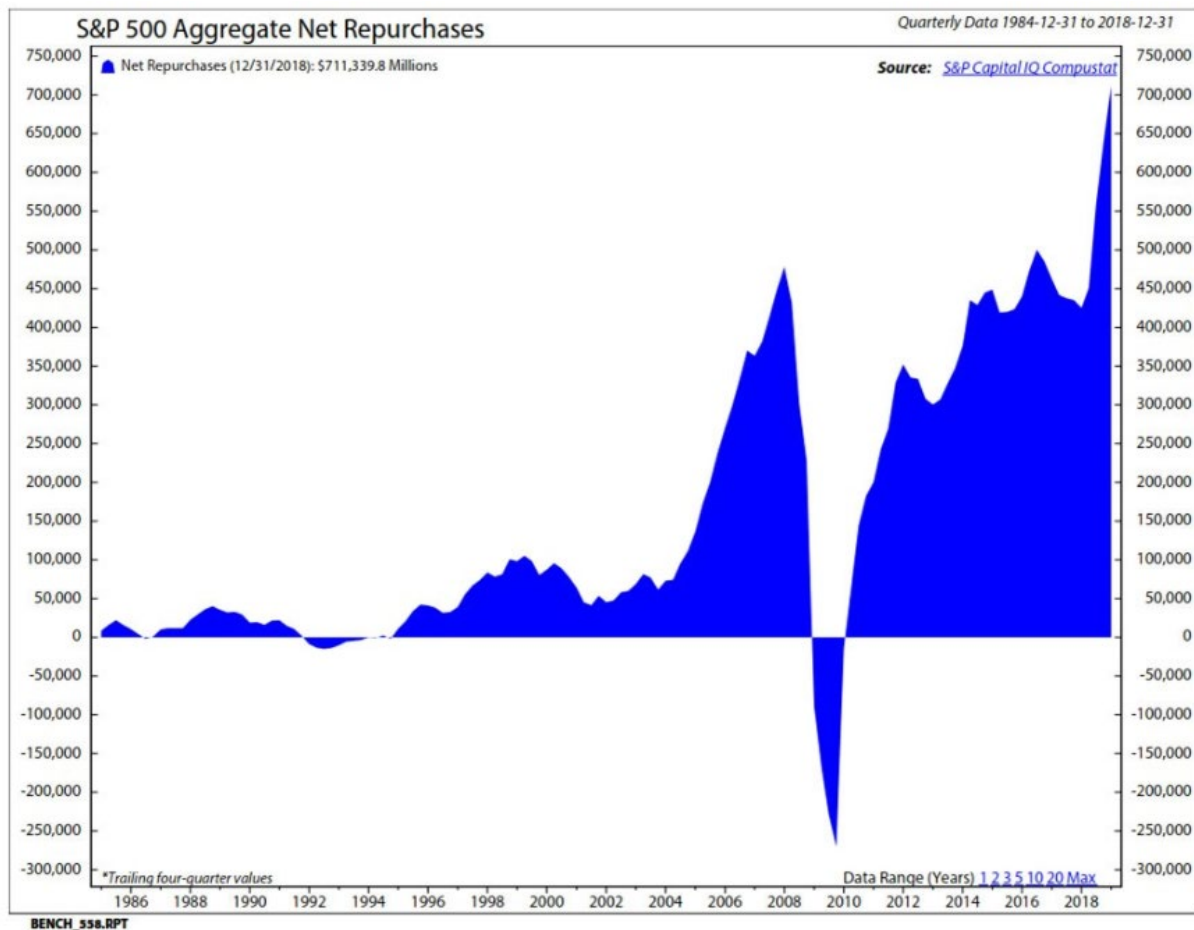
I could drone on but I won't. It will just make me sound old and grumpy, and more importantly, prevent me from getting around to the **main topic – the abrogation of thought in the investment field, and the tremendous opportunity that is being created for those individuals/institutions who are still eager to utilize independent thought and endure the discomfort that is often associated with doing so.**

Like our namesake – Kopernik (Copernicus) – we relish doing our own analysis and coming to our own conclusions. We are truly grateful that, unlike Copernicus, we live in an era where we can publish our ideas and act on our analysis without fear of loss of life or even of social standing. And, we are excited that our analysis, a la Copernicus, leads us to vastly different conclusions than the commonly embraced doctrine of contemporary times. Significant potential excess returns are in the offing due to the dogma embraced by academics, and even by many in the established investment community. As a prime example, we are thrilled that when a stock falls in half it is widely viewed as more risky than it was pre-drop, due to the increased volatility arising from the drop. Yes, volatility is widely viewed as risk, we aren't making that up. Conversely, when a stock methodically goes up until it reaches a wildly expensive valuation, it is considered low risk due to its exhibited low level of past volatility. Once again, we're not making this up. People even create funds solely devoted to buying these expensive, but low historic volatility stocks. We happily take the opposing side of both of these misguided ideas; we prefer to buy low and sell high, as quaint as that sounds. Theory proposes that volatility is risk, analysis demonstrates that it is no such thing.





Another popular idea is that stock buybacks are an effective way to return cash to shareholders. Analysis illustrates that any investment undertaking that does not include price as a variable is dangerously flawed. Buying back shares at an undervalued price is likely a very effective, value-accruing action. Buying at overvalued prices is value-destructive, and thus is not an effective return of cash to shareholders. We put forth that it is not a return of cash to shareholders at all, but rather a gift of cash to exiting shareholders, those who were smart enough to sell their stock into the company's inflated bid. History demonstrates that companies have done the vast majority of their repurchases near market tops; will this time be any different? Logic shows that **paying high multiples for a stock tends to be value destructive while suppressing interest rates allows this value destructive action to be short-term accretive to earnings per share (EPS)**. Here again, we'll let others utilize value-destructive, but EPS accretive schemes. We'll focus on true wealth accretion.



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A theory that no one had heard of a year ago, but is now all the rage, is Modern Monetary Theory (MMT). It basically states that any country that has the ability to print the currency required to satisfy its debt, and has the wherewithal to suppress the rate of interest being paid on that debt, needn't worry about debt. They are better served to provide the voters with all of the largesse they desire, I mean provide the citizens with the basic needs that they require. Why should people lack food, education, and medical care when the government can create the money needed to provide for them? Once again, it sounds great but doesn't withstand even a modicum of scrutiny. The problem, of course, is that **while the government can conjure abundantly more currency, they can't create more wealth**. It should be clear to all that manufacturers of food, drugs, etc. will ultimately want something of value for their efforts, rather than depreciating pieces of paper (or their electronic equivalent). People will point out that the last decade plus of money printing has not led to inflation; that things are different now. Here again, it sounds like a persuasive point until it is subjected to even a smidgeon of examination. Such scrutiny will reveal that inflation has been quite prevalent, even while following a customary pattern during bouts of monetary profligacy. During past





episodes, the inflationary symptoms arose first in the asset markets, then began to migrate into the broader economy. This time too, inflation has been rampant in the asset markets during the past decade of rapid global monetary growth, especially in the global bond markets (where \$11 trillion of bonds now trade with a negative yield), U.S. stocks (the NASDAQ is up 7-fold), and real estate in the world's financial centers. The inflated bond market has allowed governments to easily access beaucoup-capital, which subsequently transmitted the inflation toward their favorite programs, prominently including healthcare, education, and defense. More recently, some central banks, most notably the U.S. Fed, have tried to slow the rate of inflation of the money stock. History and logic strongly suggest that they will fail, and recently they have pretty much admitted their failure. Oddly enough bonds and stocks have rallied wildly in response to this failure. We live in interesting times. Expect the inflationary symptoms to continue to follow their historic pattern and spread to more areas of the economy as the central banks resume their money printing experiments.

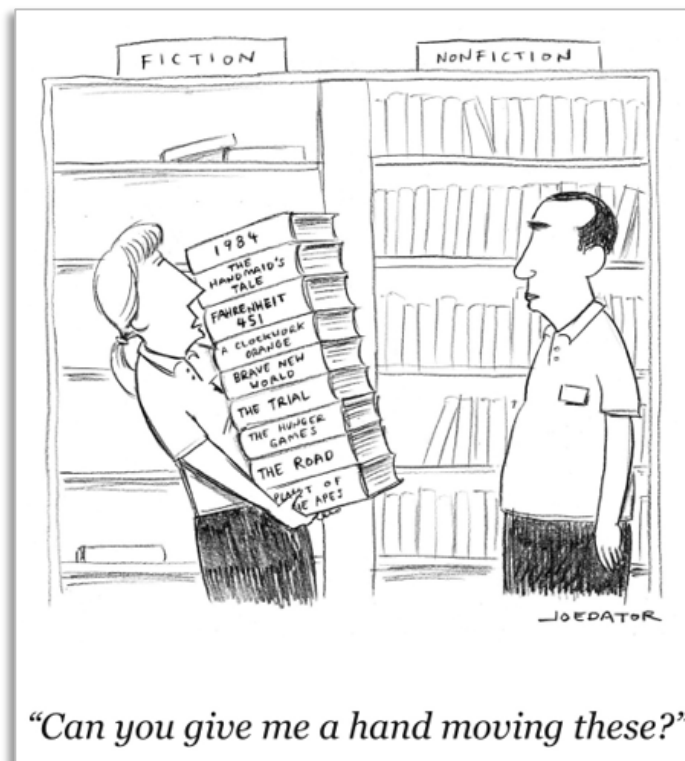
As one of the most inflated areas, bonds deserve some individual attention here. Popular belief is that economic/financial weakness is good for bonds because the authorities will choose to come to the rescue, by lowering interest rates or buying bonds (QE) or whatever their scheme du jour happens to be. Over the past decade, this has proven to be the case. But, upon reflection it has become increasingly clear that manipulation of interest rates is actually quite a daft concept. Analysis must start with the question, "what is a bond?" The answer, per Investopedia is "a fixed income instrument that represents a loan made by an investor to a borrower. A bond could be thought of as an I.O.U. between the lender and a borrower." Understandably, over the years, investors were very reluctant to lend to those whom lacked the wherewithal or the integrity to repay the loan. Over time, some came to realize that it was okay to relax credit standards a little if interest rates were raised enough to compensate for the increased risk of eventually receiving less than full repayment of the principal lent. **Only in the "twilight zone" of the current environment is it accepted that the worse the ability of the borrower to repay, the lower the interest rate they should accept!** It is presumed that if the government can't pay, they will intervene in the marketplace to suppress interest rates/inflate bond prices. The U.S. Government now owes a debt approximating 100% of its annual gross domestic product (GDP). If one (correctly) includes off-balance sheet obligations for pensions, social security, healthcare, etc. the true size quintuples. But even sticking with the official number, the odds of being repaid, with a currency of similar to today's value, are slim to none. This is because in order for governments to obtain funds, they ultimately must confiscate funds from the private sector, usually through taxation. Empirically, governments haven't been able to extract much more than 20% of Gross Domestic Product (GDP) from its citizenry, meaning that the debt is around five times the government's annual revenue (100%/20%). Now if a person has debt, outside of that secured by property or businesses, that is five times their annual income, they have a problem. Why should it be any different for governments? Unfortunately, the situation is even worse than it first appears. A government won't survive if it doesn't provide protection through a military and police force. Additionally they have made many promises to provide education, healthcare, social security and other 'safety nets', and increasingly a whole lot of largesse. Survival becomes difficult for a government that fails to significantly deliver on such promises, especially for democracies. If one were to assume that three-quarters of revenues will suffice, that leaves one-quarter of revenues for debt repayment. Therefore the U.S. debt is twenty times the annual funds available for repayment (100%/20%/25%). Importantly, it is not being repaid at all; it is growing rapidly. Even worse, **there is no willingness to repay it.** This is true of both political parties in the U.S. (see MMT above) and of virtually all parties across the globe. This is a long way of saying that the U.S. cannot and will not make good on its debt obligations. To be clear, it is understood that **they undoubtedly will make the payments, they will just do so with a currency that doesn't come close to the purchasing power of the 2019 U.S. Dollar.** The default will be economic, it will be moral, but it will not be visible. Therefore, interest rates arguably should be at all-time high levels to compensate for this risk. (Pointing out this important fact one more time, in this twisted environment, the higher the level of risk, the lower the rate of interest being accepted.) Rates are once again hovering near historic lows, the financial situation of most governments (risk) is also at an historical low point. We'll leave ownership of intermediate and long-term bonds to others who are more adventurous than we.

But wait, we are reminded, the U.S. is in better shape than Europe, financially. Many European countries have higher debt levels (to GDP) and most of their economies are too government heavy, sapping strength from the private sector. Yes, arguably many European countries are less able to repay their debt than the U.S. is, meaning that rates should be even higher there. Lending support to our point, rates are actually lower there, even less than zero. Yes, that is another modern connivance, the idea that it makes sense to loan money at rates of less than zero. The explicit agreement is that if the borrower defaults you lose most of your money and if they don't default you still lose your money, but very little of it. We could write a tome on why negative interest rates are an evil thing. Others have, so we won't. Before moving on, let's not forget Japan, widely considered to be the "mother of all deadbeat governments." Their debt is in the neighborhood of three times GDP. Rates have been amongst the lowest in the world over the past three decades. Go figure. At any rate, society certainly seems to believe that financial profligacy should be highly esteemed; Kopernik's analyses lead us in the opposite direction.

Having talked a bit about current thought on government finance and on bonds, the obvious place to go from here is "money." It is a medium of exchange, a store of value, and the eventual consideration that bondholders hope to receive. The subject has become much



more interesting than it probably has any right to be. Is the dollar really “the cleanest dirty shirt” thereby making it the best form of money? Is the market saying that the Euro and Yen are better because investors will accept a lower interest to hold them? Is the yuan the currency of the future? Or, is cryptocurrency the money of the future? Certainly, a mere 15 months ago, crypto was all the rage. Maybe it will be again – certainly it has more going for it than fiat currency, i.e. money that is backed only by mandate and the promises of politicians. The dollar is a particular curiosity to us right now since people simultaneously revere it (DXY, the U.S. Dollar Index, continues to be very strong), yet get upset if cash is held in their investment account. Seems they don’t like dollars after all, they prefer stocks and bonds. Put another way, they prefer the expectation of dollars in the future to dollars now! So much for the ‘bird in the hand’ maxim. With that in mind, the “store of value” part of the definition becomes important. The “medium of change” part of the equation probably disappears when the “store of value part” of the equation comes into question. Therefore, preferring a fixed-rate bond (a certain claim on a future dollar) to a current dollar in an era where interest rates are being suppressed, massive quantities of fiat currencies have been printed worldwide over the past decade, democracies have no stomach for fiscal discipline, central banks have a goal of eroding the purchasing power of their currencies in the future (and stand ready to ease further), and markets are expensive, seems foolish. Since U.S. bonds are claims on dollars and dollars are claims on the Fed’s balance sheet, and the quantity of both are increasing without limit or concern, our analysis of this circularity leads us to prefer scarce assets as ‘money.’ Fiat currency has proven consistently and unfailingly to be neither scarce nor value retentive. Like fiat, cryptocurrencies come with the promise of future scarcity. That may be true, we won’t bet against. But for our hard earned wealth, and for that of our clients, we’ll stick to assets that don’t require others to honor their future promises. For centuries, alchemists have been trying to create value from substances that lacked much value. Turning lead into gold (money for much of history) was a popular endeavor. What would they have thought about the current belief that money can be created from nothing at all? They would take their hats off to those who are currently conjuring fiat and crypto currencies out of thin air. Once again, when it comes to our savings, we’ll take scarce, hard assets instead. It doesn’t hurt that they are so undervalued at the moment. Precious metals are the most undervalued and have the longest history as money, but we won’t argue with those who prefer other hard assets. As it pertains to proliferating managed monetary alternatives, we will leave them to the theoreticians.



*“There’s not a snowball’s chance in hell that we went through  
8 years of free money and didn’t create a bubble”  
-David Rosenberg*



Moving on from savings to investing, possibly one of the biggest follies of doctrine in modern history is the current belief, some may say cult-like devotion, to the idea that the right way to invest one's hard-earned money is to do so through momentum-laden vehicles that eschew analyzing and understanding what one owns. It is commonly referred to as "passive investing" and it works very well in momentum markets. It is an unfortunate place to be when momentum invariably turns. Rather than go into detail, I'll refer you to our previous commentaries on the subject and to this excerpt from Howard Marks' memo entitled "Investing without People."

***"Is it a good idea to invest with absolutely no regard for company fundamentals, security prices or portfolio weighting? Certainly not."***

We believe that good money will be made by those who think for themselves and take advantage of the tremendous opportunities availing themselves due to misguided theories and practices. Let others fear volatility, fall to the siren song of stock-buybacks and other forms of financial engineering, get debased holding the currencies of profligate nations, credulously accept low yields to hold the bonds of hopelessly indebted entities, and chase momentum stocks (especially those passively held in the absence of analysis, appraisal, or other requisite due diligence.) At Kopernik, we plan to continue conducting in-depth due diligence, thoughtfully appraising value, maintaining patience and self-control, and staying disciplined in our process.

***"In all affairs it's a healthy thing now and then to hang a question mark on the things you have long taken for granted."***  
— Bertrand Russell

Transitioning to other examples of the importance of independent thought, the mainstream belief that "disruptors" are the only place to be, is a worthy topic. They aren't necessarily wrong – disruptors can be exciting and can yield true 'home run' type returns. But with this high return potential comes high risk, very high risk. Most of the **highly esteemed disruptors are in industries that have long histories of the disruptor eventually becoming the disrupted**. Technology stands out. We fully understand putting a high valuation multiple on a stock that may become the next Apple; but in general, putting high multiples on companies in industries where 90+ out of a 100 may become the disruptee, in this rapidly changing world, is a recipe for tears.

Worthy of serious thought is the fact **that technology is now rapidly disrupting many other industries, in other words, making them much more risky investments**. For example, it was amazing how quickly Eastman Kodak went from being the dominant, and highly profitable, provider of film, cameras and printers, to an uncompetitive provider of image capturing technologies. Nowadays, many other companies will succumb to similar challenges. Perhaps industrials are a good place to start. After spending years and billions on factories, machinery, supply chain, and expertise, what if anyone with a 3-D printer can build better, stronger, cheaper products? And what of automobiles, a key component of industrial production? Will ride hailing reduce the need for as many cars or will the ease of use and reduced costs increase demand? Will the cars of the future be powered by internal combustion engines or electric? If electric, will they mostly be battery electric, plugin hybrids, hybrids, or perhaps fueled by hydrogen fuel cells? These outcomes will have a huge impact on the number of moving parts in the car, the metals used in the car, the type of primary energy sources used, and so forth.

Healthcare is also ripe for disruption, especially in the U.S. where many companies charge way more than they do for the exact same product elsewhere. What if drug companies, who have profited for decades from avoiding cures because treatments are more profitable, have to compete with biotech companies that develop cures? Suppose gene editing eliminates some of these treatable ailments? What if devices such as Apple Watch/Fitbit can regulate people's behavior; what if they thereby drastically reduce the need for medicines that treat diabetes, cholesterol, blood pressure, and many other semi-controllable diseases? This sort of disruption goes beyond the pharma companies, impacting distributors, labs, hospitals, outpatient centers, PBMs (pharmacy benefit management) and insurance companies (could be positive for the latter).

Energy is certainly being disrupted. Wood and whale oil were disrupted by heating oil, which was replaced by electricity that was generated from coal (and hydro and nuclear), to later being generated by natural gas (in the developed world), and then more recently to being increasingly fueled by wind and solar. A combination of technological changes and regulatory/societal issues are making it a dicey proposition to spend billions on generation/transmission/distribution of electricity, as PG&E can attest.

Telecom is not a newcomer to disruption. Between wire and coax and fiber and the airwaves, transmission vehicles are constantly evolving. Regarding all facets of communication, the technology is changing rapidly and consistently, 3G, 4G, 5G...for example. Spending a lot of capital on any particular technology is not a riskless proposition, to say the least. Adding to the technological risk, many governments



have mandated low rates, iffy investment, poor competitive dynamics, and other detractors from returns on investment. Additionally, as we've seen in India, sometimes competitors are willing to buy market share, using paltry rates.

Where does one start when discussing the disruptive forces facing consumer staples and consumer discretionary companies? Amazon is a logical starting point. Its stock is priced as if it is going to put everyone else out of business. Oddly, many of their competitors are priced as if their futures are rosy, too. This "everyone is priced to win" phenomenon is reminiscent of 1999. Without a doubt Amazon and Alibaba, et al. are disrupting the business in a major way. And, these same woebegone competitors that are being marginalized, are increasingly having to use Amazon's platform to do business. Expect plenty more pain to come.

For one thing, the world's central banks' supercilious attempts to help consumer businesses in the short-term, have massively harmed their long-term prospects. By massively suppressing interest rates, they encouraged consumers to buy things that they didn't need and couldn't afford. This pulled sales forward, leaving consumers highly indebted and less needful of future purchases. The problem compounded when the frontloaded sales strength encouraged retailers to add capacity, on the assumption that the sales numbers represented a positive trend rather than an aberration.

Elsewhere, Millennials and Gen Z-ers have increasingly pushed back against previously accepted technologies in the food industry, taking a dim view of GMO (genetically modified organism), and of the pesticides, herbicides, antibiotics, and hormones that are so common in contemporary foods. And they increasingly are spurning packaged foods, believing them to be more of a nutrient-free, chemical-cocktail than a food. This has now gone on for much too long to be dismissed as a fad. Time will tell, but it's beginning to look like many of the packaged food companies are ruining the day when they chose to lever up their balance sheets. Disruption bites, so to speak.

Might future deliveries of groceries and other goods be made by Amazon, or by Uber Eats, proprietor delivery a la Dominos, by drone, or might people still prefer to swing by a physical store to save money or handpick the goods? Will the world still be very global, allowing us all to benefit from comparative competitive advantage or will the strong trend toward nationalism force sourcing to be more local? Certainly, very local is all the rage in the restaurant business. With so many unknowns, it is tough to want to invest a whole lot of long-term capital in many consumer facing businesses currently.

Clarifying the point before moving on, **we have nothing against disruption.** Au contraire, disruption is good. It allows progress, betterment of mankind, and survival of the fittest. It leads to a fit, productive economy. But, **industries currently prone to massive disruption deserve to sell at discounted valuations, reflective of the concurrent risk!** Once again, **this conclusion is counter to conventional wisdom. Therein lies the opportunity.**

The market is believed to like certainty. Therefore, industries that are less disruption-prone ought to be selling at a premium. The fact that they tend to trade at a large discount should intrigue would be investors. It intrigues us.

Let's lead off with transportation. Who didn't find the teleporter on Star Trek to be pretty cool, but it isn't happening in our lifetimes. And forgive us if we don't take Musk's Hyperloop seriously. It is a decent bet that infrastructure dedicated to planes, trains, and ships won't be badly disrupted before a healthy return on investment can be garnered. While efficiencies from technology and inefficiencies from politics may mildly hinder the demand for shipped goods, it's hard to see shipping being surpassed as the way to get goods from point A to point B over water. Quality transportation franchises oughtn't to sell below the cost of invested capital. We continue to be sanguine.

It is no shock that gold is an apparent winner from the trend toward increasing fiscal and monetary extravagance. As a type of money, it has not been disrupted for thousands of years. The Fed has now all but confirmed that there is no exit strategy for QE, thereby effectively ratifying the obvious, that fiat currencies cannot be counted on to store value. Never have; never will. Meanwhile, notwithstanding its recent bounce, crypto is having a tough time of it. Maybe someday its kinks will be worked out, but we will take the laws of nature over promises of future discipline. Gold is scarce, malleable, divisible, inert, attractive, and has a thousand-year history of being money. It is hard to over emphasize the importance of the fact that it's nobody's liability. It won't be disrupted and it's severely underpriced in our humble opinion.

Utilities are subject to disruption, but not equally so. High cost electricity is prone to disruption and deservingly so. Conversely, low cost power should continue to be in high demand in a world with a growing population, currently at 7.5 billion people. This means natural gas. This means existing properties for coal, hydro, nuclear, solar, and wind. Whether new investment in these areas will earn a fair return is controversial and subject to change. We prefer to invest in existing plants versus green-field plants. Low-polluting properties are much





preferable to properties associated with higher pollution. They are better for the environment and will likely prove cheaper, for example when subsequent pollution control expenditures are required. Therefore, they are much less prone to disruption, an important pillar in Kopernik's preference for gas, nuclear, hydro, solar, and wind. The market has a differing opinion on hydro and nuclear. We are taking advantage of this inconsistency.

Likewise, even accounting for the rapid growth of solar and wind, it is hard to imagine uranium and natural gas being competitively harmed. They are cheap and clean. North America has plenty. They are dependable. They are selling for well below the cost of incremental production, portending substantially higher future prices. Timing unknown.

There are also various special situations that are attractive. The central banks have very publicly suppressed interest rates. This makes valuable information unavailable to investors and lowers the opportunity cost of holding an investment. Meanwhile various agents have suppressed, if not outright redefined the definition of, volatility. Volatility now means a down market. A violent, volatile, upswing in stocks leads to a drop in the VIX (volatility index). These two phenomena have led to a gross underpricing of optionality. Whether those options reside in a markedly underpriced ship/dam/mine/well or in a more standard form such as a put option, the market seems to be vastly underpricing it. We saw a glimpse of the potential optionality in 2016. We anxiously await the return of cyclicity in the future.

### Investing Alongside the Entropic Arrow of Time

Entropy is a measure of disorder. It increases with the gradual decline of a system into disorder. The second law of thermodynamics states that the entropy of an isolated system never decreases. It is believed that the universe will continue expanding, becoming less organized. It seems that this law of physics applies to civilization as well. It can be persuasively argued that a breakdown from an authoritative system into a system that is more conducive to individual liberty and creativity is a very positive development. The further devolvement into anarchy and chaos is distinctly not positive. The "Renaissance Men" of a half-millennium ago had to take on great personal risk to challenge the orthodoxy of the, then prevalent, oppressive establishment. They slowly persevered. Monarchies gave way to representative forms of government. Science migrated from faith-based to research-based approaches. Literature and art ventured from very centrist to quite eccentric expressions. The economy progressed from feudalism to more decentralized, capitalistic, and individualistic practices. The monetary system became more flexible, incorporating derivatives of metals, thereby greatly increasing its use as a medium of exchange. Science, art, medicine, industry, and economic well-being flourished for the next five centuries, admittedly with plenty of cyclical downswings along the way.

The loosening of the yoke undoubtedly freed growth in many fields. Fast-forwarding to the 21<sup>st</sup> century, the pace of change has accelerated dramatically, but the entropic process seems to be approaching the latter stages; be that stage one of enlightenment and the Solidarity, or on the contrary, an unfortunate breakdown into anarchy and chaos. Disparate countries are choosing not to follow the rules of the global governing bodies, making the world potentially more dangerous. For example, is gene editing a step toward nirvana or toward the opening of Pandora's Box? Religious order/moral authority/spiritual direction, for good or bad, have become very fragmented and less potent. Government has devolved from representative democracies into a more pure democracy, with all the wonderful benefits and unintended hazards that accompany this trend. As Churchill said, "it has been said that democracy is the worst form of government except for all those other forms that have been tried from time to time." But, while democracy is probably better than all those other forms of government, Alexander Fraser Tytler has pointed out that, "*A democracy is always temporary in nature; it simply cannot exist as a permanent form of government. A democracy will continue to exist up until the time that voters discover that they can vote themselves generous gifts from the public treasury. From that moment on, the majority always votes for the candidates who promise the most benefits from the public treasury, with the result that every democracy will finally collapse due to loose fiscal policy, which is always followed by a dictatorship.*" Certainly, we have already reached the point where the people have primarily chosen to vote largesse for themselves. At the same time, the whole concept of the nation state is, despite the pushback from nationalists, being usurped by a paradigm of corporatocracy. Quite possibly, this is a key driver of the nationalist uprising that we've been witnessing on a global level. Perhaps related to changes in government, is the deterioration of capitalism into something more akin to cronyism. Ray Dalio, Jeremy Grantham, Marc Faber, "Austrian economists," and many others have written plenty on the subject of wealth concentration, absence of antitrust enforcement, the power of political action committees, etc. so it isn't necessary to devote more space here. Another topic, for which there is no shortage of verbiage, is MMT discussed above. What does it mean for the world that economists, governors, academics, and much of Wall Street have effectively embraced the satire (written by Mark Knopfler and Sting) - "*Money for nothing?*" We would add more lyrics from the song, "*look at them yo-yo's, that's the way you do it.*" Here again, a step toward nirvana or a step toward hell. For a proactive piece regarding modern finance, monetary theory, religion, and democracy, that you may find enlightening, infuriating, or perhaps both, "The five experiments: a short essay; by Fernando del Pino," is a stimulating read.

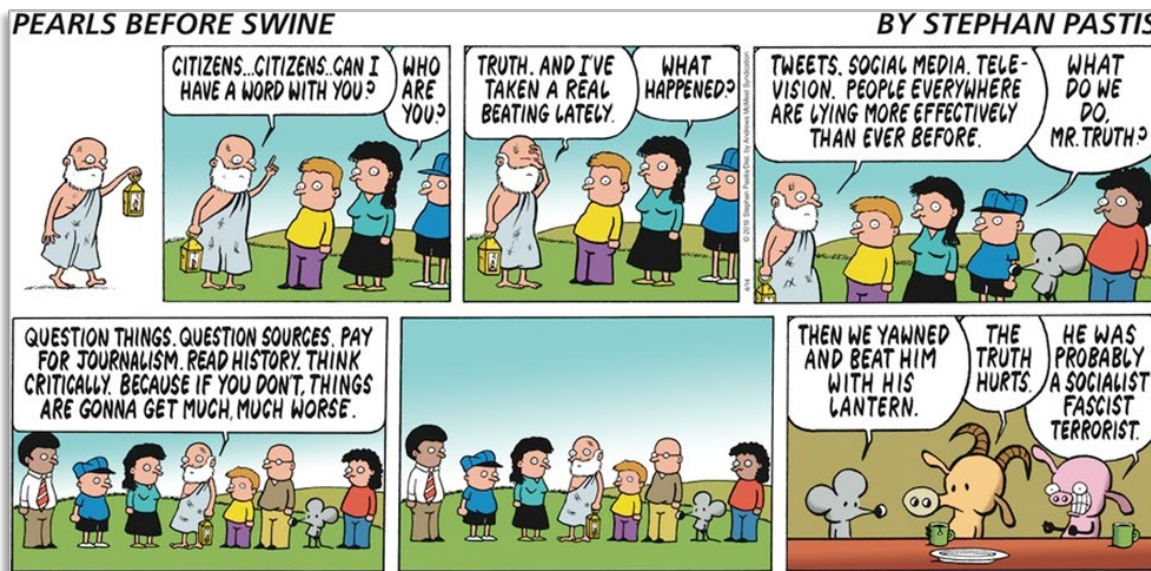




*"The main focus in my life now is to open people's minds so no one will be so conceited that they think they have the total truth. They should be eager to learn, to listen, to research and not to confine, to hurt, to kill, those who disagree with them."*

*-John Templeton*

Clearly, these have the possibility of being less stable times. Global cooperation and rule of law seem to be waning. If so, rather than paying up for the illusion of stability and clarity, people ought to be demanding a much larger margin of safety and more optionality/upside potential. Both are available for those who seek them.



## Conclusion

A half-millennium ago, mankind's search for truth began to breakdown the stifling barriers to thought and liberty. In the contemporary world where truth and liberty have conceptually become easy, they are being sacrificed. While this is a gross generalization, excellent opportunities have been opened up for those willing to use common sense, dig for truth, and act upon their conviction. Thank God that we are allowed to think for ourselves, hold opposing opinions, and hold unto values. If many others prefer to get their beliefs from social media and popular doctrine, and to chase dreams of 'Unicorns' and utopian fiscal and monetary schemes, we are pleased to 'scavenge' for the 'diamonds in the rough' that they are disdainfully leaving behind. These include scarce goods that can't be printed or otherwise conjured by political types: infrastructure; corporate owners of gold and other precious metals; clean electricity generators; dominant phone service providers in growing markets; producers of relatively cheap, clean energy; transportation networks; agricultural companies; and plenty of special situations. As Yuval Noah Harari suggests, the difference between a myth and a natural law, is that the latter holds true whether or not people believe. For example, if people stop believing in gravity, it still exists, whereas money stops being money when people stop believing that it has value. We are blessed that we have liberty and the freedom to think rationally and independently. We believe in: the laws of mathematics; the concept that supply, demand and usefulness effect value; the irrationality of crowds and its adjunct – the inefficiency of markets; and that the world is a cyclical place. These will all continue to exist with or without our endorsement. We believe in the importance of rigorous due diligence employing bottom-up, fundamental securities analysis. And finally, we want to acknowledge that we are fortunate and grateful to have so many solid, thoughtful, likeminded clients and partners. A la 1999, we all anxiously await the inevitable time when people stop believing in Unicorns and free money. Interesting times, indeed.

Cheers,

David Iben  
CIO, Kopernik Global Investors  
May, 2019



## WILLING TO THINK DIFFERENTLY

**Nicolaus Copernicus** (Polish: Mikolaj Kopernik, German: Nikolaus Kopernikus; 19 February 1473 – 24 May 1543) was a Renaissance Mathematician and Astronomer who formulated the heliocentric model of the universe which placed the Sun, rather than the Earth, at the center.

Copernicus had a doctorate in canon law and, though without degrees, was a physician, polyglot, classics scholar, translator, governor, diplomat, and economist who in 1517 set down a quantity theory of money, a principal concept in economics to present day, and formulated a version of Gresham's law in 1519, before Gresham.



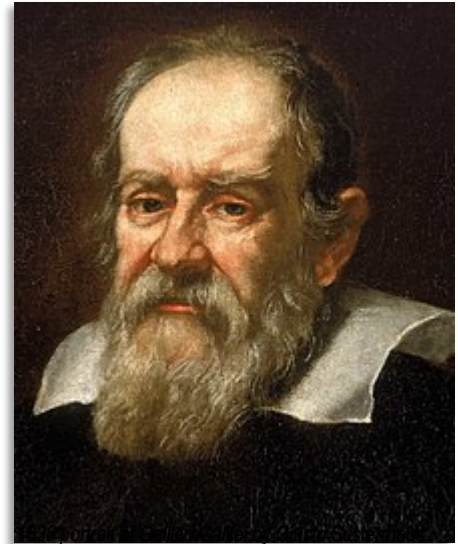


## Synopsis

*Galileo, an eminent professor and scientist in the 17th century Venetian Republic, is short of money. A prospective student tells him about a novel invention, the telescope ("a queer tube thing"), that is being sold in Amsterdam. Galileo replicates it, and offers it to the Republic as his own creation. He gains an increase in his salary, but within a short time his ruse is discovered.*

*Galileo then uses the telescope for careful observations of the Moon and the planets, and he discovers the moons orbiting Jupiter. His observations strongly support Nicolaus Copernicus' heliocentric model of our Solar System, which is counter both to popular belief and to the doctrine of the powerful Roman Catholic Church. He furthermore publishes in vernacular Italian, rather than traditional scientific Latin, thus making his work and conclusions more accessible to the common people.*

*His daughter's engagement to a well-off young man (with whom she is genuinely in love) is broken because of Galileo's reluctance to distance himself from his unorthodox teachings. Galileo is brought to the Vatican in Rome for interrogation by the Inquisition. Upon being threatened with torture, he recants his teachings. His students are shocked by his surrender in the face of pressure from the church authorities.*



*Galileo, old and broken, now living under house arrest with a priest monitoring his activities, is visited by one of his former pupils, Andrea. Galileo gives him a book (Two New Sciences) containing all his scientific discoveries, asking him to smuggle it out of Italy for dissemination abroad. Andrea now believes Galileo's actions were heroic and that he just recanted to fool the ecclesiastical authorities. However, Galileo insists his actions had nothing to do with heroism but were merely the result of self-interest.*

*Giordano Bruno (/dʒɔːrˈdɑːnoʊ ˈbruːnoʊ/; Italian: [dʒorˈdaːno ˈbruːno]; Latin: Iordanus Brunus Nolanus; born Filippo Bruno, 1548 – 17 February 1600) was an Italian Dominican friar, philosopher, mathematician, poet, cosmological theorist, and Hermetic occultist. He is known for his cosmological theories, which conceptually extended the then-novel Copernican model. He proposed that the stars were distant suns surrounded by their own planets, and he raised the possibility that these planets might foster life of their own, a philosophical position known as cosmic pluralism. He also insisted that the universe is infinite and could have no "center".*

*Starting in 1593, Bruno was tried for heresy by the Roman Inquisition on charges of denial of several core Catholic doctrines, including eternal damnation, the Trinity, the divinity of Christ, the virginity of Mary, and transubstantiation. Bruno's pantheism was also a matter of grave concern, as was his teaching of the transmigration of the soul. The Inquisition found him guilty, and he was burned at the stake in Rome's Campo de' Fiori in 1600.*





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