

APPENDIX

The Future of Pandemics

The Virus Wars

While I was working on this book Covid-19 struck and as I write this it continues to infect the US. Hundreds of thousands have died from this horrible virus and although it is still in progress, I cannot ignore Covid-19 in this book and future pandemics. The USA is in the biggest war of its life. More Americans have died than died in WWI, WWII, and the Vietnam War combined. Thus, the United States faces the most uncertainty of its life. The stupidity in the response that has occurred fighting Covid-19 is exactly why I wrote this book. Ninety percent of the world's problems can be linked back to stupid decisions taken. I must stick with just 2020 in this book and just the United States. To do other would require a book of its own. This appendix is to serve as an example of how to apply Loop Learning. I saw stupid run amuck in 2020. Stupid is always more than normal when in highly stressful uncertain times. Now that I have taken you through the process of Loop Learning let us apply this process to the greatest uncertainty of our time, The Future of Pandemics.

First, we will look at the Awareness phase and the early warning factors that should have created a much earlier response to the pandemic. Then we will move to the Insight phase and look at the Driving Forces of change in order to develop Insight into the change created by the Covid-19 pandemic. Only then can we develop Inferences for the future by developing scenarios of the possible future for the United States. In the Decision phase of the process, we will consider action. Again, I apologize that this look must be superficial but to address all the uncertainty brought about by this pandemic is far beyond this work. I

hope however it will serve as an example for those wanting to understand and apply the process of Loop Learning.



The AWARENESS Phase

Awareness begins with Anomalies – Early Warnings of Change

ANOMALY - Warning of a pandemic

On November 12, 2009, the CDC reported an estimated 22 million Americans had been infected with H1N1 and 4,000 Americans had died. Confirmed cases, hospitalizations and deaths from April 12, 2009 to April 10, 2010 were breathtaking. During that pandemic, the CDC estimates that there were approximately 60.8 million cases (range: 43.3-89.3 million) in the U.S. There were 274,304 hospitalizations (195,086-402,719) and 12,469 deaths (8868-18,306).

An outbreak of Middle East Respiratory Syndrome (MERS) in South Korea in 2015 exposed vulnerabilities that terrified the people and forced an overhaul of epidemic response. A single patient infected with MERS brought in from the Middle East was treated at three hospitals and sparked outbreaks in each one, infecting 186 people and killing 38. That epidemic was quashed in two months by quarantining nearly 17,000 people.

In 2016, President Barack Obama expanded the National Security Council to include the Directorate of Global Health Security and Biodefense. The unit, which focused in large part on pandemic preparedness, was formed in response to criticism of how his administration handled the Ebola outbreak in 2014-15.

In January 2017, seven days before Donald Trump took office, his aides faced a major test: the rapid, global spread of a dangerous virus in cities like London and Seoul, one serious enough that some countries were imposing travel bans. In a sober briefing, Trump's incoming team learned that the disease was an emerging pandemic — a strain of novel influenza known as H9N2 — and that health systems were crashing in Asia, overwhelmed by the demand. The Trump team was told it could face specific challenges, such as shortages of ventilators, anti-viral drugs and other medical essentials.

In May 2018, former national security adviser John Bolton restructured Trump's National Security Council and disbanded the global health unit. Its former head, Rear Adm. Timothy Ziemer, resigned from the administration and was not replaced.

ANOMALY December 2019 - A Chinese Doctor is jailed for alerting of a strange virus:

Dr Li was working at the centre of the outbreak when he noticed seven cases of a virus that he thought looked like Sars - the virus that led to a global epidemic in 2003. The cases were thought to come from the Huanan Seafood market in Wuhan and the patients were in quarantine in his hospital. On 30 December, 2019 he sent a message to fellow doctors in a chat group warning them about the outbreak and advising they wear protective clothing to avoid infection. What Dr Li did not know then was that the disease that had been discovered was an entirely new Coronavirus.

ANOMALY - Doctors dying from Covid-19 – Doctors rarely die in the hospital:

Four days later Dr Li was summoned to the Public Security Bureau where he was told to admit to "making false comments" that had "severely disturbed the social order". In his Weibo post he describes how on 10 January he started coughing, the next day he had a fever and two days later he was in hospital. His parents also fell ill and were taken to hospital. It was 10 days later - on 20 January - that China declared the outbreak an emergency. On Feb. 7, 2020 Dr. Li died from Covid -19. On April 4, 2020, the US saw its first emergency room physician die, while over 100 doctors and nurses have died around the world, nearly half of whom were in Italy.

ANOMALY -Warning call from China

On Jan. 3, 2020, the CDC director received a call from his counterpart in China with a warning that a mysterious respiratory illness was spreading in Wuhan. The CDC quickly relayed this to the Secretary of Health and Human Services for the US who assured him the National Security Council was notified about the Coronavirus. On 20 January - China declared the outbreak an emergency. The city of Wuhan's 11 million people entered lockdown at

10am on January 23, 2020 with residents confined to their houses and transport networks shut. On Jan. 31, 2020, the World Health Agency declares a global health emergency. But on Feb. 2020 President Trump says the virus will shortly disappear “like a miracle”. On March 2020 New York Gov. Cuomo issues statewide stay-at-home order and 41 states follow suit.

THE INSIGHT PHASE

An examination of key driving forces: SOCIAL, TECHNOLOGY, ENVIRONMENTAL, ECONOMIC AND POLITICAL

SOCIAL DRIVING FORCE

In Jan. 2020, the Trump administration banned all foreign nationals from entering the US from China; however, 27,000 US citizens visiting or living in China are allowed to return to the US from China. In March 2020, President Trump declares a national emergency and starts daily briefings on the crisis. Dr. Fauci, the leading US infectious-disease expert becomes an unlikely star as many look to science for a cure to this crisis.

In May of 2020, a police officer kneels on George Floyd’s neck for seven minutes and 46 seconds as he pleads “I can’t breathe.” His killing sets off angry protests and fire-setting on the streets of Minneapolis and quickly spread to other cities. The anger from the killing of George Floyd becomes a worldwide movement with protests in 60 countries. To further ignite tension a black man was shot four times in the back in Kenosha Wis.

There are some important distinctions but also many parallels between the post-pandemic “race riots” (as they were called) of the Spanish flu of 1919 and the current ongoing protests against police brutality. There had been a series of white-led raids of Black communities — including a month of fighting in Connecticut — when, in late July of 1919, a Black teenager was stoned to death while swimming in an area of Lake Michigan designated white-only. Police refused to charge the attackers, and the violent clashes lasted for two weeks. Between Jan. 1, 1919, and October of the same year, The Times tracked “38 race riots and clashes in cities and other communities in various parts of the country.” The flu pandemic, the so-called “red summer” race riots of 1919 and World War I are integrally connected, as historian and author Kenneth C. Davis said. “I think absolutely the Spanish Flu had something to do with the red summer,” said Davis, author of “More Deadly Than War: The Hidden History of the Spanish Flu and the First World War.” “I don't want to overstate that it was the pandemic, but I don't think you can disassociate or disconnect anything about the period from 1918 to 1919, 1920, from the flu and the war, because they're completely interconnected.”

In 1918 scientists and doctors were ignored. Sometimes the advice they were giving to politicians was ignored at great peril to the public health. In 1917, 1918, the priority was winning the war. In 2020 it was winning the economy. Concurrent with the war and the flu, the United States was going through some cultural growth. The “great migration” brought as many as 450,000 Black families from the south to work in urban centers up north. White soldiers returning from war found their jobs held by African Americans. In 1918 the US in the midst of a revolution, it was an industrial revolution. Today the US is in the midst of another revolution, a technology revolution. Both filled with strife. There are parallels to how humans react to

crisis. Crisis creates a flash point when people are frustrated, stressed out, we have yet another pressure point.

The wearing of masks to prevent spreading and getting the virus becomes an unlikely front in the culture wars of 2020. Many conservatives follow President Trump's lead in rejecting masks as an infringement on personal freedom. 2020 was tough but in many ways, it changed many things that needed changing. New ways of working were invented. A long overdue social adjustment was forced; policing was scrutinized, travel reconsidered, and dining habits adjusted. Society learned to value what matters.

From the idea that drinking bleach can kill the virus to a theory that the virus was created in a lab as a bioweapon, the COVID-19 pandemic has generated a flurry of misinformation. Indeed, one study, published Aug. 10, 2020 in the American Journal of Tropical Medicine and Hygiene, found that the pandemic has hatched more than 2,000 rumors and conspiracy theories. Such false information can have serious consequences — the researchers of the new study found that COVID-19 related rumors were linked to thousands of hospitalizations and hundreds of deaths.

TECHNOLOGY DRIVING FORCE

On Jan. 11, 2020 Chinese scientists submitted the gene sequencing data for Covid-19. On Jan 13, 2020 Moderna researchers used the genetic sequence of the virus, made public by China, to design an mRNA molecule that teaches the immune system to recognize and neutralize the COVID-19 virus. In just two days after receiving the virus scientist created a vaccine for the

virus. By February, the vaccine had actually been made and shipped to the National Institutes of Health to start clinical trials. More than 300,000 Americans died and 16 million were infected while the vaccine was painfully and slowly tested and approved. The vaccines would not exist without international cooperation. Moderna's vaccine employs technology created by Hungarian born scientist and developed by a team of researchers from around the world. The Pfizer vaccine was created by second generation Turkish immigrants to Germany and made by the company CEO and immigrant from Greece. However, the distribution and vaccination of the public saw many roadblocks, mismanagement and neglect.

One of the most unexpected effects of the pandemic on people's work habits was the sudden rise of video meetings. People who previously would never have dreamed of switching on video for a conference call suddenly had a visceral need to compensate for the lack of in-person connection. A year later, video calling has become the norm in business, and many believe we'll never go back the old ways. Zooming becomes a business and social trend as many employers allow workers to work from home. Zoom usage shot up in March 2020. CEO Yuan stated in a blog post that over the course of that month, Zoom was seeing 200 million daily meeting participants. The following month, this figure had risen to 300 million . This compares to 10 million in December 2019. Even court hearings have converted to video conferencing. The COVID-19 pandemic forced an unprecedented global shutdown that closed schools for months. In many nations, schools were closed to students, and teachers directed educational activities remotely via digital devices or homeschooling resources.

A year ago, 81 percent of shoppers said they never turned to the internet for groceries. Online shopping was

lolling at around 3 percent of all grocery sales, or about \$1.2 billion. But by June 202, online grocery sales in the United States hit \$7.2 billion. “Even my parents are getting increasingly used to using their iPad,” said Mr. McMullen, the Kroger chairman. “There are millions of people who have gotten used to cooking. They’ve found out they enjoyed it, and they’ve gotten used to tech and are understanding the benefits.” At the same time take out and food delivery services have grown. DoorDash, the U.S. industry leader with 50% market share, and the next biggest players Uber Eats and Postmates, then Grubhub. DoorDash said in its prospectus that its 543 million total orders for the first nine months of 2020 tripled compared with 181 million orders in the year-ago period.

As millions of people go online for entertainment and more, total internet hits have surged by between 50% and 70%, according to preliminary statistics. Streaming which was already huge has also jumped by at least 12%, estimates show. Consumers spent \$861.12 billion online with U.S. merchants in 2020, up an incredible 44.0% year over year, according to Digital Commerce 360 estimates. That is the highest annual U.S. ecommerce growth in at least two decades. It is also nearly triple the 15.1% jump in 2019.

ENVIRONMENTAL DRIVING FORCE

Covid19 is an environmental driving force. To say it has changed the world would be an understatement. In one year, it has upended daily lives across the globe. The pandemic has changed the way we work, learn, and interact as social distancing has led to a more virtual existence. But it has also changed our approach to health and health care. It has triggered a wave of mental health issues; addiction, depression and social isolation; especially in the young.

With almost every person it infects, the virus changes very subtly – picking up a letter in its genetic code here, another being deleted there or swapped for something different. These occur usually because of tiny errors as the virus takes over the cell's molecular machinery to copy itself. Most have little effect other than helping scientists to trace how the virus is spreading around the world. But occasionally a mutation occurs that alters how quickly the virus spreads, how infectious it might be or even the severity of the disease it causes. Several of these variants—in the United Kingdom, South Africa, and Nigeria—are being closely monitored by health experts. The South Africa variant is linked to an explosion of cases and is feared to make the vaccines less effective. The UK B.1.1.7 variant spread exponentially. In one month, it went from 4% of US cases to over 30% of US cases.

I remember an airplane accident expert saying that in his thirty years he has never seen a plane crash because of one failure. It is when two or three failures occur simultaneously that disaster occurs. Pilots can handle one failure but not two or three. Climate change has added crisis to the turmoil the US faces. Handling the virus by itself is difficult but add race relations and climate change to the menu and flying this US plane is in jeopardy.

The past six years are the hottest on record, resulting in apocalyptic wildfires ravage California in 2020, a new normal. The 2020 Atlantic hurricane season was the most active and the fifth costliest Atlantic hurricane season on record. In addition, it was the fifth consecutive above average season from 2016 onward. The season featured a total of 31 tropical cyclones, all but one of which became a named storm. It is no wonder that the US is in turmoil.

Carbon dioxide levels have increased by nearly 50% since the Industrial Revolution 250 years ago. The amount

of methane in the atmosphere has more than doubled. As a result, during this period, Earth has warmed by about 2 degrees Fahrenheit (just over 1 degree Celsius). 2020 was the hottest year on record globally. Climate modelers have predicted that, as the planet warms, Earth will experience more severe heat waves and droughts, larger and more extreme wildfires, and longer and more intense hurricane seasons on average. The events of 2020 are consistent with what models have predicted: extreme climate events are more likely because of greenhouse gas emissions.

In 2017 the hurricane season was the most expensive in US history. A series of major storms, including Harvey, Maria and Irma caused unprecedented amounts of damage. Harvey and Irma blasted the US coast with winds exceeding 130 mile an hour and savage Maria destroyed Puerto Rico with winds exceeding 155 mph. Besides the wind, Harvey flooded Houston with the record US rainfall of more than four feet of rain in a matter of hours. Then, Irma battered the Caribbean before wiping out the Florida Keys just 15 days after Harvey. And then ten days later Maria destroyed homes and most of the infrastructure, including the power grid, in Puerto Rico. Nobody saw all this coming. And even when the hurricane is striking land, it still is not predictable; like hurricane Sandy weird and infamous left turn into New Jersey in 2012 or Harvey's several feet of rain the US had never been seen before.

ECONOMIC DRIVING FORCE

March 2020, due to the shutdown 10 million Americans filed for unemployment in the first month. Congress passed the \$2.2 trillion stimulus bill.

Forty-five of the top 50 publicly traded US firms turned a profit in 2020, 27 of them laid off employees, cutting more than 100,000 workers. As billions were paid out to investors, record profits did not trickle down to

workers. Apple's total stock value climbed 133% while Amazon's share price increased 70% as the stock market set new records fueled by stuck at home Americans and the Federal Reserve interventions. At the end of 2020 just 12 million of the 22 million lost jobs have been recovered and more than 400,000 small businesses have closed their doors. Economists see a K shaped recovery with the poor getting poorer and the rich getting richer.

Life under quarantine has been a boon for e-commerce retailers like Amazon, Target, Wal-Mart, and Best Buy; food delivery services like DoorDash; and streaming services like Netflix. Consumers not spending money on restaurants and travel are spending at Home Depot and Lowe's and on video games. But restaurants that have drive through and take out like McDonald's and Popeye's are thriving. And communication services like Zoom and Slack expanded when millions of Americans began working from home. Brick and mortar retailer can barely compete and could be at a permanent disadvantage.

POLITICAL DRIVING FORCE

In March, the President Trump dismisses responsibility for the virus catastrophic spread and the massive shortage of protective gear and testing. "No, I don't take responsibility at all." States were on their own and openly competed with one another for scarce medical supplies.

As a result of the rioting, the President warmed to a "Law and Order" as a campaign theme and cleared out protesters by force from Lafayette Sq. and marched to a church to hold up a bible.

Democrats early in 2020 push for mail in ballots so people need not risk COVID-19. But the President Trump rejects this as it would lead to “the most INACCURATE & FRAUDULENT Election in history.” The President warns that the upcoming election may be “rigged” and tells the Proud Boys to “stand by.”

In a record turnout President Biden amasses more than 81 million votes, but President Trump ran closer than polls predicted with 74 million. Republications also gained seats in the House but took over a majority of the Senate as well. President Trump dismisses the election as “fraud on the American Public.” This charge was overridden with the certification of the election by Congress. However, this certification almost cost the life of the Vice President. On Jan. 6, 2021 President Trump called a rally that turned into a riot with the sacking of the Capital Building, leading to a second impeachment of President Trump by the House. President Trump still maintains the election was stolen and a poll shows 77% of Republicans agree with him. The Senate acquitted President Trump; however, seven Republican crossed over and agreed with the Democrats. This country is as divided as it was in 1969. The strange thing is that in 1969 we had the Vietnam War to divide us. Now it is hard to put your finger on what is dividing us.

A civil bifurcation has erupted, dividing America. To some former President Trump is a blatantly corrupt and cruel liar, indecent and who, purged the federal government of ethical public servant, pandered to racism, and cost the of thousands of American lives by horribly mismanaging the US response to Covid19. To others however, former President Trump is a real patriot who championed the working class and sparked the economy and can't be blamed for an overhyped pandemic. Whatever the fake news media says can be ignored and the truth can be found on Fox News. America is being

tested like no time since the civil war. Yes, it is worse than in 1969. But in 1969 the US was divided over the Vietnam war. There is no one thing clearly dividing the US in 2020, it is much deeper than that. But pandemics cause more than health issues, stress creates social unrest.

The Spanish Flu in the summer of 1919 was called the “red summer” because of the blood lost but also because of the threat of Communism. Though white people largely instigated the 1919 race riots, they were blamed on Communists and anarchists, who were supposedly inciting the Black community to violence. Propaganda at the time suggested that the anarchists were circulating among the African American community and starting trouble. When people started accusing antifa of causing all this violence there are political similarities between the two pandemics.

In 1919, there had been growing xenophobia and racism during and prior to the flu pandemic. There was a tremendous rise of the Ku Klux Klan, and in this period, the most restrictive anti immigration laws ever passed in American history or passed shortly afterwards. So, you have a tremendously conservative mood in the country, looking inwards, keeping out the other, keeping out the strange, keeping out all the things that bring diseases. And in fact, Black people were even blamed for the flu.

The Senate Republicans acquitted President Trump in his first impeachment trial for Abuse of Power and Obstruction of Congress over the Russian investigation of interference in the US election. As I prepare this the House has impeached President Trump for the second time, but the Senate found him not guilty with only 7 Republican Senators voting guilty. The House impeachment was the result of the events on Jan. 6, 2021 when 8,000 rioters in just minutes overwhelmed 1,400 Capital Police officers and took over the US Capitol. Although the rioters failed to

stop Congress' certification of the election they still energized the far-right extremist.

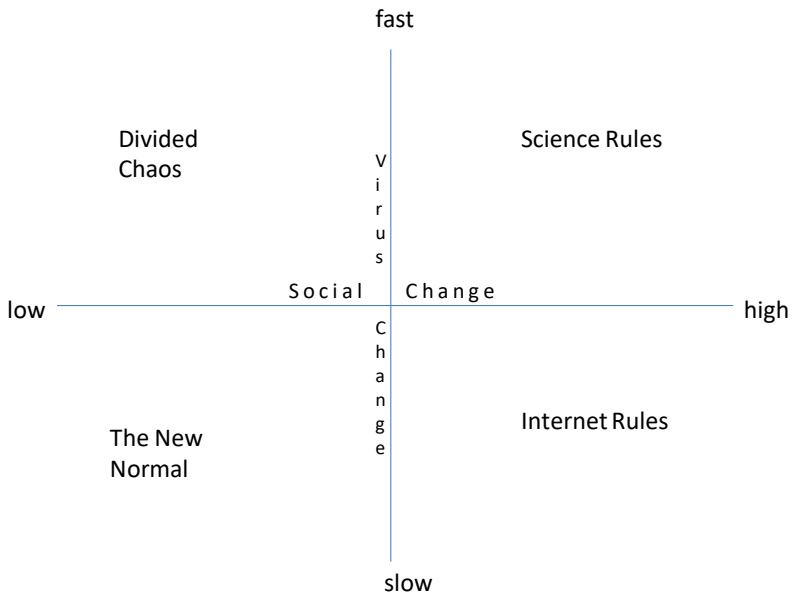
THE INFERENCE PHASE

Inferred are two mutually exclusive forces driving uncertainty in the future of pandemics:

Social Change is comprised of the driving forces of the social, technology, economic, and political driving forces. Future change will either be low or high. Low is more like today, a divided USA, separated from the interest of the rest of the world. High is a united USA cooperating with other countries of the world.

Virus Change is focused on the virus Covid-19 and its mutation or birth of new strains of the virus and is also comprised of the remaining environmental factors of the environmental driving force such as climate change.

Placing these driving forces as two opposing axis yields the following diagram of four possible future worlds:



The New Normal – the past becomes our future; tomorrow is more like today. The virus change is slow and social change remains low. New strains of the virus develop but are not resistant to the vaccines and technology modifies the vaccine as the virus migrates. Technology and science can keep up with variations and mutations of the virus. But vaccination, mask wearing, and social distancing remain resisted and viral hot spots spring up causing local outbreaks. This spread keeps Covid-19 creating new variants. Socially the country remains divided and isolated. Like all disasters the lower income classes suffer the most. Politically, liberals and conservatives remain at odds with one another. Remote work and learning are viable but limited by social opposition and lack of universal high speed

internet. The economy remains suffering as unemployment in restaurants, theaters, shopping malls, beauty salons, hotels, and airlines are avoided by the Covid-19 conscious. People just are not comfortable in crowded places. The environmental storms and natural disasters prevail as political division keeps the country from addressing globally carbon dioxide levels. Racial strife continues with police powers constantly criticized. Internationally the US struggles to maintain the leadership role with Russian disinformation and Chinese expansionism. The economy revives itself but does not experience spectacular growth.

Internet Rules – in this future, social change is high and luckily the virus change is slow. New strains of the virus develop but are quickly snuffed out by new vaccines as technology modifies the vaccine as the virus migrates. Technology and science are able to defeat variations in the virus. Vaccination is not one hundred percent but is accepted and creates crowd immunity. Hope is on the horizon of defeating it like polio but internationally the virus remains a threat. Mask wearing and social distancing become mandatory when new viral hot spots spring up causing local outbreaks. Socially the country becomes cohesive. Politically, liberals and conservatives work with one another. Remote work and learning make significant inroads. The economy rebounds as employment in restaurants, theaters, shopping malls, beauty salons, hotels, and airlines are slowly restored. However as environmental storms and natural disasters continue they are politically addressed turning technology at carbon dioxide levels. The costs of addressing climate change are costly but heavily supported. Internationally the US regains its leadership with new understanding with Russia and China.

Divided Chaos – this is a nightmare future; social change is low, and the virus change is fast. New strains and

mutations of the virus develop and quickly spread. New vaccines are developed, and technology modifies the vaccine but the virus migrates rapidly. Technology and science are not able to defeat the virus. Vaccination is resisted by many as dangerous. Mask wearing and social distancing are ignored and new viral hot spots spring up causing local outbreaks. The life expectancy in the US declines. Socially the country remains divided as politically, liberals and conservatives fight one another. Remote work and learning become the norm. The economy suffers as employment in restaurants, theaters, shopping malls, beauty salons, hotels, and airlines suffer. Nursing homes and hospitals are like tactical battlefields. Environmental storms and natural disasters continue to devastate the country as politically climate change is not addressed as the costs of environmental disasters sinks the economy. Racial strife is paramount with civil disobedience and white supremacy creating disorder.

Science Rules - in this future, social change is high however the virus change is fast. New strains of the virus develop but are quickly snuffed out by new vaccines as technology modifies the vaccine as the virus migrates. Technology and science can defeat variations in the virus quickly. Vaccination is widely accepted and creates crowd immunity. Mask wearing and social distancing become mandatory when new viral hot spots spring up causing local outbreaks. Socially the country becomes cohesive. Politically, liberals and conservatives work with one another. Remote work and learning make significant inroads. The economy rebounds but employment in restaurants, theaters, shopping malls, beauty salons, hotels, and airlines are challenged by new strains and mutations of the virus. Reengineering of all industries is major industry. Climate change with environmental storms and natural disasters continue but are politically addressed turning technology at carbon dioxide levels. The costs of

addressing climate change are costly but heavily supported. Internationally the US regains world its leadership role with new understanding with Russia and China. The economy revives itself with spectacular growth but in new ways.

The Decision Phase

We must adapt and evolve to these new worlds. But what decisions must be taken to adapt to the changing world? Decision taking, to be robust and effective, must have mutually exclusive options to choose from. Without a full range of options it is not a decision, its reacting. One option that you always have is to “be very careful”. In these highly uncertain Covid-19 times this is a viable option. If you feel sure about anything “you may be stupid”. When you are uncertain, and you don’t know how thin the ice is you have to be extremely careful and always test the ice. You may not want to go out on the ice, but you have to. Investments in these times are highly uncertain, the higher the return the more risk. Wondering farther in the woods gets you more lost. All investments require risk, but when you are not sure of the future, then risk is are high.

The best options are ones that work in all future worlds. Due to Covid-19 PTSD; like all PTSD it is not easy to overcome the fear, the flashbacks. Covid-19 is especially hard to forget because of its high unpredictability and the uncertainty. Science is learning more everyday about viruses. An Options for all worlds is reengineering personal protection equipment and masks. Also, cleaning equipment and technology will be in short supply as demand continues. Air Conditioning (filtration and cooling) advancements and investments will grow in all future worlds. Investment in high-speed Internet advancement and installation works in all worlds as well. Online meetings growth is highly likely to continue even in the New Normal. Reengineering of education, travel, and entertainment are highly likely in order to stop spread and increase comfort levels,

But remember these are war scenarios; we are fighting a War with viruses with high uncertainty. As a famous general once said “No plan survives contact with the enemy”. But often uncertainty is created by the enemy. In the book “*The Hinge Factor*” Erik Durschmied explains how chance and stupidity have changed history. Many wars were won or lost by weather, intelligence, unexpected heroism or individual incompetence. The military term for this principle is “The Hinge Factor”.

Almost everyone has heard how the Russian winter saved Russia from Hitler; however, few have heard that there were four target cities for the dropping of the first nuclear bomb in Japan and that three of the cities were fog covered so the people of Hiroshima received the first nuclear weapon all on the chance of weather. The Hinge Factor at Waterloo for Napoleon was that the cavalry early in the battle overran the artillery of the English and to disable them all that was needed was to pound a headless nail into the fuse hole; however, in the youthful haste none of the cavalry remembered their nails.

In the US Civil War, Robert E. Lee the general of the confederacy early in the War drew up battle plans to attack Philadelphia, Baltimore and Washington and the war would be over in days. General Lee drew up two handwritten battle plans. A Union Sergeant however found his plans in an area the southern couriers had bivouacked. The plans were wrapped in a bundle containing three cigars. Cigars were rare otherwise the Sergeant would not have paid attention to the bundle as he could not read. These plans made their way to General McClellan the commander of the Union army. However, for some unknown reason McClellan failed to act on the knowledge that Lee was splitting his forces and taking advantage of Napoleon’s favorite tactic; divide the enemy and destroy him as you wish. Because of the chance finding of the battle plans and incompetence of

the Union General, the Civil War was to continue another four years. The Hinge Factor was at work.

Chance was never a bigger player in a battle than the battle of the Bismarck. After the Bismarck sank the great British ship *Hood*, Winston Churchill said “Bismarck must be sunk at all costs.” The Bismarck symbolized the German Navy and Nazi Germany. She was huge with speed of over 30 knots. Her displacement was over 50,000 tons with a crew of 2000. Her terror lay in her four giant gun towers that fired further and faster than any ship in the world with 15-inch cannons that could fire every twenty seconds, each shell weighing a ton. In its run from Germany to Norway she burned over a thousand tons of fuel. By chance two torpedo planes launched two torpedoes at the Bismarck and one in a thousand chances, one of the torpedoes hit the ships rudder and the ship could not be steered. Every eventuality in battle had been considered; everything had a back-up, but not the rudder link. But if the Admiral had refueled the Bismarck in Norway, he could have outrun the Royal Navy. So, chance and stupidity and the Hinge Factor sank the Bismarck.

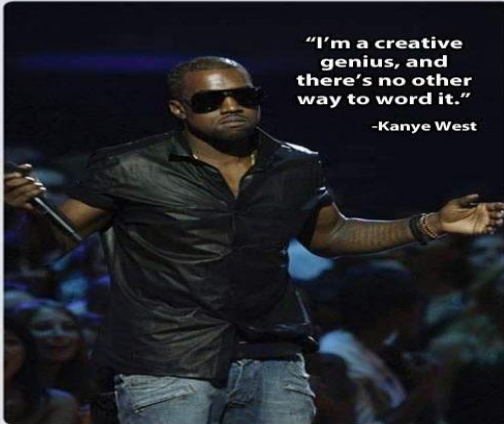
Remember ***“none of these worlds imagined will come to fruition;”*** it will be a variation of the worlds. To know early what future world is developing you must become extremely aware. You must be as aware as you are when you are lost in a bad neighborhood. When you are in a bad neighborhood your senses are intensified and you watch for any change, especially movement. When you are in a bad neighborhood at night you are even more aware than in the day. Bad neighborhood at night awareness is what you need in these pandemic worlds. And remember, change begins with anomalies. You cannot study everything, so you watch for anomalies. Study all anomalies in STEEP (social, technology, environmental, economic, and political driving forces). My experience is that you will be

blindsided by the one driving force you ignore of social, technology, environmental, economic, or political.

When taking decisions, be cautious of the overconfident. A person might have the slimmest bit of awareness about a subject, yet thanks to the Dunning-Kruger effect, believe that they are an expert."In many cases, incompetence does not leave people disoriented, perplexed, or cautious," wrote David Dunning in an article for *Pacific Standard*. "Instead, the incompetent are often blessed with an inappropriate confidence, buoyed by *something* that feels to them like knowledge." Dunning has suggested, the very trouble with ignorance is that it can feel just like expertise. Incompetent people tend to: Overestimate their own skill levels; Fail to recognize the genuine skill and expertise of other people; Fail to recognize their own mistakes and lack of skill. Another contributing factor is that sometimes a tiny bit of knowledge on a subject can lead people to mistakenly believe that they know all there is to know about it. As the old saying goes, a little bit of knowledge can be a dangerous thing. The reality is that *everyone* is susceptible to this phenomenon, and in fact, most of us probably experience it with surprising regularity. People who are genuine experts in one area may mistakenly believe that their intelligence and knowledge carry over into other areas in which they are less familiar. Dunning and Kruger found that those at the high end of the competence spectrum did hold more realistic views of their own knowledge and capabilities. However, these experts tended to underestimate their own abilities relative to others. The problem, in this case, is not that experts do not know how well-informed they are; it is that

they tend to believe that everyone else is too.

THE DIFFERENCE BETWEEN A POSER AND A GENIUS...



The Review Phase

The most frequent mistake with deciding and acting on those decisions is not in the taking of a decision from a set of mutually exclusive options, but instead failing to review the decisions taken. Rather than “working a plan” you must have the attitude that all plans must be modified. Decisions are being challenged before you take and implement them. Loop Learning is a circle for an important reason. Rather than a linear line, or step function like most

strategic planning books, in order to learn we must loop back and review our decisions.

Loop Learning requires constant awareness. But you do not have the resources especially the time to monitor everything. Instead that is why watching for anomalies is critically important. The decision of what driving forces to monitor in your environment is crucial. My experience is that at least one of the STEEP driving forces will be ignored. Again, for this book, I have focused on the USA however, awareness cannot be limited to just the USA. Awareness must be global. You never know where change is coming from. The world must be monitored. A few examples of factors to monitor are:

- Social – vaccination rates, fringe group growth in enrollment, far right/left autocrat activity, China/Russia/US relations, mask wearing, third world vaccinations, growth of Christian Nationalism, Conspiracy theory spread, work at home....
- Technology – vaccine research, Internet meeting usage, connectivity software, advances in personal protection equipment improvements, advances in air conditioning (both filtration and cooling), processor/chip speeds,
- Environmental – virus strains and mutations, global virus spread, carbon dioxide levels, global temperatures, World Health Organization progress, water availability.....
- Economic - minority incomes, wage rates e-commerce, warehousing, import/exports, health budgets, bar/concert/air travel/restaurant/theatre growth....

- Political – scientist in high government, movement toward a national health system, bipartisanship legislation, immigration, national borders.....

We have no clue as to what unintended consequences await us in the future from the decision taken by society fighting pandemics; therefore, focus on the Awareness phase is critical. We don't know what we don't know. Be aware of anomalies. All change begins with an anomaly. There is no such thing as "the end." Projects may have a beginning and an end; however that is a fiction in that the end of a project is the beginning of the next project or the beginning of the unintended consequences brought about by decisions taken. Loop Learning is not a project with a beginning and end; it is a process that must be continued throughout our life.