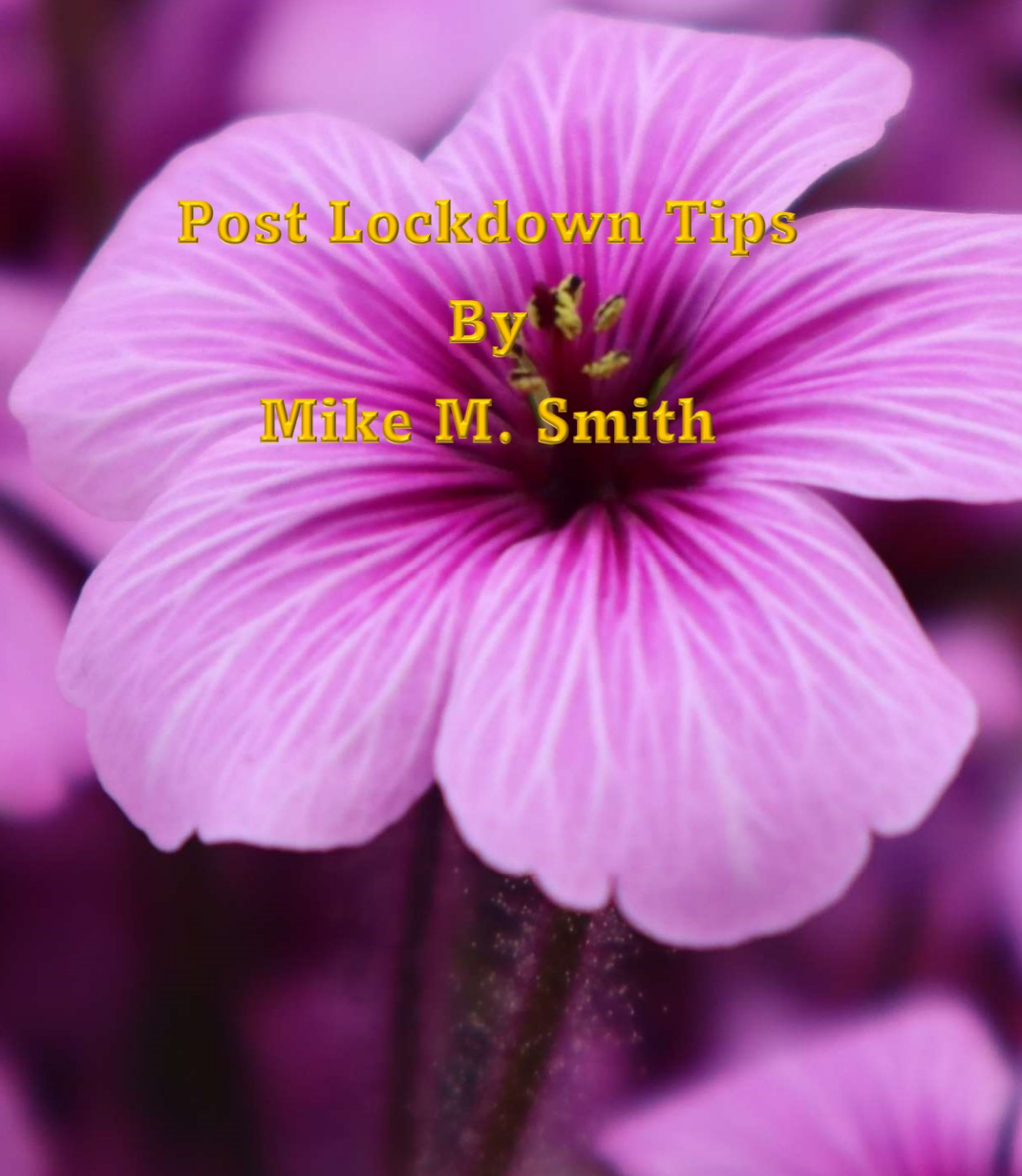


# **REOPENING**

**Post Lockdown Tips**

**By**

**Mike M. Smith**



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This book is dedicated to:

*My loving family.*

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# Introduction

Thank you for purchasing my book.

I live and work in Silicon Valley. As the lockdown is about to finish, I started to think what to do next. I started my career at a small startup. I also worked for large enterprises like Microsoft and Amazon for ten years. I wanted to predict, how the world will change, so that I can plan what to study, invest in, or to start a company myself. There are many others in a similar situation. This book is for you.

I did a quick round of job research last year after a layoff but after a few introductory interviews I realized I accomplished many as an engineer in the traditional industry. That is when I started thinking about founding a startup. I quickly realized that my business knowledge is outdated and sparse, so I signed up to an MBA. It is an online version, it turned out to be a full-time task, especially the heavy arts of law. I am about to finish now. Like the famous quote from Linus Torvalds: Do one thing. Do it well.

I try to find a few areas where the lock-down of 2020-2021 changed the minds of people. This opened opportunities, where new businesses can compete successfully. While it is easy to create another database product, it will face fierce competition and much of the revenue is consumed by sales and marketing. I wanted to find ideas that are commonly known as the blue ocean

strategy. It is usually, new, it has some risk included due to the research. It has much opportunity, even if competition grows in parallel.

I am an MSc Software Engineer with 16 years of experience, and I am pursuing an MBA. I worked in many industries including hardware, operating systems, graphics, codecs, enterprise planning, distributed computing, cloud, and databases.



## **PART I. Mind shift**

Many had to switch to work from home during the pandemic. This is a new experience. It worked out for some. It did not work out for others. Those who did well, may opt for working from home in the future, too. The toolset existed for a long time. There are lot of opportunities regardless.

## **Work from Home Infrastructure**

The grid of the internet has proven that it can handle the traffic. Communication programs like Zoom could also provide the feature set. They even made it available for schools. Video conferencing technology has been used since the early 2000s. There are some gaps still in the tool set for remote work. Offices are usually closed for the public and they are monitored by IT staff. Remote locations have home wireless that can be easily tampered with by break ins or old cars parked in a nearby alley stealing the internet traffic. This can prevent major meetings for example, if the presenter is not available or the reception is poor. Residential networks are flaky, and the internet traffic of family members affect quality.

There are tools that will help in this situation. Virtual Private Networks are created as an operating system add-on, so that the traffic of the computer is securely transferred to the corporate network. The computer looks like it is inside the office. There are some limitations. The bandwidth usage is still visible which tells who is at home and who is working elsewhere. Session free message traffic, such as the commonly use REST, can be filtered. The user is without IT staff on site, so the operating system add-on can be tampered with by malware. It cannot be fixed without experience.

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It is expected that VPN becomes an external hardware soon, so that can easily be removed. Employees can carry it with themselves. Hardware VPNs may also be useful as a replacement to a badge.

The lack of IT staff opens other opportunities. Computers need to be resilient, and you need additional tools, so that operators can provide remote support. One way to do this is to use more remoting at work. This means that the desktop is running in the data center and only the stream of the display is transmitted through the network. This allows staff to monitor and intervene when needed. It also protects sensitive data. Another method will be using the cell phone to share the screen. The phone screen can also show where to click for inexperienced users. It can use an augmented overlay to instruct the user.

Remote work also showed how families can live and work together. I expect that many, like single mothers or part time workers will opt to continue to work remotely. Flexible work schedules already spread around the world from Silicon Valley and European countries. This will create many challenges especially how remote offices schedule meetings and collaboration.

The biggest challenge is that 24/7 support is very expensive in many countries, where rare languages are used. Many German citizens in Europe would love to work for a while in California to support German customers shopping or working late in the evening

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European time, especially when the winter is cold or rainy. It can be a simple one-year contract and the costs are way less than handling the legal and regulatory compliance of overtime in the EU. It is even more lucrative, if the support staff works from a Pacific Island for late night customers.

Schooling at home may be the next step forward. The author also had hardship spending hours every week to bring his children to various after school classes before the pandemic. Many of these can be done remotely. The key is to have sound-proof cubicles so that the apartment or house can be shared. This is useful if somebody is playing an instrument while somebody else tries to focus and do work. These products already exist but the price was adjusted to enterprise use.

## **Remote Work**

Remoting will bring seamless software experience so that live performance can be shared easily. Restaurants around the world can play live jazz music while the band is in another time zone. They can even work daytime saving their night life for leisure. There are tremendous number of possibilities from entertainment to live classes at online universities.

Commute is where the average US person spends most of their time unwanted. Drop-in neighborhood meeting rooms or recharge stations on major commute paths might be one way to create a permanent station between work and home. It is something like a common coffee shop, it is just you spend more time and eat less. It can be used for work, meetings, entertainment, or games. Open meeting rooms close to home can be used for sensitive meetings or focus time when the family is at home.

Electric vehicles are on the rise. This will be the major drive of growth in the next decade. Hydrogen is another approach, but electricity has a major advantage in large East Asian cities where short trip demand is high, electric grid is given, air pollution matters, and traffic is high. Electric engines are less noisy and recharging time is not an issue, if the vehicle is used for regular daily commute. Eventually infrastructure needs to adjust to the needs of society. It is necessary to have groceries and necessities

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at most 15 minutes away regardless of density. This includes groceries, pharmacies, stationery, and postal services. Having elementary and middle schools nearby help with daily commute.

Restaurants and retail offices like banks should be in a 20-to-40-minute distance. This gives enough choice to select the dinner for the evening. High schools, and colleges can be as far as older children can travel themselves. Self-driving helps with these. Many people may consume alcohol and need a free ride. I think your evening app ride will be paid by restaurants in many cases.

Weekend attractions like theme parks and retail shopping is convenient within a 40-minute distance. Any special attractions like beaches or theme parks are convenient no more than 2 hours away. Everything else is a hassle. Longer distances can be achieved mainly by railway or light rail, so that people can stand up and walk around. Self-driving helps but more space is more convenient for long run traffic. Trains will always have the competitive edge, if the construction costs are already paid off.

## **Communication and marketing**

One interesting new development of the last thirty years is the internet and social media. It reduced the cost of distributing content, so there is so much more that is available, and many artists and influencers can reach an audience that they could not reach before.

It is empowering but it is also dangerous. Influencers can spread your word faster than before without much investment in marketing. Even the term, influencer is misleading. Some may use this lever and access a broad audience cheaper without releasing much information. Social media may increase income differences and corruption. If I want to sell shampoo for example, I just need to convince a few influencers and their opinion will be spread to their groups with opaque AI algorithms. I can pay more on advertising, but I can just pay the influencer. Even worse, hackers can tamper with the algorithms in a way that the spread of information is difficult to track. Social media rarely marks paid content, paid shares, or paid likes. People eventually lose their ability to decide clearly.

There are a few better approaches how social media marketing can advance further. These provide better transparency. If I need information on whether to launch a new business, there are countless options to research. I know how much it costs to send me a message. It is one cent. That means that the advertisers overpay those fancy social websites. Consumers need to

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say, how much does my attention worth? Do you want to sell me something? Pay for my time. Your employer pays for your time, why don't you demand the same from your advertiser? Getting information, how much a paid content spent on your attention will open many opportunities. It is the easiest spam filter for example. You just need to get the money and you can assign part of it to the subscription. I expect some paid social websites will appear just like we pay for Apple news. Sometimes just the feeling of the product manager about who the customer is helps to change the feeling of a product.

There are other methods as well. You can just see a black box or nice photo that shows how much an advertiser pays you, if you click it. You can specify an ask price, to filter spam and make your life more convenient. You may automatically decline any advertisements, where the advertiser pays less than \$1 per view. This will ensure you get better targeted and relevant content. The advertisers benefit from the focus as well, since you did a direct action to watch their content. Ads are there only to pay extra to the social media site, not you.

The third major change I expect is that the oligopoly of digital advertising may break up a little. Advertisers do an auction for major displays. The winner takes the space for the price of the second bidder. The second bidder loses out. This ensures there always be second bidders who need attention and they have money



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to spend. I expect new advertisers show up, that will provide media for them. How big is this market? It is the size of the ad revenue Google, YouTube, and Facebook. It is just for the second bidders. It is lucrative, is not it?

My major concern of social media is opaque filtering. What is happening is that the social media site uses algorithms to distribute content. It may favor influencers that you otherwise would not prefer. It may get hacked and put a weight on malicious content. Machine learning is machine code, nobody will ever be able to debug it completely in an affordable manner. Direct marketing simply does not pay as much as corporate bank wires for example.

Eventually we will need some rules to protect individual messages of citizens just like US mail is protected from tampering. More transparency will generate more domestic product and more revenue. This will probably happen when the market of these major sites starts to mature. In any case anybody can bring up a new chat program, so I do not worry much about social media.

Social media has shown how something new can open-up new worlds and opportunities. If you have much time but no income, you can just browse there and find new contacts. Once you can contact anybody in the world, it will become a zero sum game.

## **PART II. Tech advancement**

The strength of small cap shares in the end of 2020 showed that there is more interest in this market. This is a major shift towards low fixed cost manufacturing and services. One major important area of expansion was industrial internet of things. Devices became cheaper and smarter, and they started to spread to collect more information on how manufacturing can be improved. If this continues it may be the milestone of a new era of manufacturing.

## **Manufacturing cloud and Moore 2.0**

The first industrial revolution happened, when we invented steam engine and it generated an ever-growing supply and demand of energy and products that require it.

The second industrial revolution started when transistors made mass computation affordable, so that we could test more complex machines and we could make them reliable. This generated an ever-growing supply and demand of computation. This eventually led to the use of affordable artificial intelligence. It can be used for audio and video recognition, analyzing mass data, automation, and improving human learning.

The third industrial revolution will probably be generated by reliability. Once we can achieve a certain level of reliability, we will be able to create machines that produce with less and less human intervention. This will probably be driven by countries of low and decreasing population. As machines can produce more alone, they can drive again the demand and supply of more machines that can do the same reliably. We will reach an industrial revolution, where the fixed costs are reduced to a level that a few employees can create more and more complex products without major involvement of highly educated human interaction. This lowers fixed costs and it generates the next round of products with even lower costs.

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This is important. Chip shortages are happening due to the complexity of the process. We need simple and repeatable production of everything we have without human interaction, so that scalable factories can be created by a few people.

The result will be something that I call the industrial cloud. What you can expect, if an investor sees a demand for glassware, they just rent a container of the necessary equipment. They can run it with a small staff, as it arrives. Once the demand is fulfilled, they can return or resell it and the container is shipped away making space for other production equipment.

This industrial revolution should be marked by lowering equipment costs, as competition is large and entry barriers are non-existent. Cheap capital will generate even more supply and even more demand. Once an equipment is affordable and reusable, there is no risk of lower cost competition, so depreciation costs are smaller and salvage value is higher.

Countries like the United States or small EU countries can create strong competitive manufacturing sites with rented container factories. It improves property use and property valuations. It decreases construction costs. This will eventually lead to a point, when free markets outcompete the big, low-cost competition from East Asia. This is especially true, if the subsidized exports of the excess capacity of large-scale Chinese factories will face high warehouse, shipping, and

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commodity costs. I expect huge government subsidies going into the container-based manufacturing cloud business in the future.

## **Acting and Artificial intelligence**

The main use of self-driving will always be freight traffic. The reason is that this is long distance work where every mile now requires drivers that need to be aware, rest and lodging. This is very expensive. If self-driving can take over in much of the route and obstacles can be solved by staff driving remotely. It will be a major driver to reduce delivery costs. I think most highway traffic will be driverless in the long run and local drivers will just join for the last half hour of the route to finish the delivery.

However, there are issues here and it is mainly the limitations of AI and computer security. While it is viable, and it already used in production, self-driving will have slow growth. The billions of dollars spent will require to sell these cars at a premium. It will be a premium feature just like the current cruising and lane keeping features are an addition to the base price today. Reliability will be difficult to achieve in a general environment. It is hard to assess a situation when two small alleys meet in a historic city, where a mirror helps to see the crossroad. Achieving a hundred percent reliability has such high costs in hardware and energy that only a few customers will be willing to pay it.

The result is that train traffic will always be a viable and affordable alternative to self-driving for small and long distances. Dense cities can build trams, and trains that are convenient and provide more space for

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travelers for long distance trips. Some cities may opt out of self-driving if the investigation cost of accidents rise the cost of the local courts and they need to increase local taxes. Eventually painted lanes for automated vehicles might be an acceptable norm for some including remote intervention if the vehicle faces unforeseen obstacles. This will be a very affordable option that lowers traffic as well avoiding empty cars wandering around due to the lack of parking spots.

Also, self-driving requires proper precedent law and regulation in most jurisdictions. This limits the pace of growth despite the few states have liberal regulations for test driving. It cannot be smarter than human investigators, so that root causes can be analyzed easily. Courts will require evidence, so additional logging will be required for investigation just like airplanes have black boxes right now. All these will raise risks and costs, that will be affordable only for a portion of the customer base.

The main takeaway is that active artificial intelligence will require a solid security standard. When a machine slaps your face every minute, you turn it off with a button. You must not create a backdoor into the computer that controls it. You cannot rely on antivirus software and expensive consultants either. Computer security and the corresponding laws will require a major overhaul to support civilian systems that act on behalf of their owners. I expect that this will open opportunities in storage, logging, automated debugging, private

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investigation, and arbitrage of machine incidents. Much of the extra cost of self-driving will be paid by taxpayers.

The biggest advancement of the last thirty years was the spread of machine learning and network based artificial intelligence. It is not new. The research has been around for decades, however the hardware that it required was too expensive for everyday use.

I see four main usage patterns that will be viable in the decade after the pandemic. Personal assistants use sound recognition. Security software and document scanning use image recognition for classification purposes. This became affordable and they will continue to be the driver of this industry. Why? The results can be verified cheaply by the human brain. It replaces us at scale, and it saves lots of costs.

The second use of artificial neural networks will be education. Education is an area with broad quality and service requirements. Some provide knowledge, others certification, or job security by limiting the number of professionals with the same degree. Artificial intelligence can help in the first group to make basic education affordable by understanding material, generating tests, and verifying test results in an objective and reliable manner. It will never replace human education, but it can be a great addition or replacement to fill large scale gaps that require H1-Bs for example as an alternative.



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Education can be the driving force behind better growth in economies with high GDP. The cost of education has a multiplier effect on cost of everything else like capital and healthcare. Every single dollar spent on education makes products and services a magnitude more expensive due to the need to recover time, money, interest rates, and the limited amount of workforce that could afford the education. Artificial intelligence can be the major driving force to reduce the cost of economy driving education and make countries more competitive.

Analytics has a great use of any artificial intelligence. Finding patterns in vast amounts of data is cumbersome and undesirable for employees. The impact on the economy will be limited. It is useful to analyze real time analytics of securities or security logs. Analysis with material impact will always need a human to verify and summarize the results.

Industrial automation may be another way, where recognition, control, and manufacturing capabilities will be leveraged in the future. This goes beyond plain home automation of luxury add-ons to real estate. Artificial intelligence will change the way we work, and it is an area to study and leverage, when looking for opportunities.

Artificial intelligence helps us to better understand our own brain. I expect many results that will be derived from simulation; however, I do not think that any impact on the economy will come in the next 20

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years. The reason is mainly that AI can learn and manipulate our feelings, it tampers with the basic notion of freedom, so the acceptance of society will be very slow.

## **Standards and Patenting**

There is one area that is rarely talked about and it may have a significant improvement on efficiency. Standardization is probably as old as the first gold or silver coin. It represents the rule of law, stability, and effectiveness. Trains could only be built if their tracks kept the distance for hundreds of kilometers. Educational standards allow easy movement of labor reducing the time to train new employees.

It is a burden for startups and small businesses. Big companies are partly inefficient because they have the power to influence standards. They have the resources to build more complex systems and enforce the complexity on everyone. They can patent ideas to increase the barrier to enter their markets. This reduces competition and takes the opportunity from the creative small businesses, who need to get their job done.

If the rules, the law, and the standards are simple and friendly anyone can enter new markets and challenge the inefficiency. This may disrupt certain industries but some of the biggest tech companies are the proof that innovation is faster when it is not bound by unnecessary rules. The decisions should be open to larger professional groups, not enforced by the power of bigger companies. This can only be done, if the rules are simple and more players can have the resources to understand and influence them.

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Standards should be layered. The first layer is simple to understand and implement. It should apply to most of the market. Any further layers that satisfy the requirement of a special customer should be optional.

Patents are the other area where big companies increase the cost to enter a market. Originally patents were supposed to protect the risk and the investment that is spent on trying a new idea. It protects the inventor against a competitor, who copies the results but does not pay the cost of the development. Patents are often misused. Some big companies patent trivial ideas claiming that their overall R&D budget can be assigned to them.

Companies called trolls collect patents and sue companies that would otherwise be profitable. Some collect them to do patent deals. Companies are not founded because the founder's risks to be sued are too high. The result is that we lose out on opportunity. The solution is like the case of standards. Nobody should be forced to buy a product that they do not need. Patent costs should be attributed only to the products that use them explicitly. The cost of investigation and documentation will deter from building up patent packages.

A good example is the case of media codecs that are used in every cable box, web browser or security camera. Codecs are used to compress a data stream to make it smaller and save on the cost of the transmission

line. What happens is that big companies create codec packs that are protected by patent packages. Everyone must pay a general fee that has a cap. The fee becomes a tax that raises the barrier to entry this market. Companies with a large customer base do not need to pay as much per customer if the license fee is capped.

The reality is that the compression algorithms have layers of use. The most basic algorithm can save 60% of transmission cost. These are so trivial that they are unpatentable. The next stage saves 20% more but it is protected by a patent, making the device more expensive. A third stage saves 5% in just one in then cases, so effectively it saves 0.5%. The patent is sold in the same package making the device 50% more expensive. The cost to value ratio is distorted. Since the patents are protected by law the device manufacturers cannot do anything but pay or they just avoid the market.

The solution to the patent problem is to disallow selling and buying them in packages. If a patent has a value, then the inventor spent resources to develop it, so it can also spend resources justifying its cost and value. Every patent that is used by a product should be documented, so that the customer can verify the value provided. If a patent at this point does not provide any value, it should not be enforced on a product. The value of the patent is not the information but the value and cash flow it creates.

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The other issue is that patent enforcement is usually limited in time. It might be interesting to consider a limitation of the cumulative patent rights sold. If a company spends a million dollars to invent an idea, it is reasonable to get twenty million dollars, but the market would be limited, if it collected two hundred million dollars during the lifetime of the patent protection.

Patents are useful but unnecessary enforcement increases the risk of a market. This is painful in case of capital investment like computer chips, and it can create serious shortages. Reasonable patent holders can get a reasonable return for the investment and nobody can take entire industries hostage eliminating uncertainty from the stock exchange.

## **Big tech and Antitrust**

We have seen many governments, who try to regulate big tech.

Big tech like Facebook, Google, Amazon, and Microsoft are important. They grew to a scale, where they can influence serious decisions. They can help startups making exit path, where founders can sell their equity. The stability is good for capital investment.

However, the size implies similar management methods to communism. As they become a monopoly, scale enables them to set their prices arbitrarily. Entire companies are locked in if their petabytes of data are stored in a cloud environment. Eventually the scale helps them to reduce staff and run the business very cheaply but they still cash in large profits. This will reduce the end user prices in exchange for other lock in advantages like the user's data. Once prices are zero and the customer and the employees are both locked in, the perfect communism has been built.

Big tech companies compete. Usually there are two major players in a market like Google and Bing in case of search. This brings a good argument against antitrust regulators. There are no reasons to spend marketing resources to compete against each other. The big institutional investors usually hold the shares of most of the top big tech companies.

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How do they reach this state? It is usually due to network effects, where the number of users generate valuable knowledge that can be a strong factor to keep customers. This limits innovation. Only minor features are added to very complex products. It also creates a false belief of a benchmark that is based on a complex product that needs many professionals to keep running but it cannot be improved further without the burden of exponential marginal costs. Keeping up the code base requires the most expensive talent. Other companies are deterred to enter the market.

Growth is another limited factor. Once the companies start doing business with the governments, the network effects tie them as well. Various sales agreements, security contracts, and local employment agreements make the companies exceptionally powerful even compared to nation states.

Since they are usually monopolies in their own markets, they create an oligopoly that share management talent. The cash reserves and the scale let them grow further by predatory marketing tactics outspending smaller competitors. Once this is done, they can acquire these businesses cheaply, if they are big enough, and nobody in the oligopoly wants to buy them. If a smaller company has no profits due to the sales and marketing war, they can be bought under their real value. Once they are inside and they get the brand marketing support, they start to thrive bringing the extra profits to the buyer.



Eventually, big tech reaches a point when they can influence government decisions. What happens at this point is that the power can challenge constitutional standards and individual rights. It is difficult to challenge them as politics likes to show innovations and jobs created. They are usually the favorite of the press. Others see it as a threat to their independence.

Investors are on the watch at this point to consider breaking up monopolies. If a software product costs \$10 to comply with US standards but it requires \$40 to add features to comply with other small countries, it is time to consider breaking up the product and lower the market price. If new competitors stay away regardless of the situation or lowered local prices, it is likely that competition is limited, and customers pay an extra. This extra may be significant in case of capital expenditure, healthcare, or education due to multiplier effects.

Similarly, a media company in a free market is independent enough to decide about filtering some content. Shadow banning of a monopolistic media outlet would be considered censorship in this case.

Big tech is useful. They are the grey sharks that new lean orcas need to test against first. However, orcas are the future of the evolution.

## **Distributed trade and Globalization 2.0**

International trade used to be cost driven. Research suggests that countries trade goods, if one has a comparative advantage in manufacturing a product compared to the other. This is a mathematically proven fact that had a *ceteris paribus* context of elastic demand and free trade.

The last four years have proven that neither of them is given anymore. Governments had to protect the interest of US businesses with bilateral trade talks meaning that there are very strong organizations on the other side of the Pacific.

First, the traditional basket of internationally traded products has changed. We used to import fine goods like Italian wine, Chinese china, Indian spices hundreds of years ago, that were scarce. Only the wealthy could afford them, so they attracted the wealth elastically. The richer a country became the more they could buy, which enforced the basic rule of free markets. Trade was governed by classes of countries, where some were assigned ruler and the others were assigned dominium status. They traded different goods, for example India was banned from manufacturing clothing items for a long time, that was reserved for the British.

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As economies grow, they reach a point, when they saturate a market of certain basic goods and people cannot consume more of them. You will not buy 500 kg of bacon per year per capita from Canada, even if the price would allow you to do so. Once they become basic and inelastic, these products are right candidates to become hostage of trade negotiations. Governments are out to protect the supply of their citizens. Essential product is bartered for essential product. Lots of money is at stakes. Once the cost of negotiations increase, negotiators will be carefully selected. It costs even more. Few people can be manipulated easier.

The curtain covers the stage. The result is what we have today. While certain countries may have cost advantage in certain products, negotiations behind the curtains created monopolistic industries in each country. You manufacture chips in Taiwan or South Korea. That is their role “by birth”. You can only buy precision capital equipment from Germany or Japan. Serious weapons can only be bought from France, Russia, or the US without worldwide sanctions. Individual freedom and human rights of engineers and scientists are limited in favor of these agreements regardless of the government philosophy of their country. International treaties may overrule even constitutions in some countries.

It limits the power of investors as well. Small investors have less control of bigger companies. The control becomes limited to buying or selling the equity.

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The basic idea behind capital investment is that you can assess the risk, so you can adjust your income. This has serious flaws if you can only buy a few assets. You cannot diversify. Most of these agreements on chips are done in house within companies like Microsoft or Apple, where investors can only see and challenge divisional financial information. This internal power to adjust resources is closer to communism, and the class system like international trade becomes feudalist, if it lasts across generations. It is good to have some of these big businesses as examples to compare. They should not rule everything.

Businesses on the other hand need to diversify their input. If you need capital equipment, you should not just be able to select from three different vendors. If you need GPU, you have a selection of two, maybe three vendors. This is especially true if those vendors are under the control of the same political region. Wide selection helps to lower prices to the level of costs and to expand knowledge to retain national sovereignty of dozens of countries. The expensive chip industry helps to finance the military power of some countries in East Asia. It limits opportunity in the United States.

Trade negotiations and regulations ensure that the opportunity of newcomers is diminished. Regulations increase fixed costs by forcing to comply with all what is decided. Lawmakers usually have different interests making these decisions and changing rules is almost impossible. Smart regulations with adjustable

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compliance requirements help to target different markets, even with lower turnaround. You do not need to hire lawyers with environment specialization for emissions tests if all what you manufacture are electric cars. Once there are 20 or 30 vendors for capital products, selection becomes fine grained, and businesses get negotiation power and adjustable cost and quality. Engineers have the power to try multiple vendors and verify and compare results. Differentiation is not set by internal politics but by objective competitive measures. The basic rule is that regulation should set the boundaries to protect citizens and not the methods to protect a few companies and their employees.

A typical company that engages in world trade today employs lots of people and they have competitive wages. They may need to hire immigrants to prove their usefulness for foreign powers. They employ many, so they can support the political power to protect their markets. They have less incentive to expand a lot, since there are many limits of being large already. Any expansion requires political agreement, large local construction, and subsidized capital. A car company is not where you would expect double growth in every five years. Only tech has the required flexibility.

A typical company that engages in free world trade employs a few and pays them well. Not much of the scarce local capital is needed, so capital is cheap. It does not increase the demand curve much. The market share is small. This security driven by fair shares and

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diversification reduces the rates and the cost of capital. These companies can scale up and down easily. Their employees can join and leave to other businesses in town. Labor becomes free and at will by nature. The real difference is to limit fixed costs driven by local regulation and marketing.

Traditional world trade is resource constrained. Since it has high fixed costs it needs high scale, and it transports lots of commodities and intermediate products. The typical heavy industry company in China and Japan buys supplies from Australia, Brazil, or Africa. These companies can pay management a lot, raising a privileged class in each country. They rely on the safety of stinking and influential power in exchange for stability of supplies. A company that engages in free world trade on the other hand is smaller. It can work with scarce local commodities and it relies on less transportation of heavy ores requiring less energy and helping environment. Free world trade companies support stability by providing alternative vendors in case of occasional conflicts and local downturns.

Similarly, the centers of world trade are marked by brands. Silicon Valley has many tech companies. They pay better than average, so that they can attract talent from abroad. The price is leaving less professionals elsewhere, who are not paid so well. The Bay Area has higher property costs diminishing the lifestyle difference. Lower salaries and opportunity elsewhere may be the reason for more hacking. These

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companies are traditionally good at marketing and press relations grabbing lot of attention. A free world trade company does not pay so well since there are so many of them. Employees can just find another employer locally or abroad. Living standards granted, the basic comparison becomes the average savings between the two locations.

Large traditional enterprises rely heavily on their branding to negotiate better deals. This means they become a strain on free press and marketing channels. They typically have strong contract with marketing channel partners like search providers. They can have key account managers that help them enforce better marketing coverage and better access to marketing data. Their typical tool is price bundling or product mix pricing, where customers pay for marketing by the urge to buy something else as well that they need less. Free world trade companies on the other hand have lower transport and logistics quantities. They engage in fair marketing in distributed marketing locations. They do not need to rely on Silicon Valley companies, as they can partner with local businesses or industry specific marketing partners. They promote their brand in their region reducing marketing costs. They are less data hungry supporting privacy rights and individual freedom.

Traditionally, large enterprises relied on opaque trade organizations to enforce their power. These have high barriers to entry for both companies and individuals

in the form of fees and the burden of brand colleges. The Cloud Native Computation Foundation is mainly maintained by the subsidies of Google, Microsoft, Amazon, etc. Their employees get the power to set the professional rules for everyone with less resources and different interests. Rules are usually opaque, and they are decided behind the curtains. The customers pay the price. The wannabe customers who cannot pay the price pay even more in lost opportunity.

Traditional trade is also connected heavily to nation states. Regulations are eventually enforced by international law creating a strong relationship between diplomatic services and companies. Relations with secret services are incompatible with many standards including human rights, laws of warfare, accounting, property rights, financial regulations, anti-corruption, and insider trading. Regular courts cannot enforce human rights against government agencies and terror organizations. Free world trade companies on the other hand rely only on their own influential power and professional negotiations to do business. They need to treat their employees fairly, so that they can attract them back and others later. They provide transparent services to their customers. They are not necessarily nationalist although they may opt to be.

Free world trade companies need to be transparent and provide quality. The channel gets simplicity and independence. They do not need to rely on the brand to assess what is behind. There are plenty of



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similar companies to compare the products to. Finances can be published and compared easier. Their statistics can be more open sparking discussions and feedback to improve problems. This helps investors to use real world smaller companies as benchmarks and examples lowering the barrier to entry. It reduces risks and it would give them better returns. Also, smaller companies can be controlled by their investors easier and more directly removing the sometimes-opaque influence of underwriters and investment banks. Foreign free world trade companies in faraway countries can be strong allies against local competition as part of the supply chain.

Free world trade companies are better for employees as well. Management is smaller with fewer levels, so they are more approachable. Competition can help to take over laid off staff helping morale and healthy relationships. Staff members leaving are not potential competitors. If they start businesses, they may operate in another geographical region with different functional differentiation.

Big countries like India and China have a better unified language and culture. This will give them ability to coordinate science and research spending within their borders. The scale cannot be paralleled in the United States. I expect that many basic research findings and startups will come from these countries in the 2020s. The scale and ease of domestic marketing will drive development especially in less resource intensive areas like microbiology or computer analytics. Excess

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inventories can be sold abroad under the manufacturing costs.

Smaller countries have unique culture and languages that help them protect their regulatory environment and independence. Veto in the EU helps to act united but act with integrity. They will probably be strong in small capital and high quantity companies that can provide cost efficient, unique, and trustworthy products and services. Many minor competitors of traditional industries may appear here.

The United States legal system supports both large and small enterprises. The Constitution gives power to states to fine tune regulations giving opportunity to minority opinions. The country has all the potential to achieve at both scales. The key aspect for Free world trade businesses is compete where government regulation allows independent differentiation and innovation. They avoid government influence in exchange for extra protection or opaque deals. They can rely on accessible information and free market.

## Energy

I do not believe space exploration will expand much regardless of the hype we see. We have limited amounts of fossil fuels left. It might be better to spend it to advance science rather than lifting heavy equipment to space. Space exploration should be self-sufficient in energy first to play a positive role in the economy. One way to do so would be to have spaceships collecting solar energy closer to the sun and then returning them to the Earth.

Another way would be to harvest the ionized radiation. We can consume more energy this way than using just the solar facing surface of our planet. We can also have better efficiency, since the radiation grows quadratic as we approach the sun. This may be a good solution for expanding air travel as well. There are already plans to build hydrogen powered planes in France.

It is another idea to find extraterrestrial intelligence. Those that are intelligent harvest the material and radiation of their star. Finding these stars with small radiation compared to their mass and phase might be the right way to detect them, unless they found a way to teleport already. Currently we look for planets that can support life but not for expansive civilizations with high energy consumption.

### **PART III. Organic growth**

The pandemic has brought a refreshing mindset to people all around the world. We started to think about our body. We also realized that our health is directly connected to our environment. Family, living space, neighbors are all important to our well-being. This generated a green revolution around the world to protect our planet and lives better.

## **The Rise of Nature**

The Earth is warming. Someone in the next century might compare us to a Tyrannosaurus and say: “Pretty funny species arose on the ashes of dinosaurs; global warming might not be such a bad thing at all.” Who knows what we would get, if Homo Sapiens is replaced by some other creature of evolution?

On the other hand, global warming is not a joke. It is caused by excessive amounts of CO<sub>2</sub> in the atmosphere. Its danger is that it affects almost any part of the economy, but it is not strong enough to cook your breakfast eggs for free. It is very difficult to assess its impact two or three steps deeper. The risk is high. When the risk is high the demand for returns on any investment also rises.

I see a few misconceptions. There is danger but we can have bigger impact if we do not panic. Global conferences and agreements are important, but they are a mindset of the last century without social media, and public discussions. There is a risk, and the risk can clearly be measured. We collect the levels of rivers, the thickness of soil and the amount of rain everywhere. We can also use regression to estimate the impact in ten, twenty and thirty years. Collecting data and assessing the risk of companies with factories at certain locations is a lucrative business. It will be a major input on environmental decisions.

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One misconception is engineering. Let us face it, we are an invasive species. We used our brain to outperform others and take over their habitat. Some say the answer is to do more engineering to mitigate the bad effects, some others say to slow down the economy that is fueled by cheap oil and replace it with something more expensive that will reduce the effectiveness of research and progress. Should we slow down or speed up?

More people on Earth would speed up research that may find a cheap way to reduce greenhouse gases, less people may slow down this invention. We need to be careful that solutions that are proposed like electric vehicles, solar energy, recycling are also profitable. Profitability means that the overall impact is assessed, and it is acceptable to all stakeholders. It is not so complicated. If you check your income statement, you probably spend more on CPAs to find tax breaks than the difference between the cost of recyclable and non-recyclable raw materials.

There is lots of success. I look up to the sky and it is blue. I remember the time when I was a child in thirty years ago, the sky was more like orange or yellow, full of smoke from coal powered factories and power plants. I do not even hear about acidic rain anymore. I am not exposed to lead paint and electronics if I buy new products today. Gas does not contain lead anymore. I almost feel the lead withdrawal symptoms. Whales and killer whales returned to the shores of California. There is lots of positive progress.

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The biggest invention of the century could be processing soil and solid waste to extract useful elements. Mining used to concentrate on areas, where the ores were rich enough to be processed cheaply. If we could do the same with recyclables and local soil, there is no need of distant transportation of ores. There is no need to worry about extra emissions of the process. Landfills contain all what we need for civilization. They may be the gold mines of the century.

Cryptocurrencies are an interesting concept. It could be an interesting experiment to have a green currency that we all share. When you go to the gas station, you pay with money and you may pay with green currency, too. Money measure the labor you do. You earn with your paycheck. Green currency the other hand is the ultimate basic income, every individual gets the same amount every year. You use it and you run out. You wait for the next dividend the year ahead.

What is the point? It is transparent to the ordinary citizen. You will know what your real ecological impact is. Some countries use a carbon tax, but the word 'tax' alone alienates people. If you are told you get something like the fixed dividend of green currency every year, it is a positive feeling. It is a dividend of Mother Nature. Handling it is affordable. You can just have another payment card with the same software that recharges at the beginning of the year. You do not earn it, it is granted. It solves the problem of universal basic income.

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If you use too much you will see and you scale back postponing that overseas flight that you planned. If you run out, you can buy from someone less fortunate with excess of the green currency.

How much do you need to pay? It is simple, as much as there are carbon atoms in the fuel you buy. Factories can also estimate by multiplying the weight of the product with the carbon content that will eventually be burnt. It can be a label next to the weight on the package. Most food products have similar carbon content, so a standard rate may help local farmers.

Simple and friendly. Everyone can make the decision right there just looking at the package. One or two oil companies may sign up showing it on the gas receipt with a QR code. If the consumers like it, they may choose these gas stations and others will follow. Vehicle recharging stations may state the carbon content of the electricity used locally.

Do you live in a developing country with extensive carbon needs? Just buy it. The seller knows your income, they will discount it. If their carbon usage per person is low, they will probably be able to afford even donating it at the end of the year. There is no need to spend money and flights on negotiations. The donation can generate some good press as well.

Obviously, we can plant trees. They give shadow for other native species. Bushes, soft plants, or agriculture provide carbon reduction immediately. It is



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the same dark green, isn't it? They cover the surface, and they can absorb as much energy as the trees with a fraction of the time to grow. Moreover, they provide food which is a scarce resource with a population approaching ten billion. The reason agriculture plants trees is to provide wood for paper, buildings, and firewood in case of a lasting recession.

The long-term solution will probably be the simplest element on Earth: hydrogen. Let us look at the Earth. It looks way different than it did two hundred years ago. We are invasive and we pushed out lots of other species to build concrete and asphalt on their ancient habitat. Desert on the other hand has only a few species but we have no use for them because there is no water. Water is heavy and it costs a lot of fuel to transport it.

Water is made of two hydrogen atoms and one oxygen atom. The weight of oxygen is made of eight protons and eight neutrons in the most common isotope. You can transfer water just by transferring the hydrogen and burning it into water. The oxygen travels for free by the wind. Obviously, some argue, more clouds would mean more greenhouse effect. Getting clouds out of the sky is way easier than other molecules.

The hydrogen of a unit of water takes up only a magnitude less weight. It depends also on the container and other materials included, but liquid hydrogen requires a magnitude less space and mass than plain

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water. My estimations show that a household can get a year of water and energy from a single commercial truck load of liquid hydrogen for personal use and irrigation. This can be produced on the ocean by floating boats using solar that extracts from the water. It might make sense to consider this model to establish new cities in the deserts, keeping the habitats of species that do not figure out how to extract hydrogen and transport to themselves.

If the model works, we could eventually move out of our coastal cities and give the original species their own habitat. Who does not like to live close to the ocean? You can still do so on dwellings that stand on legs, so that it does not harm the original habitat except a bit of shade that was given by trees a long time ago. However, the natural population can provide gene diversity that can be used by science, medicine, and evolution.

I am not a life scientist. Viruses have way bigger numbers than humans allowing them to mutate and improve at scale. The coronavirus showed this drastically. It will probably be interesting to research them after the pandemic not just as a prevention but also to expand the pace of research of new medicine for example. The technology of the newer RNA based vaccines may be interesting basis of cancer medicine that mark the cancer cells dangerous for the immune system.

Many will raise questions about the safety of genetically modified organisms. I rather avoid them

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myself in big quantities. However, evolution always generated new genes. These got tested by other organisms. They stayed or vanished based on whether they could take up the challenge or not. My usual approach is to try things small first. It is better to avoid things that are grown everywhere at an industrial scale. If it causes cancer or helps to spread other diseases the impact will be large. If there is diversity, issues can be caught early. Other organisms will just outcompete the bad genes. You do not need to worry about your organic crops either. Evolution will do its job just like it did for billions of years. The better crops will survive.

My conclusion? Next time someone comes to you to plant a tree please give them a gift of freshly torn grass from your front yard.

## **Psychology and freedom**

Maybe the biggest advancement of the last ten years was the spread of machine learning and network based artificial intelligence. It helps us to better understand our own brain.

Artificial intelligence is still expensive. I can do all that a smart AI can do without those expensive data centers but a single Big Mac with a diet coke. AI is powerful though because it is very expensive to analyze the human brain. We cannot even cure common mental diseases and we need to treat them lifelong. It is much easier to analyze what an AI does step by step and fix any issues. It can also be the first step of analyzing vast amounts of data. It can do amazing things. We learnt how many layers of neurons are needed to recognize a green beetle. We learnt that we need to collect data to train our brain. We learnt how creativity works.

Why do we even have smarter brains than reindeers? The answer is evolution as always. We had to outcompete other species. One way to do so was to use tools. However, otters use tools, too. The other reason to be smart is to live in a society and to find the way back to our tribes from hunting, so we learnt how to love. However, wolves have similar behavior. What limited the complexity of our brain? The big difference, I think, between us and other species is that we are curious. Curiosity helped us to distinguish edible and poisonous food. We know which ones have healing power. We

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understand our body and we figured out that we can use clothes to adjust our temperature faster than animals do. We learnt how we can avoid germs and still get enough nutrition by boiling or frying our food. We learnt placebo and that love, and beliefs can help to strengthen the immune system. We learned that helping the sick will bring them back as useful members of our tribes. We are smart because we do medicine.

In any case artificial intelligence should change the way we see and understand ourselves. We will recognize the lies and fake information requires more neurons that have less impact on the overall outcome.

We will also recognize that lies tamper with the learning process making us less effective. Artificial intelligence will be a major tool to speed up and facilitate studies. I expect lot, how we will be able to treat common mental diseases using artificial intelligence in the future.

## Rules

Crime has been the main source of pain in many lives. If it goes unpunished, it will soar and make the life of more and more victims miserable. One of the main points of a constitution is to provide groundwork for justice. It is a difficult matter, and it has been studied for thousands of years. One of the earliest sources of writing were the stones of King Hammurabi of Babylon describing the rules to keep the society together.

My idea is that it is rooted in every single brain cell that we have. Because of this it has billions of shapes and forms. It is how we relate to others in our society. Society has rules and we have our own map of it in our brains. When we break the rules, then our beliefs decide to repress the rules as unknown, challenging them, or considering the relationship to the other party negligible. Crime is rooted in the inconsistency between the rules and the beliefs. I think the conservative idea of having few rules but following them is the right way to prevent it. Too few rules spark anarchy and inefficiency, too many rules will spark avoidance and negligence. On the other side, once a bad thing has happened, keeping the consistency takes energy and brain power. Accuracy can always fight it reactively. It is very expensive to lie. Others can outperform at business negotiations for example.

Fortunately, technology provided the best tools in the last thirty years to fight it. While it can be dangerous,

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we collect more and more data. As storage becomes cheap, we will be able to predict the accurate impact of our actions on others, understand the society and make the world a better place.

However, as the ten commands of Moses tells us, even God had to deal with it. Let us wait and write another book to see whether data would help to solve it. Forbidding lying is the most important one that protects all the other nine, I think.

Artificial intelligence will spark the other question, how much it can be used. What happens if the artificial intelligence commits the crime? Any machine must be built only as complex as it can be analyzed affordably by humans. This is true to the behavior and the logs of actions. If this can be done, accidents can be analyzed as well, and a proper resolution can be made. Artificial intelligence cannot be smarter than humans in a law-abiding society.

## **Conclusion**

I believe the most important aspect of a modern society is progress. We would not have any modern societies if we did not have progress beforehand. I noticed the following pillars of these societies based on the ethics they follow.

My ethics is a universal approach of forward-thinking, even if it costs a lot in the present. Every decision we make will be judged in the future, how much happiness, wellness, value, precedent, and inspiration it created.



## **Acknowledgments**

I received the major inspiration from my family background. They were doctors, engineers, farmers, and merchants who came from all around in Europe and eventually settled in Hungary.

I admire the polite leadership of Linus Torvalds. I also learnt a lot how to build highly effective diverse engineering teams at Microsoft under the leadership of Steve Ballmer, and Satya Nadella. I admired the forward-looking approach of Mike Olson at Cloudera building Hadoop. His grounding work will probably have undeniable effect in ten years as the industry shifts to openness.

The business efficiency of Tim Cook at Apple inspired me a lot. The capital gains of Apple shares paid the daily bread and helped me survive through the pandemic and pursue an MBA. I learnt effectiveness and the importance of action bias under the leadership of Andy Jessy at Amazon. It helped me a lot to reignite my professional career. I learnt how to build an efficient and competitive engineering team at DEXON Systems of Janos Czupy, Dr., where we powered the control centers of the industrial and public complexes of many countries. I also received my main competitive edge from Gyula Szabo, Dr. from DSGI, where I learned that no matter how good your engineering is, you will be chosen by the happiness, design, and ergonomics you give to your customers.

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### **About the Author**

The author is an American Software Engineer, M.Sc. born in Hungary. He is pursuing his MBA at LSU Shreveport at the time of writing this publication. He lived in Hungary, British Columbia, Washington State, and California. He worked for big tech companies like Microsoft and Amazon, and small startups for sixteen years. He is an invited member of the Academy of Political Science, NY, NY founded in 1880.