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Coronavirus Pandemic and the Coming Disruptions in the Global Economy: Insights From Jeremy Rifkin's Theory of Third Industrial Revolution

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As the coronavirus pandemic spreads through the continents, it has dramatically disrupted everything in the global economy from stock markets and supply chains to oil and food prices, and in seeking to restrict the spread of COVID -19, governments are shutting down whole commercial sectors which could cause a huge recession in some countries as the United Nations have already warned. All these new circumstances have raised again the fundamental questions about the future of our global economy. Therefore, this paper has tried to make sense of how the post-pandemic global economy would look like by shedding light on Jeremy Rifkin's theory of the new industrial revolution and the coming disruption in the global market.

Keywords: coronavirus, Jeremy Rifkin, Third Industrial Revolution, global economy, disruption

Introduction

As the coronavirus pandemic spreads through the continents, it has dramatically disrupted everything in the global economy from stock markets and supply chains to food prices. In seeking to restrict the spread of COVID-19, governments are shutting down the whole commercial which could result in a recession in some countries, the United Nations has already alarmed that the coronavirus outbreak could cost the global economy up to $2 trillion this year, and depress the global annual growth this year to below 2% (United Nations, 2020) (Figure 1).

These circumstances raise fundamental questions about the future of the global economy, and the role that both market and the public sector can play, as Reddy (2020, p. 1) puts it "The pandemic underlines the necessity for a rethinking of our received ideas about economics and points in some directions that this rethinking should take". However, it is not logical to discuss the future of global economy without having a reappraisal of where we're headed in the 21st century, one way to do this is by developing a framework that can figure out the rapid dynamics of the economy.

Therefore, this article is dedicated to presenting the big thoughts of Jeremy Rifkin, the well-known author and theorist in socio-economical transformations, as we believe his theory provides us with an explanatory framework for the future of the global economy especially after the massive disruption of COVID-19, which

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could guide companies and governments to ease their adoption process with the new transformation that is going to take place in the global economic landscape.

For more than two decades, Rifkin (2000; 2011; 2015; 2020) believed that those problems, such as: the low productivity of the economy, the climate change, high level of unemployment especially among a young millennial generation trying to find their place in a 21st-century workforce, and the level of inequality, show that there is something dysfunctional about the way the human family is organizing itself on this earth and constituting a long-term structural economic crisis.

For instance, nearly half the world lives on less than $5.50 a day (World Bank, 2018), one billion people make less than a dollar a day. The combined wealth of the eight wealthiest individuals in the world equals the accumulated wealth of half the human beings living on earth, which has a population of three and a half billion (Oxfam, 2018).

Therefore, Rifkin (2020, p. 16) claims that the world needs a new economic plan that must be compelling and move as quickly in the developing countries as the industrialized nations. To pave his theory Jeremy Rifkin needed to reveal how these great economic paradigm shifts occurred in the history, if we know how they occurred we could be able to draw a road map that allows us to travel on a new course quickly with fewer mistakes.

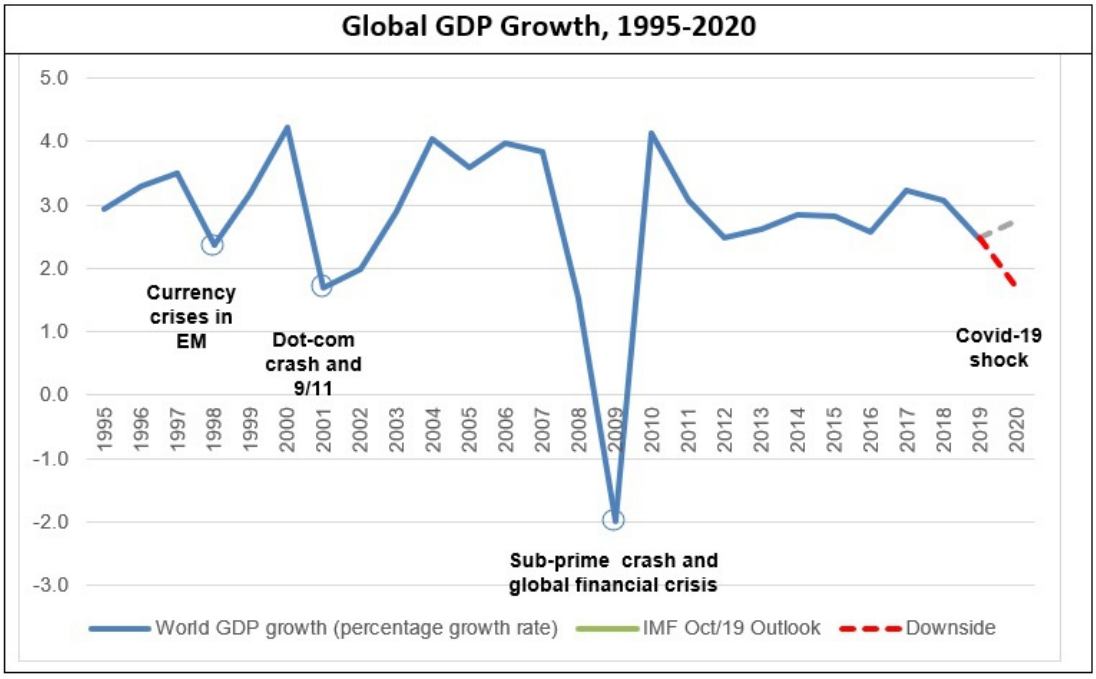

Figure 1. The impact of coronavirus on the global GDP growth (United Nations, 2020).

How the Economic Shift Paradigm Occurs

According to Rifkin there have been at least three major economic paradigm shifts in the last 500 years which share a common denominator, that is, at a moment three defining technologies emerge across the society over a period of time, and they converge to create what is called a “general-purpose technology platform”or infrastructure that fundamentally transforms the way the society manages powers, moves its economy and society, and governs life (Rifkin, 2020, pp. 16-30). These technologies are:

(1) New communication technologies to manage the economy and society, and govern life more efficiently.

(2) New sources of energy to more efficiently power the economic, social, and political life.

(3) New modes of mobility, transportation, and logistics to move the economy, society, and politics and govern life more efficiently.

When new communication revolutions emerge and converge with new energy regimes and new modes of mobility, transportation, and logistics, it changes the way that society manages power, moves the value chains, and changes the business models, and changes cognition and consciousness, or as Rifkin (2020, p. 22) puts it changes the "temporal-spatial orientation".

To show the reliability of his theory, Rifkin (2015, pp. 13-23) applied it to the First Industrial Revolution in the 19th century and Second Industrial Revolution in the 20th century as following:

(1) In the First Industrial Revolution, the convergence of communication energy mobility changed the built environment in the business model and governments. They transferred societies from the old German manual print press and communications to steam power printing, so people become able to mass-produce communication for public school, books, and magazines.

(2) Then in the last half of 19th century, the Brits introduced the telegraph system across the British Isles. So, the steam power printing and the telegraph were the new communication technologies.

(3) Converged with a new energy source of cheap coal from the hinterlands harvested by that steam engine.

(4) Then the British invented the most ingenious part of it when they decided to put the steam engine on rails locomotive national transport, which led to the creation of big urban hub.

The same explanation offered for the United States Second Industrial Revolution in the 20th century is as follows:

(1) Centralized electricity and the telephone that suddenly enabled the people for the first time in human history to make instant communication at the speed of light.

(2) The telephone, later radio, and television whose communication technologies converged with a new source of very cheap energy—Texas oil.

(3) Then Henry Ford barreled the Daimler internal combustion engine and put out cheap cars for a road, rail, water, and air traffic.

Rifkin argued that the Second Industrial Revolution took over the whole world through the 20th and 21st centuries until it peaked in July 2008, as in this month Brent crude oil cost 147 dollars a barrel. The entire global economy shut down already in the months leading to the happening of a great economic earthquake in the industry. The collapse of the financial markets 60 days later was an aftershock because it is hard to keep the debt-ridden fictional economy moving when the real economy shut down. Moreover, everything in people's lives is depending on carbon deposits, like fertilizers, pesticides, construction materials, pharmaceutical products, even most synthetic fiber of the transform system, all of which are made from fossil fuel. So Rifkin (2011) said:

> What occurred in July of 2008 is what I call peak globalization. Although much of the world is still unaware, we have reached the outer limits of how far we can extend global economic growth within an economic system deeply dependent on oil and other fossil fuels. (p. 23)

In consequence, Rifkin (2011, p. 24) argued that no nation will be able to solve its economic challenges and create new jobs if their businesses are plugged into a Second Industrial Revolution infrastructure, which peaked in its productivity over a decade ago.

The Third Revolution on the Doors

Rifkin (2015, pp. 23-39) believes that there is a shift going on (communication-energy-mobility) in the last 25 years because of the internet, as three and a half billion people are now connected with chief smartphones and can at very low cost interact socially and economically all the world. This digital internet communication revolution is just beginning to converge—especially in Europe and China—with a digitalized renewable energy internet, where millions of people already are producing their own solar and wind electricity off-grid and sharing some of it back on an energy internet with all digital eyes acting just well the way the information internet does. In addition to those two internets (the communication internet and the renewable energy internet), there is a third internet, a digital, mobility, and the logistics internet.

The total convergence between those three internets will occur in next decade when this happens, the rail, the air, the water, and the vehicles will be electric and fuel cell they will be operated at low fixed cost and very low marginal cost, so people will be able to share logistics just like the way they share energy and information. Those three internets (the communication internet, renewable energy internet, the mobility logistics internet) will be digital. This is what he called the Internet of Things (IoT). And in the coming decade all people will have ubiquitous interconnectivity on this Internet of Things, essentially, an external prosthesis of the human brain and nervous system (Rifkin, 2015, p. 27) will be created. So, everything can be connected and begin to synchronize and share that data across a global organism.

In sum, the theory claims that if the nature of the first Industrial Revolution was generated by steampunk, and the second one was analog electricity, the third one is the digital revolution and it will flow across every area from artificial intelligence to robotics and value chains, which will lead to the emergence of the new economy called “collaborative economy”.

The Emergence of Collaborative Economy

According to Rifkin (2015, p. 33), the “collaborative economy” is the first new economic system to enter into the world stage since capitalism and socialism in the 19th century, although part of it will be absorbed by capitalist networks, another part of it will be independent, before this independence shares common ground and work will exist in a hybrid system, this new system is driven by a “Zero Marginal Cost” force.

In the classic economic thinking, the optimum market is the place where you sell goods and services at marginal cost to reduce your cost with new technology so you can put out cheap goods and services, and part of the production process is making up the transaction costs to include a profit margin large enough (Rifkin, 2015, p. 16), it’s just never been thought the marginal costs would get so low in some good and services that they’d head towards zero, which constitute the ultimate success for the capitalism but also fight for it, because how any industry can survive if anyone can produce it with nearly zero marginal cost. A perfect example for this is what happened in the communication internet in the last two decades and we can study its consequences on some arenas like knowledge, media, and entertainment since it is telling us—according to Rifkin (2015, p. 16)—what’s going to happen in energy, mobility, transport manufacturing and other fields.

The internet connects and transforms three and a half billion people from being “consumer” to “prosumers”, as millions of people are producing and sharing their own YouTube, their music with each other in near-zero marginal costs, and other millions of students take massive open online college courses (MOOCs) (Rifkin, 2015, p. 17) taught by the best professors at the best universities (Figure 2) at near-zero marginal cost, sometimes they

have to blend it with physical participation or they have a high dropout rate but it's not going away. Another example is Wikipedia where millions of people are reconstructing the knowledge, and its accuracy rate is as good as the centralized top-down knowledge people acquire from the *Encyclopedia Britannica* (Rifkin, 2015, p. 275).

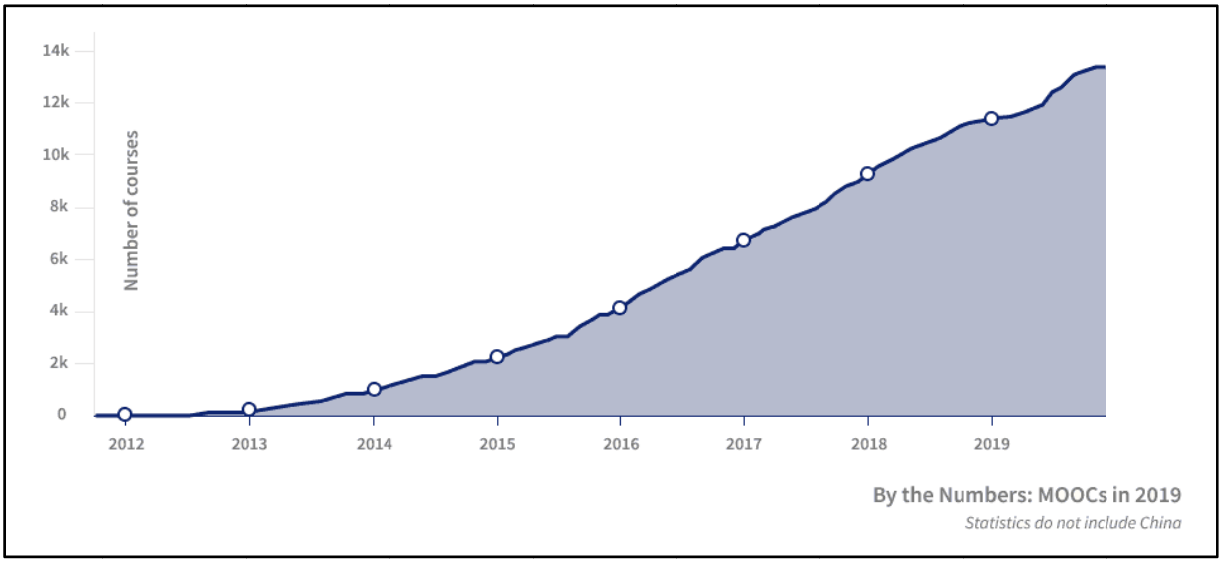

Figure 2. The growth of MOOCs from 2012 to 2019 (Shah, 2019).

The Illusion of the Firewall

The first expected respond for Rifkin's big thoughts that could come from anyone who underestimates the changes that occur in our world today, could be that we agree the internet with its near-zero marginal cost had affected the virtual world of bits, but we didn't think of moving into the physical world of atoms, there is a firewall between those two worlds that the internet can't penetrate (Smith, 2014), which means the disruption that happened in the music, knowledge, and media industries can't happen in the physical industries.

Well, Rifkin had already refuted this claim in his book *Zero Marginal Cost Society*, and argued that the Internet of Things breaks the firewall, and the disruption is already stretched to physical world like energy sectors. For example, nowadays, 35% of the electricity in Germany works on an energy internet, mainly solar and wind, and it will be 100% renewables by 2040 (Rifkin, 2020, p. 70). The energy transits into an energy internet where all sorts of people across Germany are producing their solar and wind off-grid or selling it back to the grid and sharing it just like they share information, news, and knowledge, and what's very interesting on that transition is that the fixed cost has plummeted, which eventually will increase the demand for renewables as it is shown in Figure 3.

Rifkin claims what will happen to them (energy companies) is what happened to music companies, newspapers, book publishing...etc., because all sorts of small players, farmers, small businesses, and neighborhood associations will have the ability to create electricity cooperatives all over Germany. This is the "lateralized energy" (Rifkin, 2011, p. 23) which is totally different from the vertical integration grids established to scale centralized energies. The power companies and energy companies were very good at doing this, but sooner they cannot scale lateral energies as the sun shines everywhere, the wind blows everywhere, and anyone will collect it wherever there. However, Rifkin does not suggest that this will be the end of the energy companies, but it will force them to change their business model to survive in the future.

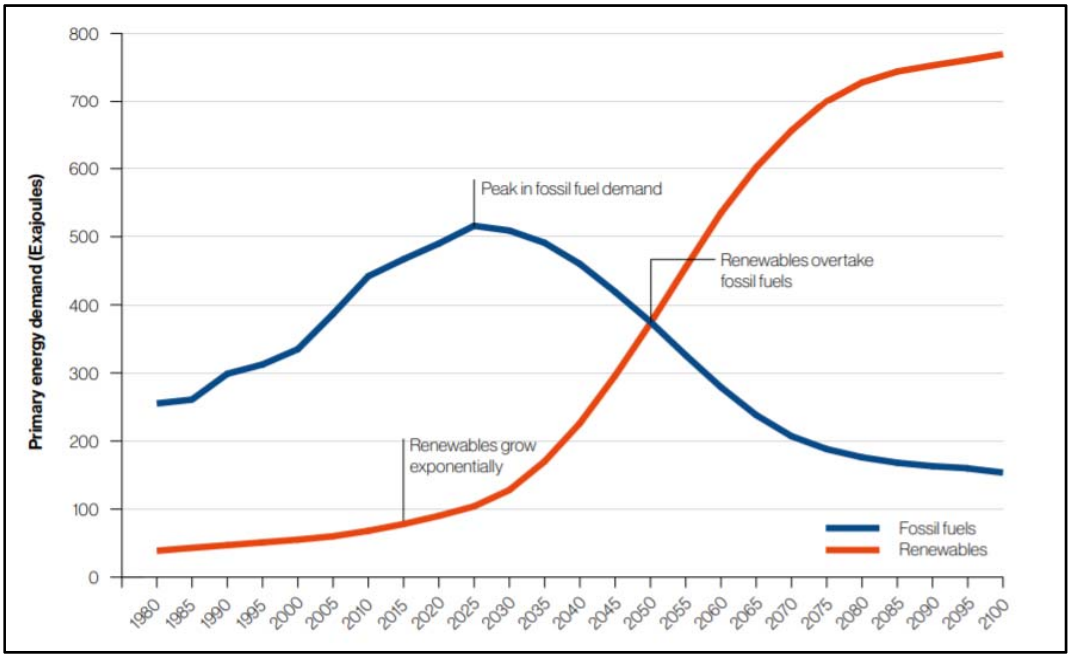

Figure 3. Forecasting of energy transition framework (IRENA, 2019, p. 17).

The Consequences of the Third Industrial Revolution

It is important to figure out what are the potential consequences of Third Industrial Revolution, for instance, as the massive disruption with a communication internet in the music industry, television, newspapers, book publishing, whole new industries have emerged not just Facebook, Google, and Amazon, but there are thousands of businesses that are setting up the platforms dealing with the algorithms in the big data, both in profit and non-profit sectors. So, here are some potential features of the coming disruptions:

(1) A shift from globalization to glocalization (Rifkin, 2020, p. 30)

This vast expansion of economic entrepreneurialism will allow us to move from globalization which was top-down centralized vertically integrating a few big companies to what Rifkin calls “Glocalization” where all players like small companies, medium-sized companies, large companies, can engage each other across the lateral networks at very low fixed and marginal costs.

(2) The emergence of new risks (Rifkin, 2020, p. 20)

The Third Industrial Revolution will also transform the security field and produce new challenges for societies like: How do we ensure network neutrality when everyone’s connected? How do we ensure governments don’t provide this digitally interconnected global brain and nervous system, for example, to hack the political elections? How do we make sure that global internet companies like Facebook, Twitter, and Amazon don’t monopolize this internet and commodify the data of every human being in the world so that a handful of people can become wealthy? How do we ensure privacy and data security when everyone’s connected? And how do we prevent cyber-crime and cyber-terrorism from disrupting a system?

(3) The new opportunities for entrepreneurs and SMEs (Rifkin, 2020, pp. 18-19)

Small and medium-sized enterprises (SMEs) or a cooperative can begin to use this internet of things and get a picture of all the data that is starting to flow through the system. That means, any small business could queue and take in the data they care about for their value chain and strip it out from all other data and by mining their big

data and creating their analytics, own apps, and own algorithms for governance, they can dramatically increase their productivity at every step of conversion across their value chain, in consequence, reducing their fixed cost.

According to Rifkin (2000), every company can do this as it is not expensive, and some of the marginal costs are getting so low. This constitutes a shift in capitalism, from capitalist markets to capitalist networks. This means, the businesses around the world will begin to adopt blockchain in regions and they will make money by the traffic flow but not the individual transaction.

Adaption to the Third Industrial Revolution

In order to adapt to the new economy, the government, private sectors, and non-profit sectors should prepare for the transition period that might last until the mid of this century, and here some recommendations drawn from Rifkin's books.

(1) The companies should utilize the new business model that can allow them to retire their assets, so they are in two business models over two decades. For example, in the power sector, the companies will make not by generating any electricity, as all the people generating where they live and work, companies will set up partnerships with thousands of businesses and help people manage the energy flowing through the energy internet and their value chains, helping them with their big data, analytics, and algorithm governance, so they can dramatically increase their productivity at every step of conversion across all their value and supply chains, share their productivity gains back with the power company in the form of "performance contracts" (Rifkin, 2015, p. 149).

(2) People and governments should spend more attention on creating the resilient in this system, as the more distributed the system the less vulnerable to attack, the more centralized the system the more vulnerable it is to either cybercrime or more importantly climate change events.

(3) The government should put money into new Third Industrial Revolution digital infrastructure to create the new job opportunities that plug into it, and to accomplish that, they have to retrofit every building in the country and make them energy-efficient, then turn them into a node that's a big data center, micropower generation, site and charging station. For instance, in Germany, there are now hundreds of thousands of buildings that have been already retrofitted which secured hundreds of thousands of jobs in Germany. For example, when they got 10% of their energy electricity, they created 350,000 new jobs, which has more than the entire rest of the energy industry together, and they were only 10% to 20% of the energy (Rifkin, 2015, p. 70).

(4) The governments should open the space to the third sector: Jeremy Rifkin was one of the major contributors to the debate about the effect of automated machines on the workforce from its early beginning, in his book called the *End of Work* (1995), he pointed out that we have one last surge of mass employment that is the layout of the smart infrastructure for 21st century, and in the last part of that book in 1995, he mentioned that the other part of the employment is not going to be in the market or the networked capitalist economy, but in the social economy. Therefore, governments should ease the work of this nonprofit economy to grow, since that's where human beings will be needed, machines are only supplementary, but they cannot be replacements. Especially in fields like culture, environment, education, and health, there is no possibility to have a robot preparing a child in a care center to be a human being.

Conclusion

As thousands of people laid off from their jobs, public gathering is banned; traveling restrictions and

physical distancing are apposed as worldwide practices to slow down the spread of COVID-19. It became obvious that all these actions would have an impact on the global economy in the long term. Therefore, we need a framework that enables us to make sense of the coming economic disruption, and we believe that Jeremy Rifkin's theory of the Third Industrial Revolution as it is explained before could fill this gab. Here are the major three insights that we can be benefiting from Rifkin's theory to understand the status of the post-pandemic global economy.

Industries That Suffer the Most

The industries being hit hardest are those related to the consumer, such as retailing, entertainment. Many hotels or restaurants have been hit even harder than others, as well as cruise lines, aircraft, travel in general, so anything that is going to be consumer-facing will have a tough time. Those industries suddenly have lots of costs continuing and absolute no revenues, which is the worst possible outcome for these businesses. But even if a business is not directly losing out due to people staying at home, lockdowns are having a devastating ripple effect. As modern industry relies on cross-border goods and materials which they cannot access, therefore there are some industries that we should worry about and these industries are dependent upon the global supply chain.

Reshaping the Supply Chain

The coronavirus has caused a break in the biggest link. In the vast global supply chain, the problem started in China where the disease started, really to be seen in January and then had a huge impact in February. As China is the bedrock of the global supply chain, businesses around the world started to look for alternative suppliers, but of course, it was a race to try and find the few that had spare capacity.

For example, China is the world's largest supplier of medical protective gear. The interruption of its exports because of the initial outbreak led to major supply shortages which left health workers elsewhere dangerously exposed (Khanna, 2020), which will increase the demand for self-reliance in some countries while the diversification in supply resources will be the most rational choice. This would lead to more investments in parts of the world other than China, such as South and South-east Asia and Mexico. But it would also lead to higher costs, as many production locations cannot match China's cost-efficiencies. The need to hold more inventories will also add to costs.

Moreover, the suppliers have become fewer. And it will take a long time for them to rebuild their supply chains and in the interim, because there's very little demand for finished products, few companies want to resurrect that supply chain instantly until they know that the economy is settled down.

E-services Booming

Many services have been able to go digital with effort to continue to run business such e-learning, food, delivery grocery services, and tele-communications apps, as those companies have been able to adapt to working from home, new pattern will be framed as a part of new reality. As a consequence, the people will work differently, and will interact differently, the crisis is going to motivate capabilities development, and the energy is going to move to digital (Carlsson, Reeves, & Swartz, 2020).

In addition, it is going to be another leg up for retail store and retail companies that don't require stores, for example, the online companies, this is just going to reinforce people's tendency to cocoon and anything that helps them do what is beneficial.

Moreover, people are going to be at home practicing social distancing, so they're going to rely on new online services that maybe they haven't used before, and habits tend to be very sticky, so habits cultivated now during

the crisis could prove quite enduring.

In sum, those trends that have been brought by coronavirus pandemic seem to work as a trigger for the structural transformations toward the Third Industrial Revolution as explained by Rifkin. Therefore this article is a trying to shed light on his big ideas as we expect that his theory will shine like a star in the post-coronavirus world, as the both academia's and policymakers would be looking for a new paradigm that has validity to explain our new economic reality.

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