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Enap Collection (ENG)

Volume 1

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The National School of Public Administration (ENAP) aims to produce content capable of transforming people and thus innovate the public sector and improve the provision of services to citizen.

In recent years, ENAP has positioned itself as a hub for the ideas that are changing governments around the world. The dynamics of innovation have never been more important for the future of the public sector.

The dynamics of innovation come together in this set of content and events that took place at ENAP between 2019 and 2022, with the participation of international experts. The themes of the lectures and conferences are based on an analysis of their transformation potential, as well as their current relevance. The themes range from human innovation to the changing economy, through issues such as rationality, sustainability and development.

Each piece provides valuable insight into the complex social and economic issues the world faces today and will face tomorrow.

The goal of this collection is to provide a starting point for anyone interested in learning more about a wide range of perspectives on some of the most urgent issues of our time and to provide a basis for further exploration.

The articles, interviews and lectures presented in this collection offer a portrait of the type of content that ENAP offers in its mission to be the space where the public sector is transformed. The launch at Innovation Week 2022 is a significant milestone, which was only possible due to the dedication and coordination of our team. We hope you find these pieces as thought-provoking and enlightening as we do.

DIOGO G. R. COSTA

President

National School of Public Administration - ENAP

Panelist:

Yuval Noah Harari

Prof. Yuval Noah Harari is a historian, philosopher, and bestselling author of Sapiens: A Brief History of Humanity. His books have sold more than 40 million copies in 65 languages, and he is considered one of the most influential public intellectuals in the world today. Born in Israel in 1976, Harari was conferred his PhD degree by Oxford University in 2002, and is currently a professor in the Department of History at the Hebrew University of Jerusalem. In 2019, following the international success of his books, Yuval Noah Harari founded Sapienship with his husband and agent, Itzik Yahav.

Jared Diamond

Professor of Geography at the University of California, Los Angeles, Jared Diamond began his scientific career in physiology and expanded into evolutionary biology and biogeography. He has been elected to the National Academy of Sciences, the American Academy of Arts and Sciences, and the American Philosophical society. Among his many awards are the National Medal of Science, the Tyler Prize for Environmental Achievement, Japan's Cosmo Prize, a MacArthur Foundation Fellowship, and the Lewis Thomas Prize Honoring the Scientist as Poet, presented by Rockefeller University. He has published more than six hundred articles and his book "Guns, Germs and Steel" was awarded the Pulitzer Prize.

Jimmy Wales

Member of the founding board of Wikipedia and WT.Social, Jimmy Wales was born in Huntsville (USA). In order to facilitate access to knowledge, Jimmy works with his users to share human knowledge. In addition to being a futurist and a technology leader, Wales is one of the most prominent names in the history of the internet. He also appears on important lists, such as the "100 Most Influential People" by Times magazine and among the leaders of the World Economic Forum.

Glen Weyl

Eric Glen Weyl was born in San Francisco, California (USA). He is the founder of the RadicalXChange Foundation. Glen Weyl graduated Valedictorian of Princeton undergraduate in 2007 and received his PhD in economics in 2008. Before joining Microsoft he was a Junior Fellow at the Harvard Society of Fellows and an Assistant Professor at University of Chicago. He is an expert in political economy and social technologies on the Microsoft Technology Board. His work is oriented towards imagining, building and communicating a plural future, so that social technologies are more faithful to our lives and diversities. The main objective of his work is to develop possible solutions to profound changes, using social technologies and market mechanisms, aiming to create richer and more egalitarian societies.
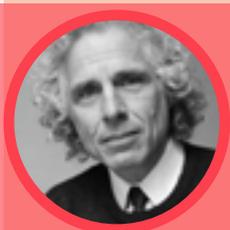
Steven Pinker

Born in Montreal (Canada), the psychologist and psycholinguist Steven Arthur Pinker is a professor at Harvard University (Massachusetts), where he completed his Doctorate in Experimental Psychology. His research focuses around language, cognition, social relationships, rationality and human nature. One of the world's leading cognitive scientists, he was, until 2003, director of the Center for Cognitive Neuroscience at the Massachusetts Institute of Technology (MIT) for 21 years. He is a bestselling author and his latest book is called: "Rationality: What It Is, Why It Seems Scarce, Why It Matters".

Deirdre McCloskey

Deirdre Nansen McCloskey is a Distinguished Professor of Economics, History, English, and Communication University of Illinois at Chicago, USA. Deirdre also teaches philosophy and Classics at UIC. For five years she worked at Erasmus University in Rotterdam as a professor of economics, philosophy, history, English, arts, and culture.

Carlota Perez

Carlota Perez is a researcher, professor and international consultant and specialist in the socio-economic impact of major technological changes and the conditions for growth, development and competitiveness. Pérez is the author of "Technological Revolutions and Financial Capital" and Honorary Professor at the University College of London and the University of Sussex. She is also Adjunct Professor at TalTech, Estonia and Academic in Residence, Anthemis UK.

Tim O'Reilly

Tim O'Reilly is the Founder, CEO and Chairman of O'Reilly Media. The company's online on-demand learning and knowledge platform at oreilly.com is used by thousands of businesses and millions of individuals around the world. O'Reilly has a history of summoning conversations that reshape the computer industry. If you've ever heard the terms "Open Source Software," "Web 2.0," "The Maker Movement," "Government as a Platform," or "The WTF Economy," he helped craft each of these big ideas. Tim is also a partner in O'Reilly AlphaTech Ventures (OATV), an early-stage venture investment firm, and on the boards of Code for America, PeerJ, Civis Analytics, and PopVox. He is the author of several technical books published by O'Reilly Media, the most recent being "WTF? What's the Future and Why It's Up to Us (Harper Business, 2017)."

Audrey Tang

Audrey Tang is a Taiwanese free software programmer and Digital Minister of Taiwan. Previously known for revitalizing the Perl and Haskell computer languages, as well as building the EtherCalc online spreadsheet system in collaboration with Dan Bricklin. In the public sector, she served on the open data committee of Taiwan's national development council and the K-12 curriculum committee; and led the country's first e-Rulemaking project. In the private sector, she has worked as a consultant with Apple on computational linguistics, with Oxford University Press in crowd lexicography, and with Socialtext on social interaction design. In the social sector, she is an active contributor to g0v ("gov zero"), a vibrant community focused on creating tools for civil society with the call to "fork the government".

Paula Berman

Paula Berman is a Digital identity researcher, civic technology practitioner, and COO of RadicalxChange, a foundation committed to advancing plurality, equality, community, and decentralization by upgrading democracy and markets.

Bruno Maçães

Bruno Maçães graduated in Law at the University of Lisbon. He holds a doctorate of Political Science from Harvard University in the United States. He was Portuguese Secretary of State for European Affairs until 2015. Today, he is a senior consultant at Flint Global and a researcher at the Wilfried Martens Center for European Studies.
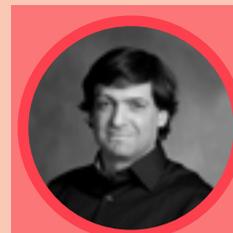
Dan Ariely

Dan Ariely is Professor of Behavioral Economics at Duke University, with stints at the Fuqua School of Business, the Center for Cognitive Neuroscience and the Department of Economics. He is also a visiting professor at MIT's Media Lab, and founder of the Center for Advanced Hindsight.

Vitalik Buterin

Vitalik Buterin was born in Russia. He later emigrated to Canada with his parents and began to further study subjects such as mathematics, programming, and economics. In 2012, he won a bronze medal at the International Olympiad in Informatics. In 2013, an wrote an article proposing Ethereum, a blockchain-based software platform that can be used to send and receive value globally, with its own cryptocurrency, Ether, without third-party interference. The platform can be used for other transactions as well, thanks to its decentralization and the use of "smart contracts".

Credits

Government and AI

Yuval Harari

Lecture presented on November 7th, 2019, at the 5th Public Sector Innovation Week: Government for the People.

Lecture presenter:
Diogo G. R. Costa

Abstract: Professor Yuval Harari, in his lecture Government and AI, talks about how governments around the world should be concerned about new technologies in order not only to regulate them but also to somehow protect their citizens from the possible problems that may arise, such as monitoring and loss of privacy.

Keywords: AI, government, algorithm, data

YUVAL HARARI: Do you hear me now? Technology sometimes works. It's a great pleasure for me to be here today with you and I would like to use this opportunity to talk to you about what the government can do about the AI revolution. The revolution of artificial intelligence will, in the coming decades, change the human economy, will change the political system, will even probably change our own bodies and minds and there is a lot of responsibility for governments to do something about the dangers inherent in this development.

There are three particularly important things that governments should do. Governments should protect citizens from the economic shocks of the AI Revolution. Governments should protect citizens from the political dangers inherent in the AI Revolution and governments should also build global cooperation to help protect humanity as a whole, all over the world, from the existential threats that the AI Revolution poses to our species, to Homo Sapiens.

So let's begin with the first government task, which is to protect citizens from the economic shocks. Nobody really knows what the economy and the job market would look like in 2050. Except that they will be completely different from today. AI and robotics would likely change almost every profession. Many, if not most, jobs that people do today will disappear or change fundamentally by 2050. Of course, as old jobs disappear, new jobs are likely to emerge. But we don't know if enough new jobs will emerge and the really big problem will be to retrain people to fill the new jobs. Suppose you're a forty-years-old truck driver and you lose your job to a self-driving vehicle. There is a new job in designing computer code, or perhaps in teaching yoga. But how does a forty-years-old truck driver reinvents himself or herself as a yoga teacher or as a software engineer? And even if you do manage to retrain yourself to fill the new job, this will not be a long-term solution. Because the automation revolution will not be a single watershed event, in which the job market will settle down into some new equilibrium.

Rather, it will be a cascade of ever bigger disruptions. It's not that we'll have the big AI Revolution by 2025 and then we have a couple of rough years when everybody adjusts and then it's all over. No, we are nowhere near the full potential of AI. It's just the beginning. So, we will have a major automation revolution by 2025. But then an even bigger one by 2035 and an even bigger one by 2045. All jobs will disappear. New jobs will emerge, but the new jobs too will constantly change and vanish. So, people will have to retrain and reinvent themselves, not just once, but over and over again throughout all their lives. Governments will probably have to step in and help people manage the difficult transition periods. Both by providing generous unemployment benefits and also by helping to by paying for all the retraining or adult education.

Just to think, in the 20th century, governments built massive systems of education for the young. In the 21st century, they will have to build massive systems of education for adults. And even that, may not be enough. Because the biggest problem of all is likely to be psychological. Even if you have the financial support necessary to reinvent yourself at age 40, it's unclear whether you will have the mental resilience.

Change is always stressful. Reinventing yourself at age 40 and again at age 50 and again at age 60 might be too much for many people, too stressful. So even though it's very clear that many new jobs will appear by 2050, we might nevertheless see the creation of a new class, a massive new class, the useless class. People who are useless, not from the viewpoint of the friends and family, nobody's ever useless from the viewpoint of their loved ones, but rather, people who are useless from the viewpoint of the economic and political system.

In the past, people had to constantly struggle against exploitation. The big struggle in the 21st century might be the struggle against irrelevance. When confronting this crisis, the government's motto should be "don't protect the jobs, protect the people". Help them retrain and reinvent themselves and find new jobs. If governments fail this mission, the result will be not only the concentration of wealth in very few hands, but also concentration of power in the hands of a tiny elite. If you think, for example, about the transportation market.

So today, millions of taxi drivers and bus drivers and truck drivers own a small, each of them, owns a small share of the wealth and power of the transportation market. They earn their living from it and they can also unionize and go on strike to advance their interests. Now, fast forward 20 or 30 years and we might see a situation in which all this wealth and all this power is owned by a few billionaires who own the corporations, who own the algorithms that drive all the vehicles. So not just the wealth! Think about Uber without having to pay anything to any driver, because all the cars are self-driving.

But also think about the billionaire who owns the company, that the workers cannot go on strike and paralyze the transportation market because algorithms never strike. But the billionaires, if something happens that they don't like, they can press a button and immediately shut down the entire transportation market. The result might be the most unequal societies that ever existed. The AI Revolution might create unprecedented inequality not just between classes, but also between different countries. We are already in the midst of an AI arms race with the USA and China leading the race and most countries left far behind. If we aren't careful, we'll see a repetition of what happened in the 19th century with the industrial revolution. In the 19th century, a few countries, like Britain, France and Japan, industrialized first and they were then able to conquer, dominate and exploit the rest of the world.

The same thing might happen again in the 21st century with AI. Countries that don't take action now, might lose control of their future. In 1840, Britain was building railroads and steamships. Many other countries said "we don't care about steamships or railroads, we have much more urgent problems to deal with". 30 years later, these countries were British colonies. Nowadays, all countries, even the poorest ones, should care deeply about the AI race, because it is likely to shape their own economic and political futures. It is very likely that the AI Revolution will create immense new wealth in high tech hubs, like the United States and China, where the worst effects will be felt in developing countries. In the 20th century, developing countries could usually make economic progress by selling the cheap labor of their unskilled workers.

But if automation reduces the demand for unskilled labor, and if developing countries lack the resources to retrain the workforce, what will they do in the 21st century? There will be more jobs for software engineers in California or Shanghai, but fewer jobs for textile workers and truck drivers in Honduras or in Bangladesh. Whenever people ask what will be the impact of AI on the economy or on the job market, you always have to remember, it will have very different impacts on different countries. It's not going to be the same all over the world.

The end result might be that most countries will be colonized by the leaders of the AI Revolution. Just as industrialization led to imperialism, so automation might lead to a new kind of imperialism or colonialism. In the 19th century, the industrial revolution in countries like Britain was fueled by exploiting the raw materials of many other countries around the world, like Brazil. This might happen again with data. Data is now the raw material of the AI Revolution and the vital data that is fueling the development in the United States, China and the other leading AI powers, is coming from all over the world. But the resulting power and wealth is usually not distributed back.

Governments, in these countries, needs to take action now before it's too late. The second important role of government is to protect citizens from the political dangers of the AI Revolution. The political threat can be summarized by a single equation, which might very well be the defining equation of the 21st century: B X C X D = AHH. Which means: biological knowledge multiplied by computing power multiplied by data equals the ability to hack humans.

The merger of Infotech and biotech, which are technologies like biometric sensors, means that very soon, at least some governments and corporations will know enough biology, have enough computing power and will have enough data to systematically hack millions of people. What does it mean to hack humans? Means to create algorithms that understand us better than we understand ourselves.

These algorithms can then predict our feelings and decisions, can manipulate our feelings and decisions and can ultimately make decisions for us or replace us all together. In order to do all that, the algorithms will not have to know us perfectly. That's impossible. It's impossible to know anything, let alone a human perfectly. But the algorithms will not need to be perfect. They will just need to know us better than we know ourselves, which is not impossible because most people don't know themselves very well. Quite often, people don't know the most important things about themselves. I know this for my own personal experience. It was only when I was 21 that I finally realized that I was gay, after living in denial for quite a number of years. I keep thinking about the time when I was 15 or 16 and I asked myself how I could have missed it, should have been so obvious. I don't know how, but the fact is that I did miss it, perhaps because I grew up in a very homophobic society. But that's hardly exceptional. Lots of gay men spent their entire teenage years not knowing something very important about themselves.

Now imagine the situation: in a few years when an algorithm can tell any teenager exactly where he or she is on the gay-straight spectrum just by collecting and analyzing data. One way to do it might be to track eye movements. The computer could track my eye movements and analyze what my eyes do when I see a sexy guy and a sexy girl walking in swimming suits on the beach. Where exactly do my eyes focus and where do they linger? As I walk down the beach, on the street, or as I surf the web or watch television, the algorithms could discreetly and continuously monitor me and analyze me and hack me in the service of the government or of some corporation.

Maybe I still don't know that I'm gay, but Coca-Cola already knows it. It knows it before me. So next time Coca-Cola shows me the advertisement for some new drink, it chooses to show me the version with the shirtless guy and not the version with the girl in the bikini. And the next day when I go to the store, I choose to buy Coke rather than Pepsi and I don't even know why.

But Coca-Cola will know and this information will be worth billions. This information could of course have far more serious consequences. In Iran, for example, there is a death penalty for homosexuality. What would it mean for a gay man in Iran to be detected and hacked by government algorithm? Everybody has some secrets. Of course, not everybody is gay, but everybody has some secrets. A lot of secrets worth knowing. To protect people against these dangers, governments should first and foremost restrain their own powers. In the 21st century, every government on Earth will face the temptation to build these total surveillance systems to monitor their own citizens. Even if you are not highly developed, you could always buy it from China or from the United States or from some other developed country.

Governments must resist this temptation. Otherwise, the result will be the creation of the worst totalitarian regimes that ever existed. Regimes far worse even than Nazi Germany, of the USSR. Of course, it is not enough. For governments to restrain their own use of such technology, it's also important for the government to protect its citizens from foreign governments and from foreign corporations, who might use this technology to hack their own citizens.

Even if the government of Brazil does not create a total surveillance regime to monitor its citizens, Brazilian citizens might still fall victim to surveillance by the Chinese, American or Russian governments, or by big powerful corporations like Amazon, Baidu, Facebook or Alibaba. Just try to imagine again, fast-forward 20 or 30 years. Just try to imagine Brazilian politics in 2050.

When somebody in Beijing or in San Francisco has the entire personal and medical records of every politician, journalist, judge, military officer, say people who are now 15 or 16 and live online and constantly monitored, in 30 years they are candidates in an election, or they are candidates for the Supreme Court, and somebody has their entire sexual record from when they were 20. The reputation of almost no person can survive this, so their fortunes, their future is in the hands of these outside systems. Whether the country is still independent under such a scenario or whether it became a data colony, it's a difficult question. If you have enough data, you can control a country without needing to send armies and soldiers from abroad. To prevent this, governments need to regulate the ownership of data. Who owns my personal data? Who owns my medical data?

For that we first need to realize the data is now the most important asset in the world. In ancient times, land was the most important asset. Politics was the struggle to control land. If too much of the land was concentrated in the hands of a single individual, like a big emperor or of a small aristocracy, then you got a dictatorship. In the last 200 years, machines and factories replaced land as the most important asset. Politics became the struggle to control the machines, and if too many of the machines were owned by the government or by a few corporations or a small elite, that was a modern dictatorship.

Now, data is replacing both land and machinery as the most important asset in the world, and politics is increasingly becoming about controlling the flow of data in the world. If too much data is controlled by the government or by a few corporations, then we will see the emergence of a new kind of dictatorship: digital dictatorship. The problem is that we don't really have a working model for regulating the ownership of data. We have thousands of years of experience regulating the ownership of land. We have a couple of centuries of experience in regulating the ownership of machines and factories and preventing overconcentration.

But we have almost no experience in regulating the ownership of data. That's a very great challenge to engineers, to lawyers, to philosophers. But above all to governments, because it is their job to regulate the ownership of data. It's not something that we can rely on the corporations to do for us. After all, these corporations don't really represent anybody, we didn't vote for them. The countries that lag in the AI arms race obviously have the greatest incentive to regulate the ownership of data and the power of AI. To do so effectively, many countries will have to cooperate. By itself, Brazil will probably not be able to resist the USA, China, Google and Baidu. But if Brazil joins forces with other countries such as Argentina, South Africa, India, and the European Union, then such a block has a far better chance of regulating the ownership of data, as the development of surveillance technology in the AI across the world.

That brings me to the third important mission of governments in the face of the AI Revolution. Governments should create effective global cooperation, because only global cooperation can deal with the existential threats that AI poses to humanity. As I mentioned, we need a global agreement on surveillance and the ownership of data. Similarly, we need a global safety net to protect all humans against the economic shocks that AI will likely unleash. Automation will create immense wealth in some countries while ruining other countries. Unless we find solutions on a global level to the disruptions caused by AI, then entire countries might collapse and the resulting caos, violence and waves of immigration will destabilize the entire world.

The poorer countries will not be able to handle it by themselves. Global Cooperation is also necessary to prevent the development of dangerous new weapons, like autonomous weapon systems. No nation can do it by itself because no nation controls all the scientists and engineers in the world. If you think about the current arms race in developing autonomous weapons systems, killer robots, perhaps the most dangerous technology presently developed by the arms industry, almost every country will say this is a very dangerous technology Robots. We don't want to develop it. We are the good guys. But we can't trust our rivals not to do it, so we must do it first.

We must do it before them. If we allow such an AI arms race to develop, it doesn't matter who wins the arms race, the loser will be humanity. The only thing that can prevent such a dangerous arms race is not building walls between countries, which is currently in fashion. But rather building trust between countries, and that's not impossible. If today, for example, the Germans come to the French and tell them "trust us, we aren't building killer robots in some secret laboratory under the Alps", the French are very likely to trust the Germans, despite the terrible history between these two countries. We need to build such trust globally. We need to reach a point when China and the US can trust each other like Germany and France. We are running in the opposite direction at the moment, but it's not impossible.

Technology poses a threat, a challenge. Not just to the global economy and to global peace, but also to the very meaning of humanity and to the most basic rules of life. For 4 billion years, nothing fundamental changed in the basic rules of the game of life. For 4 billion years, whether you were an amoeba or a dinosaur, a tomato or a homo sapiens, you were subject to the rules of organic biochemistry because you were made of organic compounds and you evolved according to the rules of natural selection. These were the two rule systems that every organism was subject to. Organic biochemistry and natural selection. But in the 21st century, natural selection is likely to be replaced by intelligent design. Our intelligent design will be the new driving force of evolution.

At the same time life might also break out of the limited organic realm into the vastness of the inorganic realm. We might begin to design and manufacture the first inorganic life forms. After 4 billion years of organic life shaped by natural selection, we are about to enter the era of inorganic life shaped by intelligent design. In the process our own species, Homo sapiens, will likely disappear.

In 200 years or so, it is very likely that planet Earth will be dominated by entities which are far more different from us than we are different from chimpanzees. It's not that we'll destroy ourselves, we will change ourselves dramatically. Today we still share it with chimpanzees. Most of our bodily structures, our physical abilities, our mental faculties. But within 200 years, the combination of AI and bioengineering might completely transform our bodies, our brains and our minds. Consciousness itself might be disconnected from organic structures. Or alternatively, we might witness the decoupling of consciousness from intelligence. Intelligence is the ability to solve problems. Consciousness is the ability to feel things like pain and pleasure and love and hate in humans and all other animals. They go together.

But in 200 years, Earth might be dominated by superintelligent entities which are completely non-conscious. How should we deal with these mind-blowing developments? We might make mistakes on a cosmic scale, and if we make such mistakes, nobody will intervene to save us.

In particular, governments, corporations and armies are likely to use the new technologies to enhance human skills that they need, like intelligence and discipline. While neglecting other human skills like compassion, artistic sensitivity and spirituality. The result therefore might be the creation of very intelligent and very disciplined superhumans who lack compassion, lack artistic sensitivity and lack spiritual depth. We could lose a large part of our human potential without even realizing we had it. Instead of upgrading humans, technology will downgrade us.

To make wise decisions, we need to think in global terms about the interests of the entire human species and indeed of the entire ecosystem, rather than focusing on the immediate interests of a particular corporation or a particular nation. Nationalism doesn't need to prove an impossible barrier for such global thinking or for such global cooperation. I know that some politicians like the US President argue that there is an inherent contradiction between nationalism and globalism, and that we should choose nationalism and reject globalism. But this is a fundamental mistake. There is no contradiction between nationalism and globalism.

Because nationalism is not about hating foreigners. Nationalism is about loving your compatriots. In the 21st century, the only way to safeguard the prosperity and security of your compatriots is by cooperating with foreigners. No matter what the situation was before. In the 21st century, good nationalists should also be globalists. Globalism doesn't mean abandoning all national loyalties and traditions. It doesn't mean opening the border to unlimited immigration. Globalism means far more modest and reasonable things. First of all, it means a commitment to some global rules. Rules that don't deny the uniqueness of each nation, but rather regulate the relations between nations.

A good model for how to do it could be the football World Cup. The World Cup is a competition between nations and people often show fierce loyalty to their national team.

But at the same time, the World Cup is also an amazing display of global harmony. Brazil cannot play football against France unless Brazilians and French first agree on the same rules for the game. That's globalism in action. If you like the World Cup, you're already a globalist. Even if you can win the cup by drugging your football players, you shouldn't do it, because if you do it then everybody will copy your example and very soon the World Cup will be a competition between biochemists. While the sport will be ruined.

So like in football, also in economics, we need to balance national and global interests. Even in a globalized world, the vast majority of the taxes you pay will still go to provide healthcare, education and security to people in your country. But sometimes nations will agree to slow down their economic development and technological development in order to prevent catastrophic climate change and to prevent the spread of dangerous technologies. To conclude, then, the AI revolution presents governments with unprecedented challenges. But I want to stress that the various frightening scenarios I've mentioned are not prophecies. They are just possibilities. If you're afraid of some of these scenarios, you can still do something about it. Because one of the most important things to remember about technology is that technology is never deterministic. We can always use the same technologies to create very different kinds of societies.

For example, in the 20th century, people used the same technologies of trains, radio and electricity, to build different kinds of societies: communist dictatorships, fascist regimes, liberal democracies, they were all built with the same technology. You can actually see the differences from outer space. That's an image taken from a satellite in outer space of East Asia at night. You see here, South Korea is a sea of light. China is another sea of light, and in the middle, the dark patch is not the ocean. It's North Korea. You can literally see the difference between South Korea and North Korea very easily from outer space. The difference isn't technological.

It's not that South Korea knows about electricity and the North Koreans don't have this technology. They both have access to exactly the same technology, but they chose to do very different things. It will be the same with the new technologies of the 21st century. The twin revolutions of Biotechnology and Information Technology will certainly transform the world, but they don't have a single deterministic outcome. We can use these technologies to create either heaven or hell. How to use them wisely is maybe the most important question facing us today. I hope very much that you in your future careers and in your future life will help us make good and wise decisions. Thank you.

DIOGO: Thank you. Now let's choose some questions that you sent to Yuval. Professor, thank you very much for the presentation. I think it's very provocative, especially talking to a group of civil servants who are actually working in government and have to be aware as citizens and as civil servants of the consequences of technology on government. But given that, I'll ask you this question. Should the government innovate less? We are in the week of innovation in public service and a lot of what we've been discussing for the past few days is exactly how to introduce new technology to the government. Is that a threat, however, to society?

YUVAL: No, I mean, you need to adapt to the changing conditions of the private market of society. It's very dangerous if the government does not innovate and remains behind because it has a very crucial role it needs to regulate all these new technologies and for that it needs to understand them. Of course we should also expect the corporations and the engineers who are developing the new technologies to be responsible in how they do it. But ultimately, the real responsibility is of the government because it has the power to do so and it has the mandate from the citizens. We didn't vote for the engineers. We didn't vote for the entrepreneurs or for the billionaires who owned their corporations. We vote for the government in the hope that it will protect the interests of the citizens in this fast changing world.

DIOGO: I think there's a question about what kind of stories that we should tell ourselves and someone is asking if the tale of pessimism - and I don't think you consider yourself a pessimist -, but if the tale of pessimism also can bring bad consequences to society, to how we see ourselves and if we should have a story of aspiration of optimism somehow.

YUVAL HARARI: I think we should be realistic above all. I mean pessimism, yes, I mean, if you just go and spread prophecies of Doom and say there is nothing we can do, then this causes despair. When I go and give such talks in different places, I focus on the negative scenarios. Largely because there is a division of labor in the Academy, in scholarship. You know you have all the engineers and the people in the computer science department and the entrepreneurs developing these technologies. So naturally, they focus on all the positive potential outcomes and all the promises, especially if you need to raise investment for your startup, you won't go and tell the investors all the terrible things that can happen from your invention. Because they focus mostly on the positive scenario, it becomes the job of historians, philosophers and social critics to warn people about the dangerous scenarios. But not in a kind of doomsday prophecy that we are all lost. There is nothing to do but just to raise alarm about dangerous possibilities in the hope that we take action to prevent them.

I focused a lot, for example, in the use of AI to create surveillance regimes. But AI can be used in different ways. The same technology can be used by dictatorial governments and big corporations to monitor the citizens and the customers, but you can develop the technology that works the other way, that monitors the corporations and the government in the service of the citizens. AI can work both ways. For example, if you think about a problem like corruption in government. Let's say that the politicians appoint their relatives and cousins to all the jobs. For a private citizen, to monitor that it's very difficult, even if I have legal access to the information, I don't have the time and ability to go over all the names and see who is related to whom and so forth. But if you build the right AI system, technically it's extremely easy to build an AI system that simply monitors who is appointed in the civil service and the government should be open knowledge to the public, and so it's quite easy to know who is related to whom, in what way, and as a private citizen, you can just go to the computer, type the name of a politician or Minister or whatever, and immediately see all the relatives he or she appointed and compare different politicians for example. AI can also do that. In most dictatorial regimes you will never encounter such a tool. But it depends on what kind of technology to develop and how to use it.

DIOGO: Do you think that, in an opposite sense, big tech should be favored over smaller startups, given that big techs are usually easier to regulate and control, they are more responsive to social control and to government control? Facebook is easier to manage than 4Chan or 8Chan and they're usually also less innovative. Facebook and Google have been innovating by buying smaller startups. Do you think that there should be a higher entry barrier for startups and that the government should have policies that favor those well manageable, bigger companies?

YUVAL HARARI: Of course there are also huge dangers to the big corporations, both by lobbying and undermining government, or even taking over governments. Also the enormous concentration of data in power in one place is extremely dangerous. I don't think that there is an inherent vantage or that the government should prefer the tech leviathans over the small new companies. The key is really not the size, but the policies. Again, here the problem is that the government, I think, never encountered this problem to such an extent. Technology changes so fast. By the time that the government understands the new technology, its implications, thinks about regulation and then you have to pass legislation. By the time all this process is complete, the technology has changed three or four times.

The regulations may not be relevant anymore. For instance, one danger that we are facing - in all countries, not just dictatorial countries, also in free democratic countries - is that more and more decisions about our lives will be, and already are taken, by algorithms. I don't know how it is in Brazil, but in many countries you apply to the bank to get a loan and your application is not processed by a human banker, it's processed by an algorithm. The algorithm decides whether to give you a loan or not. Let's say the algorithm said no, don't give this person a loan. You go to the bank and you ask "why not, what's wrong with me?" and the bank says "we don't know, the algorithm said no and we trust our algorithm." This is extremely dangerous because it means people are losing control over their lives. There could be so many biases written into the algorithm. We already have racist algorithms, sometimes unintentionally. One famous example was a self-driving car, an algorithm for a self-driving car, developed in Silicon Valley lately. It turned out that it recognizes white pedestrians more easily than black pedestrians. Why? Because the data it trained on driving around Mountain View and all these places in Silicon, there are very few black pedestrians there. Eventually it means that it is 10% worse at recognizing black pedestrians, which could in some future lead to greater fatality, more accidents. It's not even intentional. But how do we know if the algorithm is biased, say racially?

The EU has just passed a regulation or legislation that says that citizens have a right for explanation. If your fate, like a bank loan, if the decision was taken by an algorithm, you have the right to get an explanation from the bank. The bank can't just say "oh the algorithm said no." But here is the problem with the development of technology. It sounds good on paper. But the bank then just can say "ok, we can give you the explanation, here are 1,000,000 pages, a print out of all the data that the algorithm collected on you and based on that it found patterns and comparing you to a million other people, it reached the conclusion that you are not creditworthy". The thing is that algorithms just make decisions in a very different way than humans. A human banker, when it makes a decision, usually takes into account just four or five salient features.

Could be relevant features like your past credit history; could be a biased feature, like your race or gender. But humans can't take hundreds of factors into account. The big advantage of AI is that it is able to make a decision based on hundreds of different factors. Just giving people the right to an explanation, if you don't understand how the technology works, this legislation is really irrelevant.

DIOGO: What do you think of Facebook's proposal of having an oversight board, a sort of Supreme Court over the decisions of the CEO? You think these kinds of governance mechanisms could be a good or better solution, at least than others?

YUVAL HARARI: It's a step in the right direction, especially because of the fast pace of technological development. It will be very difficult for governments, at least in democratic countries, to effectively regulate these kinds of technological developments without some cooperation from the corporations, from the engineers. Because simply they are not at the forefront of the research, and they sometimes lack the necessary scientific and technical knowledge. I think it would be good. I don't think that Facebook is the enemy and we just need to fight it, but ultimately the responsibility is of the government and not of Facebook.

DIOGO: Someone's also asking what is the right balance between corporate power and government power in a global system.

YUVAL HARARI: I would trust governments more than corporations. Because corporations, again, they don't represent anybody. Nobody voted for them. Their loyalty to a large extent is ultimately to their profits and to their business model. Sometimes they have nice CEO's, but you can't rely on that. I don't think we should exclude corporations from the dialogue or fight them. But the ultimate responsibility for regulating these dangerous developments is of governments.

DIOGO: I know you don't consider yourself a technology pessimist again, but there is another sort of writers who alert of dangers of technology but, not of technological progress and speed up, but of technological slowdown, like Robert Gordon, Tyler Cowen, and others, who think that we're actually stagnating energy-wise; energy became more expensive; nuclear energy, which was a promise, became actually frowned upon. And when you look at transportation where you're actually moving slower than we used to move in the 70s because of the traffic and also the technology didn't advance that much. The Concord was abandoned in 2003. Do you see that there is, at least in society, a technological slowdown in certain areas that could also be of concern?

YUVAL HARARI: In certain areas, yes, but that's the way that the history of technology develops. That you have a breakthrough in a particular area and a lot of advances there, and eventually it slows down and there is a breakthrough in another area. So yes, in transportation in terms of flying between countries, we haven't advanced much in the last few decades. But then, instead of coming here by airplane, maybe in 20 years I can just be here as an hologram, as an avatar, and save the entire transport cost, the pollution and so forth. The thought that the progress should be linear - we invented an airplane and now there should be faster and faster and faster airplanes - it usually doesn't work like that. Sometimes the new development comes from a completely different angle, which makes this entire line of development obsolete.

DIOGO: We are a school of government and we teach civil servants. What would you say that our school should teach the next batch of civil servants to prepare them for the future?

YUVAL HARARI: A lot of things. Maybe the most important thing to realize is that nobody knows what the world will look like in 20 or 30 years. Nobody knows how the job market, how the economy would look like, how the political system would look like. The old model of education… We are giving students certain skills that they will then use throughout their lives, throughout their career. This is increasingly becoming obsolete, because you don't really know what skills civil servants or anyone will need in 2040 or 2050. The one thing they will need for sure is the ability to retrain themselves, reinvent themselves, and adapt to completely unknown situations and problems. I would say that the emphasis should be on that. The assumption that, if you teach a course on anything and you teach certain examples and skills, the assumption should be that by 2050 this may be completely irrelevant. What you really need is the ability to learn new things and deal with unknown situations. Like at the end of the year, a good exam, a good test will not be "Ok, for the entire year you've learned a particular skill; now solve these equations or tell me these facts that you've learned for the entire year." Rather, the best test is "here is an entirely new situation, which we didn't say anything about during the whole year, how do you go about learning about it and solving it?" So what you really acquire during the year is the skills of how to approach a new problem, and it doesn't matter in the test whether you solve the problem or not. The key question is what is your approach? How do you approach a new and unknown situation?

DIOGO: Very good. Do you think there are indicators that we should be looking at when we are modulating our optimism and pessimism? If there was a dystopia index, what kind of numbers should be included there for us to be aware of the dangers posed by the future?

YUVAL HARARI: Because I think that the key to solving most of our biggest problems is global cooperation, then one indicator of pessimism or optimism is what is the level of trust and cooperation in the world. If there is enough trust and cooperation, I think humanity can solve almost any problem, and can deal with almost any threat it faces. But if the level of cooperation and trust drops below a critical level, then this is a dystopian scenario. Just think about the 2008 financial crisis. Let's not talk about some futuristic AI scenario. Let's say that something similar to the 2008 financial crisis hits the world tomorrow morning. The world is completely unprepared for that, unlike in 2008. In 2008, when the crisis hit, the largest economies in the world were able to cooperate together to prevent the worst outcome because they trusted one another enough. Despite tensions and competition, there was enough trust. Now there is no such trust. Nobody, I think, would follow the USA on that today, in 2019. Basically, in the last three years, the United States, which was, for decades at least, claimed to be the leader of the world or the leader of the free world, basically came and said, "we are resigning, thanks, but we don't want this job anymore, from now on, we care about one thing only, which is ourselves." Nobody would like to follow a leader whose motto is "me first." And that's the situation we are in now. There is no alternative leader at present. I think the good thing is that the world should learn how to cooperate without American leadership, but this is also not happening.

My best hope is that the world will learn how to cooperate better without depending on the US. No matter what will be the result of the 2020 elections. The world just can't be in a situation where everybody waits every four years to see who the Americans elect this time. We need a much more robust system of global trust and cooperation, which doesn't depend on a single country. At present, we are running in the opposite direction. There is greater and greater distrust. This is cause for pessimism, but I hope that we can reverse this trend.

DIOGO: The level of trust in government in Brazil has been very low for the past few years - in Congress, in the executive power - and now there are efforts to regain this trust which is fundamental for cooperation. What do you suggest that the government can do to restore trust from society in itself?

YUVAL HARARI: I'm not an expert on Brazilian politics or society, so I can't really give any. In general, I think, we see it as a crisis all over the world. I think in a way, it's also a crisis of national unity, which we see all over the world. There is a lot of talk about the kind of resurgence of nationalism, but actually, what we see all over the world is a weakening of nationalism. As I said in my talk, real nationalism is not about hating foreigners, it's about loving your compatriots. There is no lack of hatred towards foreigners in the world.

But there is a growing lack of love towards your compatriots. Many of the leaders who portray themselves as nationalists are in this sense actually anti-nationalists. They actively and deliberately undermine the national unity in many countries with divisive policies and inflaming rhetoric. I think, for example, about the United States. In the United States today, Americans fear and hate other Americans far more than they fear and hate the Russians or the Chinese. The American National community is disintegrating and this is at the core of the crisis of government and democracy all over the world. This is something which should be much relatively easy to solve. It depends on leadership. Not leadership that sets itself the goal to divide and rule, and to divide society even further and inflame hate and fear between citizens, in order to bolster their power; but rather a leadership that sets itself the aim of trying to bridge these divisions. I really emphasize that good nationalism is about loving your compatriots.

DIOGO: Yuval, thank you very much. Our time is up. Thank you very much.

Turnaround: pivotal moments of nations in crisis
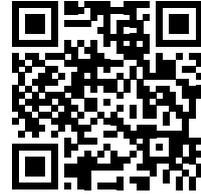
Jared Diamond

Lecture presented on November 19, 2020, at the 6th Public Sector Innovation Week: (Re)imagining and building futures.

Lecture presenter:
Diogo G. R. Costa

Abstract: In this talk, Jared Diamond posits that COVID can give us the possibility to learn to cooperate with each other in order to overcome both the crisis that the pandemic brings and the already existing global crises of natural resource depletion, social inequality, and climate change. The professor gives examples of how in other historical moments humanity has managed to come together to solve some problem, and that he is a cautious optimist that we will be able to come together again.

Keywords: COVID, global crises, social inequality, climate change

DIOGO COSTA: Welcome Professor Jared Diamond.

Jared Diamond is a best-selling author of multiple books. His 1997 "Guns, Germs, and Steel," is one of the most influential nonfiction books of our time. The book won a Pulitzer Prize. It has influenced researchers, journalists, presidents, and prime ministers. His latest book, "Upheaval, how Nations Cope with Crisis and Change" takes a similar sweeping view of history. Although it was published in 2019, it reads like a book written for our pandemic times. Jared studied Physiology at Harvard and Cambridge and became a leading expert on gallbladder. He's also an ornithologist, anthropologist, sociologist, evolutionary biologist, and environmental historian, with a working knowledge of archaeology, genetics and the epidemiology of human diseases, as well as professor of geography at UCLA. In this time of upheavals, Jared's work gives us hope. Contrary to what many think, his works are never deterministic about the future. Rather, they provides us with explanations. Explanations of what happened in the past, explanations that give us power, power to change to make things different in the future, to create possible futures. That is why Mr. Diamond does not describe himself as a pessimist, but rather as a cautious optimist. The world according to Jared is not hopeless, although our future happiness is not assured. We're going to have to work on it, but we can work on it. Jared Diamond teaches that we can achieve a better future, a future that we can imagine, a future that we can build, a future that is possible. Ladies and gentlemen, Mr. Jared Diamond.

JARED DIAMOND: Good afternoon, good afternoon, good evening. It's a pleasure for me to be with you. I'm Jared Diamond. I'm an American. I'm a Californian. I'm from the city of Los Angeles. I'm sitting here in my wife's study in West Los Angeles near my university, the University of California, which is closed like most American universities. At the moment, the sky over my house is clear, but until recently the sky over my house has been gray from the forest fires that are raging throughout California. In short, this is the time of upheaval. It's a pleasure for me to be with you. I wish that I were actually in Brazil. I had a wonderful visit to Brazil, but now, for reasons you can understand because of COVID, I'm speaking to you indirectly from my wife's study. Countries, Brazil and the United States and the whole world is in a state of upheaval now because of COVID.

What future is awaiting us? On all grounds, amidst all this upheaval for hope, there's no doubt that COVID is a tragedy. It places us in imminent danger. How might COVID cause our world to change for the better? Your first reaction might be that it's an obscene idea to suggest that COVID might change the world for the better when it kills people, and I personally understand that because my wife and I have lost five of our closest friends, friends of 50 and 60 years, in the last few months. So I understand the tragedy of COVID. But nevertheless, it might cause our world to change for the better. What innovations could we adopt that might give us a better world and not a worse world? There's no doubt that COVID is a new sort of crisis. It's an epidemic. You may say, but there have been previous epidemics.

Let's compare COVID with the big previous epidemics of the past. When you think of epidemic, perhaps your first association for big epidemics that kill lots of people is to the Black Death of Europe in the Middle Ages. The Black Death, bubonic plague that spread from Central Asia into Europe, killing an estimated 1/3 of Europe's population. But paradoxically, a century later, Black Death had brought benefits to Europe by changing Europe's economy. That is one terrible epidemic before COVID.

An even bigger epidemic before COVID were the epidemics that Europeans brought to the new world. When they crossed the Atlantic following Christopher Columbus in 1492 and began to spread throughout the new world, Europeans brought with them European diseases such as smallpox, measles and tuberculosis, diseases to which Europeans had had long exposure. To which Europeans had developed some genetic resistance and some acquired immune resistance. But Native Americans had no experience of smallpox or measles or tuberculosis, and so Native Americans had no immunity, genetic or acquired resistance to these diseases and were killed in large numbers.

For example, when Cortez made his first attack on the Aztec Empire, Mexico, one of the two biggest governments of the New World, Cortez and his 600 Spaniards were thrown out of the Aztec capital of Tenochtitlan, retreated towards the coast and it appeared that Cortez was about to be wiped out. But just at that time, a Spanish ship from Cuba arrived in Mexico and on that ship was one slave who had smallpox and that slave spread smallpox to Native Americans. Smallpox spread throughout the Aztec empire, killing half of all the Aztecs, killing the Aztec emperor. But Europeans, the Spaniards, having been exposed to smallpox from childhood, were spared and so it was demoralizing for the Aztecs this disease killing them, but not killing Europeans. The result was that half of the Aztecs died and Cortez on his second attempt conquered the Aztec empire. But smallpox spread from Mexico through Central America into South America, along the Andes to Peru and Bolivia, into the Inca Empire, killing much of the population of the Inca Empire and killing the Inca Emperor, provoking a civil war between two sons of the Inca Emperor.

Precisely at the time of that civil war, another Spanish conquistador, Pizarro, arrived on the coast of Peru with 169 Spaniards. But thanks to smallpox, Pizarro encountered a weakened Inca empire torn by civil war and Pizarro succeeded in capturing the Inca Emperor, executing the Emperor and then taking over the most powerful state of South America. These are examples of how European diseases changed history. These diseases, smallpox and measles, that change history, different from COVID in several aspects, they were not spread worldwide, nor was the Black Death spread worldwide.

They were not new diseases. They were old diseases, diseases that had affected Europeans and Asians for thousands of years, and so some peoples, European and Asian people who already exposed and partly protected against these diseases. But Native Americans were not. How does COVID then differ from the Black Death and smallpox and measles? There are two obvious differences. One is the speed of spread. COVID is spreading with jet planes. Smallpox and measles spread across the Atlantic with slow moving boats and then with horses. COVID spreads with jet planes and so COVID has spread worldwide within, a couple of months of its appearance in China. So the speed of spread that's something new with COVID. Another difference about COVID is that nobody is immune to COVID. It's a new disease. There are no people in the world who've been exposed to COVID. Nobody has genetic immunity to it. Nobody had antibody immunity to it. Unlike the case of smallpox and measles, when they arrived in the new world, being brought by Europeans who already had some immunity, in the case of COVID, every country of the world is at risk to it. No country is immune to COVID. No country can solve its COVID problem by itself because it will just get reinfected. Suppose Brazil succeeded in eliminating COVID within Brazil. Would that protect Brazil?

No, of course not, because there's COVID in other countries of the world and Brazil would just get reinfected. Tha has in fact happened with many countries: New Zealand, Australia, Vietnam, New Zealand instituted a lockdown. Australia instituted a lockdown. Transmission of COVID within New Zealand and within Australia stopped, but nevertheless there were jet planes coming to New Zealand and Australia, bringing and returning New Zealanders and Australians who've been trapped overseas. Those jet planes brought COVID back to New Zealand and Australia and those countries got reinfected. Similarly, Vietnam stopped transmission of COVID within Vietnam, but international travel returning Vietnamese reinfected Vietnam. This then illustrates that no country will be safe against COVID until every country in the world is safe against COVID. For the first time in world history, we are faced with an acknowledged global crisis. A crisis that we acknowledge is affecting everybody and so demands a global solution. When I say that COVID is the first acknowledged global crisis, you may object, "of course we've already had global crises, big global crises." We have the global crisis of climate change that affects the whole world. We have the global crisis of resource depletion that affects the whole world. We have the global crisis of inequality between countries of the world.

You might say COVID is not the first global crisis, but we have not acknowledged climate change and resource depletion as global crises. Many people around the world are still indifferent, dismissive of climate change and resource depletion, whereas now virtually everybody is acknowledging the threat from COVID. Why is it that we acknowledge the danger of COVID and that we do not acknowledge the danger of climate change? The reason is obvious. COVID kills you quickly. If you are infected with COVID, you'll be dead within maybe two days, certainly within two weeks, if you're going to die of COVID. And if you are dying of COVID, there's no doubt that what is killing you is COVID. It's not something else. In contrast, climate change does not kill you within two days. Climate change kills us indirectly, and so those people who are dying of the effects of climate change don't say they are dying of climate change. They say dying of tsunamis or of starvation, or sea level rise or disease spread. That's why we acknowledge COVID as a danger, but we have not acknowledged climate change as a danger, although it's a more serious danger.

In reality, compared to climate change and resource depletion, COVID is a minor problem and I'm serious when I say that it's a minor problem. Just think, the estimated death toll from COVID is on the average about 2%. Suppose that everybody all around the world is infected with COVID. And suppose that 2% of all the world's people die of COVID. The world's population is about 7 billion 700 million people. If they all get infected and 2% of them die, that means that COVID will kill 154 million people. But the world has 7 billion 700 million people and even if 154,000,000 of them are killed by COVID, 2% of the population, that still leaves 7 billion 546 million people alive in the world. More than enough people to keep the human race going. That's why I say the COVID is comparatively a small problem compared to the big problems of climate change and resource depletion and inequality that affects all of us. Just think of the ways in which climate change is a threat to all of us. COVID kills us only by COVID.

Climate change threatens us in many different ways. One threat posed by climate change is the decrease of agricultural production resulting in famine. You might say: how does climate change reduce agriculture production when climate change involves warmer temperatures? Surely warmer temperatures are better for growing crops. Well, warmer temperatures are not only better for growing crops, but they're also better for growing the weeds that outcompete crops. In addition, climate change involves weather so that the net effect of climate change is to decrease food production, rather than to increase food production, and to cause famine, the slow development of famine. That's one consequence of climate change.

Another consequence of climate change affecting potentially so many people around the world is a rise in sea level because of the melting of the Arctic and Antarctic ice caps and the Greenland ice cap, the melting of glaciers resulting in a rise of sea level. But there are many parts of the world that are very low, barely above sea level. Just a meter or two above sea level. Those include the East Coast of the United States, such as Florida. The areas close to sea level include the Asian country of Bangladesh, of which something like 1/4 is barely above sea level. Recently, you may have read that there have been floods in Bangladesh. There have been heavy rains but, since Bangladesh, 1/4 of Bangladesh, is only a meter or two above sea level, one quarter of the country got flooded, as a result of climate change. China, the East Coast of China is low line and so salt water percolating into the freshwater aquifers of eastern China is making those freshwater aquifers salty and depriving Chinese people of much of their supply of fresh water. So those are ways in which climate change, not just through famine, but also through sea level rise is threatening us. Still another way in which climate change is threatening us is by causing severe weather events: hurricanes, cyclones, heat waves, droughts, storms, if you've been reading the newspaper today and within the last few days, you may have read that a second hurricane has hit Central America and you may have seen the pictures in the newspaper showing widespread flooding in Central America.

That's a consequence of climate change. The increased frequency of hurricanes, cyclones, floods and droughts. Another consequence of climate change affecting us is the spread of diseases. Because tropical climates, warmer climates, are spreading into the temperate zones. That means that diseases are also spreading into the temperate zones thanks to climate change. For example, there is a fever in tropical East Africa, in Uganda, called chikungunya fever. Until recently, chikungunya fever was a tropical disease confined to East Africa. But now, chikungunya fever has spread to Italy and infected Italians, in fact in Europeans. Why? Because Europe is getting warmer and chikungunya fever and its vectors are able to spread to Europe.

Still another way in which climate change affects us and in some cases kills us, climate change is acidifying the oceans, releasing carbon dioxide into the oceans, making the oceans more acidic, destroying the coral reefs. But the coral reefs are barriers that protect tropical coastlines against tsunamis. In the past, when there have been some tsunamis, often areas of the coast with coral reefs have been protected against the tsunamis. But now, because the coral reefs are being damaged by climate change, by acidification of the ocean, tsunamis are able to sweep inland.

About a dozen years ago, there was a tsunami that struck Indonesia and killed 200 thousand Indonesians, because the coral reef barrier had been damaged. Indonesians did not say 200,000 of us were killed by climate change. Instead, Indonesians said 200,000 of us were killed by a tsunami. But the reason why that tsunami killed Indonesians, whereas in the past would not have killed all those people, was climate change destroying the coral reefs. These are examples of how climate change is potentially ruining all of us. COVID at most will kill 2% of us. Climate change is threatening all of us in so many different ways. But climate change is not the only big global threat that's endangering the world. Another big threat is resource depletion.

The exhaustion of resources on which we humans depend. We depend upon biological resources that are so called renewable resources, resources that renew themselves. Trees that grow and produce new trees. Fish that reproduce and produce new fish. These are renewable resources and as long as we humans have been harvesting fish and cutting down trees at rates slower than the rates at which new trees grow and the rates at which new fish, new crustacean and new mollusks reproduce themselves, these have been sustainable resources that can keep going forever. But now, we've been harvesting fish and cutting down trees, harvesting mollusks and crustaceans, faster than these trees, fish, mollusks and crustaceans can reproduce themselves. So the world's fisheries are being depleted.

Many fisheries, for example, the Atlantic swordfish fishery has already been driven, essentially, to extinction. Similarly forests around the world are being chopped down faster than they grow, but we depend upon seafood and forests. We depend upon seafood for protein, something like 1/3 to 1/2 of the world's people get their protein from the sea and from rivers, from fish crustacea and from mollusks. That means that the protein supply of 1/3 of the world's people is threatened. Similarly, the world's forests provide us with construction material, and they provide us with paper. In South America in the Amazon Basin, in the Congo basin, in Indonesia, and Southeast Asia, even in Siberia, the world's forests are being depleted, which means that our construction material and our paper is being depleted. Still another renewable resource that is being depleted is topsoil, dirt soil. You might say, how on Earth can soil be depleted? Farming that removes the cover from the ground exposes soil and after crops are harvested, soil can be washed away by erosion and so the world is losing topsoil. Some years ago I visited the American state of Iowa. Iowa within the United States is famous for growing corn, so much corn. My Iowa host picked me up at an airport and then drove me to one of the universities of Iowa and as we drove, we drove past a church and it was striking. This church was 10 meters up in the air.

This church was on a man's 10 meters high and all around the church, the land was 10 meters lower. Why? The reason is that the church is surrounded by a cemetery and people do not grow corn on cemeteries, and so the cemetery, for the last century and a half, around this church has not been subject to erosion, but all the land around the cemetery and the church has been growing crops, it has been subject to erosion. In the last century and a half there's been 10 meters of topsoil swept away from the United States from the richest agricultural area of the world into the ocean. Still another renewable resource, fresh water. You might say, "Fresh water? That's not a renewable resource. Yes, there's fresh water in the Amazon, but if we depleted our fresh water or drinking water, we could always make more fresh water just by desalinating salt water. We can make fresh water from the ocean." Well, yes we can, but that requires energy. It requires fossil fuels. But our fossil fuels are in limited amounts. Burning fossil fuels is what causes climate change.

We do not want to be forced to make fresh water by desalination. Instead, we want to get fresh water from renewable rivers and lakes, but already something like 85% of the freshwater around the world, 85% of the rivers and lakes of the world are exploited and the only rivers and lakes that are not exploited are in remote parts of the world, like Iceland or Northwest Australia or Northern Siberia. Most of the world's freshwater has already been being exploited. That then is a second global threat. A threat more serious than COVID itself. The threat of resource depletion following on the threat of climate change. Still, a third threat to the world, a global threat, that's much more serious than COVID, that rivals climate change and resource depletion in its seriousness, is the threat of inequality. Inequality around the world. There are rich countries and there are poor countries. Within South America for example, Bolivia is a relatively poor country. Uruguay, Chile and Argentina are relatively rich countries, and Brazil is also a relatively rich country. But even within Brazil, there's inequality, southern Brazil around São Paulo and Rio is richer than northern Brazil. Until 60 years ago, there was inequality around the world, but it was not a threat to rich countries, because there was no mass immigration and because people in poor countries didn't have television, they didn't have cell phones, they didn't know what the situation was in rich countries. But now, cell phones and television are widespread, so the people in poor countries know about the better living standards available in rich countries.

Thanks to jet planes and fast moving ships, people in poor countries don't want to wait for the government of their poor country to make their country rich. They want to become rich now, they want to have a good standard of living available now, for their children. So, they emigrate towards rich countries, they emigrate towards Europe, they emigrate towards North America, they emigrate towards Australia, they emigrate towards the richer parts of the world. Inequality, then, along with climate change and resource depletion, those are the three serious threats to the world.

Climate change is a danger that no country can solve by itself. Suppose in Brazil, you reason climate change is due to burning fossil fuels and the production of carbon dioxide. We're going to solve our climate change problem in Brazil by burning less fossil fuel, and that will mean less carbon dioxide in the atmosphere over Brazil. But burning less fossil fuel in Brazil won't protect Brazil because the atmosphere over Brazil is mixed with the atmosphere all around the world. Brazil's reducing its production of carbon dioxide and attempting to reduce the carbon dioxide in the atmosphere over Brazil will not spare Brazil because the world's atmosphere is mixed.

That illustrates then that climate change is a global problem, and neither Brazil nor any other country can, by its own efforts, protect itself against climate change. Instead, climate change is a global problem that requires a global solution. Just as COVID is a global problem requiring a global solution. Just as Brazil cannot reduce the carbon dioxide over Brazil forever, Brazil cannot reduce the COVID within Brazil forever because, just as the atmosphere mixes carbon dioxide, similarly jet planes mix the people of the world. Brazil or any other country that solved its own COVID problem would still be at risk from the rest of the world. This illustrates, then, that big problems in the world today are problems that require worldwide collaboration. COVID could be solved only by collaborative efforts among people of the world. Climate change, resource depletion, inequality can be solved only by collaborative efforts among people of the world. But you may object. Surely the people of the world are not going to collaborate to solve the problem of COVID or climate change. People of the world compete with each other. China competes with the United States, China and the United States compete with Europe. Brazil competes with Australia. Within Latin America, Brazil competes with Argentina.

Countries of the world are competing with each other. They're competing even for a face mask. When COVID began to expand around the world, in January and February, there were not enough face masks to protect all the people in the world, and so there was competition for face masks. China produced excess face masks, and when China sent its face masks to Europe, there was a scramble, there was competition for those face masks. French people, Swedes, Italians, Israelis and Russians were all competing for those same Chinese face masks. You might object. If there are vaccines that become available for COVID - and within the last week or two we've heard of two new promising vaccines developed against COVID - you may think that countries are going to compete for the vaccines. If the United States succeeds in manufacturing the two promising vaccines, or if China manufactures its vaccine, or Russia manufactures its vaccine, or if Germany manufactures its vaccine... You might think countries of the world are not going to be generous and share vaccines with each other. They'll compete, and so here is Jared Diamond saying "we have to innovate, the world has to adopt collaboration". You may say the world is not going to collaborate. We've seen that countries compete with each other. Well, I'd say the world is going to collaborate. The world will have to collaborate because there is no alternative.

Every country in the world is going to discover that it cannot solve its COVID problem nor its climate change problem unless it collaborates with other countries. You can think of COVID as a teacher, COVID as a professor, professor COVID. COVID teaches us that much as we have resisted collaboration in the past, today collaboration is essential. We have no alternative, except to collaborate, because if we don't collaborate in the struggle against COVID, all of us are going to be ruined by it, and in that respect, COVID is a teacher.

For that reason, I began my talk today by saying that COVID is a tragedy, it has killed some of my best friends. Probably all of you here know people who have died of COVID. Yet I began by saying that, paradoxically, this tragedy may bring benefits to the world. What benefits could this killer bring to the world? Well, what COVID may do is finally inspire the world to cooperate in solving a global problem. The global problem of COVID. But suppose that we do learn from COVID and the countries of the world collaborate in solving the problem of COVID. We will then have learned for the first time how to address a global problem that requires a global solution. And perhaps therefore COVID will serve as an example to inspire the world to innovate, innovate in solving not only the global problem of COVID, but also the global problem of climate change, the global problem of resource depletion and the global problem of inequality. It's not that climate change requires us to invent something new. We already know what is causing climate change.

Climate change is caused by the human burning of fossil fuels. We know what we have to do to stop climate change. We have to burn less fossil fuels. We can do that in two ways. One is to reduce our fuel consumption. Countries around the world, particularly rich countries, like the United States, Europe, Japan and the rich countries of South America, Argentina, Brazil, Uruguay, Chile, rich countries are burning more fossil fuels than our poor countries. The United States is very wasteful in burning fossil fuels. The average American burns twice as much fossil fuel as the average European. We have big cars that consume lots of fuel. It would be relatively easy for the United States to reduce its consumption of fossil fuel by 50% just by imitating Europe. One way that we already know that we could solve our fossil fuel problem is by being more efficient in our energy consumption. But another way that we know how to solve our problem of climate change is by shifting to renewable energy sources. There are other energy sources besides fossil fuels.

There has been much development of those alternative energy sources in recent years and in the recent decade or two, more and more countries are getting more of their energy from not just fossil fuels, but from wind power, from hydroelectric power and from solar power. And there were efforts to develop tidal power. The power that could be gotten by harnessing the tides to produce energy. Already, the country of Iceland gets essentially all of its energy from hydroelectric power. Denmark gets 20% of its energy by windmills. Germany and Spain are getting much of their energy from windmills. Here in California, I live in a sunny part of the world, only a few dozen kilometers from the desert. In the deserts of California solar installations are spreading.

To get more and more of our energy from renewable resources from solar energy. There's no secret about how to solve our problem of climate change. We don't have to innovate with new technology. We already have the technology to solve the problem of climate change. Where we need to innovate is in developing the political will to adopt the solutions to climate change that we already know about. In short, we know how to solve, in principle, the world's big problem with climate change. We're developing solutions to COVID through vaccines. We have to innovate in developing a global attitude of sharing instead of the global attitude of competition that has been so widespread. You may object. People of the world have been competing with each other for so long. They've been making war against each other for so long. Will people really cooperate with each other? Yes, I'd say they will cooperate with each other because there is no alternative, if we want to have a sustainable world. And I'd end by saying that COVID, the tragedy of COVID, brings hope with it. COVID is opening to us the possibility of creating hope for a better world. In that once we have solved the problem of COVID, we will have learned that we can find a global solution to the global problem of COVID and we will then go on to adopt a global solution to the serious world problems, to the global problem of climate change and the global problem of resource depletion and the global problem of inequality. That's why, amidst the tragedy of COVID, I'm cautiously optimistic that we have at least the possibility of creating hope for a better world. Thank you.

DIOGO: Thank you very much, Professor Diamond. Very inspiring, very provocative talk. We have many questions from the audience, but I want to begin with one of my own. In your book "Guns, Germs and Steel," you chose three words for the title, when you do this sweeping account of our past. If you were to write a book about the future, long-term future, which three words would you choose?

JARED: That's a good question, and especially an appropriate question for me as an author. It's true that my book "Guns, Germs, and Steel..." The title was those three words, "guns," "germs" and "steel", and it was my wife Marie, in whose study I'm sitting there, was my wife Marie who thought of the title. What would be the three-word title for my next book? The title would be: "Sustainable, sustainable, sustainable." By that I mean that the world has to get on to a sustainable course. The world is now on an unsustainable course. We are consuming resources faster than those resources are renewing themselves, and so we need a sustainable world. But if you want a three-word title, my three-word title will be "sustainable, sustainable, sustainable."

DIOGO: Excellent. Questions from the audience: is our global system of governance up to the challenge of tackling complex issues such as climate change and inequality? And, if not, how could an adequate level of international cooperation be achieved? You are optimistic about that, but how do you go about achieving that?

JARED: Is our global system of government up to the task of solving our major problems today? Yes, it is because our global system of government already has a successful track record. Think of the difficult major problems affecting the whole world that our global system of government already has solved. Smallpox - the deadliest disease of human history, the world succeeded in eliminating smallpox, the World Health Organization organized campaigns to eliminate smallpox all around the world, and that was difficult because the last country that had smallpox was the African country of Somalia. It is not easy to cure health problems in Somalia, but the world campaign to eliminate smallpox succeeding in the last case, was in Somalia. This is a campaign that was successful. One of the world's worst diseases of livestock rinderpest, there was cooperation between Europe, Asia and Africa to eliminate rinderpest, the most serious disease of cattle. Or the damage to the ozone layer caused by chlorofluorocarbons, the world collaborated to get chlorofluorocarbons out of production and out of the atmosphere. The world already eliminated chlorofluorocarbons; the world already reached agreement on eliminating coastal economic zones. That was difficult because neighboring countries have economic zones that overlap, but the world succeeded in delineating coastal economic zones and the world has also succeeded in achieving a framework for managing the open oceans that will eventually make deep sea mining into a world framework. My answer to your question is the world already has a framework having solved difficult problems such as the ozone layer, smallpox, and rinderpest. Therefore again, I'm cautiously optimistic that the world having solved these difficult problems can also solve further difficult problems of COVID, climate change, resource depletion and inequality.

DIOGO: And how optimistic are you about future technological developments? We know that technology can be seen as a path for a less sustainable future, but also for a more sustainable future. You have companies like Tesla that try to make sustainable transportation, for instance. Do you see yourself as a technological optimistic or technological pessimist?

JARED: I am a technological neutralist. By that I mean that technology is morally neutral. technology can do good and technology can do harm. Technology has brought us cures for many diseases. It has brought us vaccines. Test technology also brought us the atomic bomb, it brought us cyanide and brought us the ovens of Auschwitz. Technology can do either good or harm. Today, technology is doing both good and harm. The burning fossil fuel is the cause of climate change, but technology is also developing new methods for producing energy. For example, windmills at the time of the Gulf oil crisis of something like 40 years ago, in the United States, I remember, American gas stations running out of gas, and so the United States government embarked on a crash program of supporting the development of windmills. The US government put a lot of money into developing windmills, we developed really super duper windmills. The US government then lost interest in windmills, but those American super duper windmills are now the windmills that are producing 20% of the energy of Denmark, Spain and Germany. There is a way. There is an example of technology helping us, but technology can also damage us and so the challenge that we face is to get the benefits out of technology while avoiding getting the harm out of technology.

DIOGO: Another question. Where are you right now in relation to the effects of ideas versus environment in human development? Your books put a lot of weight on environmental factors, but you write as someone who believes in the power of ideas to change minds and change the future of civilizations. How do you put your work in relationship with people who are advocates of the power of ideas, such as John McCluskey or David Dodge, who prefer to use ideas more than environmental differences to explain why civilizations had different trajectories?

JARED: The reason that I'm smiling in response to your question is that the United States had an election last week and that election was a confrontation of ideas. Different Americans have different ideas, and while I have written about the role of geography and the role of the environment, I would be the last person to deny the importance of ideas. Both ideas and the environment are important. Let me make a comparison. Suppose a newly-married couple comes to you and ask you what is more important for a happy marriage. Agreement about sex or agreement about money?

When a newly-married couple asked you that question, you know that couple is going to get divorced within a year because they're being so stupid. Both sex, money, religion, politics, children and in-laws are important for a happy marriage and similarly for understanding history. Ideas are important for understanding history, the environment is important for understanding history. In Brazil, you know that you have a very different environment up north in Brazil from the environment South in Brazil, and so the environment is important within Brazil. Just think of countries within the same environment and different ideas have had different consequences.

Germany, one country, one environment was divided in 1945 by the line between East and West Germany. East Germans and West Germans had different ideas about how to govern their country, with the result that West Germany became rich and East Germany remained poor. Or North and South Korea, North and South Koreans have very different ideas about how to organize their system of government. North and South Korea are in the same environment, and yet those different ideas mean that South Korea is one of the richest countries in the world, and North Korea is one of the poorest countries in the world. This illustrates then that both ideas and the environment are important. Just as both sex and money are important to conducting a happy marriage.

DIOGO: Very good answer. Another question from the audience. What competencies are essential for current governments to be able to deal with the great contemporary challenges?

JARED: For governments to deal with the great contemporary challenges... When I think of what so many governments sadly lack, and what they need to in order to overcome the great contemporary challenges, these are things that I wrote about in my books, in my recent book "Upheaval": what are the things that people need to overcome crises and one of the things that governments need to overcome crisis. Just as I mentioned that there are a dozen factors that you need to have a happy marriage. In my book "Upheaval", I also discussed the dozen factors that a person needs to resolve a personal crisis and the dozen factors that the country needs to resolve a national crisis. In a personal crisis, if your marriage has broken down, or if you've been fired from your job, or if a beloved relative has died and you have to figure out how to conduct your life better, you know that one thing essential is honesty. If you are not honest about yourself, and if you're not honest about the world, you're not going to solve your personal problems and you're not going to solve the world's problems.

There are governments that are outstandingly dishonest and there are governments that are honest and there are governments that started dishonest and became honest. For example, in December, when COVID emerged in China, the Chinese government at first denied COVID. That's dishonesty. As people began dying in China, in January, the Chinese government became honest and acknowledged COVID. So honesty is important. Another thing that's essential for countries to solve their problems is compromise and talking with each other, reaching agreements in every country. In Brazil, different people have different ideas. In the United States, different people have different ideas. In our recent election, it turned out that 49% of Americans have different ideas from the other 51% of Americans. We have two big political parties, the Republican Party and the Democratic Party, and sadly within the last decade or two there has been less and less compromise within the United States. Less compromise between our political parties. But also less compromise within our political parties, there has been polarization within the Republican Party and polarization within the Democratic Party. So, an essential thing for countries to solve their problems is honesty. Honesty is deficient, in some segments of the United States and I'm sure that you can think of examples of honesty being deficient in some segments of Brazil. Similarly essential for solving the problems of the United States and of China over all the countries is compromise and I'm sure you can also think of examples within Brazil, where Brazilians have different ideas, but it's necessary to have compromise between Brazilians with different ideas in order to solve Brazil's problems.

DIOGO: Very good. Going back to technology. Much of the technology used for people to farm efficiently or for more sustainable manufacture is freely available. Shouldn't we expect there to be more import of those technological ideas into different countries? If so, why is there so little?

JARED: That is a paradox, or it seems to be a paradox. Yes, technology is available all around the world. You and I are now talking to each other. We are 10,000 kilometers apart. But we are talking to each other thanks to technology and the technology that enables you and me to talk to each other is also available in Bangladesh and it's available in Bolivia and it's available in Somalia. Why is technology not helping Bolivia, as well as Brazil, become rich? You know the differences between Bolivia and Brazil. Bolivia and Brazil have different environments. Many parts of Brazil are a good environment for growing soybeans and for growing cattle. Much of Bolivia is not a good environment for growing soybeans and for growing cattle, and so Brazil is more successful at growing in and exporting cattle and soybeans than is Bolivia. There were also different levels of education. Brazil has a much more highly developed system of higher education than does Bolivia. There were also differences in wealth, differences in existing technology. Brazil is a richer country than Bolivia. Bolivia is, I believe, the poorest country in South America. The country with the lowest average per capita income and therefore yes, it's true that cell phones are available both in Brazil and in Bolivia, and computers and Zoom technology are available both in Brazil and in Bolivia. But because Brazil is richer than Bolivia, many more Brazilians, a higher percentage of Brazilians have access to cell phones and to computers and to Zoom than do Bolivians. In short, yes, technology in theory is available to spread all around the world, but because different countries have different environments and because different countries have different existing technologies and because different countries have different educational levels, the same technology is not equally available all around the world. It's not equally available to Brazil and to Bolivia, and it's not equally available to the United States and to North Korea.

DIOGO:Jared, you are a masterful storyteller. But there are some stories that are harder to tell than others. Stories that you have of great people, usually great men, are easier to tell than stories that come from civil society, from emergent orders. What are their stories that we should be making more of an effort to be able to tell?

JARED: That's a good question. Big question. What are the stories that we should be making more of an effort to tell? There are so many stories, but I would begin, the stories that we should tell are the stories of history. We can learn from history. Everything has been tried in history. Governments have tried everything and some things have worked well and some things have worked badly. We can learn from history. History is a series of lessons that have been carried out. Just as biographies: we can learn from the biographies of people. Some people have done small things, some people have done stupid things, we can learn from the biographies of people. Similarly, we can learn from the biographies of countries, we can learn from history, and therefore when you ask me what stories should the world tell… There are many stories, but perhaps in the first line, would come the stories of history, the things that countries have done well in the past and the things that countries have done badly in the past so that we can repeat the good things and we can avoid repeating the bad things.

DIOGO: How confident are you about countries around the world actually learning lessons from the current pandemic? Do you think that we have the risk of actually not learning the lessons of "Professor COVID", as you called it?

JARED: Of course we run the risk of not learning from Professor COVID. We have the possibility of learning from Professor COVID, just as when I teach my undergraduate students at University of California. Some of my students learn from what I say and do well on exams and some of my students do not learn from what I say and do not do well on exams. How do I rate the chances that the world will learn and will master COVID? I'm a cautious optimist. I'm not a pessimist, but I say that I'm a cautious optimist. By that I mean, I'm not saying that the problem of COVID is a simple problem, and of course we're going to solve the problem with COVID. I recognize that it's a difficult problem, but it's a problem that we have caused ourselves. Because we have caused the problem, we have the potential for solving the problem. If you ask me to name the odds, I would estimate the odds as 51% that we will solve COVID, climate change and resource depletion, and I rate the odds as only 49% that we will fail to solve COVID, climate change and resource depletion. I'm a cautious optimist. Basically, I'm a cautious optimist because we humans are causing our problems. It's not that the problems of the world are because there is an asteroid in outer space that's hurtling towards us, like the asteroid that exterminated the dinosaurs, an asteroid that's unstoppable. Instead, our problems are stoppable. We are causing them, and because we are causing them, we can choose to stop causing them. Will we choose to stop causing them? I rate the chance of the 51% yes, that we will choose to stop causing them.

DIOGO: Professor, I think you've made us more cautious, but also more optimistic. We thank you for your time and hope that we learned from Professor COVID, but also that the world learns from Professor Jared Diamond. Thank you so much.

JARED:
Thank you.

Por que esse desafio é importante?

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Desinform

Collaborative platforms to bring about change

Jimmy Wales

Lecture presented on November 9th, 2021, at the 7th Public Sector Innovation Week: Dare to Transform.

Lecture presenter:
Diogo G. R. Costa

Abstract: The main topics covered in this lecture are central to contemporary discussions surrounding participation, communication, misinformation, fake news, censorship and freedom of speech. As ways to approach these topics, the lecturer talks about collaborative platforms and how they can inspire societies and governments to overcome contemporary challenges, finally, to end his discussion, Wales answers some popular questions from audience members.

Key words: participation, misinformation, fake news, censorship, freedom of expression, collaborative platforms.

DIOGO COSTA: Participation and collaboration, misinformation, fake news, censorship and freedom of expression. These are the subjects which are in the centre of the contemporary debates and also, at the heart of the debate that we will have now. In order to open the "Astro Stage", we will welcome Jimmy Wales, founder of Wikipedia, to talk about how collaborative platforms are able to inspire governments and societies to handle the contemporary dilemmas. Jimmy Wales is a futurist and technology leader, who is one of the prominent names in internet history as well as, the founder of Wikipedia and WT Social. Wales features on top lists, such as, the Times magazine's 100 most influential people and leaders of the World Economic Forum. With you, the Wikipedia founder, Jimmy Wales.

JIMMY WALES: Hello, thank you for having me. Great. Shall I just begin?

DIOGO: Yes, please. Go ahead.

JIMMY: Very good! So, I am going to talk tonight about the themes that were mentioned in the introduction. Thus, I have come up with this sort of amusing concept: "We are all humans, let's liberate the internet from the machines." Then, this is, in fact, to talk about the human side of how Wikipedia works. Besides that, how important it is to think about the algorithms that are running the internet and how they are contributing, positively or negatively.

Therefore, let's go back and discuss the very beginnings of Wikipedia. The origin of Wikipedia is, for all of us, to imagine a world in which every single person on the planet is given free access to the sum of all human knowledge. Hence, that is what we are doing at Wikipedia. So, we will see where we are today just to understand how far along we have come.

Thus, Wikipedia is seen every month by over one and a half billion unique devices. However, it does not necessarily mean one and a half billion people. Since, most people will see Wikipedia on their mobile device and also on their laptop computer. Anyway, one and a half billion devices is a lot. Furthermore, we think it is 700, 800, 900 million people, every month. So, there are over 50 million entries in Wikipedia, across 288 languages. But actually, there are a few more languages than that. When I look at these numbers, these are the languages that are really thoroughly launched. Besides that, we have new languages launching all the time, but some of them are quite small. So, I stick to the ones that have really gotten it rolling. Then, if you count all the languages, it's over 300 now.

Therefore, where did we start? It is a really fascinating thing. I mean, we live in an age of technology and algorithms, but of course, Wikipedia came from a very, very simple beginning. This is, in fact, what the homepage looked like on the very first day that I set up Wikipedia. When I installed the software. So, you can see the American flag logo. Which was only there for a short period of time. It just happened to be what I had on my computer at the time. It was just a file that happened to be there.

Then, I typed, as you can see: "Hello World". And those were the first words of Wikipedia. Moreover, this early software was so primitive. So, this is something that amazes you to hear about, even today. In the beginning, there were no real accounts. You could log in as anyone. This means that you could give yourself a username, but there were no passwords. Thus, anyone could pretend to be anyone else. And that was pretty crazy. Besides that, very little history was kept initially, only the most recent revisions, no more than that. But, we very quickly changed that, to hold all of the past revisions.

So, what was the result of that? Well, a lot of it was not a great idea. We launched this way because we did not have any money. Hence, I used an open-source Wiki software package called UseModWiki. Despite that, it was not terrible either. We were a close-knit community and nobody was really paying attention to us. It was just our little project.

Thus, we were just beginning to work and to think about how to build an encyclopedia, in a way that no one had ever done before. Then, we obviously introduced real passwords and etc. In addition to that, we started to improve the software, as we learned what we needed to make Wikipedia.

On the other hand, what still remains today is: deliberate vulnerability, which is part of the Wiki philosophy. So, it is very easy to participate in Wikipedia. You can go to over 99% of the pages in Wikipedia, click on edit and modify whatever you like. Although, obviously, lots of people are monitoring and watching. But we really like that ease of entry. It is very simple to get started in Wikipedia. Thus, we do not try to gatekeep, upfront. Instead, what we do is to focus on accountability.

In this sense, I have this analogy that I like to tell people, so you can think about the design issues for Wikipedia. Hence, what I invite you to do is to imagine that you have been asked to design a restaurant. A completely clean sheet design, you can design it any way you want. And, I do not just mean how it looks inside, but, the whole concept of how a restaurant works.

So, you might think to yourself: "Okay, well, in my restaurant, I would like to serve steak, because I like steaks. And if people are going to eat steak, then I know I have to give them knives. But, if there is one thing we know about people with knives, it is that they might stab each other. Something terrible might happen. Then you think: Okay, well, we can solve this problem by putting everybody in a cage. We will lock everybody away from everybody else. So, they cannot hurt each other."

However, this is obviously ridiculous. This is a silly idea. Because, if this is how we design everything in society, we would have a bad society, a society of mistrust. Where we would assume the worst of everyone, and we would not have openness, neither collaboration. Instead, we would just focus on designing for the bad people of the world. So, I do not think we should do that. I think we should primarily design for the good people. Therefore, this is really how Wikipedia has grown through the years.

Furthermore, there is a great deal of writing in Wikipedia about how Wikipedia works and what are all of the editorial guidelines and the rules, and so forth. Moreover, what really boils down to these five pillars, which emerged over time, in the first couple of years of Wikipedia, as being our core principles. First of all, Wikipedia is an encyclopedia. So, this means that Wikipedia is not a wide open, free speech forum. It is not a place to come and offer your opinions on everything in the world. It is a very specific type of reference work, which summarizes human knowledge.

Secondly, Wikipedia is written from a neutral point of view. This is one of the earliest things that I ever wrote about Wikipedia. So, the neutral point of view is non-negotiable. In fact, we would not have a huge discussion about whether we should be political, whether we should have a particular agenda, either for religion, against religion, for this, for that. That is not the Wikipedia way. The Wikipedia way is to try as hard as possible to be as neutral as we can. In other words, to present all sides of every question, in a fair way, so that the reader can learn, then understand, and make their own decisions.

A third pillar is that Wikipedia is freely licensed. Everything in Wikipedia is under a free license. So, this is similar to a free software, an open-source software, as you probably know. It means that you have the right to copy, to modify, to redistribute modified versions. I think you can do all of these things commercially or non commercially. Hence, that is really a core part of our philosophy. When people are contributing to Wikipedia, they are not just contributing to this one humanitarian project, they are contributing to a storehouse of knowledge that can be reused and repurposed in many, many different ways. In fact, we see this today, for instance, if you ask a question of Apple Siri, or Amazon Alexa, or even Google, very often, you will get an answer that is read directly from Wikipedia. So that is because we make them freely available to everyone to reuse as they see fit.

The fourth pillar is one that I think has been really crucial to helping us avoid a lot of the toxic nature of what goes on in most internet social sites. Therefore, Wikipedians should be respectful and civil. Hence, the original rule for this was "no personal attacks". The idea here is that we are trying to write an encyclopedia. Thus, if you want to yell at people or insult them, there are plenty of other places on the internet for that. But we (Wikipedia) have a mission here. We have a job: to create an encyclopedia, and we should be kind and respectful to each other. Besides that, we should think about what we are saying. Then, we should try to find the best in other people, in order to bring out the best in the encyclopedia.

Finally, perhaps the most surprising rule or the surprising pillar of Wikipedia, is "IAR." Which stands for "Ignore All Rules." This is a strange rule to have, but we do have it. And what does it mean? It does not mean chaos. It means you should not have to learn all the rules of Wikipedia, in order to be able to participate. If you see a way to make Wikipedia better, just do that, and do not worry too much about the rules. Thus, if you break a small rule, people should not yell at you. Instead, they should help you, teach you and bring you on board. The idea is: we should always remember that the rules are not nearly as important as the goal. Hence, the goal is for Wikipedia to be a great encyclopedia.

Moreover, we are very unusual as an organization. We are the fifth most popular website in the world. We have an enormous amount of traffic. Incredibly, as famous as any of the major internet brand names. And yet, we are a charity. We are a non-profit organization that I set up, a great many years ago. Now, Wikipedia is 20 years old and the Wikimedia foundation, I set up a couple of years later. Because of that, it actually has a huge impact on how we think about what we are doing, on how we make decisions and so forth. I will talk more about that when we move forward and talk about how things are going on the internet these days.

Therefore, we have a unique place in the culture. Wikipedia is a community site, we are a non-profit site. Besides that, we do not use algorithms, except in very minimal ways. And we really strive hard to be factual and to be neutral.

So, do we really live in a post-fact world? This is a saying that people have said the last few years. Thus, there has been a lot of concern about the rise of misinformation and disinformation. Let's examine that for a moment.

Inside Wikipedia, we are very passionate about facts. Accordingly, Wikipedia is spending an enormous amount of time debating about reliable sources, about what is true. But what is going on outside Wikipedia? Well, outside Wikipedia, we have seen something: the rise of the advertising-only business model. And, this has been incredibly destructive. It has been destructive for journalism, for social media. Thus, I am going to explain why. Once, I think it is a really important concept.

First of all, the thing we need to understand is that the business model always drives incentives. Whatever your business does to make money, that is going to determine what the business does. And this is true actually, for a non-profit or a for-profit. It doesn't really matter if it is a for-profit or non-profit. Whatever your business model is, that drives the incentive of the organization. Moreover, the advertising only social media wants you to click. It wants you addicted. It wants you outraged. They want to keep you on the site as long as possible. In other words, engagement is the buzzword. And this is quite bad. It leads to things like clickbait. We all know clickbait, it is the screaming headlines or pictures that cause you to click. Even though you are not necessarily that interested. But it is something very tempting to click. Sometimes, people ask me: "Why don't you put ads in Wikipedia? You could just put a few ads on Wikipedia and you would make so much money. You would not have to ask for donations''. But then I think, well, Wikipedia might end up looking like this:

Collaborative platforms to bring about change - *Jimmy Wales*
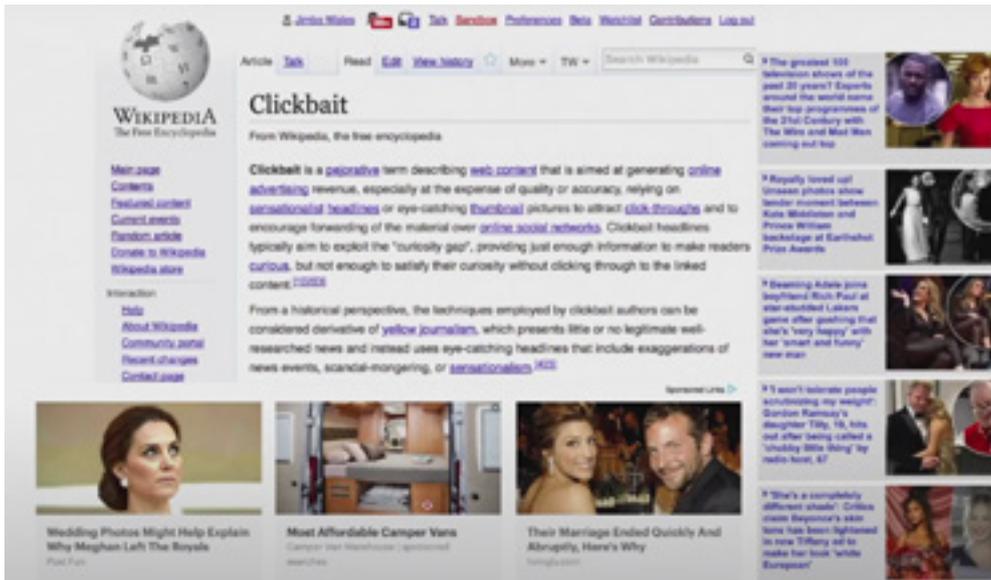
If you recognize this layout, it is the layout from MailOnline. Which is, by some measures, the number one most popular news site in the world. And it is full of clickbait. It is clickbait in the sense of all these headlines, which are all about celebrities and drama. Besides that, these are ads, very cheesy kinds of ads, that just get you to click. Therefore, I do not think anybody wants Wikipedia to end up like this. I think of Wikipedia as a temple for the mind. It is a place where you go to think, to learn, to reflect. So, we avoid this model. However, that model does not just make a sort of unpleasant website, it actually does something much more damaging. For instance, here is a picture, an absolutely gorgeous one.
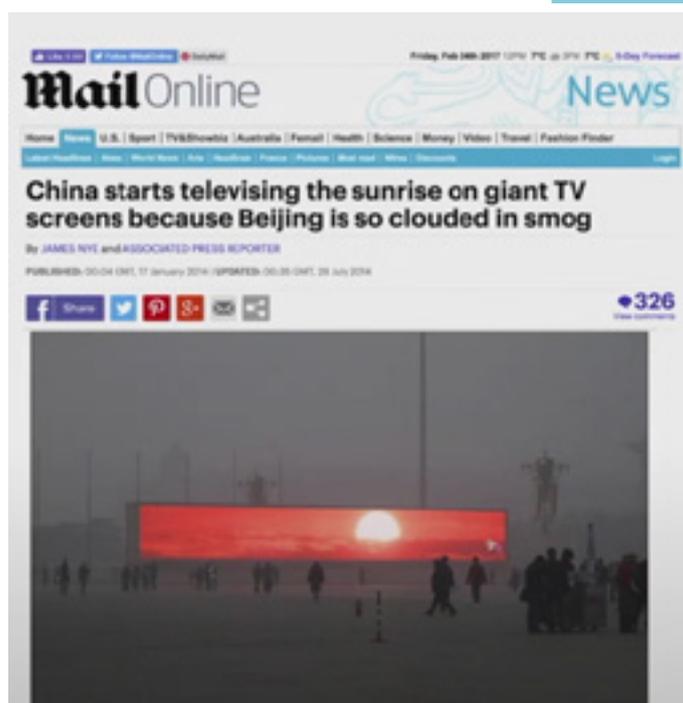
Thus, I think this is a really interesting picture. It is showing a sunrise in Beijing, on a giant television screen. Then, you can see, it is a very smoggy day, with a lot of pollution. And this image accompanies this news story in the MailOnline: "China starts televising the sunrise on giant TV screens because Beijing is so clouded in smog". Well, that is a really interesting human interest story. It tells a story about China. It tells a story about pollution. However, the only problem with this story is that it is completely not true. And, it has been widely debunked online: "No, people in China do not have to watch the sunset, or rather the sunrise, on a giant TV". This is not what the advertisement is about. It turns out that it is simply an advertising billboard saying: "Come to this part of China where we have beautiful sunrises, it is a great holiday". Therefore, it has nothing to do with smog. The advertisement is completely unrelated to the headline of the story. The Mail just made that up and it is just not a true story. But they got thousands of clicks. They were shared hundreds of times. And that model actually works. In a case like this, it is not legally a problem. Because there is no libel, there is no slur, it is just false. And that is it.

So, what is the solution? It has been assumed that advertising is the only possible model for social media. If everybody has to pay, too few people are on to make it genuinely social and influential. Hence, you can imagine, if you logged into a social site and you invited your friends, but everybody saw that they had to pay, so, they would not join it. Thus, there would not be enough people. Therefore, it would be kind of hard to have social media. Nevertheless, as we have seen, that model of advertising-only is a formula which leads to the destruction of important human values. Once it leads to clickbait and to addictive technologies. And it is just not right.

What we want is, when you do see that little banner that pops up and says: "Would you donate to Wikipedia?". We want you to think: "Wow, Wikipedia is good. Wikipedia is something that matters in my life. And I should chip in a little bit of money". So, people do it. Therefore, it is incredibly successful for us. We are able to get enough money to survive. In fact, we build our reserves every year. Because, we have a strong financial model which is really working.

Thus, I think we should think about this. It only takes a small fraction of people to pay, to keep the service going. Most people do not pay. And that is totally okay. The important thing to keep Wikipedia going, is a strong community of people who care about getting things right. As long as we have a healthy community, who are very passionate about making Wikipedia, as good as it possibly can be. Then, we know that enough people will donate to help us with our work, to keep it going. And that really, really is working for us.

Accordingly, the Wiki way tells us that resilience is key. Go back now and think about my analogy from before. Hence, Wiki works, not because bad people are not allowed to edit it. On the contrary, they are, at least for a little while, until they get themselves banned. So, it works because good people are given the tools to make things resilient. If we go back and think about that analogy of the steak knives, what happens in real life when someone attacks? Well, it does happen. It is very rare, but it does happen. And what do we do? Well, sometimes we see a brave person, who will jump up and tackle the bad guy, knock them down to save people and stop the attack. And someone is calling the police. Someone is calling an ambulance. And we solve the problem. However, sometimes it is a tragedy. We cannot do it perfectly. But in general, we accept that there is a small risk of something bad happening. For this reason, we build systems that are resilient, so that it is not a complete disaster and the bad people do not win, ultimately. Then, we can have healthy and happy societies that are also open societies. So, do not forget the parable of the steak knives. I believe it is incredibly important to think about how we build better societies, better open cultures. And also, to understand that we cannot make things perfect. But, we can actually build for health and build for resilience.

Furthermore, I have a new pilot project. I invite you to check it out. It is called: WT. Social. In which I am trying to apply these ideas to social networks. So, it is a site, in which we have no ads and no pay wall. Instead, we have voluntary payment. Thus, when you sign up for the site, we are going to ask you: "Would you like to pay?". If you do not want to pay, just say: "No, it is fine. I do not want to pay". That is fine too. But please, do pay. We could use the money. And the idea is to say, let's try a different strategy. In this strategy, we will not have an incentive to keep you on the site as much as possible. We will not have an incentive to just keep you addicted, so we can show you more ads. On the contrary, we have an incentive to build something meaningful in your life, to bring together good quality people, to think through ideas with you, to make your life better in various ways. Therefore, if we do a good job of that, then eventually you will say: "You know what? This is worthwhile. I am going to chip in a little bit of money to make this continue to happen".

Here is a great post that was just posted yesterday: "I just closed my Facebook account for good. I think it is getting crazy with Facebook and I needed something more private. I am really glad I found this platform and hoping I can make some new friends out here". Well, we are a small community, but we loved to see that. We would like to see more people coming in and saying: "I do not like what I am seeing out there on social media. I am going to try something new, something that is healthier". So hopefully, we can build something amazing.
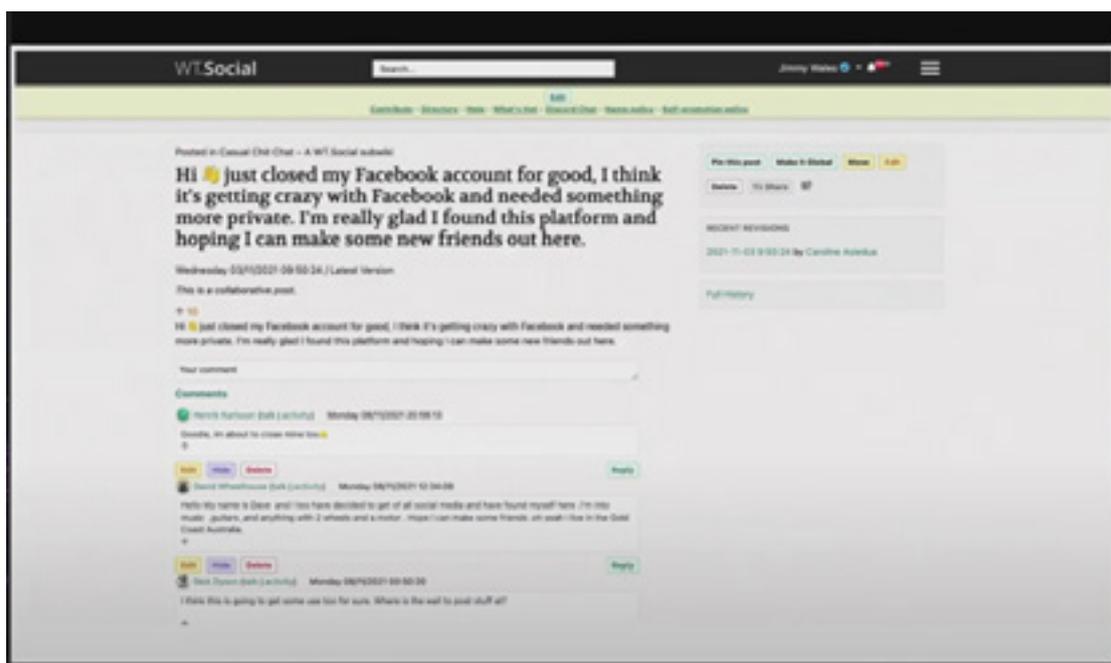
Well, thank you. That is the end of my prepared remarks. And then I believe we have got time for some questions.

I think the first question was: "Why don't we have more platforms like Wikipedia?". I think the answer is that the advertising model has been very easy. For a very long time, we have not had as good a payment layer on the internet as we might like. However, that has gotten better. Thus, we are seeing that newspapers, for example, are able to charge for content, which is very helpful. In other words, it is a newspaper that needs to ask people to subscribe. Again, they have different incentives from newspapers that simply want as many clicks as possible. So, I think that is helpful. Besides that, I am very interested to see what will come from what people are calling Web Three: payments enabled, web using, crypto Ethereum sort of contracts. That is a bubble right now. There is a lot of hype. But I think we are beginning to see some interesting ideas there. Then, they might lead us to a different set of business models for the web.

I always have this question: "What advice do I have for people who are interested in innovation?". Therefore, one of the things that I always talk about is the importance of being comfortable with failure. This is a fact about innovation: if you are trying to innovate, to do something different, something new, hence, many times it will not work, things will fail.

Accordingly, organizations need to think about resiliency. They need to think about how oftentimes, things will fail. So, they need to be comfortable with that. Moreover, there is a myth of entrepreneurship that comes about, because we see a handful of people like, Bill Gates or Elon Musk or someone. Hence, it seems that they never have had a project that failed. Besides that, at a young age, they came up with a brilliant idea and it went straight to the moon. Then, they became incredibly famous. But that is not the way it is, for most leaders. It is not the way it is, for most innovation. Most innovation involves trial and error. It involves making mistakes. Therefore, I think that people really need to get comfortable with that. For young people in particular, who are trying to do something innovative. This might be in a business context, as an entrepreneur, or even in governments. Since, it is very easy to follow the same path that everyone else is following. Because if you fail then, well, that is fine. Everybody fails, because the whole system is not working. On the other hand, it takes a little bit of courage to be ready to say: "No, let's try something different and it might not work. We may fail".

DIOGO: Thank you so much for answering a couple of popular questions. Well, another popular question within our platform is about how most social networks have incentives that favor polarization and agitation, over-learning and persuasion. "What can we do to make the online environment to be more like Wikipedia and less like Twitter?".

JIMMY: I think that it is very hard, given the current business models. So, I think that it is a real issue and we, as consumers and users, should be vocal. In fact, we should begin leaving these platforms, if they are not satisfying us. For instance, I use Twitter. But I do not use Facebook much anymore, I only go on there if I want to chat with some old friends with whom I am more connected on Facebook. However, as a daily matter, I just decided I do not find it helpful, nor pleasant.

On the other hand, Twitter, I find it very difficult to quit. Because, it is addictive and that is the problem with addictive technologies. Besides that, there are a lot of great people on Twitter. Yet, the problem is that the platform is really designed around conflict and it is not very helpful. Thus, for me, one of the things that I have done personally, I have installed a browser extension that limits my amount of time on certain websites each day. So, when I'm working, during a Workday, I only allow myself 10 minutes on Twitter. Because, I do need it for business reasons. I do post there. It is important to be there. Even so, I just think these are the kinds of things that we all have to start doing to say: "Look, we are going to limit our interaction with technologies that we are not finding helpful in our lives".

Moreover, I do not think there is anything top down that governments can do to fix this. I think it is partly human nature. But it is also an opportunity for innovation, for really thinking about different business models, different types of social platforms that are really optimized around healthy psychology and healthy ideas and all of that. I mean, even now, like I said, I still use Facebook to connect to old friends. I think it is really wonderful that you can see pictures of your friends'kids, that you have not seen in a long time, and all that kind of good stuff. Therefore, avoiding the bad pieces of those technologies is becoming incredibly important these days.

DIOGO: Another question from the audience, "What can we learn from the collaborative initiative Wikipedia to enhance services such as education and public health?"

JIMMY: Well, I think in many organizations, we still have a much too hierarchical view of how information should flow. Hence, there are the big bosses and the departments, so, the information flows down, down, down. In other words, it is not flat and open, in the same way that a Wiki is. Therefore, I do think that if we want collaboration and we want people to learn from each other, we have to recognize that the organization has to actually make some changes. For instance, to encourage that and to help it flourish, mixing people from different areas, not breaking things into such rigid hierarchies.

And also, having a culture that says: "Sometimes, we are having conversations in a positive way, and we do not have a specific objective. Namely, to improve the standing of our department or whatever. We are just trying to understand the world better, so that we, as an organization, can be more resilient". And so, this can be on education or on all kinds of government services. Hence, the idea is to say: "Look, we have a specific job we need to do, but actually these days we need to be very open to quality ideas coming from anywhere in the organization".

DIOGO: Jimmy, what is your thought on legislation about content removal right now? In Brazil, the Congress is discussing a content removal bill called, "Fake news law". Other countries have also moved towards allowing governments to remove content that is esteemed false or is against public interest, or even for the right to be forgotten. Thus, "What is your opinion on these kinds of policies?"

JIMMY: I think, in general, they are very dangerous. Although they sound good, people can understand that there is a problem. The real risk, it is very often, the governments themselves, who are putting forward false information and so forth. Hence, just giving the United States, as an example, because it is very famous. I do not think anyone would argue that we would be better off, if Donald Trump had been able to remove news stories that he did not like, about the election results. Despite being a rather dramatic example, it just shows how we can go in a really bad direction. However, that would not happen in the United States because of the First Amendment.

But of course, around the world, the laws can be much more flexible around freedom of expression. And I think it is a real problem. Therefore, in general, it is not something that I support. At the same time, I do think that some reforms are possible. Particularly, reforms around harassment, threats of violence, things like this. Which are not always handled in a timely manner. Besides that, most countries are not investing nearly enough money in pursuing cybercrime and fraud. And so, those are real problems that we can do something about. But I think it is very dangerous to allow governments to start deciding which ideas are true, which ideas are false. We know that normally, it does not end very well.

DIOGO: Thank you! Another question from the public: "How do we achieve more diversity and representativeness in a polarized environment and of fake profiles?"

JIMMY: I think it is an interesting and very hard question. For social networking platforms, it really depends on the context and the nature of what they are trying to do. For instance, if we think about what I call "old Facebook". Facebook was about connecting to your friends and you would have chats with them. So that is not an environment that is normally particularly diverse and, nor is that lack of diversity particularly a problem. Although that reflects a broader problem in society.

But that is a different story. Whereas, when we look at a more public facing broadcast. Whether it is on Facebook or typically on Twitter. There is this very complicated question around, how can they both keep an open, free speech environment, which they very much want to have. On the other hand, this is a lot harder than what we try to do at Wikipedia, where we say: "We are not an open, free speech environment. We are an encyclopedia". So, we need sources and so forth. But if you have got a little box on the screen that says: "What are you thinking?". So, type your random thoughts. Then, some people are going to have horrible thoughts. And some people are going to say abusive things. Hence, drawing that line is incredibly difficult.

Therefore, my solution to this, even though it is imperfect, it is what we are working on at WT.Social. Because, a top-down content moderation by a company is never going to scale very well. It is never going to be effective, since it is going to involve the company making decisions about things that are far too hard for them to even understand. And for me, the better example or the better idea is to put more power in the hands of the users. In other words, find the most trusted users. Then, give them the power to control the environment and trust them to do that. Because you cannot scale the problem. And that is really the Wiki way to say: "Look, the Wikimedia Foundation cannot decide what is true or not."

But we have a great community. Thus, we make people administrators, who are great people and they control what is happening. And that works reasonably well.

DIOGO: Another question from our platform is about "Institutional Sclerosis." Institutional Sclerosis happens when systems become less dynamic to favor special interests and preserve the status quo. Hence, "How do you prevent institutional sclerosis on Wikipedia?".

JIMMY: Well, in some ways we are subject to it. Therefore, this is something that we have to focus on. There is no magic answer to this. I think it is a very human problem. "Special interests" is not how I would frame it in Wikipedia, but the truth is: we grow rigid sometimes. Because, we have been doing things and they work really well for a long time. Even so, we know that we should remain open to new ideas. But it is hard.

In this sense, at times, people come in with a new idea. Oftentimes, they think it is a new idea. But, in fact, it is an old idea, which we have heard a million times. So, we know why it will not work. However, we have to really focus our minds and try hard to treat any new idea that comes in, with respect. And say: "Okay, look, we know what we are doing. We think this is working pretty well. Although we also believe we can improve". So we should listen. Since we have certain areas of Wikipedia, such as Wikipedia policy, where I think we do have a problem. For example, how many administrators do we have in the large language versions of Wikipedia? Well, it has become quite difficult to become an administrator. Because there are a lot of hurdles to get through. On the one hand, there are good reasons for that. On the other hand, it does mean that we are not making enough administrators. We know what our problem is and I think most Wikipedians would agree with that. But there are about 10 different possible solutions. Thus, we have a really hard time choosing between the 10 different solutions. So, that is our own version of an area where we know we need to change, yet we cannot decide which change to make. Then, we were a little bit paralyzed. But I think we will get through that.

Therefore, it is the kind of thing that I think every organization - whether it is a formal organization, like a company or a non-profit, or an informal organization, like the Wikipedia community - still has to face these issues. Namely, you can become too entrenched in doing things that you have always done. Thus, you will miss opportunities to improve.

DIOGO: "Do you know examples of public organizations or political parties that have used the Wiki model to success?"

JIMMY: I have heard a few examples. I mean, I do know that there are efforts, in several different political parties, mostly at the local level, that I have seen to use Wikis in their work. For instance, to work on policy papers, to hash out strategies, things like that. That is really mainly using it as a software tool. More than really being a completely open kind of Wiki.

Wiki is a great tool for making an encyclopedia. It is a great tool for some other things. But it is not a great tool for everything. However, I think some of the Wiki philosophy, for instance, the idea of openness, of being ready to hear a great idea from a surprising source, I think that is really valuable. Hence, a lot of successful political parties need to do that. Because, very often, it can be the thing that a political party loses over and over again. Since they cannot change their ways. In other words, they have got a certain set of policies, which are outdated.

Although the intentions are good, they are not meeting the needs of the people who are voters. Then, they do not get elected. So, they need to really break out of that, open their minds and listen to the voters. On that account, the political parties should think about how, given the values that they believe in, what are the policies that they need, and what are the policies that the voters need?

Thus, that is why we do not always do very well in political parties.

DIOGO: We have a question about voluntary payment. "Do you think that we need more platforms where people pay for it? And if so, how do we achieve that instead of relying on ads?"

JIMMY: I do not have anything against advertising as a business model. Except, when it becomes the only business model. Particularly, for journalism. It is very unhealthy. However, we do see the rise of new payment models. A lot of newspapers are finding that people are willing to pay. I think in part, their willingness to pay has not changed. It is just that, their ability to pay has gotten a lot easier. I mean, it used to be much harder to type all your credit card information into a form. Nowadays, people use various services to manage that. Thus, it is just one click on the mobile and, your browser fills in your credit card details. Since, the payment mechanisms have gotten easier, we are able to get people to pay for valuable content. And I think that model could extend beyond just news. There are a lot of other areas and opportunities for people to have "paid for services" that are valuable to them. Although I think we are not there yet. I think we are on a path to get there. But it's going to take some time.

DIOGO: You have mentioned crypto technology as something that we should maybe look forward to in the online environment. Thus, "Have you seen any concrete steps with which crypto has been used to make healthy environments on the internet?"

JIMMY: Not yet. I think it is still very early days in crypto. Unfortunately, because of the speculative boom, that is mainly what is in the news. Of course, there is nothing wrong with covering that in the news. It is very interesting and a bit crazy. However, I think what is more interesting about this idea is that you do not have a payment layer really integrated into the platforms. So, people use MetaMask, where they can connect to websites and send money immediately, in a very convenient way. Except, it is only convenient after you have set a MetaMask and you further buy cryptocurrency. Hence, it is not that trivial, after all. Therefore, I think we are seeing the beginnings of this technology working into what I would say is a payment lander for the web.

Moreover, that might end up not being for the famous cryptocurrencies, like Ethereum and Bitcoin. Instead, we might actually end up using that same type of technology for US Dollars, or Brazilian Real. In other words, our traditional currencies may become more digitized in a way that makes payments much more straightforward online. Though I think this is looking out five or ten years. Besides that, there is a lot that can go wrong and I am not sure about it. But it is an area that I am watching. Because I think it is very interesting.

DIOGO: "What kind of subjects do you think that Wikipedia is not well-designed for?"

JIMMY: Well, Wikipedia is designed to be an encyclopedia. So, we are looking for reliable sources. We are looking for mainly proven facts. However, what we see at Fandom, which is my for-profit Wiki company – I did not talk about it tonight, but I can tell you quickly. It is the number 20 website online. Then, in there, we see wikis being used, in pop culture and in gaming, in a much more casual way. People write about, summarize what happened in the TV show. Besides that, there are no news sources, no journal articles and no academic sources. Instead, people watch the shows and they write down what happened. And then they run about the characters and so forth. It is more casual and it does work there. Even though that would not work for Wikipedia.

Because Wikipedia really needs sources. So, there are a lot of things. Another example: I love to cook. But, in Wikipedia, in fact, I have not seen any really successful recipes. On the other hand, we have got a few at Fandom. Because, I think, somehow that is harder to collaborate on. If you are going to change the recipe, that is very subjective. In addition to that, you have to cook it and see if it works, and so on and so forth.

So, I think there are certain areas where collaboration is easier and certain areas where collaboration is much harder.

DIOGO: "How different do you think Wikipedia would be, had it not been founded by you. If it had been founded by someone else? How dependent is Wikipedia on your personality and your management style?"

JIMMY: That is a really good question! I do not know. I mean, I like to think it is because of me. But I think it is because of the Wikipedia community. So, I think there are a lot of people out there, who share the same kind of idea as us. In other words, we want good quality information. We do not want to be told what to think. We want to examine issues from all sides. And, we want to be thorough. Although, that is my style, it is not just me, it's a lot of people. We did make early decisions at Wikipedia, to say, a neutral point of view is really important. We could have gone in a different direction and ended up in a different place. I do not know. It is hard to really know.

DIOGO: "Is there any other language where the community is especially good at Wikipedia, and stands out?"

JIMMY: We are in hundreds of languages. So, there are a lot of really great languages. Obviously, German Wikipedia is quite large and quite thorough. Hence, it has a reputation for being quite serious. I know that Portuguese Wikipedia faces similar questions, but maybe slightly more than English. Then, of course, there is British English, American English, Indian English and other little variations in English, all around the world. Besides that, although I cannot speak Portuguese, I understand that Brazilian Portuguese and European Portuguese are also different, but similar. Thus, sometimes people fight about that, which is not necessary. That is an interesting thing. Despite that, what we see around the world is that there is no monopoly in any language on thoughtful people. Because thoughtful people, working hard to get it right, is really the core for all of these things.

DIOGO: Some people on the internet believe that pseudonyms are very important for a new future. "Do you think that pseudonyms play an important role on Wikipedia?"

JIMMY: Indeed, they do! However, it is important to highlight that pseudonyms are different from just completely random anonymity Since with pseudonyms, over time, people build a reputation. For instance, if you are in English Wikipedia, you may not know New York Brad's real name. But you know that Brad is incredibly good at being a Wikipedian. He is incredibly thoughtful and a real leader in the community. Because New York Brad has generated that reputation over time. Hence, it is not really important to know the real name of a person, if you see their behavior on a day in and day out basis. So that works really well for us. Besides that, another function that pseudonyms play for us is that people can separate aspects of their life, as they wish to. Sometimes it is a really serious matter.

Namely, if you are a Wikipedia editor in an authoritarian society, you may find it helpful, for example, if you want to edit about politics in your own country. Even in a neutral way, it is important to disconnect a little bit from your real-world identity. Because you could get into trouble. Even though you are not doing anything illegal, you may find pressure. Then in other sillier cases, it is interesting as well, to have a pseudonym. I always give the example of, maybe there is a very serious academic professor, who is also a huge fan of Britney Spears. Then, he wants to write about Britney Spears without his work colleagues knowing about it. And that is okay too.

DIOGO: Someone is asking about the impact that Sci-Fi has had on you. Thus, "Have any of your ideas came from Isaack Asimov's *Foundation series*? Are there any other books which have influenced you?"

JIMMY: It is a great question! I did read the Foundation series. Most of it, I think it is a trilogy, but with more after that. Hence, I think I read four books. Even though I was aware of it, they were not a direct inspiration. A similar question would be, Hitchhiker's Guide to the Galaxy, which has some really funny ideas about a galactic encyclopedia, which is edited by all kinds of people. However, there was no direct inspiration nor a direct thought. But I assume it was somewhere deep in my mind, in some small way. I do not know.

DIOGO: "What do you see as the main threats for Wikipedia?"

JIMMY: Well, one of the things I am concerned about these days is as we see governments beginning to react to the poor job that social media has done around moderation.

Therefore, we will see legislation passed to regulate social media. Which will accidentally impact Wikipedia and make our model difficult to continue with. I mean, I do not think we would want to see a world in which, suddenly, the Wikimedia Foundation is responsible for everything that people write in Wikipedia. Because, then, we can no longer have volunteer administrators. And also, it will begin to destroy our volunteer ethos. In other words, we would have to have different models. So, I think that would be incredibly unhealthy. Hence, I am hoping that, as we move forward in a lot of places, the most important thing is that governments just slow down a little bit and do not react to the populist wave of the moment. Moreover, I hope that they really think through any kind of regulation as to how it might impact all the real parts of the internet, the community spaces that are not part of the big tech hegemony.

DIOGO: Jimmy, our time is almost over. But we still have one last question. So, "Wikipedia has changed the world for the past 20 years. How do you see Wikipedia, 20 years from now, in the future?"

JIMMY: I think in many ways, Wikipedia will be very similar in 20 years. Just as it is similar today, although different, from 20 years ago. We are happy with the model. So, we are not going to turn into TikTok and have streaming videos or that sort of thing. We will remain an encyclopedia and we will remain community driven. I think editing will become easier as the tools become better.

Besides that, I think support from volunteers should become better as we begin to harness technology, to help the volunteers find areas that need work and automate certain things. But we are not thinking of automation, once we want to keep it really, really human. So, I think we will be very similar.

DIOGO: Thank you so much! Thank you for your insights and for being here with us, at the Innovation Week 2021.

JIMMY: Thank you!

Transforming the present for a fair, decentralized and cooperative tomorrow

Glen Weyl

Lecture presented on November 9th, 2021, at the 7th Public Sector Innovation Week: Dare to Transform.

Lecture presenter:
Juliana Oliveira Domingues

Abstract: The main topics covered in this lecture concern the use of social technologies and how they can be used to create a new decentralized social system. The panelist, Glen Weyl, also covers ways to develop a future that is more just, collaborative and decentralized. He also explores the possibilities for organizing markets and societies to increase prosperity and cooperation. Finally, Weyl shares some insights from his latest books: "Radical Markets: Uprooting Capitalism" and "Democracy for a Just Society."

Keywords: decentralization, cooperation, digital democracy, antitrust, social technologies

JULIANA: Good afternoon, everyone! How can the use of technologies create a new social system from decentralization? Ultimately, how do we create a more just, decentralized and cooperative future? In Glen Weyl's lecture, we will explore the possibilities of market and society organization, in order to increase prosperity and cooperation.

Glen Weyl is the founder of the RadicalXChange Foundation. He is the specialist in political economy and social technologies of the technology board of Microsoft. His work is oriented towards imagining, building and communicating a plural future of social technologies, which is more faithful to our lives and more committed to diversity. Besides that, he also focuses on pointing out possible paths for these profound changes from social technologies and market mechanisms, aiming to develop a richer and more egalitarian society. Therefore, Glen will share with us insights from his last books, among them, the most recent: "Radical Markets Uprooting Capitalism" and "Democracy for a Just Society."

GLEN: It is an honor to be here with you all. And it has been an honor to cooperate with you over the last years, trying to imagine a better future together. Thus, that is what I want to talk about today. One of my favorite quotes is from Albert Einstein in 1932, just ahead of the great disarmament conference of that year.

He wrote that: "What the inventive genius of mankind bestowed upon us in the last hundred years could have made human life carefree and happy if the development of the organizing power of man had been able to keep pace with his technical advances. As it is, the hardly bought achievements of the machine age in the hands of our generation are as dangerous as a razor in the hands of a 3 year-old child."

Therefore, I think that what Einstein inspires us to consider is that our technologies, for example, our communication technologies have come so far. Accordingly, we used to write on the walls of caves. After that, we had printing presses. Then, we were able to hear each other's voices over long distances with the telephone. And nowadays, we can see each other with a television in both ways with video conferencing. However, the basic tools that we use to organize ourselves, namely, the dynamics of representative democracy, voting money, et cetera, really have not changed much over time. Despite that, I think we have the potential to transform those fundamentally, in ways that are as much true to the texture of how we interact in small groups as we have done with our ways of communicating at scale. In other words, we have gone from very primitive ways, just the most basic communication of information in text, to these rich forms of communication.

For instance, we are doing it right now, over this video conference that lets me reach you from halfway around the world in Seattle, Washington. Furthermore, let me explain what I am saying in a broader way. Capitalism is optimized for a particular set of circumstances, which are called decreasing returns. These are contexts in which the more people are involved in something, the more they crowd each other out, the more they fill up a space, so, the less each additional person is able to add.

Let me give one example of this. These circumstances make sense in a factory when you have got a fixed space and you put more and more people in and it crowds it up.

But capitalism is not optimized for a context of increasing returns or what you might call exponential technology. Since these are things where the more people are involved, the larger the scale, the more powerful the system is. Cities are a classic example of this. The reason why São Paulo has about 30 million people is that everyone is able to benefit from those interactions. You are able to provide more services to more people at lower costs by having people together. Hence, the fundamental problem is that, in a context of decreasing returns, you can pay out wages to all the workers for their incremental contribution, for what they are adding and still have something left over for profit. However, when you have increasing returns, if you try to pay everyone their marginal contribution, the amount that they are adding, you would go bankrupt, you would run a loss. You cannot do that in a capitalist system.

In this sense, you cannot have the idea that capitalism is meant to promote the notion of economic efficiency and also have the power of exponential technologies. You have to support and optimize those using different types of systems. Moreover, another problem is that everything that creates modernity, both the benefits and the problems with it, come from these exponential technologies, these self-reinforcing increasing returns processes.

Whether it be the initial power of mass production which inspired Adam Smith's wealth of nation, or the modern possibilities of network technologies. And of course, the dark sides of both of those. For instance, the ways in which the power of production is running out of control and destroying the planet. Or even, the ways in which our networks are running out of control, creating misinformation and undermining our ability to govern ourselves.

Having this in mind, consequently, we need to come up with new approaches, which are different from standard capitalist organizations. Instead, they are optimized to manage these exponential technologies, these increasing returns processes. And I want to give you a couple of examples of things that do that. Namely, this is joint work with Vitalik and the founder of Ethereum, Zoe Hitzing, who is a poet, philosopher and economist at Harvard, it is called Quadratic Finance.

The idea is, rather than funding new ventures, as you would normally do by just putting in funds - then, the amount which the venture gets is the sum of the funds contributed. Instead, there is some pool provided by a philanthropist, by a platform or by a government that matches those individual contributions. Therefore, the total amount received by the venture is not the sum of the contributions, but the sum square of the sum of the square roots.

It means that we match small contributions more than large ones, contributions to causes with many individual contributors more than to those with few individual contributors. Hence, this basic principle is actually pretty familiar. For example, in the city of New York, you get a match on any contribution you make to a political candidate, six for one up to $100, as long as there are another 999 people making contributions.

Of course, those numbers are arbitrary. In fact, the right version of this can be derived from this formula, using some basic economic logic, based on the principle of free-writing. For instance, if you are a small part of a big public good, you are not going to take into account the full value. Thus, you are going to contribute much less than would be ideal.

Therefore, what this formula does is: we are going to match you inversely proportional to what a share of the total value you are. This means that, if you are a very small fraction, a very small contributor, you will get a very large match. On the other hand, if you are a bigger contributor, you will get a much smaller match. In this sense, nowadays, this procedure is being used around the world to fund everything, from media campaigns, supporting small businesses and open-source software, within the Ethereum ecosystem, as well. Moreover, it offers a really powerful way to re-imagine how something like crowdfunding or capitalism, as a whole can operate.

However, this raises a natural question. Namely, how do you fund those matching funds without undermining the dynamism of the economy? Thus, we know that taxes can undermine economic growth, but we need those taxes to support these public goods. Furthermore, this is the seed of another idea called Self-Assessed Licenses Sold at Auction or SALSA, which was first proposed by the University of Chicago economist, Arnold Harberger, who is famous for being the original Chicago boy.

However, before he did any of the sort of free market policies, usually associated with the Chilean experiment, he came up with this quite brilliant idea building on the work of Henry George and of the Chinese revolutionary Sun Yat-sen. Hence, he said:

"If you have to make a base for taxes, adopt criteria that determine the true economic value. The solution that the economist offers is simple and direct: allow the owner to declare the value himself, make values public, and oblige the owner to sell his property to any person willing to pay that declared value."

Therefore, this system is simple and creates incentives, even beyond those in existing markets, for assets to be employed in their most productive economic gifts, since it basically creates a system where we actually use taxes not to slow down the market, but to accelerate it. In other words, everything is made subject to the possibility of buyout and, in the process, taxes are raised.

So that they can support the development of cooperative public good enterprises. Effectively, what I think this is doing is to create a far more dynamic version of democracy, where we are constantly creating these new organizations, using Quadratic Funding.

Besides that, by using these taxes, they also sort of decay away. Accordingly, they are up for some continuous form of election all the time and also, being accountable to the public.

Although these ideas may sound radical or transformative, in fact, they are already starting to change our world. For instance, they have played a fundamental role in Taiwan, the most successful digital democracy in the world. Since, they have allowed people to participate in self-government and solutions to key problems. Thereby, these ideas have made Taiwan the most successful country in the world in dealing with everything, from COVID to misinformation.

Moreover, they have been used to allocate the budget of the state of Colorado, and also to allocate millions of dollars of funds for open-source software in the Ethereum ecosystem. Furthermore, we now have hundreds of groups around the world that are working on trying to implement these, including the extremely dynamic group in Brazil, led by Juliana (the lecture presenter). And yet, this was really just an example of one problem, and only the start of the process of developing transformative social technologies.

There are so many other problems that we know our existing institutions get wrong from the structure of social identity to the very institution of money. Once, they are thin and forget many of the important elements with which social systems should be built on. Besides that, our representation is rigid and based on predefined geographical boundaries. Furthermore, the way in which we do not account for the effects of our communication and other social signals on people, and how they impair the creation of social value.

Additionally, I think the fundamental reason we have antitheses has to do with the attitude that we have taken. Everybody knows that technology can advance hugely towards unimaginable limits. For instance, we went from machine intelligence systems just doing calculations to playing chess, to being able to identify images.

On top of that, we have this aspiration of technology eventually matching some of the flexibility of the human mind. Besides that, communication has gone from the most primitive ways of us representing things across distance and time, to us maybe being able to have even richer connections to each other using technology than we have in person.

Accordingly, I think we need to have a similar ambition for our social institutions. Everybody knows that in small groups, when we are interacting with each other, we have much richer connections, much richer ways of interacting than we do just using money or votes in some elections. That is the reason why people have this ideal of local democracy.

Despite that, I believe that we can get to a point where, just as we have done increasingly with our communication technologies, we can have as rich interaction with people very far apart, as we have in a local town hall democracy. Hence, in order to make that happen, we have to create a culture of radical social technology, which requires fundamental science. Thus, it demands that we take social science to be the foundation for justice transformative technology, as we take natural science to be. Moreover, it requires entrepreneurship and experiments like what is going on in the Ethereum ecosystem, to build tools which people can use to do this at scale. It also requires culture and imagination and ways that we can feel and live these things.

In this sense, one of my favorite examples is the latest iteration of civilization, the best-selling strategy game of all time, which incorporates Quadratic Voting, a cousin of Quadratic Funding, as the foundation for their diplomatic voting mechanics. Hence, millions of people every day are exposed to some of these tools just by playing games. It requires activism. In other words, it requires people to make these tools part of how they imagine the future of their government and also, what are they fighting for politically, beyond just the tired debates of the 20th century.

Accordingly, these tools should actually transform how we live democratically together, in order to get to a place of economic, social health, and political success, that a country like Taiwan has achieved. Furthermore, to make that happen, we need everyone involved. Since all of the talents you bring, whether you are someone who imagines, creates, whether you are someone who builds, whether you are someone who is politically engaged. Likewise, all of you have a role to play in helping us bring about the social technologies that we need for a successful 21st century.

JULIANA: Thank you, Glen! I really enjoy interacting with Glen. On several occasions, I had the opportunity to discuss his book. We had even started a group in São Paulo University, to debate his ideas, which allowed us to spread them considerably, including the concept of Quadratic Vote.

Now, we have the opportunity to interact with the audience. Before that, although I do not like to monopolize the speech, I think the timing is perfect to share with everyone how the chapters of the book were spread around the world, within the RadicalXChange movement. For instance, we had seen some work being done in Asia and Europe, as well. Thus, maybe Glen would like to also share with us, in this last year, with the Coronavirus, how these ideas were somehow discussed and applied.

GLEN: As I mentioned, Taiwan is the single most exciting and successful and comprehensive case. I think that is because they have faced some really difficult challenges. Namely, they are right next to China, feeling every day the threat of authoritarianism. Hence, they wanted to show an alternative.

Moreover, they had faced the onslaught of the pandemic before anyone else did. Therefore, in face of these threats, they have responded and adopted these new technologies. I think it is not as close to any problem for many people in the west. On the other hand, in the West, things have been slower, but we have had some great successes here as well. For instance, Danielle Allen, who is on the board of RadicalXchange, is running for governor of Massachusetts.

Besides that, right now, the state of Colorado has become a very successful laboratory for innovation, both in the private and the public sector using these ideas. Therefore, it is playing out everywhere from Finland to Brazil, from China to Columbia. So, we are very excited about the way in which these experiments are traveling. But, the most successful and the most complete success has been the experiments in Taiwan.

JULIANA: Glen, we have some questions here, which have been voted on. Hence, the first one is the most voted and it is very simple: "How to decentralize and be fair at the same time?"

GLEN: That is great! So, I think that the essence of this, to me, is to realize that robust decentralization always relies on moving beyond our simplest notions of decentralization. Thus, what do I mean by that? For instance, when the founders of the American Republic, the framers of the constitution, set up the country, they could have just said: "Oh, we want democracy".

Meaning, one person, one vote, et cetera. However, that is not what they did. The problem was, there were lots of divisions within the country, lots of different groups that needed to be protected, and also, there were minorities. Although they did not do things perfectly, since they oppressed African-Americans, for instance.

But they took into account the complexity of the different groups and how they had to relate to each other. In this sense, I think that, in order to maintain decentralization, and also to be fair, we need to take the sort of social network structure, the diversity and the different social groups which exist within our world.

Hence, we need to build that into the structure of how we do decentralization. And that is exactly what things like Quadratic Funding, does. In other words, they allow for the emergence of these social groups, so they can govern, collectively, and not just allow individuals to prosper. Thereby, they allow us to simultaneously have a very decentralized system, where everything comes from the bottom up, and yet, at the same time, we set rules that enable this kind of collective governance to create fairness and equality.

JULIANA: Perfect! We have several questions being forwarded. The next one was also extremely well voted. Here it follows: "What would be other forms of political representation, radically transformative, that would not be based on the distribution of people on the physical, political and administrative territory?"

GLEN: Well, I think right now, the electoral districts are usually set up on a geographical basis. Thus, within a particular region, you elect a representative. Sometimes there is a nation that has proportional representation. I actually forget which system Brazil has. But the problem is that it only makes sense when all the ways in which people relate to each other is about physical proximity.

Even if that was the case, it would be a little bit weird. Because often the divides of a district can be strangely aligned to actual geographic or linguistic aspects, or whatever are the things that make people feel close to each other. However, today there are so many other ways in which we relate to each other. Whether it be sexual minorities, racial groups, people interested in a particular topic, people who were part of a particular cryptocurrency community, et cetera.

Therefore, what we need, increasingly, is a way to use that full set of information, which comes out of our social networks, and not just our physical locality, to form effectively representative districts.

Thus, things like Quadratic Funding, and tools beyond them, will give us the power to recognize the real clusters of affinity, rather than just having representatives of some sort of relatively arbitrary historical or physical jurisdiction. To sum up, we can have representatives for all those different ways in which we are socially connected to each other and dig each other deeper and deeper into balkanized, small groups.

JULIANA: Perfect! There is another question for you. I believe I have never asked you this one. So, I am curious as well. We are living a very delicate moment, not just in Brazil, but all over the world. Hence, the question is the following. "Many democracies, nowadays, suffer from a lack of engagement of their population, who stop voting. This is something that also happens in Brazil. Then, how can the social technologies, which you mentioned, can help change this scenario?".

GLEN: Well, I think one thing we find is that people are very engaged with their social media. We, people, spend a huge amount of time on them. They spend a lot of time discussing politics. So, there is a lot of energy, devotion and engagement. However, it is directed in ways that do not actually have the right incentive structure, since they dig people deeper and deeper into whatever engages or focuses their attention most, rather than what serves the ability of the system to function, reach reasonable compromises, and to deliberate, and so forth.

Therefore, if we can just channel that energy, which already exists, towards purposes that actually serve the system, rather than just serving the ability of getting people addicted and focused on their phones; then we will make a huge amount of progress towards actually improving our political system. And that is precisely what they have done in Taiwan.

Accordingly, people are not spending more time engaging digitally in Taiwan. They are spending a similar amount of time. Nevertheless, they are spending it in these venues that actually lead them to solve problems rather than just to fight each other and dig each other deeper and deeper into balkanized, small groups.

JULIANA: Great, Glen! There are other questions coming up, and they are too many. So maybe, we are not going to be able to make all of them. Hence, there is an interesting question: "Platform Cooperativism can be an innovative alternative to a solidarity economy capitalism, in this future of innovations?".

GLEN: Absolutely! I think it is a very important step. I think we need to have a much broader understanding of what a cooperative is than we had in the past. In the past we thought of cooperatives as just being controlled by workers. But of course, consumers are crucial to the market. And increasingly, it is not just consumers, there are people in the supply chain. There are people who are just making comments on the platforms. There are much more complex sets of relationships. Thus, we need to learn how to allow for the self-governance of these systems, by the people who participate in them. In a way that is not as rigid as "the workers should own the factory" or something like that.

In this sense, that is exactly what is being enabled by some of these new tools. Therefore, I view the Platform Cooperative movement as very closely connected to what we are all working for in RadicalXChange. I do not think that new platforms should be created as cooperatives, although I think that this could be a great possibility. I actually think we can use antitrust as a lever to force existing firms with market power to operate more like cooperatives.

For instance, I know Juliana (the presenter of the lecture) and I have talked a lot about this. But I think we can use it as a remedy for market power in antitrust cases, by transforming the accountability structure. So that consumers, workers and those who firms have power over (that we found in investigations) get the capacity to participate. Accordingly, these tools are making that much more possible with much greater scale than was ever conceivable before.

JULIANA: Indeed, I am very familiar with the subjects concerning the use of antitrust law instruments and competition law. Since then, I have been researching the field and the possibilities we have today to fight the market power of large technology companies, obviously without killing innovation. On the contrary, what we want is to encourage an innovative environment. I would even quote what Glen said before, we should find the right remedy, in order to not kill the patient.

Once the promotion of innovation actually generates several positive externalities, for the consumers, the society and the economic development. Hence, the idea is precisely to work in the right measure to promote innovation. Moving forward to the next question. Therefore, we have questions here, which I would say, are legal-philosophical. In other words, one of the questions is: "What can be done to reverse the aggressive situation in our society?". Since here in Brazil, we have today a very big polarization. Even though I know that this is not something particular to our country. Thus, how would you answer this question?

GLEN: Well, I think that the key to it is creating the right incentives, the right environment that encourages this type of cooperation. The problem is that at present, if you think of the social media environment, everything is focused on serving people, content that is likely to focus their attention most. Hence, they are in a narrow group, or in a personalistic way, which they are likely to enjoy, rather than to present content that enables them to form coalitions and cooperation with other people. For instance, in Taiwan, they have a great system for deliberation (in English it is called Polis, they have a different name for it in Taiwan), where people can propose solutions to difficult problems.

Then, they use natural language processing and artificial intelligence type of tools, to summarize all this information into a few comments that people can read. Although that might sound complicated, if you think about what Wikipedia is doing: in Wikipedia thousands of people participate, yet they synthesize it into an article that anyone can read. In other words, you have a bunch of positions that represent different groups within the population.

Thus, individuals can come back and say: "Well, here is what I think is a potential resolution of this disagreement". Then, you get scored, not on just how many people like it, but on how many people from the different groups connect and have surprising consensus on that statement. So that creates a very strong incentive for people, as part of a conversation, to try to bring them together, rather than to drive them further apart. Therefore, those are the types of technologies that offer us the possibility to leverage the power of the environment, which we have right now, for cooperation and consensus, rather than for hatred and division. And at the same time, it recognizes the differences in perspective. It is not that we just wash away those differences or we are reasonable or whatever. But instead, we recognize our differences. And then, based on those differences, we find ways to cooperate.

JULIANA: Glen, we have here an important aspect, which I think it would be very useful to recapture. Although Glen is always very precise in his presentations, being able to communicate several ideas, we had just assumed that everyone in the audience would know Glen's book well. Furthermore, a big event was held in Detroit, about Glen's book, which I had the opportunity to participate in. In this event, many examples were given about tests related to the ideas in the book, which I recommend to everyone here.

Hence, there is someone in the audience who is asking about examples of Quadratic Vote, clear examples of when Quadratic Vote could be used. I have seen many examples, but I would like you to share them with our audience. Because I believe it is a very interesting subject, which we could even test here in Brazil, in different situations.

GLEN: Great! So, let me give you some of my favorite examples. Thus, in Colorado, in order to allocate the budget, they used Quadratic Voting among the legislators, in the Democratic Caucus, in the state legislature of Colorado. Therefore, the things that got the most Quadratic Votes received the most funding, or were included in the budget.

Another example is, Quadratic Funding can be used to support local media. We know that, on the one hand, if you just leave it to the market, we do not invest nearly enough in media that gives high quality journalism. But, on the other hand, we do not want the government to control the media either. Hence, Quadratic Funding provides a way to give public support to media that people want to support, that the public wants to support. Though, at the same time, it does not give the government the ability to dictate where those funds go.

One more application of Quadratic Voting, in practice, is this game which I had mentioned, Civilization. Thus, in that game, there are multiple civilizations and they are somehow competing. They are making diplomatic decisions about things that should go on in the world. So, each country earns what is called "Diplomatic Favor."

Then, they can use these to vote on the different decisions that the world's community makes, using Quadratic Voting. Accordingly, those were a few very different examples. Another example like that last one is in participatory art projects. This is being used in the UK to decide on which works of public art get created and what they look like, using Quadratic Voting, in a very famous gallery called, Further Fields.

JULIANA: Excellent! I think that those were great examples, very diverse ones. We have another question: "What are your affinities and disagreements with the Web Three Crowd?"

GLEN: That is a great question! I am a huge fan of the notion of the internet. Even though the internet does not have the capabilities that it needs right now, in order to allow for decentralization. Hence, we need a new set of capacities to make that possible. In this sense, I am in total agreement with the Web Three Crowd. However, I do not actually think that blockchains, as a technology, is a very powerful tool for achieving that goal. The problem is that blockchains are based on the notion of a sort of global open public ledger rather than on an intersecting network, like the original internet was based on, of different communities. The original whole notion of a network is that you have a bunch of communities connected to each other, then those connect to each other, and so forth.

But blockchain instead is based on a single global public fully available state. Therefore, that does not actually allow for a lot of the things we want to happen, to happen very well. For instance, in blockchain, everyone has some pseudonymous key, which they use to make monetary transactions or whatever. But, if you think of something like, an NFT.

What gives an NFT value is that it is a limited edition and some person, who you actually know, is making a commitment about. Moreover, in order to make this commitment, you have to post something on a press release or on Twitter or whatever, which is linked to the blockchain. The blockchain itself does not actually carry the value. Because the scarcity is created by that person making some statement about the value, or some institution making a statement of the value.

Accordingly, the best version of Web Three would be one in which that identity information was actually connected into the technology itself. So, it did not have to happen outside. Similarly, the current Web Three architecture does not actually allow things to, simultaneously, be cheap and decentralized. Either you go on a side chain or one of these inner services like Coinbase, if you want it to make a cheap transaction, or you do it on the public chain, where the transactions are really, really expensive. In other words, it does not actually allow for both decentralization and the sort of scale, which we need for these things to really work effectively.

That is why I believe Web Three is a great direction to think in, since it is really pushing things. But, ultimately, just like the internet, it will require public investment, cooperation between the university and the private sector and also governments all over the world, in order to build the architecture that we want. In this sense, that is how the Web came about. The decentralization of the original Web was not something that just came from a hacker, throwing something out there. But rather from a concerted set of investments by the US government and universities and a number of companies. Thus, I think we are going to need the same thing to make, to really realize, the vision of Web Three.

JULIANA: Great! We have other questions here. I will have to select one. Hence, "Do you see greater alignment with the crypto rationalist community?"

GLEN: The way I think about it is that there are the 20th century sort of ideologies, namely fascism, communism, that were sort of left behind. Furthermore, there is a new emerging spectrum that I see. Thus, we are actually hoping to organize a debate around this. Maybe, including some of the people that we have talked about. And I think one pawn in this debate is the sort of AI singularity people. The people who think that we are going to have some sort of artificial general intelligence, that will somehow plan the world, create a lot of wealth, give everyone a universal, basic income, etcetera. Therefore, Sam Altman is a good example of this type of a viewpoint. Then, there is a set of people who think that these technologies are going to lead to sort of a radical decentralization, where it is every individual for themselves. For instance, there is a book called "The Sovereign Individual" which biology often talks about that expresses this view.

Furthermore, I think the third view, which is the position I hold, is what I would call Digital Democracy or Digital Pluralism. This is a view in which the future we want is one that is neither a centrally planned AI thing, nor a fragmented, every individual for themselves vision. But instead, we have more and more diverse democratic intersecting communities. Accordingly, those communities have the capacity to both govern themselves and cooperate with other communities, in order to solve broader problems. For me, that is the vision of a true network. When Balaji talks about the network state, he does not usually have in mind a network. Once a network is made up of communities and those communities intersect in individuals, they intersect with each other to create greater structures. Thus, I believe that is the vision we want: a true network governance, a democratic network self-governance. Not a sort of individual, polarized, each on their own, nor a global structure from top down, like a lot of AI folks suggest.

JULIANA: Glen, you are going to end up answering some questions concerning transaction costs, as well. Thus, maybe, you could also give some good examples of how innovation and technology can help reduce transaction costs.

GLEN: "Transaction costs" is a quite vague term. Many times, what we mean by transaction costs is actually the information that we lack. Therefore, information technology is obviously one of the most powerful ways to transform what information is available and to whom. Besides that, transaction costs often mean the different ways in which ownership and property works, and the incentives that give us to lie or distort systems. Again, social technologies give us the capacity to transform those. Hence, if you bring together those two elements: changes to the information structure and changes to the kind of ownership and governance rights structure, in other words, our ability to participate in richer forms of collective governance; then I think that information technology is a tremendous foundation for transforming both of those things and allowing a new system of governance.

JULIANA: Glen, from the moment when there were changes in the US government, a new discussion has arisen. For instance, in front of the FTC. Moreover, some of the thoughts of your book, Radical Market, even communicate with those ideas, which have been attentively discussed nowadays in the academic field.

As if there is a denial of the past being tested in the present. Thus, taking this opportunity to have you here, I would like to ask you to comment on how this has been seen in the United States, since there is a great concern around those ideas, including the impacts they could generate in the creative process of innovation and technology development.

GLEN: I think it is indeed really remarkable how far we have come, in terms of antitrust thinking in just a few years, Juliana. Even when I talked to you, the ideas in the book, the ideas we were promoting seemed quite radical. However, they now actually seem, in some ways, quite mainstream, or even conservative within the antitrust thinking in the United States. Therefore, the notion that we would stop mergers to prevent new competitors. And that was very bold when the book was proposing it. But now, everyone seems to agree about this. For instance, horizontal shareholdings, it is very mainstream now.

Dealing with labor markets using antitrust tools, it is very mainstream now. Hence, I think we need to keep moving at this pace. I do not think we just have found the solutions. We need to keep innovating. Moreover, I think that the idea of getting past the division between antitrust that wants to block and break up and, on the other hand, the need to have scale, is absolutely critical. Furthermore, that is what some of these ideas about economic democracy and antitrust are capable of doing. Although they might still sound a little bold.

Now, I would predict, in a couple of years, they will be conventional wisdom. So, I hope that places like Brazil, which are creative and can be on the leading edge, will help push forward the frontiers and think about these.

JULIANA: Excellent! For those who do not know, I had the pleasure to win a prize here in Brazil, with Glen's ideas, related to the Labor Market, applied to Brazilian reality. Therefore, I would really like to hear from you, Glen. Because, indeed, two years ago, some of these ideas seemed much more radical than today. However, we have here a more general question, concerning artificial intelligence. If we regulate artificial intelligence, it would be necessary to reduce the influence of economic power over democracies and environmental sustainability.

GLEN: So, I think that AI is really not quite the right conception of the future of technology. AI drives us towards this notion of autonomous systems, which are trying to sort of imitate human capabilities. Hence, as I wrote recently in wired with Daron Acemoglu and Michael Jordan, a prominent economist and computer scientist. I think that, instead, what we should really focus on as the goal of our technologies is to enable people to cooperate in new ways and to enhance people's capabilities rather than to imitate or replace human capacities. Additionally, if we build technologies in that direction, we will have much greater chances not just of dealing with social or environmental issues, but whatever issues arise from those technologies operate.

JULIANA: Glen, I do not want to take much more of your precious time, but in order to close this amazing lecture, could you please comment on some of the effects of the relationship between economy and politics? In other words, how do you imagine the future of economic power in relation to political power? In addition to that, we could compare these aspects with the ideas of the book, Radical Markets.

GLEN: I think that right now, we are in a very delicate moment. People feel they are losing agency over their lives. They are also very worried about the concentration of power in technology companies and the way that this relates to the power of governments. So, they are trying to find a way past it. Besides that, we have the anti-vaccine, anti-lockdown protests, protests to the "Black Lives Matter", to the crypto movement. All of them are sort of reactions to these concentrations of power. Hence, those could lead to violence, could lead to social fragmentation, to chaos. Or, instead, they could lead us to come together. And for the people in positions of power to realize that this is not sustainable, therefore, they will have to reform. Accordingly, which of these choices gets made is in the hands of people in those positions of power.

Thus, I have the honor at Microsoft to speak to some of them. And, perhaps, you have the honor to speak to some of them in Brazil. Finally, I hope all of us can take this message, about the potential of future democracy, back to all the people we have the chance to offer options to.

JULIANA: Thank you very much! It was a great pleasure to be here with the founder of RadicalXChange who has also been doing wonderful work by spreading these ideas, which are deeply aligned to technological development. I hope we can meet soon, to keep discussing these topics and have the opportunity to participate in other Innovation Week events. Congratulations once more for your academic and professional work, and also for your commitment to these ideas. Thank you again for being here!

GLEN: Thank you very much!

Rationality:
how to inspire a balanced reflection?

Steven Pinker

Lecture presented on November 12, 2021, at the 7th Public Sector Innovation Week: Dare to Transform.

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Abstract: The main topics covered in this lecture concern some insights about his latest book and also about some powerful tools of reasoning, logic, critical thinking, probability, correlation and causality. Steven Pinker invites us to take advantage of the power of rationality, aiming to make better choices in our lives, to improve social justice and moral progress.

Keywords: rationality, logical reasoning, critical thinking, fake news, game theory

DIOGO: Good afternoon, folks! We live in an era in which there are so many innovative scientific and technological advances. Yet, why does rational thinking seem to be so lacking? At the same time, we managed to develop the COVID vaccine in 48 hours (the Moderna vaccine was developed in 48 hours, without the direct access to the virus, using only a digital file). But the humanity still faces so much difficulty in knowing how to converse and in being able to combine public discourse and freedom of expression with common sense and civility.

BRUNA: In the closure of this Innovation Week 2021, we will welcome Steven Pinker to share with us some insights of his latest book. We will talk about the powerful tools of rationality, logic, critical thinking, probability, correlation and causality.

DIOGO: Steven Pinker is a best-seller author and a Psychology Professor at Harvard University. His research is focused on language, cognition, social relations, rationality and human nature. Steven Pinker has been one of the most rational voices in public debates, encouraging healthy spaces for constructive discussions.

BRUNA: His most recent book is named "Rationality: What It Is, Why It Seems Scarce, Why It Matters". Thus, Pinker is closing this week's program explaining why we think in ways that make sense in our daily lives, but yet we do not use the powerful rationality tools, which our best thinkers discovered over the millennia. Welcome Steven Pinker.

STEVEN: Thank you so much. I think to talk about my new book, "Rationality: What it is, Why it Seems Scarce, Why It Matters", I should start by talking about human rationality. Thus, human rationality presents us with a puzzle. On the one hand, we are a highly rational species. We have discovered the origins of the universe. We have walked on the moon. We have uncovered the basis of life and mind. We have fought back against the horsemen of the apocalypse, scourges like war, whose death rate we have reduced.

We had also reduced famine, poverty and early death. However, at the same time, a majority of Americans, aged 18 to 24, think that astrology is "very" or "sort of scientific". Besides that, large proportions believe in conspiracy theories, such as that COVID vaccines contain microchips that Bill Gates is trying to inject into our bodies to monitor us. Or even that the American deep State contains a cabal of cannibalistic, Satan worshiping pedophiles, that Donald Trump will soon reveal. Moreover, people consume fake news, like "Obama signs Executive order banning the pledge of allegiance in schools nationwide". Or yet, this other one in which Yoko Ono said, "I had an affair with Hillary Clinton in the 1970s". In addition to that, many people believe in paranormal "woo-woo", including possession by the devil (42%), extra sensory perception (41%), ghosts and spirits (32%), witches (21%) and spiritual energy in mountains, trees and crystals (26%).

With this in mind, how do we account for both the presence of rationality in the human species and the fact that it appears to be so scarce? That is what I try to take up in the book. In this sense, if people can be rational, why does humanity seem to be losing its mind? Thus, there is not a simple explanation. So, I have adduced four distinct reasons. The first you can call "Motivated Reasoning". Namely, rationality is always in service of a goal. That goal is not necessarily objective truth.

Hence, "Motivated Reasoning" consists not in following logic wherever it takes you, but in deciding what conclusion you believe is true, and then manipulating your reasoning so it ends up where you want it to be. Besides that, rationality can be deployed too, just because you want to win an argument in which the stakes matter to you. As the American journalist Upton Sinclair said: "It is difficult to get a man to understand something, when his livelihood depends on not understanding it". Moreover, if the goal may be to prove how wise and moral your group is, namely, your religion, your tribe, your political sect, and how stupid and evil the opposing one is. Which is sometimes called "My side bias".

And also of all the many cognitive biases and fallacies that psychologists have discovered which I discuss in the book "Rationality", the "My side bias" is maybe the most powerful.

Therefore, I will give you an example. This is a logical Syllogism. If college admissions are fair, then affirmative action laws are no longer necessary. In other words, affirmative action laws are those ones that give preference to racial minorities and women. On the other hand, college admissions are not fair. Therefore, affirmative action laws are necessary. Since valid syllogisms are the ones in which the conclusions follow from the premises, is that a valid Syllogism? Well, the answer is, no. This would be the fallacy of "denying the antecedent". Namely, "P implies Q", "Q therefore, P". That is not logical.

Nonetheless, the majority of people on the political left, liberals, commit the fallacy that conservatives do not. Now, what a conservative would say: "Well, it proves what we knew all along. Namely, the left is irrational". Well, not so fast. Because let me try out this other Syllogism. If less severe punishments deter people from committing crimes, capital punishment should not be used. On the other hand, less severe punishments do not deter people from committing crimes. Therefore, capital punishment should be used. Well, this too involves the fallacy of affirming the consequent. Now this time conservatives commit the fallacy and liberals do not. Basically, both sides will twist logic to end up with the conclusion that they believe was true in the first place.

Furthermore, a second explanation for widespread human irrationality is primitive intuitions that we all share. Perhaps a result of our evolution in a natural environment. For example, we are all dualists.

We believe that people have minds that are separate from their bodies. Thus, when you interact with a person, you do not treat them like a robot or a doll. You input a mind to them. You assume that inside them, there is a set of beliefs and desires that, although you cannot see or hear, animate their behavior. Hence, that is the locus of their consciousness. From there, it is a short step to imagine that minds can exist separately from bodies. As a consequence, you have beliefs in spirits, souls, ghosts, in afterlife, reincarnation and ESP (Extrasensory Perception). Besides that, we also have the intuition of "Essentialism", that living things contain an invisible essence, stuff or power, which gives them form and powers.

Then disease comes when there is some contaminant, pollutant or adulterant that has been introduced into the body. Thus, that intuition is a short step to rejecting vaccines. Because after all, vaccines involve taking a piece of a disease agent or germ, and actually injecting it into your body. That is also why people reject genetically modified organisms, which have repeatedly been shown to be perfectly safe, but people perceive it as some kind of pollutant and also other food additives.

Besides that, it also explains why people are susceptible to medical quackery, like homeopathy, herbal remedies. And why, in many cultures, disease is treated by purging, by bloodletting, fasting and this vague notion of getting rid of "toxins".

Another primitive intuition is "Teleology". As we know, our plans and artifacts are designed with a purpose. They are designed with some future goal in mind. Often, that is a short step to assume that the universe has a purpose and to believe in creationism, in astrology, in synchronicity and the vague sense that everything happens for a reason.

Moreover, we have intuitions of collective self-defense, that we are vulnerable to raids and ambushes by enemies plotting in secret. And in our evolutionary past, that was the way in which tribal people were most vulnerable to attack. And then from there, it is easy to move to the lack of evidence for this conspiracy as proof of what a diabolical conspiracy it is.

Accordingly, these primitive intuitions are unlearned and objective scientific truths are acquired, only by trusting legitimate expertise, scientists, historians, journalists and government agents. However, just a few of us can really justify our beliefs, including true ones. There are very few of us that, for example, know enough atmospheric chemistry to really explain what causes climate change. But we trust that the people in the white coats, who have done the calculations, have the true story. On the other hand, experiments and surveys have shown that "Creationists'' and "Climate deniers" are no less scientifically literate than believers. They just differ in their political ideology. Hence, the farther you are to the right, the more you deny climate change. In fact, people who believe in climate change often have an iffy basis for their belief. Maybe people think that it has something to do with the ozone hole or toxic waste dumps or plastic straws in the ocean. It is not that they understand science. But it is rather that they trust the scientists.

Furthermore, weird beliefs persist for people who do not trust the establishment. They think that scientists or journalists or government officials are just one more priesthood or tribe. Thus, they have no greater cling to the truth than some guy on the internet with a website. And that especially happens when the establishment flaunts its own partisan politics. For instance, when scientists and journalists basically advertise they're part of the political left, then, the political right will naturally take the opposite point of view. Finally, there is a distinction between what I call, "Realist beliefs" and "Mythological beliefs".

Therefore, Bertrand Russell once said: "It is undesirable to believe a proposition when there is no ground whatsoever for supposing it is true". Hence, if that strikes you as an obvious trait, banal, of course… Then, you have an unusual post-enlightenment view of belief. In fact, what Russell said was a radical unnatural manifesto. That is not the way the human mind actually works. In this sense, people hold two kinds of beliefs. On the one hand, their beliefs are what I call the "Reality zone".

So, the physical objects around us, the other people that we deal with face-to-face, our memory of their interactions, the rules and norms that are applied to their everyday life. Thus, in this Zone, beliefs are thought to be testable and they are held if they are true. And in this Zone, people are perfectly rational. Even people who believe crazy conspiracy theories are enough in touch with reality, they hold a job, they pay taxes, they get their kids clothed and fed and off to school in time, they keep food in the refrigerator and a roof over their heads.

However, beliefs in what I call the "Mythology zone" are very different. When it comes to what happened in the distant past, billions of years ago. The unknowable future, faraway peoples and places, remote corners of power, like corporate boardrooms or presidential palaces, or parliamentary committee rooms, the microscopic, the cosmic, the counter factual, the metaphysical. In other words, in all of these more abstract domains, people hold beliefs, not because they are true or false. It is not possible to know. But because they are entertaining, uplifting, empowering and morally edifying. Whether they are true or false, it is kind of unknowable and irrelevant. For example, a lot of religious beliefs.

For instance, people who believe in God, they do not say that they can actually see him or hear him or prove that he exists. But rather they just think it is important that you believe in him. Besides that, national myths, the heroes and martyrs and the gods that founded a nation that historians often tell us were not nearly as noble as they are portrayed in national myths. And also, historical fiction, like the plays of Shakespeare. Thus, do we really care whether Henry the fifth delivered that speech at the battle of Agincourt? Finally, conspiracy theories.

For instance, many people who claim to believe that, let's say Hillary Clinton ran a child sex ring out of a pizzeria in Washington, DC. Despite that, they do not do the obvious thing, like call the police. Which is what you would do, if you really thought that children were being raped in the basement. Instead, they did things like, they left a one-star review on Google, of the restaurant. Now, for people like that, saying that Hillary Clinton ran a child sex ring, it is basically a way of saying: "Bu-hu, Hillary!" In other words, it is like saying that she is so evil and depraved, so that is the kind of thing which she could do. Whether she did it or not. Well, no one really knows.

Therefore, it raises the question "How can we become more rational?". Hence, I suggest that the tools of formal rationality, the ways of reasoning soundly, like logic, probability and game theory, should become second nature. First of all, rationality should be the "fourth R"[1], behind reading, writing, and arithmetic, and should be taught in schools. Second, norms of rationality should be promoted. We should be aware of fallacies like, the "My side bias", or arguing *ad hominem*, which means attacking the person rather than the position. Besides that, the "Availability bias", which means reasoning from anecdotes that are available in memory instead of the best data. Therefore, it should be considered embarrassing, mortifying (faux pas) to conduct one of these fallacies.

[1]A reference to an educational program, which included a fourth principle, besides reading, writing, and arithmetic, namely "Relationships".

Thus, we should treat our beliefs as hypotheses to be tested, not treasures to be guarded, and change our minds when the evidence changes. That should be a general norm or expectation. But perhaps the most important is "institutions" that must be safeguarded. It means groups of people who agree to certain rules that favor the truth and allow us, collectively, to be more rational than any of us is individually. Moreover, in a group, they can compare their findings, criticize each other's positions, and one person can notice another person's biases.

So, for example, in tests of logic, often a test will not be so intuitive that only 1 in 10 people get it right. But if you put people in groups of 4 or 5 to work together to get the correct answer, then 7 in 10 will get it right. Even though all of us are biased, we are pretty good at noticing other people's biases. Accordingly, that can work, if you have a group of people following rules to get to the truth.

Furthermore, what do I mean by "rationality promoting the institutions"? Well, there is science, when there is empirical testing and peer review. And also, democratic government, in which there are checks and balances. So, the president can do anything he wants, but can be opposed by the courts and the parliament.

Besides that, there is journalism, with its requirement for editing and fact checking. Moreover, the judicial system, with the adversarial proceedings of opposing lawyers. In addition, there is academia, with freedom of inquiry and open debates, where any idea can be criticized. And even Wikipedia, which is surprisingly accurate, and whose editors have to commit themselves to neutrality and objectivity. Hence, compare that to Twitter or Facebook (social media), where you get credit not for objectivity, but for fame, notoriety and entertainment value.

And also, where opinions can easily be shared rather than evaluated. Besides that, it is very quick, any idea that you have could instantly be propagated. As opposed to responsible journalism and academia, where you sift, filter and try to find the one good idea from the dozens of bad ones.

Thus, why does rationality matter? Well, rationality matters to our lives. A number of studies show that people who follow the models of rationality, avoiding cognitive biases and fallacies, on average, get into fewer accidents and mishaps. In addition, they have better financial health and employment outcomes. Therefore, rationality drives material progress.

In my previous book "Enlightenment Now: The Case for Reason, Science, Humanism, and Progress", I argue that progress is a real phenomenon. Hence, if you plot over time, longevity, peace, prosperity, safety and quality of life, they have all improved. Consequently, this leads to a question, "Does that mean that you believe in progress?". Well, the answer is, no. As an American comedian said: "I don't believe in anything you have to believe in". Thus, progress comes from deploying reasons to improve human flourishing.

In other words, people see a problem, then they try to figure out how to solve it. Sometimes, they succeed and keep the solutions that work. We try not to repeat our mistakes. So, that is the only reason that progress ever happens.

Less obviously, I believe that rationality drives moral progress and social justice. Hence, in another book "The Better Angels of Our Nature: Why Violence Has Declined", I applauded many declines of violence and oppression. For instance, the decline of war, of torture, of genocide and of autocracy. In this sense, I found that many of those movements began with a rational argument.

Namely, some philosopher, thinker or activist made an argument claiming that some practice which people were doing is incompatible with other values they claim to hold. Thus, the arguments would be reprinted in pamphlets and books. As we say, "they would go viral". Then, they would be discussed in coffee houses, saloons and pubs. Consequently, it would influence the elites, and eventually become the law of the land. This includes religious persecution, cruel punishments, war, autocracy and even slavery. Finally, I argue at the end of the book that the power of rationality to guide moral progress is of peace, with its power to guide material progress and wise choices in our lives.

Moreover, our ability to make increments of wellbeing out of a pitiless world and to be good to others despite our flawed nature depends on grasping impartial principles that transcend our parochial experience. We are a species that have been endowed with an elementary faculty of reason, and that has discovered formulas and institutions which magnified its scope. Thus, they awaken us to ideas and expose us to realities that confound our intuitions that are true for all that. Thank you!

DIOGO: Thank you very much, Professor Pinker! We have a few questions from the audience. I will begin with: "Which political system do you think is more conducive to rationality in politics?" and "Which one better prevents irrational wackos, as they say, from rising to power?"

STEVEN: Well, clearly a liberal democracy is the most rational political system. Because it has these mechanisms of feedback and error correction. If you have an autocrat, a strong leader, he is just a human being, he is just a guy. And, no one is infallible. No one is perfect. No one knows everything. Inevitably, someone in power will do something stupid. Moreover, people in power like to accumulate more power.

On the other hand, in a democracy, if there is a mistake in a policy, then people can criticize it, journalists can criticize it, people can protest it. And, in the government itself, there are checks and balances, as I mentioned. This means that the leader can do anything he wants, but he has got to have the cooperation of the legislature and the court system. Accordingly, all of these checks and balances are, like in science, the demand for peer review and empirical testing. In other words, the ways that any idea is corrected by feedback from the world.

However, in a system of government that suppresses free speech, that gives power to a strong leader. Then, there is a guarantee that they will do stupid and perhaps evil things.

DIOGO: Then, "Is that the liberal democracy, which you find more rational?"

STEVEN: Indeed, liberal democracy is more rational.

DIOGO: "Is there an electoral system, proportional representation, majoritarian, which you find more rational?"

STEVEN: Oh yes! Democracies have a variety of mechanisms. And some of them are definitely more rational than others. For instance, the American system is probably the least rational. Both because there is an electoral college and virtually no one could defend the electoral college. But even without the electoral college, even if it was just by popular vote. Since any system that is, as they say, "First past the post" - namely, whoever gets the most votes wins - it will be less rational, in the sense that it will fail to satisfy the preferences of a majority of voters whenever there is a third-party candidate. I should not say whenever, but, instead, very often.

In this sense, among the different voting systems, for instance, a runoff, or ranked choice, we know that each one of them has different flaws. There is no such thing as a voting system that satisfies all the criteria for what you would want a voting system to do. But some of them are better than others. And the plurality wins, as we know it is one of the worst.

BRUNA: Excellent, Professor Pinker! First, I have to say that we have more than 6,000 people watching us right now in Brazil. I am sure they are looking forward to your book being translated into Portuguese.

STEVEN: Yes, it will be.

BRUNA: It is important to say that our questions are voted by our audience. So, we will start with one that was the most voted. Hence, "Given that social media businesses are driven by engagement and emotion, how to encourage rationality in this environment?"

STEVEN: It is an excellent question, because all of the mechanisms that allow certain institutions to promote rationality - like science, liberal democracy, the court system - are totally disabled in social media. It is almost the exact opposite, since we get instant proliferation without reflection, without filtering out the bad ideas and the good ones. Moreover, you get esteem or glory based on fame, notoriety and entertainment value, rather than on a reputation for accuracy. Besides that, it is not clear how the social media platforms - what changes in their algorithms or in their engagement mechanisms - would make it more rational. Whether it would be to slow things down, for instance, to have people accumulate a score based on how thoughtful, how accurate their posts have been.

Although there are ways of scoring posts for intellectual complexity, as opposed to just an insult value. I think that they are so new and the interactions are so complex that it would be very hard to know, beforehand, what would work and what would not. But we can put pressure on the companies to try out modifications that would make it less polarizing and divisive, and more thoughtful and deliberative. I do not know what they are.

DIOGO: Thank you, Professor Pinker! "How do you see the future of institutions of higher education, where the pursuit of objectivity and rationality can sometimes be seen as dangerous or aligned with other social goals?"

STEVEN: Well, I think that there is a problem in American higher education, where there is a narrowing of political viewpoints. There are fewer and fewer conservatives, almost everyone is liberal or leftist. And this means that students and professors are not exposed to criticism and alternative viewpoints.

Furthermore, there is a problem with the punishment of unorthodox opinions, where people can get fired or disciplined for questioning certain policies or certain ideas. As a consequence, these will disable or turn off the only mechanism that we have for approaching the truth, which is voicing ideas and allowing them to be criticized. If certain ideas cannot even be expressed, then we are guaranteed to be ignorant of certain answers. In this sense, there is a saying: "The more we disagree, the greater the chance that at least one of us will be right".

BRUNA: Yes. We have one question here related to physics. Actually, I will start with another one, and then I will ask you about theoretical physics, which I found very interesting. Thus, "Do you believe that global warming is a matter of a normal cycle of our planet?"

STEVEN: I think the evidence is overwhelming, hence, it is not just part of the normal cycle of the planet. However, I think we would be better off posing this question to someone with expertise in climate and in geological history. But my understanding is that there is a huge or overwhelming consensus, and a good reason to believe that this is not part of a natural cycle. That it is way out of whack with the natural cycles. We have never had levels of carbon dioxide like this. We have never had a rate of warming like this. Definitely, we are seeing something that is historically unusual.

DIOGO: I want to ask you about one of the themes in your book, "Rationality": "how dependent is that on social rationality?" So, Aristotle thought that individual morality depends on social morality. Hence, "Should individual rationality also depend on social rationality, or should we be more irrational in an irrational society?"

STEVEN: Well, it does not. In fact, when I spoke about the role of institutions like, science, liberal democracy, journalism and the court system, those are the kinds of social rationality. Namely, it is not just one person trying to be brilliant. It is a community of people, who can criticize each other and decide which ideas are likely to be true.

And also, which ones are probably false, so that you can combine ideas into more and more complex ideas. Thus, that is a kind of social rationality that I think is our only way of becoming collectively more rational. In this sense, it is never just one genius, because no human is free of biases and no one is smart enough to think everything up on their own.

BRUNA: So, "Where would untestable theories such as the Dark Matter, fall? Would they be Mythological beliefs? Should we consider them non-scientific?"
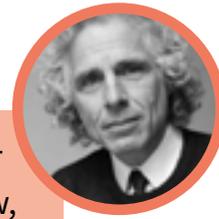
STEVEN: Well, probably a physicist will be better able to answer that question. But as far as I know, Dark Matter, the nature of Dark Matter, is not inherently untestable. Although it may be difficult to test in practice. Since, we do not have big enough or sensitive enough sensors. Therefore, it might have to be evaluated through different explanations, by parsimony, consistency with other things that we know in physics, and the reasoning to the best explanation. But I think that it would be different from mythology, where the only reason to believe it is entertainment value. Besides that, it is of moral value and valuable in bonding the tribe, for instance.

On the other hand, in physics, it may not be the case that everything is practically testable. Because we may not have a particle accelerator the size of Jupiter, or some other reason. That does not mean that the theory or the phenomena are logically untestable. It is just that, we may never be able to build the devices that we would need to test them or gather the observations necessary.

DIOGO: Let me ask you about the reconciliation of free speech and rationality in social media. "Should we have designs that make rationality more profitable?"

STEVEN: Yes. That is exactly what we should do if we can figure out what those are. Yes. I mean, one example of that would be prediction markets, where there will be some issue like an election, or exiting the European Union, or a rise and fall in Euro prices. And people actually bet against each other on what will happen.

So, when the event takes place or fails to take place, whoever has the best understanding of the world will make more money. Therefore, that is one example of making rationality profitable. Accordingly, there has been an argument that prediction markets are a lot more accurate than individual experts. So, by making that kind of accuracy profitable, we can incentivize more and more people to pull their expertise and therefore, come to more rational forecasts.

BRUNA: This question is also very good: "What ordinary actions or rules that are common today, will be regarded as irrational in a couple of centuries time?"

STEVEN: Well, it is hard to know. But it has often been suggested that factory farming and maybe more generally, eating meat, will be considered as barbaric and unacceptable as slave auctions and burning heretics are to us today. Besides that, it is also possible that just our slowness in switching from fossil fuels to alternative energy sources will be seen as highly irrational. I suspect avoiding nuclear power and shutting down nuclear power plants with the result that countries which do that and rely more on coal and oil might be seen as irrational. Plus, a lot of our science and technologies are bound to improve. And so, some of the beliefs that we have now, will be considered, if not irrational, certainly mistaken. Which are not necessarily the same thing. Moreover, nuclear weapons might be another example. Things that are militarily useless, but with the potential of catastrophic harm. Thus, it is possible that nuclear weapons will be considered to be just inexplicably irrational.

DIOGO: "What would be the most important belief about which you have changed your mind?"

STEVEN: Well, probably the belief that each of us, that we ourselves are infallible or perfectly rational. Everyone thinks that they are rational and everyone else is irrational. So, probably the most important belief is that other people will often have opinions that turn out to be correct when yours are not.

BRUNA: "Do you believe in minds as a subject? Or is it only a way to describe internal behaviors?"

STEVEN: Well, I sure do. I am a cognitive scientist and those are people who study the mind. In this sense, I spent my entire life committed to the idea that the mind is something that can be studied. So, absolutely, yes.

DIOGO: "Do you see your book as part of a series of books that have been dealing with an epistemological crisis?". Thinking of Julia Galef's "The Scout Mindset" or Jonathan Rauch's "The Constitution of Knowledge". Thus, "Do you think that this is a wave of books which are talking about the similar problems we are facing?"
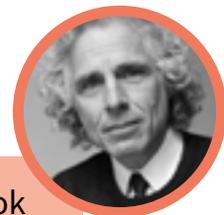
STEVEN: Yes, I would say that my book is very much in the same spirit of those by Galef and Rauch.

BRUNA: So, "Irrationality in power is a lot more harmful than in the rest of society". That is a statement. So, "How can governance improve that?" and "Do you think that we can build a better political system architecture to do so?"

STEVEN: Yes. I think that it is imperative to make governance more rational. I talk in the book about a number of ways. Even though everyone thinks the society is going crazy, and that rationality is going down, in many ways, there are movements which are making us more rational than ever.

For instance, in sports, there is Moneyball - you may have seen the movie with Brad Pitt - on the use of data and statistics to make decisions in sports, instead of just hunches and intuition. In philanthropy, there is effective altruism. You decide where your hours or your dollars will do the most good. There is evidence-based policing, how to use police force in the zones that have the most crime to reduce criminal violence the most. Moreover, there is evidence-based medicine that is evaluating medical practices for what actually works, with the use of randomized controlled trials.

You divide one group into the group that gets treatment, then, you have a placebo control group, and you compare them. And also, effective governance. Sometimes called Nudge, sometimes called Behavioural Insights, or just, Evidence-based governance. In general, the use of gathering of data, the processing of evidence to see which government policies actually do what they are designed to do. For instance, that engages people, makes them aware of government services, or steer them away from harmful behaviors. There is an organization that I consult with called Apolitical, which tries to share the information that we have between public servants in governments, all over the world.

Because together with the problem of not necessarily knowing which policies and programs work and which ones do not – often that knowledge may exist; however, it may be confined to one agency in one government, and there could be a huge benefit if it is shared. If other municipalities, other provinces, other countries could pull their knowledge as to what works. So, these were some of many examples of applying data and evidence to make our practices more rational.

DIOGO: America, right now, is pulling much less religiously than they did, let's say, 20 years ago. "What impact do you think that had on social rationality?"

STEVEN: Well, there are different aspects to it. For many years, the United States lagged behind other Western democracies in pulling back from religion. America was an unusually religious country. It still is more religious than most of the countries of Western Europe or the Commonwealth. But it has happened in the United States as well. Namely, the United States is becoming less and less religious, especially younger generations. The "Millennials" are less religious than the "Baby Boomers" and the generation "Z" is less religious than the millennials. In part, that is driven by just an inability to believe in miracles, stories and scripture.

And in part, it is also driven from an alienation or withdrawal from all institutions. The younger people are less committed to not just churches and synagogues, but also to the government. They trust less in government and in the press. However, that may not be such a good thing, because it is institutions that offer us our best hope for being rational. In the United States and I think in other countries as well, often the really religious people have an unbalanced influence in government. In other words, their influence is above the actual numbers, once people who are religious are engaged in institutions that bring out their members to all vote, whereas the more secular, less religious people just do not care about any institution; hence, they stay home and do not vote.

So, the number, the percentage of the American population that are evangelical Christians and that are atheists, agnostics and humanists is about the same. But the evangelicals, they all vote, while the atheists and humanists stay home. And that is because of the general disengagement from institutions. And that is not such a good thing.

BRUNA: Professor, the event here, the Innovation Week, has a motto this year: "Dare to transform". So, it is a call to action for public servants, public agents in Brazil, to build bold and better futures. To start transforming it right now. Hence, one of the questions that we have outlining the program is: "What future would make the past worth it". On this account, I ask you the same question that we asked our audience.

STEVEN: A future with where you identify what are the things that we value and what are the things that make people better-off. Therefore, there would be longer life, better health, more literacy, more knowledge, more opportunities to enjoy the world, to enjoy nature, to enjoy culture, less violence, less disease, less war. All of those things. Hence, I have shown in my previous books that, most of those measures have showed improvement. Consequently, a future in which we'd have improved even more, would be a future that would make the path worthwhile. I do not believe in a utopia. I do not believe the world will ever be perfect. Besides that, I believe it would be dangerous to try for a utopia. Because a number of reasons, one of them is that people are different. People disagree.

Besides that, anything that would make some people happy would make other people less happy. The problem with the utopia is that the people in power would have to impose their vision on everyone else. Moreover, if they think that they have a plan to make the world perfect forever, it would mean that anyone who disagrees with them would be standing in the way of a perfect world. How evil is that?

Well, we know utopian schemes like Mao's communist China, like Hitler's a thousand-year Reich. Hence, it involves massive genocides, because the people who opposed them, who were not part of their neat plan, were nuisances that had to be pushed out of the way. Also, among the things that we value, there are trade-offs. For instance, we all agree that freedom is a good thing and health is a good thing.

However, if you give people freedom, part of that freedom includes liberty to do unhealthy things. People will drink too much. They will take drugs. They will drive too fast. Furthermore, there is a trade-off between freedom and equality. If you allow everyone to compete economically, according to their talent or to their luck, some people will end up with more than others. We cannot have both. On the other hand, if we make everyone the same, that means restricting what some people do, compared to others. So, they will not get ahead. In this sense, those trade-offs are with us permanently. And that is why trying to make everything perfect is a recipe for disaster. On the other hand, trying to make things better, so that even with those conflicts, we are all somewhat richer, freer, healthier and happier. That is attainable. We know it is attainable because we have attained it in the past. We are healthier, live longer and are richer now than we used to be. Therefore, there is no reason that this cannot be extrapolated forward.

DIOGO: If nationalism and communism were the two greatest alternatives to democratic liberalism in the 20th century "What do you think there will be in the 21st century?"

STEVEN: Well, certainly nationalism in the form of authoritarian populism, is very much a 21st century phenomenon. And, both the audiences in Brazil and the United States have had a very strong taste of that. So, that would be one threat, authoritarian nationalist populism. The other one is a kind of a leftist radicalism that would just tear everything down because of a belief that the system is so corrupt, decadent and evil, that anything would be better than what we have now; rather than trying to work for progress, by solving the problems that we face. So, that kind of destructive nihilism is appealing to many people. It is a kind of need for chaos and burning it down. So, that is another threat. And, to some extent, I think the, what is sometimes called "Wokeism", in the United States. Which means, the identitarian politics where people are not treated as individuals, but rather as members of groups of races or sexual orientations, for instance. And they are thought to be in permanent conflict. So, the only way that you can raise one up is by pushing another one down. That is, I think, a recipe for conflict and for further polarization that works against the kind of constant compromises and the recognition of individual human rights, which are the basis for liberal democracy.

BRUNA: So, Professor, one of the objectives of this event and of our work is to catalyze the formation of a new ethos of the 21st century public servants. Which for us, should be emboldened by daring to transform. So, I wanted to ask you quickly to complete the following phrase: "The public leader of the 21st century is a leader that…".

STEVEN: Does the best use of evidence to design policies that make people better-off. I know that is very vague. That it may not be saying anything. But certainly, the use of evidence is, I think, going to be crucial. And also, the goal of solving problems. So maybe, the best leader would be one who believes that problems are inevitable. Problems are solvable. And solutions create new problems that must be solved in their turn.

BRUNA: You have just published a book and we are, as I said, very curious to read it in Portuguese. But, before we wrap it up, I wanted to ask you, "What are you working on next?"

STEVEN: Well, I'm going to write a book on the concept of common knowledge, the technical sense from game theory. In other words, I know something, you know something, I know that you know it, you know that I know it, and so forth. Therefore, this is a logical concept, which I think has a psychological counterpart. Namely, the difference between something that everyone knows is true and something that is out there, that is public or common knowledge. There is a huge difference between these two. And, I have done experimental work to probe how it affects our emotions and our language. So, I will have a new book, not for another three to four years, that will be called, "Don't go there: Common knowledge and the science of hypocrisy, civility, outrage and taboo".

BRUNA: Thank you! I know and Diogo knows it, that this was a fantastic conference in our Innovation Week 2021. Thank you so much!

DIOGO: Thank you so much, Steven Pinker!

STEVEN: My pleasure. Thank you for having me! Nice to speak with you all!

How human innovation works

Deirdre McCloskey

Lecture presented on November 12, 2021, at the 7th Public Sector Innovation Week: Dare to Transform.

Lecture presenter:
Diogo G. R. Costa

Abstract: The main topics covered in this lecture concern the importance of innovation. McCloskey will present her vision on humanity's great challenges, such as poverty and tyranny, and how the return to liberal and illuminist values of freedom and prosperity can support us in overcoming these crises.

Keywords: participation, misinformation, fake news, censorship, freedom of expression, collaborative platforms

DIOGO: We are going to listen about the importance of innovation. So, I am going to start by calling Deirdre McCloskey and inviting her to present her vision on innovation. Deirdre McCloskey is a Professor Emerita of Economics, History, English language and Communication from the University of Illinois (UIC) in Chicago. She is 79 years old, was author of several books and, according to her, she is a literary, quantitative, postmodern, free-market, episcopal, progressive woman, who was born in the American Midwest and, once, was a man. Hence, McCloskey is going to present us her perspective on how humanity's great challenges; for instance, poverty and tyranny, and also, how the return to liberal, illuminist values of freedom and prosperity can support us in overcoming crises. Professor McCloskey, thank you so much for being with us today. The floor is yours, professor.

DEIRDRE: I am glad to be back in Brazil, even virtually. Thank you, dear. I would like to start with some aspects. Thus, we have become rich, even in Brazil, because of innovation. Not because of investment alone. Although, surely, they are important for some things, for instance, railways. But because of human creativity, human ingenuity. Contrary to Professor's Mazzucato view, which was the view of progress in Latin America and John Maynard Keynes in England and others. Innovation does not come straight from organizations.

And certainly not from the state. After all, this is a somewhat obvious point, a new idea for investment, or a new idea for organizing the labor force, or a new idea in science or in music, comes from someone, one person's mind. Of course, I mean, there is nothing controversial about that. So, the only role that the State can have, which is the focus of Professor Mazzucato's case, is to create the environment in which individual creativity can flourish. Now, for some projects you need the state. I am not an anarchist. I believe that there is a role for the state. For instance, we would not have had the atomic bomb in the United States without the Manhattan project.

And indeed, that single example, the Manhattan project, has encouraged enthusiasm for State management of innovations ever since. But most innovations, in economy such as, in your own or my own, comes from individual companies, and within them, from creative people. I and Alberto Mingardi have written a small book of a hundred pages, examining in detail Professor Mazzucato's examples, under her evidence, such as it is. And, furthermore, her economic theory behind her cases, that there should be in Brazil as elsewhere, in which innovation policies are enforced by coercive instruments of the State.

I might as well comment that the present State of Brazil is not the best instrument, even for her proposals. But still, considering what she is saying. She is saying that someone in Washington or Brasilia knows much better how to orient her innovations, how to get new ideas than does the entrepreneur or the engineer on site, on the frontier of economic activities. It is an old presumption. This presumption that the state can do it. It is the basis of Mercantilism, in the 18th and 17th century extending into the 19th.

And in earlier forms, it was what was behind economic policies in Italy, England and China. Although, for a brief period in the 19th century, nearly to the 20th, it was out of favor, but it has come back into favor in the late 20th century. As I say, it is a species of Keynesianism. However, I believe it is quite implausible. Therefore, I would ask you:

"Do you think it would be a good idea that there be a government innovation agency with powers of coercion in music, for instance? Would that guarantee the best future for music in Brazil or the Portuguese language? Or even, would it be a fine thing to have someone, in some head office, deciding what the conjugation of the verb to be should be in Brazilian Portuguese?" Hence, I think it is fairly obvious that this would not be a very smart idea. The same thing is true for friendship. Do you think that there should be a friendship planning agency, which says: "I think you are to have this kind of friend and, no, you are not allowed to have that other kind. Besides that, here is some money to encourage you to go into that kind of friendship".

Thus, I think the case is that, this sort of central planning light, this modest central planning - not so modest, actually - which she proposes is unwise. Since we do much better in music or in the language or in friendship, as in the economy, by allowing the creative abilities of us each, to interact in markets, and in other ways, and in prestige and so forth, other sorts of cooperation, which is what a market is. Accordingly, I think that is the best policy for Brazil, to finally be more than the country of the future, as it is always said to be. In other words, to be an enriched country in every way, in music, as in the economy.

Therefore, I think that professor Mazzucato's proposals, though, are inevitably popular with the powers that be. Because the powers that be like the idea that they are in charge of innovation. And they sound plausible to ordinary Brazilians, because after all, we have to plan our own lives. "So, why don't we plan the national life?" They are not adults. They are not sensible. Even in our own lives – at least I could say, and I am sure you could say – that our plans very seldom work out. Thus, it is unwise to use the example or the analogy with the individual to a whole complicated country.

So, I invite you to hear her out. She would not actually debate with me, which is a shame because then we could converse. And in the way of the Portuguese language or of music, innovative music or innovative ideas, in science and art, we could test each other's views. Thank you very much. And please, allow me to come back to your splendid country.

DIOGO : Thank you very much, Professor McCloskey. May I just ask you a couple of questions?

DEIRDRE: Sure. Ask away. I am the answer lady. I can answer anything about your love life or anything like that.

DIOGO: Concerning the kinds of innovations, there are innovations that might have different political biases. So, we can think of Peter Theos, saying that cryptography is a more libertarian kind of technology, while artificial intelligence is a more authoritarian kind of technology. "Do you see that in the near future, these kinds of forces might shift our societies towards more freedom or more authoritarianism?"

DEIRDRE: Well, that is a very interesting analogy, which I have not heard of. But there are similar analogies all over the place. I mean, as I said, for instance, in family lives, we need to plan, and the mama and the papa need to be in charge. And that analogy of mama and papa is what Lenin had in mind, and Marx and Raúl Prebisch. And as you are suggesting, it is a top-down technology, like artificial intelligence. Indeed, the use of artificial intelligence, to follow us around, to influence and record our consumption in detail, as we have seen in China. I have been to China a number of times and it is quite shocking how deeply into the lives of ordinary citizens the State wants to go. Thus, I think, in professor Mazzucato's view, I am sure she would agree with me that this is awful in China, but at last, I think it is a step in that top-down authoritarian erection. And, although my example, which may seem extreme, of the state governing friendship, that is Xi Jinping's goal. Once he is very interested in intervening and in the alliances, so to speak, the personal alliances to reach his objectives.

DIOGO: Professor McCloskey, in different times, the frontiers of society have sometimes been the most innovative parts of the society. Hence, we have seen this with California, in the U.S., and even with the Eastern Asia. Now that we do not have geographical frontiers, "How do you see that the role of the frontier plays out in modern innovation processes?"

DEIRDRE: Well, there is a famous speech in American academic history, in the 1890s, by a professor named Turner, where he chronicled, over a hundred years ago, the end of the geographical frontier in the United States. When most of the West of The United States had been occupied. And the point is that, in the modern world, as we are observing, there is hardly any frontier that we cannot get to very easily physically, or certainly by Zoom call. "So, where is the frontier?" And the frontier, as you were suggesting, I think is intellectual, it is in our minds. Thus, government policy is simply dangerous. Since it comes to tell you how to orient your new ideas.

In fact, I was speaking, a few years ago, to a young entrepreneur, not in marketing exactly, but in retail. He was advising people with computer assisted techniques, within their shops or their stores, of how to make things go. Then, I asked him, "How do you deal with the regulators?". And he said, "Aha! In computers, we know more than the regulators know, so we can always stay one step ahead of them. So, instead of asking permission to do some new technique, we can ask for forgiveness, after we have already introduced the technique and it works very well." Therefore, I think that is the way to go, to marshal, to put together the creative abilities, which are immense on individual Brazilians. Hence, you cannot be bossing them around all the time.

DIOGO: "What is the role of philanthropy when it comes to innovation?" For instance, in America, big fortunes have sometimes been converted into philanthropic donations, which goes to arts and sciences. Moreover, many of them happen with some sort of tax subsidy from the government. Thus, "How do you see those kinds of policies?"

DEIRDRE: Well, I suppose I am in favor of those policies. For instance, I have been supported by them for my whole career. So, it would be a false position for me to say that the tax advantage of contributions to arts and to universities in the United States is a bad idea. But I think it is probably a bad idea. The problem is that in most countries, and I think this is also true in Brazil, is that the state has taken over these cultural objects. Most particularly high culture, the art museum, and so forth. And that, as I was saying, has its dangers.

Therefore, there are two ways of persuading people to do things you want them to do. One of them is to take out a gun and threaten them. And that is the way of the State. I told you, I am not an anarchist, since I believe the State has a role. But I think it is very dangerous, because it is a role of coercion. It is the method of coercion. Furthermore, the other way, which is the only other way we have, I call it "sweet talk" or trade, they are the same thing. As Adam Smith said, we offer people money or persuasive talk, to persuade them to do what we want them to do. And that is the way of art and science. Thus, I get very worried when either the billionaires or the State are involved. Although I must say, I am less worried when the billionaires are involved. Because again, they do not have the power of the gun.

In other words, they do not have the power of coercion. The big danger is not from large corporations making big contributions to art or rich people like Gates trying to cure malaria or something. The big danger is, as you discovered in Brazil in the last couple of years, the power of the State.

DIOGO: Well, Professor McCloskey, thank you so much for talking to us today, with all your sweetness. And I hope that next time, it will be in-person, here or in some other Brazilian city. Thank you so much!

DEIRDRE: I want to taste Brazilian food again. I want to hear Brazilian music. I want to go to a Samba class.

DIOGO: We will make sure that happens! Thank you so much!

Economy in transformation:
sustainability, development and technologies

Carlota Perez

Lecture presented on November 10th, 2021, at the 7th Public Sector Innovation Week: Dare to Transform.

Lecture presenter:

Adriana Ligiéro

Abstract: In this lecture, Perez talks about old technological revolutions, looking for learning points in such past experiences. She talks about economic, social, and institutional changes toward a transition to a sustainable economy through learning from past experiences and exploring the role of the state in promoting growth and sustainability policies.

Keywords: technological revolutions, sustainable economy, sustainability

ADRIANA: Good afternoon everyone! Welcome to another panel of Innovation Week 2021. In the midst of stagnating production and consumption, new crises, and increasing inequalities, the economy is a key piece for transformation. New technologies. Decentralized finance. Changes in the energy matrix. Sustainable markets. Green economy and a broader vision of development emerge in the international debate as central themes to catalyze this transformation. What are the possibilities for our economy? In this panel, we will hear from distinguished researchers to inspire us and execute changes aimed at sustainable development. Now I am pleased to invite Dr. Carlota Perez who will bring us a look at old technological evolutions and what we can learn from these past experiences.

CARLOTA: Well, thank you very much for the presentation. I am sorry I cannot speak in Portuguese. Well, I'm going to talk mainly about the big picture. That is, how we can do development.

Once we have development, it is easier to distribute, it is easier to end poverty, it is easier to improve health. Of course, it is not certain that it will be done, but in fact the Brazilian miracle did not necessarily reduce inequality.

Inequality in Brazil, unfortunately, remained for a long time, during this period of great, great boom. So now the idea is to be able to make a leap in development, but making sure that we also have good distribution. By the way, the intention, the good intention of distributing, if you are not generating wealth, it doesn't work.

So, I'm going to talk about the relationship between technological revolutions and development opportunities, specifically for Latin America. The first thing that is important to understand is that development opportunities are a moving target in the context of global capitalism. In fact, what happens in the global north defines much of what we can do in the south.

It is important to recognize the opportunities in order to take advantage of them. Latin America took very well the opportunity of import substitution in the 60s and 70s, but missed the opportunity used by the Asians in the 80s and 90s. When South Korea, Taiwan, Singapore and Hong Kong made the leap, Latin America did not.

However, the results of what I would call the great success – even if many people don't see it that way – of import substitution were important and still left us with a legacy that allows us to take advantage of new opportunities. Let's see what was the combination of factors that allowed industrialization by import sectors in Latin America in the 1960s and especially the 1970s. First of all, the so-called First World had saturated markets, they could not sell any more automobiles, refrigerators or anything else, because the market was already saturated and Latin America, of course, was interested in producing and importing all these things. At the same time, the technologies that mass-produced those products were mature and highly transferable.

That created the opportunity for import substitution. What did Latin America have? Well, it had an educated middle class with solvent demand and a State with an income from exports, because we were all exporters of raw materials, but generally in the hands of the State. So that made it possible to finance the process. On the other hand, the State had the possibility and the willingness to massively protect the industry in each country. Protection of 60%, 70%, 100%.

I must warn you that the United States, at the time when they were an underdeveloped country, in the 19th century, in the 1860s, 70s, 80s and 90s, they also protected their industry 60%, 70%, 50% in order to catch up with England, which they succeeded in doing. So, these two conditions allowed us to make assemblies for the domestic market, and it is very important that we understand that this is one of the things that made it difficult to take advantage of the next opportunity, because we were working mainly for the domestic market with very high prices.

Therefore, we were not competitive when we tried to do export promotion in subsidies, they had to be huge. Meanwhile, Korea was achieving real competitiveness, even with some subsidies at the beginning. So this was an opportunity well taken.

Latin America grew at an average of 4% on a regular basis for almost 20 years. The middle class grew and a large working class was formed, infrastructure was put in place and an entrepreneurial layer developed, particularly in Brazil. What happened in Brazil was called The Miracle, because it was indeed a very significant leap in development. Experience was also gained in the construction and process industries, and the process industry is very important, because the opportunity we have now requires capacity in the process industry. What is the combination that creates the opportunity now? On the one hand, we have a globalized economy with segmented markets, needing natural resources. And Latin America is highly endowed.

On the other hand, there is access to generic technologies. Generic technologies are those that apply to many sectors and these are ICT, information technologies, digital technologies, biotechnology, materials science, etc. And we also have access to information and trade via the Internet.

This generates very different conditions in terms of export possibilities, even of small things and specialized products for very restricted markets. So this creates the current opportunity. What do we have? We have the legacy of import substitution in the process industries, as I was saying, in the process industries such as chemicals, steel processing, the agro-industry.

Also in services and qualified personnel we have qualified many people, even studying in the developed world, and we have that, unlike other underdeveloped countries, which do not have it. In other words, we do have a difference in that sense.

We have, on the other hand, that the world and ourselves, our country is segmented markets of all sizes and we have access to global networks and of course there are growing requirements for climate change and biodiversity. So what the market is asking for has to do with things that we could provide. So what is the opportunity? Natural resources, more technology, more inclusion for environmentally and socially sustainable development. This is the opportunity.

And notice that it is not the manufacturing of, I mean, we no longer understand by technology the manufacturing of assembly, the manufacturing industry, we are greatly expanding the range of what can now be developed. From raw materials to services, all can be elevated in their competitiveness, in their conditions, in their possibilities with the technologies that are available today.

Therefore, with appropriate policies, it is possible to create a profitable, sustainable and innovative economy, with a high quality of life for the entire population, both rural and urban. This is the possibility that we must take advantage of. One of the things I would like to talk about is the issue of hyper segmentation of markets. It is very important to understand this because this is one of the conditions that makes it possible for innovation to be directed specifically to new possibilities that exist in the market and we have to abandon a little bit the ideas we had before.

Conditions are changing. We lived in a world where we moved between commodities with price competition and a certain level of custom-made adaptable issues, with competition in adaptability, where in general we had construction and I always say that among the things we custom-made were wedding dresses and bridal cakes, because almost everything else was mass production, all identical products and therefore trying to lower the cost and not necessarily raise the quality.

In fact, we were lowering quality, but now with specialty niches becoming more and more numerous, we are moving from a time of high volume, narrow profit margin and basic qualities to a world of high profitability, small quantities, specialty qualities, and technology. This world up here is a very special world and also you can go head-to-head with small, medium, large and giant companies, because that whole world has infinite variety and can be much more profitable.

And the competition is less fierce and you are innovative enough. And this is happening equally in inputs, meaning raw materials, manufacturing and services, and in every single activity of the value chain, because now the value chain tends to break up into pieces and, in different countries, it is produced in different parts.

Of course, now with the pandemic we have learned that globalization has gone too far and we are redesigning forward.
There is a redesign of globalization that we can take advantage of. I'm going to give you some examples of positioning to give you an idea of what I'm talking about. Let's look first at commodities. Well, iron, meat, soybeans, televisions, which are already super-cheap commodities. It is almost no business. Hard disks, for example, and beach tourism. Wherever has sand, caipirinha and palm trees is perfect. But all over the world many people have that.

On the other hand, if we go to the special ones, we find organic food, gourmet fruit, like açaí, biomaterials, and certified wood. If we could have anti-termite wood that would be wonderful. Things like that. Specialty steels, high fashion, electric flying vehicles. I understand you guys are producing electronic chips, adventure tourism. All these special things are adventure tourism, very different from beach tourism, because it requires qualification, conditions, training, and a lot more complex things. And people pay much more for that than going to the beach. Adapted. Well, meat, Halal or kosher, for example.

Tailored materials, remote data interpretation, personal services. Each one is different in each case. Health tourism. In India they are doing hip surgeries for a whole plane of English people who need hip surgery. They take them to India, do the operation, do the exercises, take them there as tourists and send them back. And the cost is less than what it would be to do it in private medicine in England. And the time, of course, you don't have to wait as long as you might expect. In other words, they took advantage of that window of opportunity and made tourism adapted to health conditions.

Oh, and the only large buildings such as the Beijing stadium, the Beijing pier; or complex infrastructure projects, logistics services; the Panama Canal, for example; the unique instruments for bio and nanotechnology. Of course, these end up happening here and there, because it depends.

Things start out as special and may later become common. Ecotourism in the jungle or in the Iguazu Falls. Because the Iguazu Falls are unique and because the Amazon rainforest is unique, it is something that people come to see especially. So that's another one. What does one do? Well, they try to achieve advancement through proper repositioning, relying on what has been learned and on the advantages already built. It's not like you make up that you're going to go do a specifically new thing, if you haven't acquired prior capabilities to be able to succeed at that. So what would a strategy that takes advantage of the opportunity I described – which has to do with natural resources, technology and inclusion; social inclusion – look like?

We are at a time when it is changing; we are already at the moment when the paradigm of the information revolution is in its moment of splendor, let's say, where it is going to be deployed throughout the world and definitely change what were all the habits of the world of mass production of the previous revolution. But we are also close to the possibility of game-changing opportunities with the technologies of the next technological revolution.

So what do we do? Make a breakthrough now based on the window of opportunity that is created by globalization, the threat of climate change and the ICT paradigm.

By the way, the pandemic also forced reconstruction and an understanding that the state had to become active again. And that helps to make it possible for this opportunity to become even greater. And, of course, it is an opportunity for the holders of natural resources and to expand biodiversity. But this allows us to prepare for the leap into the next technological revolution, developing local and global capabilities, companies and networks in the sectors of the future, which are probably going to be bioelectronics, biotechnology, personalized medicine, nanotechnology, materials on demand.

That's where it is very likely the next massive revolution will be in 15, 20 years. And this is what Asia did with the ICT revolution without having planned it. They were actually the first assemblers of electronic issues, because they happened to enter a little bit later, but we are not going to discuss that now. So the question is: does the state do it or does the market do it?

Look, successful national projects have a common pattern: they start by recognizing the opportunity consciously or by good luck. Then you need adequate institutions of promotion and support, raising the technical capacity of the State. By the way, import substitution trained thousands of personnel for the Latin American public sector in Chile, ECLAC and an institute whose name I do not remember. These institutions and the high technical capacity of the State, because a competent State is extremely important.

They identify the great objective projects. What Mariana Mazzucato is now calling missions, which is much more concrete. This requires human, business and technical resources at various levels, and technical and commercial alliances. In other words, this is the production sector. Then financing, clear and favorable policies and a stable consensus: this is very important.

If we do not manage to ensure that the political sectors of the country – even if they have differences as to how to do it – have a clear idea of the direction that development is going to take, whether it is stable or not, every time the government changes, the direction changes. Because one can achieve little with a pure free market without the help of the State, but if at least one goes in the same direction, it is more likely to be successful. So neither the State alone, nor the market alone, but both aiming at a consensus direction. These are times for institutional innovations, not just technological innovations. We need appropriate institutional innovations and the creation of shared visions. And to have a shared vision, we also need institutional innovations to build consensus. In the 60s and 70s we had the very successful protectionist state. In the 80s until now we had a non-interventionist state, the free market not exactly too successful in my opinion.

Some will think otherwise. And from now on we need a promoter, active and innovative state. The pandemic is ushering in a new era. The post-Covid destruction, like World War II, will accelerate change in production methods and sustainable lifestyles. Both have to be transformed. Let's seize the opportunity. Brazil can be a world power in innovation, in natural resources, in everything we do. Let's seize the opportunity! Thank you very much!

ADRIANA: Thank you very much. Thank you very much, Dr. Carlota. What a pleasure to listen to you and even ending on an optimistic note, we could really use some optimism. I thank you very much and it is really interesting how we can look at history sometimes when we are in a crisis and we forget that history has a lot to teach us, that today we can look at the past, what worked, what didn't and build new things sometimes by putting parts together.
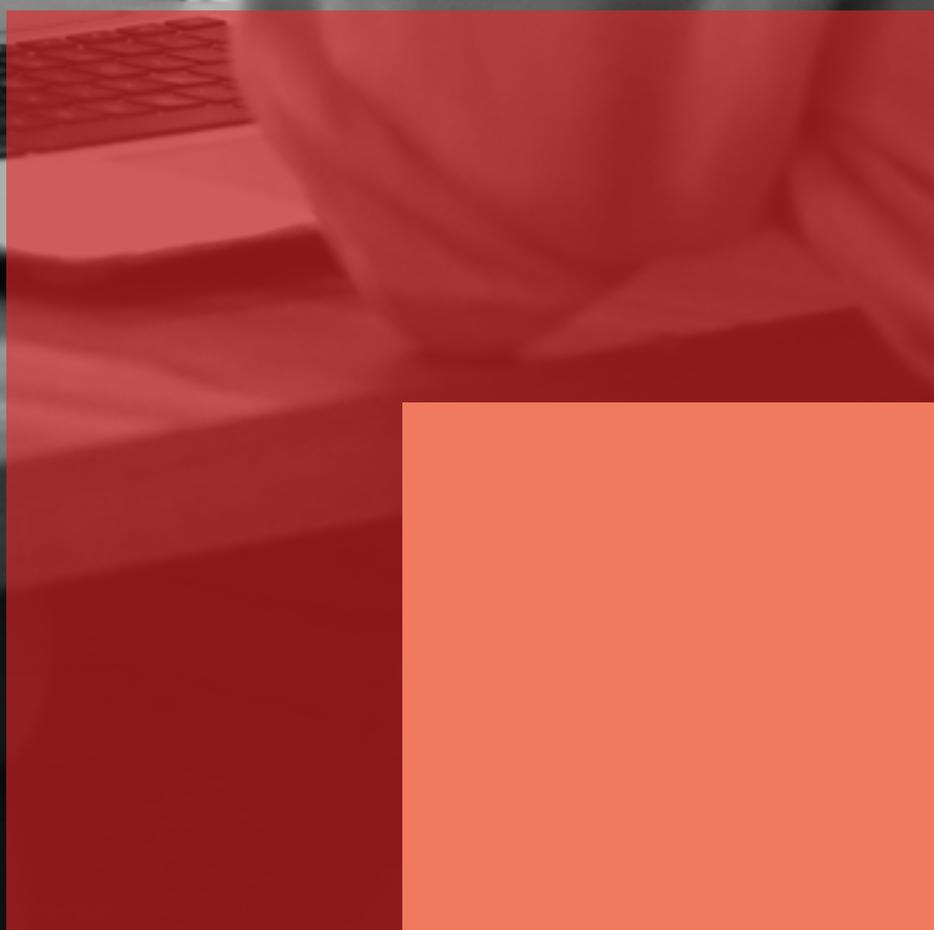
How to build dynamic systems and use more digital data

Tim O'Reilly

Lecture presented on November 16, 2020, at the 6th Public Sector Innovation Week: (Re)imagining and building futures.

Lecture presenter:
Luís Felipe Monteiro

Abstract: In his lecture, Tim O'Riley talks about scenario planning as a way to predict different futures and achieve a robust strategy, that is, a strategy that serves well to deal with whatever the outcome may be. Within this perspective, Tim brings the concept of government as a platform: a government that makes use of technological innovations such as AI and big data to invest in infrastructure and prepare for possible futures.

Keywords: scenario planning, robust strategy, government as a platform, investment.

LUÍS FELIPE MONTEIRO: First of all, good afternoon everyone. Good afternoon to all of you who are here watching the incredible Innovation Week, this event, now completely remodeled in the context of the pandemic, where we are fully online, closer than ever, closer to all Brazilians. We were talking just now, on the backstage, that there are public servants and participants from all regions of the country, people who could not be here if this event were held in person. So, it's a great satisfaction to be here with everyone, it's a pleasure to be here to debate these issues of innovation, transformation and changes that we are going through with Tim O'Reilly.

Tim O'Reilly, who is basically a myth for us in the technology area. He reinvented many times the technology processes in the Silicon Valley and the knowledge and innovations brought by his company were very important.

Hello, Tim, it's a pleasure to have you here. We've met a few years ago. Now we are virtually connected. It's a pleasure to join you in this session.

Tim O'Reilly is the CEO and founder of O'Reilly Media, which is one of my favorite editors on technology and innovation, books and articles. I was one of those who you impacted personally very much. It's good to have you here, so please tell us more about what you see around the globe. How do you see governments reacting in this new environment? What do you think? How do you think we should evolve in the future? How will governments be from now on? Thank you very much.

TIM O'REILLY: Thank you very much for having me. I am really glad to be with you. Thank you. Given the topic of your program, which is imagining the future, and I think imagining a better future, I thought I would talk about an essay I wrote a few weeks ago, or a few months ago rather, called "Welcome to the 21st century". And the idea that I explored in that essay, and that I'm going to explore today, is just how much we need to challenge our assumptions about what's happening in the world. Now I think we always have to do this because of technology. But COVID has reminded us that much more dramatic changes can come on us quite suddenly, and the question is: how are we, whether we're individuals or business people or people working in government to actually plan and COVID is almost like a practice session for us.

And I start the essay with this idea that the 20th century didn't begin in the year 1900. It began really in 1914 with the beginning of the First World War, which really upended the old order.

So, over those 150 years the people who were on top of the system, the way the system worked, changed fairly utterly. So, you know there was this saying in England, "the sun never sets on the British Empire'' and it was literally true. I mean the British, this tiny island, had possessions all around the world, so the sun literally never did set. But we're not very good at predicting the future, and Juan Enriquez who is a biotech investor wrote a book back in 2005 called "The United States of America '', which tried to transpose the situation of the British to us today. He was a little ahead of his time, but he said that in 1914, the British Empire held sway over a massive amount of the world's population, 23% of the world's population, 24% of its land mass, and yet only 34 years later it was reduced to its original island and a population of 66 million.

But if you had asked the British leadership in 1914 whether they expected their empire to be larger or smaller in 50 years, what might they have said? And I think that's just a really good reminder for us as we face the 21st century that so many of the things we take for granted may be subject to radical change. But the question really is, how much of the current world order and the current world economy do we take for granted? And how much should we question?

Fortunately, there is a discipline called "scenario planning" which helps us to think about the future in an uncertain world. Peter Schwartz is one of the originators of the technique. I read a book called "The Art of the Longview''. I'm quite sure it's available in Portuguese as well. But he describes scenario planning as an imaginative leap into the future, and it's not designed to predict what will happen. But to imagine various things that might happen and to develop strategies.

This is a family picture there with my mother and dad in the lower center, and this Grand House that my father grew up in, you know, farm boy effectively drawing water from the river below the Grand House.
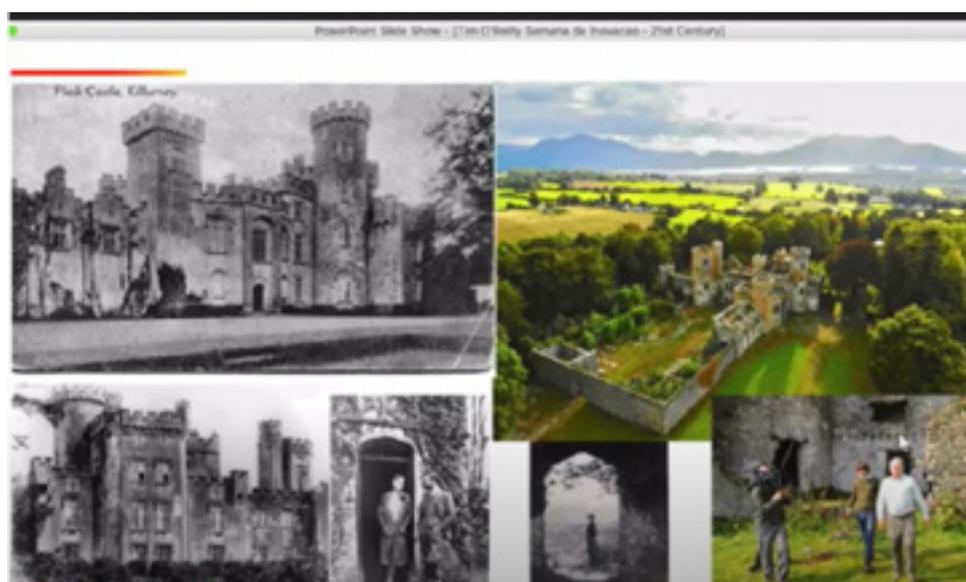
So, let me go forward and get to this point about scenario planning. Salesforce and Deloitte back in April did a set of scenarios for how to respond to how the world might be remade by COVID-19. And they got some things wrong. They got some things right, but it's an illustration of how to think about the future in this scenario driven way, and I want to talk a little bit about that.

You start out by identifying things that are radically uncertain. So, if you think back to March and April, there were a set of uncertainties. We still have a lot of them, but they said "look how bad was this pandemic going to be?" Another was, and this was something of a surprising one, that they chose to focus on the level of collaboration within and between countries. And you know, for example, I think very much here in the United States that this turned out to be a very prescient uncertainty because it turned out that there was very little collaboration between the government and the private sector, between the federal government and the states. And so that turned out to be something that generated a whole lot of ideas about what might happen that turned out to be true. Obviously, there's the healthcare response to the crisis. We now see that the healthcare system has gone through some initial crisis and has responded pretty well. We've seen vaccines being developed. I don't think we quite saw how bad the economic crisis consequences were going to be, but this was an uncertainty that you could identify very early. But also identify this question of the level of social cohesion.

Now the thing is that in order to do scenario planning, you can't focus on all the uncertainties. So typically, a group that's working on this picks a couple of uncertainties that are used just to develop these so-called scenarios. These imagined futures help to stretch your thinking about what's available and so in their particular case they chose the severity of the pandemic and the level of collaboration within and between countries. Now that of course is very appropriate for this talk because I'm speaking to an audience that's in public administration, and yes, that became a critical question. Was there going to be a coordinated response, or was it going to be weak and divided? And that turned out to create very different futures based on how things turned out.

Now they developed a set of four scenarios, of course, when you have these two vectors that are crossing, you know they do the typical thing and you divide it into a graph into 4 quadrants and then you do some storytelling about them. So, I'm not going to go into detail about the stories that they told, but you kind of get the idea that there are different futures. And this is the point I really wanted to get to.

That scenario planning doesn't ask you to say: "Oh yeah, that's the one that's going to happen. The one in the upper right is the one that you really have to prepare for". No, they say: "Look, there's a wildly divergent future. Some of them are pretty good. The pandemic wasn't a big deal. Everybody dealt with it well. The other is a real disaster". And then, they say: "Well, is there a strategy you should take?". That is what they call robust, that is, it works well regardless of which scenario turns out to be true.

And then they ask you to say what scenario are you actually preparing for. Which ones are you ignoring? What would you do differently in order to succeed in each of them? And then of course, what capabilities, partnership segments and strategies do you need to learn more about? So, this is a way of thinking about: how do you prepare for unknown futures? And this is a great crossover into the world that I've talked about for years of predicting the future and the present. There's this quote from science fiction writer William Gibson that I've been using in my talks, probably for 20 years:

"The future is already here. It's just not very evenly distributed."

If you look around you can see people who are living in the future today. Those of us who were pioneers of the commercial Internet in the early 1990s, we're living in the future. Now everybody's living in that future.

So, you can kind of look around and say, well what's happening today that teaches us something about the future? And in scenario planning they call this news from the future. You're literally looking for new stories that confirm or disprove some of your ideas about what might happen. Because it's not one future, but many and we really see this with COVID, you know. There's been a number of articles now about the difference between countries, which is really focused on how well their government and the trust between people and government function. And it turns out that in South Korea you know they basically dealt very, very effectively. They've had a total of 487 deaths, while in the United States, in disarray and denial, had 240.000 deaths. And the disease is pretty well managed in Korea, but totally out of control in the United States.

So why was South Korea able to do so well? And there's been some recent articles that identify the idea that robust government plays an outsized role. Francis Fukuyama wrote an article in foreign affairs a couple months ago called "The pandemic and political order", he said the factors responsible for successful pandemic response have been state capacity, social trust and leadership. Countries with all three – a competent state apparatus, a government that citizens trust and listen to, and effective leaders – have performed impressively, limiting the damage they've suffered. And so that's a robust strategy in a nutshell. A robust government is actually a pretty important bulwark against uncertain futures.

Similarly, following the science is robust. I have an Australian son-in-law; my daughter and my grandchildren and my son-in-law have moved back to Australia because they can live a normal life there. Whereas here in the US we're still vacillating between crackdown and spread of the virus. So, following the science is robust. But now I want to move on to a sort of a much more O'Reilly specific idea for how to think about the future. And it's not, strictly speaking, part of scenario planning, but it's very aligned with it. And I call it thinking in vectors.

So, a vector has both a magnitude and a direction. So, in this simple illustration you can kind of see that if you have that blue line with a force that's taking you over to the left and you have a force represented by the green arrow taking you back to the right and the red arrow taking you back to the right and up they add up into that black arrow. It's not always obvious because there are so many forces in play driving the future. But you can still see that forces pushing in different directions end up with a kind of a clear direction. You know reality is way more complex than this simple illustration, but by getting a sense for vectors for how quantities and directions and trends, how big are they? How fast are they accelerating? What direction are they going? Which ones push against each other?
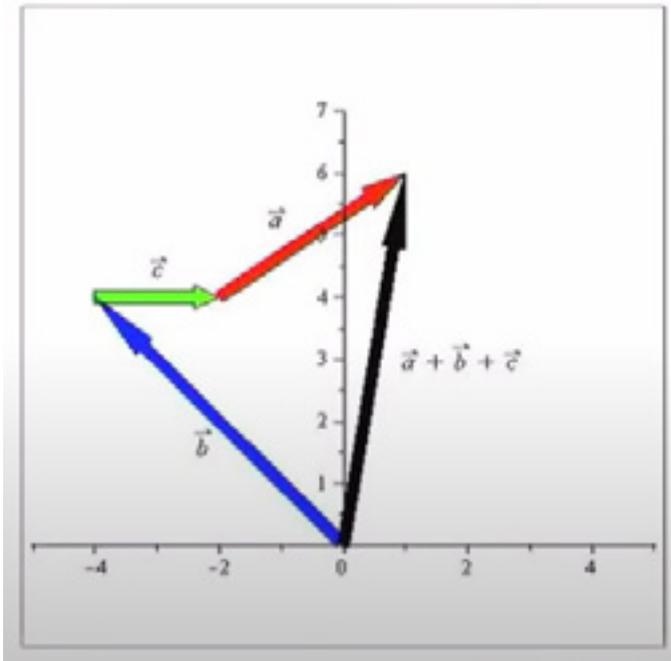
You can start to get a very powerful sense of the future. And this was very clear in the coronavirus context with a series of articles which you may or may not have seen – they were actually downloaded and read, I think, tens of millions of times around the world, by Tomas Pueyo.

Now, he was not an epidemiologist. He was a Silicon Valley growth marketer and, yet, he was able to read the epidemiology and, using his experience of trends and vectors from Silicon Valley growth marketing, was able to say "These are some different possible futures. Here's what happends if we do nothing; here's if we do light mitigation; here's what happens if we - as we call it - drop the hammer; and then ongoing there'll be a dance". Very, very precedent set of articles back in March. And the fundamental idea of this thinking and vectors is: you look for something and you say, well, what happens if this continues? If this goes on, and then of course you're looking for this news from the future that says "yes", it is going on or it's accelerating or it's slowing down, or there's a new vector that's coming in.

And obviously this is true in many other areas that affect public policy. Climate change is quite clear. There's a vector there and it's accelerating. We should be very concerned about that, particularly when we see that carbon dioxide goes just about vertical, you know. So, there are some people who are accepting science and building public policy around it, but far too few. And far too few taking it seriously. Income inequality, you know it's not as clear as coronavirus growth or global CO2 concentrations, but it's pretty clear that inequality is becoming a serious problem around the world. It affects life expectancy, infant mortality, the homicide rate, mental illness, drug and alcohol addiction, social mobility.

How do we understand these kinds of trends and who is trying to shape public policy to deal with them? And I think the very first thing we do is we start to recognize them. We start to say "Well, if we're not even sure of what's going to happen, how do we build a robust strategy?" The same question of vectors is really illustrated wonderfully in a talk that's given by Google's chief economist, Hal Varian. He has a talk that he calls "Bots vs Tots". Now some of you know there's been a lot of talk about, well. Are robots going to take all our jobs? And thinking like an economist, you start to say, well, there's a supply and the demand curve and the question is, well, how many more children are there? And is it going up or is it going down? How fast are the robots coming? Is it going up or is it going down? And there's going to be an interaction between these two vectors, which is going to satisfy the supply curve.

Anyway, I won't go through his whole argument, but he comes to the conclusion at the end that for many countries if the robots come to do many more jobs, they'll be coming just in time because the supply of new children growing up into, you know, working age adults is going down. And so, you can again look at trends. You can look at them and do the math and you can see the future. So, what you want to develop is a kind of radar. Whatever you're dealing with, you look around, you watch events a little bit like they're incoming aircraft or weather, you know, storms, remembering that things come from different directions and at different speeds. And you don't just do it in times of crisis like coronavirus; it's something that you should be doing every day.

Now just to bring this home, you know, to my business, we do it every day. We have to predict what books we should publish about up and coming technologies; what courses should we put on in our online learning platform about upcoming technologies; so, we're always trying to study and say well "what's growing and what's not?" And in particular, we were very concerned with how fast things are growing. So we look for examples at the search patterns on our online platform. And we say, ok, yeah, Python's the number one search term. But look at this number three, ok, Kubernetes. The graph over the right shows how fast it's growing. It's growing at about 30% a year, whereas Python is growing only a very small amount and a lot of technologies that you hear a lot about in the news are actually shrinking, so we pay attention to that rate of change, so to speak.
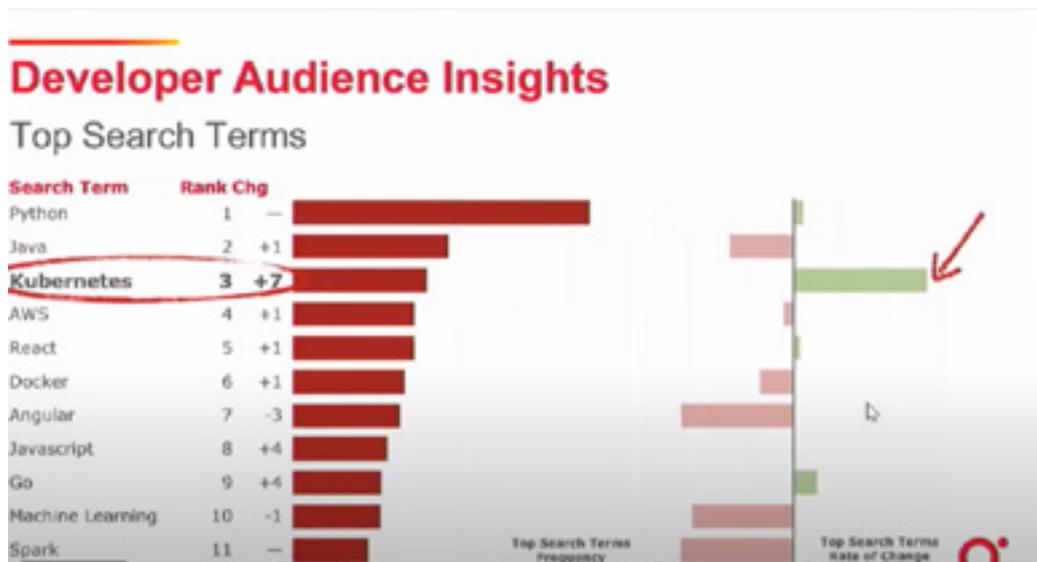
So, because we're used to thinking like that, we were much more prepared than a lot of companies when COVID hit. We actually had one of our largest events, the "Strata Conference" on big data and it was due to be happening at the San Jose Convention Center for about 8000 people, just as COVID was hitting. And about two weeks before the event, we decided that we had better cancel it. People were starting to get very nervous and a lot was going on. But we didn't just cancel that one event. We actually ended up shutting down our entire events business. Our events business and everybody was like "that was fast" and much later of course everyone said what wow, how were you so pressing? Why did you do this so soon?

And the answer was pretty clear because we think in vectors. And we came to the conclusion that, whether it was short or it was long; whether it was really severe or whether it was not so severe, in different scenarios: in all of these scenarios, the best thing to do is to shut down. Why? Because the uncertainty alone was going to cripple all of our future events. We were already seeing this immense drop-off where nobody was signing up. And so all of the costs would still be there.

In fact, the further we went on closer to the events we'd have more sunk costs in terms of commitments to hotels and venues and food and marketing, etcetera. And we could just see that just the uncertainty alone, even if it only lasted a few months, was going to be incredibly damaging to the business.

And meanwhile, we've already been developing an approach to online events as part of our platform. And the actual content curation for physical events was done by the same team that curates content for our online platform. So, the robust strategy, regardless of what happens, was to accelerate the pivot to online. So, we were able to cancel the in person event and put on an online live event only a week or two after the original date, which also drew many thousands of people. In fact, I think we had more people attend the online event than we had the original event. And we were able to act very quickly because we were able to recognize what was happening and the implications, we were able to see the future in the present.

So, I want to move on here and talk about this idea of robust strategy as a societal level. And that is we have to prepare for the unexpected. You know, whether it's the pandemic, climate change, financial collapse, war, or something else entirely. That kind of forethought is one of the fundamental roles of government. But when we also think about robust strategy, I think it's important to understand that social cohesion, fairness and justice are robust. They're far more robust than inequality. And we have to rethink our economic priorities. So, a wonderful phrase from Erica Liu and Nick Hanauer where they say:

"We all do better when we all do better."

And I think that's absolutely right. Government needs to invest in 21st century infrastructure. I'm going to talk a little bit about what that means. We have to start. We have to think about how we protect the future from the past. We want to nurture new industries, not protect old ones. And that's why I've been talking a lot in the last few years about building the next economy. What does it look like? And that brings me to this idea that I've talked about for the last 10 years or so, which is government as a platform. And when I first began talking about that, I focused a little bit on the idea of procurement versus platform, and I was inspired when I talked about this in 2008 by the iPhone, which had recently opened up the App Store. And when the initial iPhone was released in 2007, it had like every other phone 15 or 20 apps. You could do a few things. And now you know in 2020 there are millions of apps. Apple opened up and unleashed a market. Now many people took this to be the beginning and end of the idea of government as a platform. Let's just open up data and people will come.

But I thought that was only one of many lessons for technology from the government. It means way more than open data. In a lot of ways, we have to think about the government building the infrastructure for society to prosper. And that means the rule of law, ensuring safety, fairness, justice, and equity. And also, the rules of the road. Now that's different than the rule of law, because of a great example of what's called a "Nash Equilibrium" in economics, after John Nash, who was the mathematician who was the subject of that movie, "A Beautiful Mind". And that is, there's an equilibrium in which everybody agrees to do the same thing, but they could agree differently.

For example, in the UK, people drive on one side of the road. In the United States, they drive on another. And this is super important in technology because interoperability and standards like the Internet, like TCP/IP, have been enormous enablers for the future, and I think government, particularly when it's focused on antitrust and big companies needs to actually enforce and insist on standards and interoperability so that one company does not effectively hijack the rules of the road.

Government provides financial stability and investment capital provides common infrastructure, it invests in strategic futures and it regulates and manages markets. So, contrary to what you hear from a lot of people, I think governments are really good at creating markets, and I think a great example of this is the notion of self-driving cars. You think of everything the government did to enable that new market. First of all, the roads are generally funded through taxes and it's a shared infrastructure. Think about the global positioning satellites. Again, the government provided infrastructure, which was opened up to the world using standards and interoperability, so everybody, every phone can have a little radio in it that can find its location. All the mapping data that's used by companies like Google to provide Google Maps. Again, the government provided open data. And then the original grand challenge from DARPA, The Advanced Projects Agency, here in the US, which basically kicked off the self-driving car market.

But also, financial markets. That's the First National Bank in the US, the Internet. So, I highly recommend, if you have not read it, economist Mariana Mazzucato's book "The Entrepreneurial State", where she talks a lot about the role of government in advancing technology. But the government is not so good at managing markets or capturing value for their citizens. And we see this right now in the question of how much should coronavirus vaccines cost. The government has invested billions of dollars in accelerating vaccine development.

In fact, most research is done by governments, it's funded by governments, yet most of the profits, including fairly large monopoly profits, tend to be basically taken away by the pharma companies. And governments are often the customers who are paying. And they're not negotiating on behalf of their citizens, who are the ultimate ones who are paying. So, we have to ask how should the return on government investment be shared? How much should go to companies? How much of it should go to taxpayers? And this idea of who gets what and why is the fundamental question of economics.

Alvin Roth got a Nobel Prize for his work. He worked on markets without money like kidney transplants. But he really points out that you can actually improve the design of the marketplace and have better outcomes. And I think there's a real opportunity to do that today with technology. Mariana Mazzucato again says:

"Markets are outcomes."

They're the result of design decisions and those design decisions are typically made by governments. She's written a lot about this in a more recent book called "The Value of Everything". But this is also the fundamental question of digital government. Tom Steinberg, the founder of MySociety, pointed out back in 2012 that good governance and good policy are now inextricably linked to the digital. The problem is that government and central bank statistics, economic modeling and regulations are often too slow for the pace and scale of the modern world.

Jeff Jonas, the former IBM Fellow, said: "would you cross the street with an information that was five seconds old?" So, the great IBM ad that he did a few years back. Tom Loosemore, the Former Deputy Director of the UK Government Digital service, now with public digital, says: "why is policy still educated guesswork with the feedback loop measured in years?". We need to have real time digital regulatory systems. Now we have them in the private sector, Google search quality, social media, feed organization, e-mail spam filtering, credit card fraud detection, risk management and hedging in the financial sector. These are all real time digital regulatory systems, but the government lags far behind. It tends to basically promulgate rules but not measure their results, not respond in real time, not update them.

So, I've been focused a lot in advocating for this kind of 21st century government regulatory system. I think it was about 2012, I wrote an article called "Open Data and Algorithmic Regulation", I was meditating a lot on what we learned from the way that Google manages its search through a variety of signals. And the conclusions I came to was that the regulatory system has to operate at the speed and scale of the system it's trying to regulate. It has to incorporate real time data feedback loops. It has to be robust in the face of failure and hostile attacks. Think about the struggles that Facebook is having today. It has to focus on outcomes, not on rules.

I'm going to come back to that, and have to address the incentives that lead to misbehavior. In other words, if you can spam a system and get paid for it, you're going to do it. So, you have to be able to identify those kinds of problems. This last thing has to be constantly updated to meet ever changing conditions. Google is continually adjusting its algorithms for the outcome. Facebook is continually adjusting its algorithms. It's focused on the outcome, not on the rules, whereas government regulation tends to say "well, here's the rule and very little measurement of whether that rule achieved its intended effect".

Now we see how this had an impact in the real world in terms of South Korea's real-time testing infrastructure because they had previously had a brush with another epidemic in 2004. They put real time testing infrastructure in place. Temperature checks at airports, rapid testing infrastructure, and they basically had a very effective government response because they had the forethought returning to the earlier theme. Now to be able to deploy real time response, not just in the digital realm, but in the physical world.

My wife, Jen Palka, who is the founder and executive director of Code for America but also the founder of the United States Digital Service, has written a lot about delivery driven government. That is where you have to really put the delivery of service and the effectiveness of service delivery. And the user sentiments of service delivery and data about what's working are really at the center of policy development, not just a digital service that is added on at the end.

So that's where I come back to this idea of focusing on outcomes, not on rules because algorithmic systems – which is what you need to have a real-time digital response – they all have what's called an objective function. Google looks for relevance. "Did people actually click on the things that we served up to them?" If they clicked on the 3rd result in a search set of search results rather than the first, maybe that means the 3rd result is better and one of the Google signals is "Did people go away and come back and click on something else again, or did they go away satisfied?" And that is literally a feedback loop that changes Google search results. Facebook on the other hand, said "well, we want people to show more of what they spend time with." And it turned out to have a very different impact. It was like, "wow, let's show them more things that make them angry. Let's show them more things that make them upset". Facebook thought that showing people more of what they liked would bring people together would also make them profits, but they did not understand the social impact.

So, we have to ask ourselves in the same way with government tax policy, when we incentivize capital markets versus employment, what are we trying to achieve? I'm not sure that the government is always as clear about that as it should be. We have to ask: what is the objective function of our policy? And of course, because when platforms get their objective function wrong, there can be serious consequences.

Facebook is the poster child for that today, but when you ask what is the objective function of our government regulated financial markets, in the US at least, and I think in many other parts of the world, we basically have doubled down on an idea that was put out by economist Milton Friedman in 1970 that the social responsibility of business is to increase profits. And of course, that has had the intended effect. I hear about our corporate profits after tax in the US. They've gone up pretty steeply since 1970. But at the same time, we see this divergence of productivity and real median family income. The profits are going to fewer and fewer people, leading to social instability. We have to ask, was that really what we wanted? Was that really the right goal? Because tax incentives are algorithmic economics, just as surely as Google's algorithm economics or Facebook's, they're just in slow motion.

They don't change very often, and they're not focused on what the outcomes are, so we have to ask ourselves constantly as we start thinking about 21st century policy. How do we build more dynamic responsive systems? And we have to understand we're getting what we wanted. My friend, Andrew Singer once told me:

"The art of debugging is figuring out what you've really told your program to do rather than what you thought you told it to do".

Are we doing it with public policy? What do we actually think we meant to do? But we do have new tools. Paul Cohen, who was the DARPA program manager for AI, is now Professor of Computer Science, says

"The opportunity for AI is to help humans model and manage complex interacting systems".

And we're starting to see this come into discussions of public policy. A recent article from Microsoft and Open AI proposed automating US tech export controls. They're literally making the case that heavy handed rules that basically specify one thing are not good enough, we need to be using AI techniques to more dexterously, identify and restrict problematic and users or uses by continually improving to incorporate government policy changes or observations from unauthorized users or use attempts. This is a whole new approach. But we're starting to talk about it, we're starting to consider it.

A wonderful work by Carla Gomez is at the Institute for Computational Sustainability. They've done a lot of work actually in Brazil, looking at the interaction of economic forces of population displacement, sensitive species in the placement of dams on the tributaries of the Amazon. It's amazing work where you can actually use the tools of big data of AI to start to model and manage these complex interacting systems that are increasingly the face of policy.

So, I just want to get you to this point where the great opportunity of the 21st century is to use these newfound cognitive tools to build sustainable businesses and economies. It's not just to keep doing what we're doing. I think we have an enormous opportunity going forward.

I think the main point I would leave you with is that, this again, Mariana Mazzucato at UCLA. They have something called the Institute for Innovation and Public Purpose, and I think this idea of what a mission-driven government does for us. And I think it would deal with climate change, it would prepare for future pandemics, rebuild our infrastructure, feed the world, end disease and provide health care for all, resettle refugees, educate the next generation, help us care for each other. So, I guess all I'm saying is when you think about the government as a platform, this is what you should be thinking about.

LUÍS: This sounds very challenging so to speak. For us here in Brazil we've been following the government as a platform concept for many years. Since you quote the term a decade ago. You told us that we should work as operating systems. That we should follow what the private sector leaders are doing and we would become providers of technological infrastructure to society. Here in Brazil, we established the gov.br platform, which now gathers more than 3000 public services. It integrates states and municipalities, more than 60% of all the Internet users in Brazil are now users of the gov.br, and this means 82 million users monthly. Now we have 63% of our public services online and fully digital. And we saved more than 150 million hours of bureaucracy for the Brazilian citizens.

So, we think of gov.br as a platform. But on the other hand, we want to know how we could do better or what you suggest to us about how to use this technology in the real-life scenario to work as a platform, not only as a regulator, but also as a service provider. How do you see all over the world governments working with the private sector in civil society to provide better and more efficient services to its citizens?

TIM: Well, I guess I would say first of all, congratulations on the progress in Brazil. I've seen that you're the most highly ranked digital government in South America and one of the most highly ranked in the world. So that's really fantastic. I guess I'm trying to make the case as we go further and further into the 21st century that the stakes are higher for government, and for digital government. I think we really have to start adopting a new approach to managing the systems and, again, I think it starts just like when I started talking about government as a platform.

It was really a call to recognize with a different metaphor how the government actually operates, and that's what I'm still doing. I'm saying if you start to understand that there are analogies between the way that governments regulate the economy with tax policy, with central banks, etcetera, and that these things are analogous to the way that Google or Facebook regulate their platform with their algorithms, and then you start asking yourselves, how do we modernize that stuff? How do we actually improve it? So that it becomes more focused on what outcomes we have as a society. I think it's a very heavy lift, but there's amazing work going on, in academia and the private sector.

I could point you to other examples besides the work that Carla Gomez is doing, where we can start to use data and AI to actually improve the processes by which we manage what we do. And I think you know clearly these areas that get talked a lot like smart cities, but when I look again at the massive changes that we're heading into in the 21st century, I think it's going to be a lot of migrations, understanding where people should go, what kinds of challenges that brings up, how we think about the future is going to shape very much what we do and the choices we make.

LUÍS: Thank you. These new technologies that just arrived every day, like you said, AI like robotics, UT and everything. Most of them were real to us after the first edition of your book, "WTF?: What's the Future and Why It's Up to Us". How do you see the evolution from the 1st edition? If you had a blank piece of paper right now, would you change the approach you took on the 1st edition? How will you write the new versions of your book and how do you see us as a government? To keep the pace of these innovations, how do we avoid becoming obsolete in these highly evolving and speedy technological innovations?

TIM: First of all, I don't know that I will be rewriting that book, but I am working on another book which is about antitrust in this context. As we have these giant global platforms like Google and Amazon, Alibaba and we have to ask, do they have too much power over big segments of the economy? And if they do, how will we regulate them? How will the government come to grips with that? And I think right now much of what the government is doing is the kind of enforcement that it might have done in the 20th century. And I think we can do better. I think the big challenge that we have to come to grips with is first off understanding how to change the incentives for these companies.

And I think some of that requires the government to understand that it is actually controlling, even in the most free market economy, the government plays a far larger role than it admits to. And I think that's why I'm very enamored of the work of Mariana Mazzucato because she keeps coming back to this idea that the government is, in some sense, the proprietor of the platform and unless it takes that role seriously, it is not going to be able to do the kinds of things like regulate properly and prepare for the future.

And I think we have enormous challenges here in the 21st century that are going to require vigorous, effective government. And that's why I keep pointing to these studies that kind of show the response to COVID and how much effective government has played a role in the divergent outcomes across different countries.

LUÍS: We have all these challenges and opportunities regarding new technologies and they are all based on data, citizen data. Right now, we are following the health challenges, how we deal with the COVID-19, and how we deal with the vaccines, and the logistics to make the country more prepared for the COVID next phases. But all of this data is very precise and personal. How do you see privacy in that concern? How should governments work to keep personal data and privacy of its citizens while on the same hand it has to increase data exchanging mechanisms to be able to respond in real time as you said?

TIM: Yeah, I have a somewhat, probably controversial, thinking about privacy. I believe that the fundamental question is not who has data and who doesn't. I think that fundamental question is, are companies and governments using our data on our behalf for our benefit, or are they using it against us? Because what I see is that people are very willing to give up their data in return for services.

Mapping is a great example. I'm happy to tell Google where I am at any time so that they can give me directions and you know, I can literally get anywhere I want. And that's like an exchange where we've said, ok, we're gonna give you our data and you're gonna give me back a service. And the question really arises: what happens when Google uses that for other purposes? Sometimes we say, oh yeah, that's actually really ok because even though I didn't anticipate that that service would be there, I'm really happy because they did it, and I really love it, it's really useful to me. In other cases, they're selling it to someone else, and I get no benefit whatsoever.

So, when I think about privacy, I think this idea of who has the data and we have to keep it private it's just the wrong approach. It's like no, we have to make sure that companies that have our data can only use it for our benefit and they can't resell it to other people where we get no benefit. They can't use it against us. A great example of that is you know healthcare privacy. There's plenty of data that shows patients like me, where people who have life changing diseases are very happy to share their data with anyone who can be helpful to them. The reason why it's a privacy issue is because at least here in the US, insurance companies use your data against you. So, if I were to have a magic wand, I'd say the government should get off the privacy thing and instead get on this idea of regulating harmful uses of data against the people who provide it.

LUÍS: Yeah, we see lots of new approaches to privacy. First of all, we started to close everything and to make regulations for everything. But right now, we see how data is important, and that's for sure a quite good usage of data that should be spread all over and I agree with you that we should avoid the bad usage of it. In your presentation, you told us that we have many scenarios where we have to turn on our sensors to catch all the signals that the new technology is coming, the development of a society. But if we have many futures, possible futures, how can we do it? Is there any method? Or clue? Or are there any recipes that you could give us that says how to choose the best future or the possible future among all the futures that these signals will give us as possibilities?

TIM: Well, I think that really the key point of my remarks is this idea of robust strategies. But you know, you can ask yourself: is this strategy one that is good regardless? And I know, think climate change is a great example. There's been a lot of debate, politically, about how bad the problem is gonna be, and some people are in complete denial for decades. Other people say this is a crisis. But if you apply the robust strategies filter and say, well, if the people who are really worried about it are right, we better deal with them. If the people who are saying it's no big deal are right, and we invest in, say, solar energy and electrification. It's gonna be pretty good anyway, right? So that's clearly a robust strategy, whereas if you say "no, let's double down on fossil fuels." You know, it's a terrible strategy.

If the people who are worried are wrong are right, right? And it's only good in one future, whereas you look at what happened with Elon Musk. You guys have one of the richest men in the world because he bet on that robust strategy. Look, let's go to electric cars, and let's work on solar. He's only one of many 21st century climate change billionaires. You look at companies like Beyond Meat. You know this is trying to deal with agriculture. You look at the solar cell billionaires in China, you look at the countries that are investing in dealing with climate change and are having an enormous economic advantage over those who are hitting the sand. So clearly, it's a more robust strategy regardless of which future turns out to be the case.

LUÍS: Yeah, the real lesson is implementation. A good strategy and a good implementation may be more important than the right choice because between all the choices, if you do a good implementation… We will create a better future in the end, right?

TIM: That's absolutely right.

LUÍS: So, Tim you are right now being watched by more than 6.500 Brazilians, most of them are public servants, some of them regular citizens, as much of the Brazilian society. So, the main topic of this Innovation Week is: what do we want to leave behind after the COVID shock, what we learned and want to keep for our future, and what should we do differently from now on. So, could you close your session with main ideas? And by the way, thank you for being with us in this virtual session and I hope you can come physically to Brazil in the near future.

TIM: I hope I can do that too. It's a country I've always wanted to visit and I've never been there. So yes, I will definitely put that on my future calendar. Let me close by saying that there is an opportunity for a reset, that's why I opened with this idea of the way that World War One reset the entire global economy.

COVID and climate change, I think are going to change the economy profoundly. Right now, we have a consumer facing economy that's based on consumption. It's based on increasing corporate profits, and I think we're going to have to invest pretty seriously in dealing with big, hard problems, and you look at the difference that we've had with COVID and having to provide support. It's suddenly making us think about questions like universal basic income, which seemed like fringe ideas for a while. You know climate change is going to accelerate so we're going to say wow, maybe we don't want to be just saying that growth always has to go up to the right. Maybe we need to say we need to focus away from the consumer economy into, for example, mass electrification. Help, dealing with the impact, helping people to relocate.

There's going to be all these redirects of the economy that are going to require, I think, the kind of intervention that is very different from what we've expected in the completely free market economy we've been aspiring to for the last four or five decades. We need to rediscover the sense of public purpose redirected by the government to have forethought, to help push the economy and to unleash the private sector in the way that, for example, Franklin Roosevelt did for the US economy in response to World War Two. It was like "we have to go in this direction, we're not gonna make cars anymore, we have to make airplanes".

And once they did that, it was the genius of the free market that actually rose to the occasion. But it took a government push and I think we're going to have a lot of circumstances in the 21st century that are going to require that kind of strong leadership, mission-driven leadership that then catalyzes the private sector. And that really is the essence, I think in the 21st century version of government as a platform.

LUÍS: Thank you, thank you very much. Ladies and gentlemen, this was Tim O'Reilly, the founder of O'Reilly Media and the inventor of terms like "open-source software", "Web 2.0" and the "government as a platform". Thank you, Tim. It was a pleasure and as I said, I hope we can be together to discuss much more about how governments can move on.

Thank you very much.

TIM: You're very welcome.

Radical Futures: Data and Data Coalitions

Audrey Tang

Lecture presented on July 8th, 2021, at the event Radical Futures, of ENAP.

Lecture presenter:
Bruna Santos

Abstract: With the theme Data and Data Coalitions, Audrey Tang, digital minister of Taiwan, reported on the country's experiences in tackling Covid-19. In her definition, coalition is the use of data in a participatory way. Audrey presents that the success in tackling the pandemic without confinement was achieved by also fighting infodemic, that is, false information that spreads, especially in digital environments. In addition, the first non-binary minister posits that for the data coalition to be effective, it needs to be fast, fair, and fun.

Keywords: data coalition, infodemic, pandemic

BRUNA: Hi, I'm Bruna Santos, Director of Innovation at ENAP. Data has generated innovation in the last two decades at an accelerating rate. Economics has brought us structures that concentrate wealth and power. So to unlock the resources and potential, how can we find new ways for individuals to participate in decisions? Data is the new resource, and we need tools to calculate its value and find ways for it to give people more say in decisions. These are questions that will guide our conversation today. And to inspire us we will have Taiwan's digital minister, Audrey Tang, who will share the worldwide work done on shared control.

Audrey Tang is from Taiwan and the 1st Digital Minister. She is a hacker activist and the first non-binary minister from Taiwan. She is an influencer for many people like me, working on governance and innovation. Audrey, thank you so much for being here with us. You have the floor.

AUDREY: Hi, I'm really happy to be here virtually to talk a little bit about data coalitions and I look forward to your questions and interactions with the panelists. Now let's share my screen and see if the data coalition mascot appears. You can probably see a Shiba Inu, a dog.

So in Taiwan, since the beginning of Covid-19, the pandemic, on January 1st of last year, we have gone almost 500 days without a local outbreak. Recently we had an outbreak, but only for a few months, and now we are back to where we were, less than 20 local cases a day. The key to enabling this coronavirus fight without lockdown is fighting the infodemic, the conspiracy theories. This is because of the use of data in a participatory way or data coalition.

The data coalition mascot is a Shiba Inu named a dog that lives with the Ministry of Health and Welfare's participation officer. So when there is a new data coalition, the Participation Officer, who is a public servant, career public servant, and every minister, to engage the public, he goes home and takes new pictures of the dog and establishes rules of social distancing. Or that you need to cover your mouth to sneeze. And the participation of the data coalition, in which the participant must protect his or her face, so that you don't do something that the dog shows here. I brought some data coalition cases. It's fast, fair, and fun. The quick part, I mean the collective intelligence, we need to build safe spaces for the digital public and the infrastructure. This is saying instead of using the antisocial corners of social media where it's easy to spread anger, discrimination, and revenge, we need to design the interaction in a way that doesn't serve the interest of advertisers or shareholders.

That is, the civic infrastructure has to be covered by the social sector, this has been happening for 25 years. Here, what we see is a form that we call PDT that has the sharing of the ideas of people my age, because it has been running for 25 years as collaboratively managed open source. It is a student project at the university, there is no commercial interest, it is subsidized by the national budget for academia.

Because the national university has a liberal code of ethics, its very active participation in public health and other public issues are brought up for discussion.

So, as you can see, on the last day of 2019, on PDT there is a post by a young doctor, she posted something that said that in Yuhan market there were seven cases of confirmed Sars and maybe other things like that have been posted on the internet, but only that one got a number of votes and people screened the legitimacy of the message and came to the conclusion that Sars 2.0 had been released. So this resulted in health inspections, in people leaving Yuhan and coming to Taiwan.

Which shows that a civic, social sector driven space can easily gather collective intelligence without being distracted by the not so important health issues. This stems from expectations that people without digital access or digital capability are a responsibility for the state to bring connectivity, under the banner of broadband as a social right.

Infrastructure requires committed investment for anyone not connected to become connected. But even in Taiwan where we have mountains over 4,000 meters, even up there you are guaranteed 10 megabits per second for 16 euros a month for a limited data connection. This ensures that people can participate, look at daily streaming throughout the epidemic. After the message was posted on PDT, people watching live streaming interacted as a hub on things like the 1992, which is related to Covid. Over 2,000 calls were made to 1992, anyone can participate by sharing what they see, on the spot, or bring constructive criticism of the policies brought by PCC. So it's two ways and even the very young non-voting people, for example, last April there was a young man who criticized the pink masks.

"I'm a boy, I don't want to wear pink in my school, maybe other boys in my school have blue masks to wear, do something about it." The Participating Officer took this to the Minister, immediately, and the following day, everyone at the conference wore pink masks. The Minister even said that the Pink Panther was his childhood idol, so the mask was adopted. This quick response instead of waiting 60 days, as in literally minutes and hours, is a direct response, and has more reliability. It's the basis on which fairness guaranteed by data coalitions can be done, because if people don't have a way to quickly correct data bias, people are not going to trust the data coalition and bring it into interest.

Now the part about being fair, I talked a little bit about the masking and everything, it looks like this map was built by the government, but it wasn't. Last February, some hackers, civilians, people who are independent in Taiwan, built these maps, in a few days, showing the availability of personal protective equipment, specifically medical grade equipment in the stores and pharmacies nearby. In the beginning it relied a lot on crowdsourcing, meaning people would use these maps and they could report if something was out of stock.

Bringing people to where they had stock, obviously, so they could get those PPEs, but it was all done with crowdsourcing, with a lot of risk, because if nobody or not many people participated, it wouldn't work. In a few days, and because I am part of these movements here, the G0V movement, a project that prototypes outsourcing without government participation, in every government service is something that has already been read here, and then hackers can do the same kind of service, in the same way as G0V, just changing the O to a 0, which is very similar in the address bar of your browser. People started to see a swarm of hackers doing reimagining of state digital services, so for example the mask map was an example of that, because it is always open source, which means that the creators will set aside property rights.

So we don't have to bid or tender to use that, instead we just say "ok let's do a reverse bidding, you can't get rid of this interface that people already like, but you can provide the real time data in the API's." And then you can see that when people buy these masks they use the national health card, this one that is maintained by the national health insurance, not only for natives, but for all residents and when people use this card, actually, we know every 30 seconds how many people bought, how many masks in each pharmacy.

And then we decided that instead of publishing a daily summary, we would publish a collection and then every 30 seconds it is published as a distributor with over 100 tools that put their own copy of this here every 30 seconds. And that allowed people to participate in auditing the fairness of that system, to see if it was fair or not. The people in line could swipe their card to check where and when their turn was going to be after 30 seconds and see the transactions that are being done in real time.

And that encouraged people to participate more and also to trust each other more, instead of accusing the pharmacies of lack of supplies and so on. They can see that people do a good job. It also helps people to build their own dashboards to track distribution efficiency and also allows people to see if they have biases, because initially we distributed on the map the pharmacies based on population centers. The pharmacies almost align perfectly with the population center, however, according to analysis of the dashboards built by the social sector, people's time and the opportunity cost in people's time of going to the pharmacy is not the same.

Not everybody has helicopter, obviously, and because of this we can't say that just because it's within a 5 km radius on the map it means that the person has equity of access and in fact, normally, people may even have to wait for public transportation and once they get to the pharmacy, it is already closed, out of stock, and there is a lot of that in our presentation. But the beauty of publishing this data as soon as it is collected is that no public service takes the blame for how they present the data.

It's much more about fulfilling the requirements of presenting the information by having the data before it's published. And once the pharmacies have the data they already publish it immediately, so nobody takes the blame for anything. That is why we work together and suggest to the legislators the modified distribution to make it more fair.

Then, I believe that the immediate correction of these information biases is only possible when people have equal access in real time to access the data in the public domain because everybody understands that if you don't have every district, every area, with more than 75% equally distributed masks, that would not work as a physical vaccine and everybody would suffer from that. And that's why this common purpose unites everybody. Finally, to bring in this graph, to contradict the information that we already thought we had, that is to say, a collection of data now human to human. As you can see, for example, this here makes sure that we give explanations in enough time for people to be able to access the information.

How do we make sure that we focus on exactly that information that is really there as a trend that has a higher volume of basic reproduction? Well, we can rely on measures here, so the major antivirus companies, for example, as well as Russcall – which is a company that blocks phone spam and also has a text box – that even if you have closed tools like LINE (which would be Taiwan's whatsapp), you can see that information; and if you are not too sure, you can follow it to the virus detector and see if it has that already in the group text box.

And just like a normal antivirus, it will check that against a database of clarifications and immediately it will put that clarification of service to people who are there who might want to do the same search. Based on the number of that information, the way it is shared you can quickly see. Even before it goes to Facebook or Twitter, we can already see which of that information has the most value and which is toxic and therefore would need further cladding.

We call it a public notification and a private notification, so the point is not to take everything away, but to inoculate each other to be able to share more human messages; because when people pay attention and the conspiracy theories are no longer viral, they become ridiculous and then you can talk to people in the same way, with one foot in reality. So I will now share another collection of data that was developed a few months ago. It is called SMS 1922. It is a checking system that introduces how you put a place. You can scan this QR code here and check the banner. I know many countries have done this kind of system, but the Taiwanese system is unique in the sense that it doesn't require downloading any applications and it doesn't introduce new data drivers to the mix.

It is compatible with phones that don't even have a rear camera, it is maximally affordable even. It is also fun. The trick is of course instead of solving all this on a website, you can scan a code and you will see that it will take you to your SMS application and on every phone has a camera and you can swipe it, point to the code and immediately send an SMS without going through a block. That takes about two seconds to complete before you move on to what you want and then if you have an old Android, all the messages like on LINE, they all have their own QR code scanner.

Nowadays you can use LINE or Bluetooth to use a notification display and they offer the scanning capability. So of course, it's going to cost about 5 seconds, but if you're not on the phone, of course, people who are with you can scan and if you're alone without a phone we still have the paper to help you, so it's more inclusive. Another important thing is that the text of the message besides showing a random 15-digit code is also just for epidemic control.

That's why people use it in bulk, because they know that the national health service would never use it for commercial purposes. It is forbidden by law. And the same thing for SMS check-in, that would never be used for commercial purposes, because again it is forbidden by law. People understand that they are not going to get advertising calls etc. if they participate in this kind of data collection, meaning that it is in line with the public interest and in line with public health values. But as I said before, if you don't have a camera you can type in the digits manually and then the QR code is much more transparent because it does the same thing, only here it is done with the text instead of the code.

Just by entering 15 numbers into your phone, you also complete this registration. In Taiwan, we have five major telecom companies, the operators do a data check every four weeks and they only allow legal access for example from trackers and for exposure notifications and all access is auditable and kept as a record.

We will offer it so that people can do a check themselves to find out who got the data from whom, when and also with the exposures from the exposure notification areas before they are deleted. We have a whole record of audits that allow people to have the exercise of their dignity and sovereignty of public health.

And again, if you don't think it's necessary, if we don't do this everybody's going to have to go back to pen and paper, which of course is much more risky of infecting people, but people are going to say "isn't this an overconcentration of data?" The 1922 is a short code that when you send an SMS it stores that on your carrier and nowhere else. In a way, it is not even a message, it is just a data storage offered by the agency that already knows where you are anyway and then when you send that message to a store, it decentralizes and makes a structure out of that because you have that 15 number code that is only known to the seller and the trackers. The companies have no information about that to be able to compare it to these digits that you have. It's safe, they can't do a triangulation to know where you are.

The people at the technology companies, the users and the vendors now have a way to complete this in this system, only when these four happen together can we actually have the tracking and ultimately the exposure of the notification. This also significantly decreases the risk of selling this data because it is not commercially useful. I believe the idea here is that both vendors, suppliers who need to do this for themselves, and trackers who can ask for this when there is an outbreak, can use this data because it is fast, it is very convenient for everybody, it is very fair, it is useful and used just for that, with equity, and it is fun.

If you interact with this code for a long time, for a few days, you quickly get used to it, without having to use your phone much. You just swipe to the left, enter a code, and that's it. People have gotten into this habit of using this as data collection, and they enjoy the benefits also of fighting the pandemic with lockdown, and they've gone down to only 20 local cases after a month or two. In the first moment of the pandemic, this ensured that more than a million SMS's were sent by the trackers and this would send a message to everybody in Taiwan that if we like to have universal broadband and digital coverage in basic education, if we support mechanisms like this for open innovation, this will ensure equity of access to data and then we can fight against communicable diseases, whether it is covid or any other.

Economy in transformation:
sustainability, development and technologies

Paula Berman
Lecture presented on November 10th, 2021, at the 7th Public Sector Innovation Week: Dare to Transform.

Lecture presenter:
Adriana Ligiéro

Abstract: In her presentation, Paula Berman brings the concept of quadratic voting to show that voting, both for electing members to the Executive Branch and formaking important decisions, can be less polarized and more inclusive of the opinion of the population, that is, the major stakeholders when it comes to public policy. To exemplify the use of quadratic voting, the panelist presents cases such as the state of Colorado and also Taiwan.

Keywords: quadratic voting, polarization, technology

ADRIANA: And now let's hear from Paula Berman. She will address the major challenges of using emerging technologies to promote economic growth and decentralization.

PAULA: I would first like to thank you for the invitation. I think that ENAP is a public institution that makes us have great faith in the future, great faith in Brazil. I am very happy to be participating here. I work for RadicalXChange, which is an organization that talks about institutional innovations and how we can make decisions.

We are here talking about how to develop a more sustainable economy, and how to contemplate the challenges of climate change. And these are all decisions that are political and social as well as economic. We need to think about how we can have institutional innovations that help us contemplate these highly complex challenges that we are facing now, like climate change, like the pandemics, with an extreme polarization, which is something very latent in our country.

And how can we use information technology to create new institutions that bring balance between the market and the State? How can we have the intelligence of the market and the cohesive role of the State while we are making these economic and political decisions? I would like to take two steps back here.

Therefore, I wanted to take two steps back and reflect on technology, since the theme is to try to understand how technologies can strengthen and help our institutions to address these economic and ecological challenges that we are facing. It is interesting to try to zoom in on this term, this concept of technology, to see what we understand by it. We usually understand technology as tools that the person and the collective will use to achieve defined goals. But I would like to add a little more nuance and look at technology as a spectrum. On one side, we have helping technologies that will empower individuals, collectives, companies, organizations. And on the other side of this spectrum we have authoritarian technologies, which are those that take away this empowerment and reduce this concentration of power for a group of people. So, this spectrum of technology can be looked at, one of the places that we can have this concentration of power to try to understand what is the ideological framework, what is the political impact of technologies that we can use for institutional innovation. How can we think about helping technologies and expand to those, increase the production of those in our society?

One of the challenges is that when we think about information technology a lot of what we do is think about broadcasting, where the idea is that you disseminate information on a large scale. And this is the paradigm around which much of our technological development and information technology is centered.

And then we have another category that should come in balancing these broadcast technologies and which we can call "broad listening", which is the technology for listening, conflict resolution and coordination of objectives on a large scale.

So, this new way of looking at technologies we can call social technologies, where, instead of simply thinking of technology as a tool to help people coordinate around specific goals, we can look at social technology encompassing this whole process and removing this element from the defined goal. So, thinking about social technologies that help groups coordinate themselves to define what their goals are and so that we can reach this consensus to make decisions as communities, as a society, that will take us to a paradigm of a more sustainable economy.

One of them is that bringing leadership and expertise to the surface is very difficult, and there are a number of new models there, of liquid democracy, of having civic meetings to try to address this challenge. There is the issue that deliberating with quality on a large scale is very difficult. We see how difficult it is. Social networks are the agora of contemporary times and we have a lot of polarization.

This makes political decision making very difficult, which we feel strongly here in Brazil. I will comment on this issue of the tyranny of the majority, which is a central issue within our democracy, where you simply have a system where all the people, each person can vote with one vote, which leads to an outcome in which a majority can oppress various minorities.

And this is like a straitjacket within which this voting system ends up trapping us and we know that it leads to a number of challenges for democratic processes, so I'm going to focus here on the tyranny of the majority and comment on the issue of deliberation as well. As I said, democracy is a system where the majority can take away the rights of the minority and, besides this, we also have the issue of the tyranny of the indifferent majority.

In traditional systems, it is very common that you have these political decisions, where the people who care the least about an issue, those who are indifferent, are the ones who have the most power when it comes to determining the results. You have a very simple example here, where you have 45% of people preferring dogs, 45% of people preferring cats, and you have that 10% who are on the fence, who don't care much about the issue, and they are the ones who end up making the most important decisions that we have in our society, this is very common. Besides the tyranny of the majority, we have the tyranny of the indifferent majority. I will talk here about a voting method, a radical social technology that brings a balance. As I said, it interests the market intelligence, because it has a price system and a system that aims to have more representation and that helps to get us out of this situation of the tyranny of the majority.

Thus, the quadratic vote has a weird name, but it works in a very simple way. Every citizen has a series of credits, and then the price of his vote is the square root of the number of credits. One vote costs one credit, two votes cost four, three votes cost nine, four votes cost 16, five votes cost 25, and this price grows exponentially. If you want to shout, if you have a very strong preference. You can express that and it helps the minority to coordinate, to express their strong preferences, but you are going to pay a cost, there is a high price for that strongest expression. And you have a more limited political budget, so to speak.

That means balancing the minorities and the majorities, because it gives a greater power for when you have this price system, it prioritizes a greater number of voters. I have in the example here that one person placing nine votes, he would have to spend 81 credits in order to allocate nine votes. Nine people placing one vote each would have that same impact of nine credits, but the total cost would only be nine voice credits. So, it brings this greater strength to groups coordinating around a cause that they can achieve. And in addition, it brings much greater richness to the results. Here I am giving an example from the state of Colorado, where we have already applied this method.

They had a vote, they had to prioritize a series of proposals, more than 100, and they, using traditional voting methods, always had a result where you had few proposals at the top and little signal in the remaining proposals. And with quadratic voting we can get a very precise curve, showing what the priority of each of these proposals is.
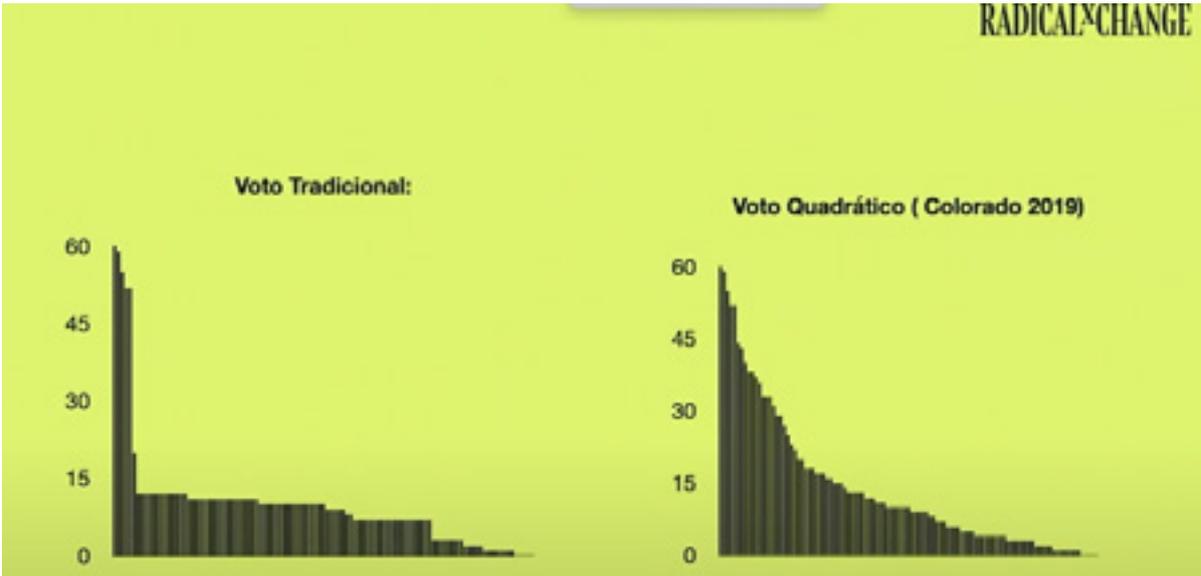
And besides that, it also reduces polarization, precisely because it brings this wealth of nuances, of detail. Some examples of how, using a traditional Strongly Disapprove/Strongly Approve scale, you generate results that are more polarizing here on the left side, and on the right side, with quadratic voting, you have this nuance of greater preferences. I'm just bringing another example of radical social technology that can help us do this large-scale social listening and coordination.

Another central problem is that deliberating with quality is very difficult. In small groups we can have a wealth of debates that is very difficult to have digitally, online, on a large scale. So, I will bring here the example of a technology called Polis, which is widely used in Taiwan and that we, as an organization, are working with several institutions to increase its adoption. It brings this richness in the deliberation of groups that we have small groups, but it can do this online with thousands of people and it works in a very simple way.

You can open up a conversation that each person can put his or her opinion into. Here: What do you like to cook? Pasta. And then each person can add their views and all the people can agree or disagree or just pass. And what is this artificial intelligence going to do? It has a special intelligence instead of our social networks that are antisocial and create more polarization. It will divide people into opinion bubbles and then it will see which consensus proposals are approved by people among different opinion bubbles. Here to give a very concrete example. They were legislating how Uber should be regulated. If you remember, Uber was a very serious issue when it came into Brazil and it was like that in Taiwan as well.

And then you had that group that thought it was anti-Uber and thought it was a threat to taxi drivers. And there was that group that was pro-Uber and pro innovation. Not very different from what we saw here, the typical polarized situation. What does this technology do? It looks at which proposals are liked by the pro and anti-Uber groups. What did they get in this case?

They had a number of very interesting results. For example, that the taxies no longer had to be orange, they could be any color, and also that the regulation of the way taxis worked had to be revised so that they could compete fairly with the new app services. So, a super common-sense thing that a pro-social technology helps us to find and that works well with most of the very polarizing situations is that we have much more consensus, but this consensus is not revealed by the new information technologies that we use today. So, I'm just giving you an example that we are working with this kind of technology here in Brazil, working with quadratic votes, with several municipal scales in the Colorado government, in Taiwan, and I invite you to continue this conversation.

ADRIANA: Thank you, Paula. Look, it's impressive how you manage, in a very didactic way, to bring us some examples of concrete results of how you can use technology to promote coordination on a larger scale. Now I feel like asking a million more questions. I imagine that there will be a lot of visits to the RadicalxChange website and a lot of questions here too. Paula, Carlota Perez was talking precisely about this need for pivoting the government, for the government to act in a different way and to really start working oriented towards great missions and bringing together the various actors focused on these themes, to these consensuses in a broad manner.

And then I would like to pose two questions from our audience. One of them: what is the profile and competencies required from public managers so that they are able to make this transformation towards a sustainable economy and so that they have the conditions to carry out this collaboration, this articulation?

And also, a second question that is related more to our Brazilian electoral system, which is that our electoral system is considered one of the most proportional in the world. The minorities have a lot of space to express themselves as well. When we have a second round in the election for the Executive Branch, why is this method better? And there I understand they

are referring to the quadratic method. But I think that we could use these social technologies not only for the direct elections, but also in several moments of the conception of politics. How do you see this, Paula?

PAULA: Great questions. To start with the last one, I already agree with you that quadratic voting, of course, is not restricted to presidential elections. But in this case, it has an interesting utility which is the question of the useful vote or the strategic vote that it deals with. When you can have, when you can distribute your credits among a plurality of candidate options, you don't have the incentive to make that strategic vote for a candidate that you don't necessarily approve of, but you think that he or she will have better political conditions, more political viability than a candidate that you disapprove of.

Many times, we have the protest vote, and being able to choose more than one candidate opens a little bit of this scope so that we are not so limited in the issue of strategic voting. But, again, I agree with Carlota, because I think that, and connecting this to the first question, what is the profile of the public servant so that he or she can bring this innovation?

I think that is a question of starting small. Of course, I brought some very specific examples, and yes, radical social technologies that we understand can help. They can have a profound impact, but as we know, decisions within the government always involve a lot of risk and there is a series of bureaucratic processes for us to be able to implement, to make any change.

It is interesting to look first at the decisions in which you have less pressure, more controlled risk, so that you can experiment, start with these decision processes and see what advantages they can bring, and then, in a second moment, bring this to the bigger decisions. In the state of Colorado, in the United States, we had a very interesting process.

We started talking with them and implemented in 2019 the quadratic vote for an extra budget that they had to distribute at the end of the year among more than 100 proposals. And they liked it so much. They saw that it really was a methodology that the name is complicated, but easy to implement and that solves practical problems.

As I showed, it brings a lot more nuance to the results. They have already started using it to make internal decisions. Within the different Colorado state offices, they had to prioritize certain issues. And to make this trade-off between what the priorities are within the offices, they started using this method because they saw that everybody was much more satisfied with the results, and the results were of higher quality. And now we are in the process of trying to understand how this same quadratic vote methodology can be used to improve our ability to make assessments about the social impact of large infrastructure investments. It is a process that has to be ongoing.

It is good to start small and, in terms of, once again, what is the character of the public servant, I think it is to understand that democratic participation is here to help, to bring more legitimacy to the decisions, more security to the decisions, and not to diminish the authority of the public servant, nor of the elected official, but to support him or her in the decisions that we are making, and bring a wealth of information that we usually can't get by with more traditional processes.

ADRIANA: Paula, thank you for this insight. We really welcome ways in which we can include more of the citizen's view, the view of the people who actually use the public service at the end of the process.

From covid to climate emergency:
our context of crises and uncertainties

Bruno Maçães

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Lecture presenter:
Oliver Stuenkel

Abstract: The main topics covered in this lecture concern some insights about his last book, "Geopolitics for the End of Time". Besides that, Maçães will talk about the pandemic and its geopolitical consequences and the strategies for coping with it.

Keywords: pandemic, post-pandemic strategies, geopolitics, strategic autonomy, climate emergency

OLIVER: Welcome to the Innovation Week 2021, Bruno Maçães. It is a great pleasure having you here with us. It will be a pleasure to hear your thoughts.

BRUNO: Good morning! It is a pleasure to be here. And, it is a pleasure to share this section with you, Oliver. I am a great admirer of your work, but we have never met. So, it is very gratifying to meet you virtually.

I want to talk a little bit about the geopolitical consequences and strategies regarding the pandemic. Which is the subject of my latest book, published one or two months ago. Let's start from the beginning: "How did we experience the pandemic?". In my case, in particular, at one point, it started to look like it was something similar to space travel. Every one of us had to fall back to our capsules, to our spaceships, because our outside contact had to be drastically reduced. In many cases, like in Europe, in the USA, in Brazil, in India and in Russia, the lockdowns were so strict, that our contact with the outside was mostly through platforms, like the one we are using now. What was very similar to traveling in a spaceship. And, it seemed to me that it was almost an announcement of our entry into the space age.

Why did we have this feeling? Because, suddenly, the nature around us, the natural environment became hostile, aggressive, unsuitable for human habitation or habitat. From this point of view, it was simultaneously the return to a more or less distant past, in which the human beings had to fight a necessarily hostile, aggressive and dangerous environment for their lives. But it was also a projection for a future in which we will have, once more in the space age, to venture into environments that are not yet tamed, not yet controlled.

Therefore, to me, it started to feel like the last few decades, maybe the last few centuries, were from this point of view, an interregnum ("a transition period"), at least in the Western world. It is relevant to highlight that there is an important contrast between the western world and the developing world. In this sense, at least in the Western world, the central idea was the one in which we had already conquered nature in a permanent and ultimate way.

However, the pandemic was a very humiliating experience for the westerners, especially in Europe and in the United States, because it sent us back to a world where we are still deeply vulnerable, in which we feel weak and powerless in the face of a natural environment, since it is capable of destroying our plans overnight. For instance, weddings were canceled. Professional lives were changed. And families were not able to meet.

Indeed, from this point of view, the social reaction to the virus was something that far exceeded what we could have expected. Hence, it was a re-entry into the world, which we thought we no longer knew and which we thought was not possible anymore. The question that arises, from this perspective is, what are the political and strategic consequences, if we take into account the idea that the natural world around us is no longer the same as in the last few decades or the last two centuries?

And, above all, what if we take seriously the idea that the promises which were made, that we would be able to tame and control natural forces once and for all, were utopian and unrealistic? Particularly, because we know that the pandemic was some kind of general trial for the climate crises and the climate emergency. Many of the phenomena that we saw during the pandemic are going to be the ones which will return, one way or another, in the coming decades, during the climate emergency.

Therefore, what are the consequences of the pandemic for the States? First of all, I would say that the pandemic taught us some important lessons, from my point of view, of what is going to be a climate emergency.

And yet, all those cooperation and multilateralism ideas while facing situations of global crisis turned out to be, in fact, fragile, non-existent and completely disconnected from reality.

When I was a politician in Portugal, many times when we had difficulties with a communication of the European Union, for instance, to talk about the relationship with Russia, it was used, very often, a strategy of talking about a possible pandemic in the future, as a situation in which collaboration would be natural, obvious and easy. However, this turned out to be completely false. Because the pandemic showed us that cooperation and collaboration among the states were neither easy, nor natural. On the contrary, the pandemic had become an arena of intense and sharp competition among states. I do not believe that this happened only due to the irresponsibility of politicians or political leaders. It was a mental attitude common to the political leaders and the public agencies.

We saw, for example, that the Financial Times, in the first days of the pandemic, created a sort of ranking, where we could compare our country with the others. The name was, and it is still available: "How your country compares."

Hence, this exercise turned out to be very addictive for all of us. For instance, to see which country was playing the best role, and which one was in the end of the list. In other words, it became some kind of sporting competition, in rather bad taste, from that point of view.

But, very quickly, it became almost obvious and natural for all of us. It lasted throughout the first phase of the pandemic, before the vaccines. And also, after that, throughout the vaccination period, particularly in Europe.

There was an intense competition, for instance, between the European Union and the United Kingdom to see which one would give their voters the best results, regarding getting the available vaccines. And, in many cases, there was even a certain rejoicing, when our direct competitor failed or did not get results. Thus, the cooperation was essentially non-existent, and what we saw was an intense competition. However, in fact, it was not a direct competition among the states. But instead, it was a competition which, from my point of view, was similar to a game, since the states were committed to playing a role or to overcoming certain challenges and tasks to control the environment, the nature and the threats posed by this new hostile and aggressive environment.

Therefore, there was a ranking to know which countries were better performing the tasks and responding to the challenges, in comparison to their competitors, something very similar to a game. Actually, games are also a competition between two, three or several competitors, who try to perform a certain task better than others.

In this sense, does this announce to us what the response to the climate emergency will be in the future? So, it is easy to make analogies, which are worrying, but also very justified. The same way we saw during the pandemic, a certain attempt to benefit from the failure of others. For instance, by attracting value and production networks to the country which was better performing the task of fighting the pandemic.

Hence, it is entirely possible that, in the future, certain regions in certain countries, if they can fight climate change better than their rivals, will be able to attract talent, qualified professionals, companies and value networks. Namely, if a city like Singapore, proves to be capable of fighting climate changes through city transformations, such as air conditioning and public transportation suitable to a new era of climate changes. Then, it is possible to imagine that talents, capitals and value networks will move from other places to Dirham, for example. Thus, I believe it is easy to think of this scenario as some kind of replica of what happened during the pandemic.

And, from a more radical perspective, now making an analogy with the vaccine phase, it is possible to also imagine that certain countries will try to control critical technologies to respond to the climate emergency, once they know that these technologies have become dominant in the future. So, whoever has access to them, will be in a position to exert economic and even political power over other countries.

Likewise, the truth is that we saw, in the past, that there is a very direct correspondence between the new energetic paradigms and the emergence of new superpowers. In fact, I would like to draw the attention of the audience to this remarkable coincidence. Neither the United Kingdom, nor the United States, in the 19th and 20th centuries became the dominant powers through the World Wars.

The United States was already a dominant economic power, even before World War I and before World War II. It seems to me that the key factor was the emergence, either in the first industrial revolution or in the second industrial revolution, of completely new energetic and economic paradigms. Which were based on steam power and coal, in England, in the United Kingdom case.

And after that, based on electricity and fossil energy, in the case of the second industrial revolution, and the emergence of the United States as a dominant economic power. Thus, it is easy to imagine and – it was something that I verified, by talking to officers in China while I was living in Beijing – that China thinks of a third industrial energy revolution, in which the green energies replace the currently dominant energies. Besides that, it is an opportunity, more than a global war, so that China would become the new global superpower.

Therefore, we have to think more and more about the climate emergency, not as a moment when the States will gather and collaborate to solve the problem; but, in fact, for good and for bad, it will be a moment of intense geostrategic competition. And I say, for good and for bad, because evidently, we would expect something different. It never ceases to be a disappointment to realize that even the moments of crisis for our species, in general, will be used as a moment of competition.

On the other hand, I must confess that I found some optimism. Because, it seems to me, that the more this strategic aspect of the climate crisis is absorbed by the states, the more results we can expect. Hence, I expect more from China and the United States, once the leaders realize that it is at stake as a global power.

In comparison with how climate issues have been treated until today, as a moral issue, as a matter of moral responsibility. And, I think that, as long as it is a matter of moral responsibility and not a matter of power, the results will be less impressive. I am afraid to tell, but it seems to me that this is the reality.

Finally, the final comments concern the way the states have been reacting during the pandemic, and the way they will react in the future to that new situation. Thus, instead of having a scheme in which the states directly fight each other and the dominant relations are the ones among the states. What we have today is a scheme in which we should include the relations with this new hostile and aggressive nature, and with an environment that should be controlled and tamed again.

Therefore, what have we seen until today? We have seen much greater concern than before the pandemic, with the idea of Strategic Autonomy. Besides that, globalization is not coming to an end. Since then, we have not even seen a reduction in world trade. However, it is being replaced by a new model of globalization. Not a globalization on autopilot, but a globalization in which the power of the states is also important.

And the states, by being integrated with each other in the same global system, are permanently in competition and have to worry about the accumulation of power and the Strategic Autonomy, in order to face this competition. In this sense, what we have seen is actually a series of developments happening in parallel. In China, in the United States and in the European Union, they all point in the same direction. Thus, in the EU, we talk a lot about Strategic Autonomy, in security and defense issues, but especially in economic matters. In view of this, there are several new economic instruments, which are being developed for the European Union to be more resilient and more autonomous in its economic relations.

They involve limitations on global trade, privileging European economic agents over others, entering into trade agreements with strategic partners, energy matters and energetic security issues and many others. All of them encompassed under the heading of Strategic Autonomy.

Curiously, we see the same development in China and the United States. However, in China, the label or name given to these instruments, since last year, is the idea of Dual Circulation or Double Circulation. What does the Dual Circulation mean? It means that, in fact, there are two separate economies, a domestic economy and a global economy. Therefore, they do not obey the same rules. According to the Chinese Communist Party, the global economy has to be subject to the power and the strategy of states, and only then, can an economy prosper. While in the domestic sphere, impartial rules and market rules can be adopted. Moreover, there is huge skepticism and cynicism in Beijing about this idea. However, what is actually dominant is the idea that in the global economy, the states compete directly with each other.

Furthermore, the idea of state capitalism has a lot to do with this as well. Namely, with the idea that there are no impartial rules in the global economy, once there is an economic competition among the states. Thus, we also see the same kind of development in the United States. For instance, the US Trade Representative, Katherine Tai, at her initial congressional hearing, in response to a direct question if she still believed in trade agreements as a way to create free trade at global level, she answered that, a few years ago, she did believe. However, nowadays, she does not believe anymore, what appeared to me, at the time, to be a very important revelation. Besides being a symbol that there is something different about the American attitude, concerning global trade.

Since then, we have seen several important developments, which, in the United States, are usually grouped under the name of Resilience of Global Supply Chains or Resilience of Global Value Chains. Consequently, that is the reason why we have similar developments in Europe, China and in the United States. Although the names are different, oftentimes.

I think that, even the European name, Strategic Autonomy, is more general and easier to understand. But the developments happen in all the big economic agents. In addition to that, at the same time we are not going to have the end of capitalism, nor the end of its structures. However, we will have a new form of capitalism, which is a more oriented capitalism. I would say that it is a capitalism oriented to the rise of national power and to the control over our natural environment and the threats that result from it, besides being a more technological capitalism.

Since this is the goal, control over the environment. And also, a capitalism, which, once more, no longer obeys that model of automatic rules of capitalism or globalization on autopilot. Nonetheless, the political and economic model that is still in force in Portugal and certainly, in Brazil as well, is what we oftentimes call neoliberalism.

Which we actually understand as capitalism on autopilot, subject to more or less automatic rules. But it seems to me that this understanding of capitalism is indeed in crisis. And it is being replaced by capitalism in which the functioning of market rules is not the ultimate end, but it is a means to another kind of end. We can see this clearly in China, where these market rules are used as an ultimate end, namely, the aggrandizement and rejuvenation of Chinese society and state.

The second aspect, to end the lecture. Thus, the consequences of the pandemic, something that seems clear to me, is the technological matter. In other words, to summarize, I see two big strategic consequences of the pandemic. Therefore, the first one is the development of a certain understanding of Strategic Autonomy, namely, national sufficiency and the power of the States over the economy, capitalism and globalization. This is the first strategic consequence, which clearly was a result of the pandemic. And, in China's case, we can even see, if we want to carefully investigate, the new strategy of Dual or Double Economy. Hence, in the first speech in which Xi Jinping develops this new strategy, he directly connects it to the pandemic. In this sense, the speech was very much built on the following terms: "The pandemic showed us ´X´. Then, this results in a new economic understanding, which we call the Double Economy''.

Therefore, maybe China's case is the one in which the connection between the pandemic and the new economic ideas is the clearest. But this also happens in the United States and in the European Union.

Thus, the first consequence of the pandemic is this new development of the understanding of Strategic Autonomy. The second consequence happens, to me, at the level of our understanding of technology. I have been talking about it, and I argue in my book about a new technological acceleration. Namely, this acceleration was a direct response to certain ideas defended by a group of authors in the United States, among whom, Tara Coen, Peter Thiel and Robert J. Gordon, who defended, a decade ago, around 2010, the idea that we had entered into a sort of technological stagnation, with repercussions on economic stagnation.

And the truth is that, throughout my lifetime, the technological development we have seen, clearly seems to me to be low-impact technological developments, when compared to the technological development in the rest of the 20th century. In view of this, Gordon used to like asking his students, in his lectures, if they would prefer having a smartphone or piped water at home. And often, the answer was the same, every one of them would prefer having piped water at home, instead of having a smartphone.

Then, Robert J. Gordon concluded, from this, when he analyzed the big technological developments between 1980 and 2020, that the smartphone was not so impressive. Especially when compared over time, on a larger time scale, with other previous inventions. Therefore, it seems to me that, although the pandemic is not the only reason, evidently, it has provided a new understanding of technology and a technological acceleration, which, in fact, we are already seeing. We only need to look at the daily news, in the newspapers to realize that something is happening.

Thus, I think the pandemic has shown us that we have to have a different comprehension of technology. Besides that, it also showed us how the vaccines as well as its rapid development were absolutely critical in preventing a political, social and economic crisis, which would be extremely deep and with unforeseeable consequences at a global level and, certainly, in the United States.

For this reason, we have to think more and more about technology, not as a response for the problems which already exist, but as a way to respond to potential problems. Moreover, we have to develop technological responses to problems, which in many cases, we cannot even anticipate nor imagine. Accordingly, this is a fundamentally different understanding of technology.

Because it implies a certain deliberate acceleration of technological development, once we know that we do not live – as I mentioned in the beginning of the lecture – in that placid, peaceful and domesticated nature in which we believed we lived. And, when I say "we believed", I mean the Western societies.

Because, in places like Africa and India, in fact, that understanding of nature, as something placid and innocent, was never truly adopted. To end, this technological acceleration, which we can see in biomedicine, for instance. In which there are impressive developments in several areas, such as the vaccines against Malaria. But also, in areas like, anti-aging, among others.

In addition to that, this has been seen even in energy, with very impressive proposals, for example, in the field of nuclear fusion. We can see that, in cases of space exploration, where, for the first time since 1969, we have again a certain enthusiasm for what can happen in the next decades. Maybe with a manned trip to Mars.

Furthermore, we have the cryptocurrencies and the development of this new understanding of the internet as Web Three, which indeed is a radical change in our knowledge of the internet. More recently, we have also seen the development of the MetaVerse, which is in fact, a radical revolution in the way we relate to the world. Therefore, I believe it is possible that, in the future, we will remember the pandemic as the beginning of an era of fundamental technological acceleration. Then, I would just call the attention to the fact that such technological acceleration is deeply connected to the first aspect I mentioned before.

Namely, the idea of the states increasingly competing with each other, to respond to the challenges posed by the natural environment, which is more and more hostile and aggressive. Especially, as we truly enter the age of climate change and also the space age.

Hence, those two points are very related. Because, living in the planet Earth, with a temperature of 2 or 2,7 or even 3 degrees above the pre industrial average, will be comparable to leave the Earth we have known over the last ten millennia, and indeed, landing in a completely new, unpredictable and hostile planet, with which we will have to deal.

Thank you very much! I believe now, we will have some time to debate, and make questions and answers.

OLIVER: Thank you very much, Bruno! We have many challenges ahead, as we could see! Thank you very much for the insights and provocations! Ultimately, we have many questions. Thank you to all those who sent questions and also voted on the questions. I hope we can make most of them, while Bruno is here with us. The first question I would like to ask is, "How do you evaluate the confrontation that will come between the two superpowers, the United States and China?"

Because, in the 20th century, it was not only a situation of military tension, but also a clash of ideas, of capitalism against communism. Now, will we have some kind of confrontation of ideas as well? Or, will it be simply a fight for power?

BRUNO: I believe that, very clearly, we will have a clash of ideas. For instance, China has a certain model of social organization, which is different from the Western world. Although it is not as rigid, nor so ideological as the Soviet. What I consider to be an advantage that China has, when we want to compare it with the Soviet Union. Once many of the ideas, which have been developed by Chinese intellectuals and party officers, are still a bit boiling and under development.

And, there are internal debates, even though they are not public, but they exist, about this model of organization of Chinese society. But there are already some clear ideas about those differences. There is much greater emphasis on economic rights. Besides a much greater emphasis on the relation between the collective and the individual. In other words, the idea that the individual has, ultimately, to fit into a certain collective. Furthermore, there is a much greater and stronger focus on the industries, on the control over nature and over the infrastructures. And yet, there is a very big distrust about the entertainment internet. In addition to that, there is a very strong belief in the benefits of different access to information, in the Chinese model. Thus, certain parts of the party and of the State have access to all the information. While, some other parts have limited access to information.

Therefore, transparency is not seen as a value. To summarize, they have a certain constellation of values which was, in fact, aggressively put to use during the pandemic. We even watched Chinese diplomats pointing to the situation in the United States, trying to argue that what happened in the United States during the pandemic shows that the Chinese model is superior, once it gets better results due to the concentration of power, its ability of making decisions and, because there is an idea of a collective duty to follow those decisions. Finally, all this without being the Soviet model. Although, of course, I do not think it is the Western model either. Nor is there in China the objective of converging on the Western model.

Therefore, it seems to me that we entered into a rivalry of models and ideas, which, despite being different from the Cold War, has, in fact, this aspect as well. So, it is not purely an economic competition, from my point of view.

OLIVER: Excellent question, that someone made and it has been very well voted. It is about the fact that the countries are increasingly adopting a more competitive and self-centered mentality. In other words, it seems that there will be increasingly less room for cooperation. In this sense, "How to establish spaces for cooperation?", and "Can developing countries like Brazil, for example, maintain some degree of neutrality and have good relations both with the United States and Europe, but also with China?" or "Will they be forced to choose a side at some point?" I think this is a question that many countries in the Global South are asking themselves at this moment.

BRUNO: This is maybe the question which I receive more often when I visit other countries, both before the pandemic and now, in the trips that are starting. For example, this is a question that I heard many times in Singapore. And, indeed it is a fundamental question there, at this point. Besides that, it is a question that we hear a lot in Kazakhstan and also, interestingly, in Switzerland.

Despite this country not being part of NATO or OTAN, as we say in Portugal. But it is a country very connected to the Western and has a trade treaty with China. Moreover, I believe this question might be asked very often in Brazil. Then, what is usually my answer? I believe we would make a mistake if we think of the Cold War model, between the Western and Soviet Union. In this case, there was a very complete alignment with one of the blocks. The non-aligned bloc was never particularly influential or powerful. And yet, there was an enormous pressure over the countries to choose a side to be aligned with. However, I do not see the same thing happening at this point.

And, it seems to me, that the differences are obvious. Because in the Cold War case, many countries were leaving the colonization period. So, their structures were still weak and it was not possible to even consider the idea of enjoying a level of autonomy and independence in face of the large blocks. On the other hand, this is not the case now. The powers of the United States and China are much more diluted in a world order in which there are other relevant powers. Hence, it does not seem to be possible that China or the United States would organize the world into two blocks. I believe that the most that China and the United States can do, what they aspire to – namely, their ambition – is actually, in many cases, to prevent certain strategic countries from being controlled by its rival.

In this sense, it will be very important for both China and the United States, that Singapore, for instance, is not entirely aligned with only one side. Likewise, it is important for both China and the United States, that Brazil is not entirely aligned with only one side. And if that is the attitude, whether from the United States or China, I believe this will open a huge space for the countries to become truly autonomous. Once this way, they will be able to satisfy the essential priorities of both Washington and Beijing.

Evidently, a second question arises, which is whether countries want to be autonomous. Because, in many cases, due to reasons related to their history, tradition and values, the obvious and immediate solution, namely, the one that their public opinion demands, is to be more aligned particularly with the United States. We have seen this a lot in the case of European countries, which have made this choice deliberately and in a democratic way. However, in other cases, I am not going to talk specifically about Brazil's orientation, but in other cases, there will be much more interest in keeping a certain level of Strategic Autonomy.

In this sense, Brazil traditionally has this ability in the economic, political and cultural fields. Although, it does not have, traditionally, this ability in the military area. But it also does not need it. And, because of this, it seems to me that, if that is the choice of the Brazilians, this model is still very open to the countries which want to choose.

OLIVER: Well, we have some hope in face of this very challenging picture. It also always seems very interesting to notice that the country is in this process of adapting to this much more multipolar world, in face of a reality which we do not know very well about in Asia yet. Thus, we will have to acquire much more knowledge about these more traditional actors. And, this will be a long process ahead of us.

We have many great questions. And, one of them, which I particularly like, is about the adaptation process of the post-pandemic world. We are now in this process of getting back to the on-site/face-to-face work. Then, there is a very complex and interesting debate between the individual needs and freedom and the public responsibilities. Some countries can adapt relatively well, others not so much. Therefore, there is an immense danger of a greater social chasm or more inequality both within countries, but also between countries in this post pandemic world. Since some developing countries, for example, will find it much more difficult to adapt to this new situation. While some countries do much better. So, I ask you, "What is your expectation regarding it? Do you believe that inequality will increase in this context?"

BRUNO: The inequality has been increasing within the countries. And, I believe that the technological acceleration which I was talking about, has the capacity to increase the inequality within the countries. Once we know that, the fast technological development tends to increase inequality. And I believe that is exactly what is going to happen. At global level, maybe less than we expected. For instance, in the beginning of the pandemic, there was a huge concern about the consequences to the developing world, in particular to Africa.

On the other hand, there was a huge complacency about the consequences of the pandemic to the Western developed world. And, one of the shocks was to see that, actually, the Western world was not exactly prepared for it. To a large extent, because the Western world was never convinced that the pandemic could be a problem. For example, I have a very vivid memory that, until March or April of 2020, the idea in Europe was that this kind of thing used to happen in China or in Iran. And it was very tragic.

But it would never happen in Europe. Therefore, there was a huge complacency. And also, what I believe is the most important thing, there was a sudden discovery that our structures in the Western world are extremely rigid and difficult to adapt. On the other hand, we saw, interestingly, that developing countries were able to adapt more quickly to the pandemic. Because their societies and their states are more recent, so they still have the flexibility of their origins. Or even due, in fact, particularly in Africa, to the fact that an experience, like the pandemic, was not something new in that region.

In other words, the scenario of being permanently subject to the uncertainty of some disease or a natural disaster, is something recurring on that continent. Because of this, those societies, in many cases, had a greater resilience. The cases which were considered successful in facing the pandemic were, curiously, democratic societies, which were not created many decades ago. Namely, South Korea, Taiwan and Singapore, with their democratic elements, although Singapore is not a democracy.

But these are societies in which it is still possible to adapt and react quickly. Besides that, there is no excessive consolidation nor stiffness of the social and state structures. This shows that many of our beliefs were wrong, about the consequences at the level of the global distribution of power. Moreover, it seems to me much more possible today that the pandemic has even accelerated a certain redistribution of power at a global level. Contrary to what we thought at first.

OLIVER: It was really a privilege to have questions from the participants. And, it was also a privilege to have you here, Bruno. Thank you very much!

Chitchatting with Dan Ariely

Dan Ariely
Lecture presented on September 17, 2019, at ENAP's GNova - Laboratory of Innovation in Government.

Lecture presenter:
João Sigora

Lecture presenter:
Thaís Gargantini

Abstract: The lecture consisted of a chitchat between Professor Dan Ariely, the moderators and the audience, on topics related to behavioral economics, rationality versus irrationality, and trust, in addition to some insights from the Professor about his books and his work with governments around the world, with which it has developed projects to shape or improve rational choices, aiming to obtain better results for the greatest number of people.

Keywords: behavioral economics, rationality, irrationality, trust

JOÃO: Well, today our chitchat is very special! I think it is enough to say that the Professor Dan Ariely was elected by Bloomberg, one of the 50 world's most influential thinkers. Anyone who is familiar with behavioural economics knows who he is and what he represents. So, we are very honoured to have his participation here today. Most of his work is dedicated to showing why us, human beings, are so predictably irrational. By the way, this is the title of on of his books, "Predictably Irrational: The Hidden Forces That Shape Our Choices". He is a psychology and behavioural economics professor at Duke University, where he leads the Center for Advanced Hindsight. Besides that, he is the co-founder of the Kayma labs, which is coordinated by Thaís Gargantini (presenter of this lecture) in Brazil. He has also had with several books among the best-selling of The New York Times, including the one I mentioned before and "The Honest Truth About Dishonesty" as well. Moreover, Professor Dan Ariely has a column in the Wall Street Journal called "Ask Ariely". And, that is exactly what we are going to do here.

Thaís, I believe you are more familiar with the Professor, since you know him better than me, do you want to make any comment before we call him to the stage?

THAÍS: Yes, I would like to comment on something. Anyone who has seen the TED Talks of Dan, knows that he has only half a beard. Because he had an accident when he was younger, so he has many scars. And that is why hair does not grow on the other half of his face. But actually, I say it is, because it is part of accepting our history. And, this is one of the reasons why I admire him even more. Thus, let's connect with the Professor now.

JOÃO: Professor Dan Ariely, welcome to the Innovation Week! Thank you for being here with us! Thaís and I are going to conduct the interview. And we are going to receive questions from the audience. Hence, we are going to start this conversation, Professor Ariely, with the concept which you really focused through your career, in other words, everything has been done based on the idea of trust. So, we can start this conversation by talking about the reason why this kind of behavior, specifically, is so important and why it should be encouraged. And also, "How can it be applied to governance?"

DAN: Well, this is a long question. But I will give a short version of the answer. Then, after that, you can decide if you want to ask anything else about it. First of all, in practical terms, there is evidence that the contribution of trust to the Gross Domestic Product is very high. Imagine what would happen in a society which has a lot of trust. For example, we would hire the right person for the job, not necessarily a family member. We would not need to rely on contracts for everything. And we would not fear that the person would deceive us, if there was more trust. Contrary to what happens with a society without trust. Which has a lot of bureaucracy and nobody trusts anyone. Then, there is a lot of dishonesty. And, you end up not hiring the right person. So, much is lost with this. Imagine, for example, a government that trusts their citizens. In Denmark, it takes between half an hour to one hour to open a new business. Because there is a lot of trust. How long do you think it takes in Brazil?

JOÃO: I have no idea. Do you know, Thaís? I just know that it takes a long time.

DAN: Indeed, it takes a long time. So, this is one thing. The other thing, for what we perceive, is that trust makes us think in the long term, not in the short term. Then, imagine a society from a long time ago, like, a small village, with just a few hundred people. What happens in this case is that our face is our reputation. If you treat someone bad, they will tell other people. And because of this, these other people will probably not treat us well. In a small village which deals with trust this way, if people start to betray each other, this will be very bad. Since, in a small society if you behave poorly, people will know and will treat you badly as well. Therefore, we will not do this so easily.

On the other hand, in the current large economy, in the big global community we have nowadays, suddenly this thing called "reputation", does not play the same role. Because people do not think long term. They act in a selfish and short term way. In other words, they do not think about the longevity of the society. This is the basis of human nature. In this sense, if we live in a small community, we trust each other. However, nowadays, trust is no longer something very common in the large centers. That is why we think of mechanisms which we could develop to improve these things.

THAÍS: Great! Dan, there is one thing I would like to ask you. "Why did you decide to work with government agencies, with the government?" We know that it is a very hard job and there are many challenges.

DAN: Yes, there are many challenges. So, in general, every time I look at a new project, I try to multiply the number of people who we could help. For instance, I make a project in a classroom, helping 30 kids. In other words, whatever the intervention is, I always try to make things on a larger scale.

Therefore, when we work for the government, indeed, it is complex and hard, etc… But the potential for change is amazing. For example, I very often work with the Israeli government. We made some studies and implemented a new method to label food. Thus, from April of this year, food in Israel, instead of having a list of ingredients saying what is healthy and what is not, we included a big red circle, in case the food is not healthy. Besides that, we also made a gradation between what is healthy and what is not. And, when we tested it, the model was very successful. If you want an intervention like this, at the national level, it could reach many people.

Another project we made was with the British government. In which we tried to make people pay more IVA or VAT taxes. In this case, we changed the order of filling this information, from the beginning of the form to the bottom of it. The idea was the following: the questions which people fill in first, they usually think more about the answers. But when the question is in the end, people are already more distracted and tend to fill in without noticing. Then, it is too late. This experiment, basically, created an enormous amount of income to the country, hundreds of millions of pounds sterling. Therefore, these are the reasons why I wanted to work for the government.

JOÃO: "What do you see as a major challenge at the user level, so that behavioral economics becomes more widespread?" Once you work for the government, you might notice that there is a lack of knowledge about behavioral economics.

DAN: I think the first thing would be: People, in general, especially the politicians, do not like to admit that they don't know something. However, one of the essences of science is to say: "Look, I have an idea and I think it might help, but I am not sure how much it will help, nor which idea will be better, will help more the work".

For instance, in the experience we had in Israel, in which we did not know what would be the best alternative. The companies, in general, do not like to hear: "I do not know or we do not know". Hence, I think the consultant's condition is to say: "We have the answer for you". This is something very uncomfortable, when you are going to try something and you do not yet have a ready-made solution. So, this is a problem.
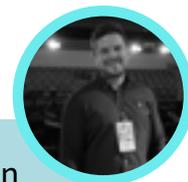
JOÃO: When we talk about experiments, there are concerns in terms of ethical issues and of behavioral economics. Because some might feel this is a way of manipulating people. And this has been a challenge. Thus, I would like to know, what do you think about this, of the possibility of manipulating people, especially the vulnerable ones. Accordingly, I want to bring an example of what Thaís mentioned before, about computer science and the idea of creating incentives to women, to girls, to study engineering. In this sense, these girls might be in a vulnerable situation, of "not knowing". So, in a way, we are influencing their choices. Even though, sometimes, people try to put this as if it was something neutral. But there is something behind it. So, I want to hear your comments about this.

DAN: So, these questions about interventions and manipulation are very important and also incredibly complex. It is not easy to solve.

I am going to give an example of how complex it is. We made a study, in which we created a type of Tamagotchi, a turtle, in people's phones. Thus, the turtle would be happy when people give her medicine or make her do exercises. On the other hand, it would get sadder and sadder, when people did not give the medicine or did not take it to exercise. In this sense, the turtle itself did not have much power, since it could not change much of its behavior. However, we gave it some superpowers, among which was the superpower of deleting apps from the phone.

Hence, the turtle would analyze the most frequently used app, for example, WhatsApp, so, this app would be the first one to be deleted. Therefore, whenever the turtle was sad, it started to delete the apps. Then, when later the person went to check their cell phone, they would realize that they had lost some apps.

One of the possible uses of this app was, for instance, to people who had just gone through heart surgery. So, it was as if we said: "You just had a heart surgery". And, we think in this person as someone who is going home, is going to exercise, sleep well, take the medicines, etc.. However, we know that, in three weeks, you are going to get back to your previous behavior. Thus, when the app is installed, it is going to force you to behave well. So, people allowed us to install it and, most of them became healthier and lived a more peaceful life. Here is the essence of your question.

If we assume people are completely rational and capable of making their choices, then, we would not have moral issues. Let's assume that people are making the right choices, making rational choices and, if they are eating unhealthy food, it is because they want to. Because they think it is the right thing for them. Or yet, if people use cell phones while driving. In the case of behavioral economics, when you think about these subjects, you realize people have a lot of irrationality. Hence, the question that arises is, "What is the moral limit?"

For instance, I am a doctor, what is my obligation and where does it end? Is it enough if I tell the patient to do exercises and take the medicine? Or, should I help them in some other way? Another thing we should notice is that we created an environment where it is difficult for people to act on their long-term benefits. The world is full of temptations. On the one hand, you do not control what you eat, your alcohol and cigarette consumption. In other words, we have many temptations ahead of us in society. Isn't it?

Therefore, is it correct to provide such temptations for people in the name of freedom? Will we allow all the companies to tempt people to eat unhealthy food, drink alcohol, smoke, spend a lot of money or have easy access to credit cards?

On the other hand, we do not feel comfortable helping people fight it. In view of this, every year I study behavioral economics and decision-making. Because I am worried about our ability to make decisions. Not because I think people are stupid. People are just very busy. They are busy with their lives; they do not have time and are not able to think about everything. Besides that, suddenly, the world starts tempting us. Every time we go to the supermarket, we have that situation in which people are not interested in their long-term care. Anywhere you go, there are donuts and other temptations. Indeed, it is not easy!

That is why we try to manipulate people. We try to reformat their environment, to make people behave better. And, we make sure that we are doing it for the right reasons. And, that we are actually improving everyone's welfare.

JOÃO: In your relationship with governments all over the world, "Do you think this approach can be misused?" If yes, "How can we protect ourselves from it?" We are public servants as well, so "how can we protect ourselves from the misuse of this approach?"

DAN: Well, every time we have new discoveries, they can be used for good or for bad. If you study ways of making people think long-term, someone can try to use it to make something bad. For me, an important step in the face of all this, is the welfare analysis, the way the economists understand welfare analysis. So, surely, the total amount of welfare that the new discoveries bring, exceeds the evil that they might bring. If we analyze the unintended consequences that may be generated, they are related to the situations that people will choose. For instance, when we look at unhealthy eating. When we ask people, "Do you think you are eating in a healthy way?" Most people will say: "No." Then we ask them: "Do you want some help with this, to know what is best to eat?", "Would you like to have some self-control and eat healthier food?" and traditionally, people will answer: "No, I am fine! I have no self-control issues. I know everything I need to know." If that is the case, if people say they do not need any help regarding their eating. I would not interfere. But if people say they want help, then, yes, I would consider helping.

If we compare the percentage of people who say they need help and the percentage of people who say they do not need help, they are fine. Usually, 95% of people say that they are fine and 5% say they need help. Therefore, is this, in fact, the reality? On the other hand, if the percentage was the opposite, 95% of people saying that need help and 5% saying they do not need it, then, I would be very worried.

In this sense, I should say that I like data and science. And I believe we should certainly value data. However, there are some cases in which we should analyze how distant people are from their ideal. Therefore, if there is a gap between where we would like to be and where we in fact are, then we should be worried. If this gap is not so big, perhaps this is not so worrisome.

Furthermore, we also have a kind of paternalism meter, to help us understanding when can we be more paternalistic or less. We have some elements to talk about this. When the decision is big and the consequences are serious, then, I am willing to be more paternalistic. For instance, with regards to savings, when people get disorganized with their finances and reach their 80's without having saved enough money. Hence, it is already too late.

Then, I have to be more paternalistic, when there is no second chance to something. In other words, I am willing to be more paternalistic when the decisions are big and the mistakes can be very substantial. Moreover, I am willing to be more paternalistic when there is a very large knowledge gap between people's decisions and their professions. As in the case of health, for example.

On the other hand, there are many things that I am willing to give up on being paternalistic, concerning human behavior, for the sake of freedom. We have to evaluate very well those things, especially as public servants. Namely, we have to weigh these things to find out if what we are promoting is right and meet people's needs. If we think that they are not, then, how can we make proposals that are more in line with people's interests? In this sense, we know that taking out people's freedom is not good. However, having bad results is not good either.

The last example about this topic: a person who uses a cell phone while driving. Should we allow those people to do that, even though they might kill someone or die? I do not think so! Just giving cell phones to people, knowing that they use them all the time, then only suggest that they should not use them while driving, would not be the right approach. Therefore, we have to think of something more extreme to deal with this situation.

JOÃO: Since you said that you love data, I have some great questions from the audience, regarding randomized control experiments. Thus, one of the participants spoke about how we are predictably irrational. For instance, there are some experiments made with small groups, based on what you said, about external validation. "How could it be applied in other contexts?" I mean, in larger groups or in other situations.

I have another question related to it, "How can you be sure that these results are valid in other contexts?" And also concerning this topic, there is another great question here, "For how long these results are valid? How can we know how long a behavior strategy will last or work?" Sometimes, we trust the results, but behaviors are dynamic, they change. So, these last questions concern the sustainability of the interventions.

DAN: Very good questions. So, answering to them, science starts with easy things and moves to harder and more complex things. I was very glad to know that someone in the audience agrees with this level of irrationality. I wrote this book a few years ago. But now, I work with governments and large-scale experiments. And, we are expanding those ideas. At that moment, experiments were simple studies made in labs. Over the years, we moved on to large-scale studies, with big companies. Therefore, scientific processes are constantly developing.

Besides that, when we have experiments made in labs, we can give the recipe to someone else and it can be reproduced. And, if something works in the lab, it is more likely to work in real life than not, in terms of probability. Then, now it is time to try it in real life, or in large-scale or in another country, etc. Thus, everything is a continuous learning process, and we never stop studying.

The second question is about the matter of the dynamics of the world. And this is very important! One of the amazing things about social science is that the world is dynamic, contrary to what physicists say. They say the world is the same and the rules of the universe do not change. They have been saying this for a long time. However, for the social scientist, the rules change. For example, the attention. Attention was not very important, as a psychological function, forty years ago when we just used to look at things and receive instructions. But now, we have Facebook and cell phones with their constant notifications. So, the matter of attention became very important in different ways.

For instance, Tinder. The world of romantic life was very different twenty years ago. Then, technology comes and we start wondering, what are the fundamental technological changes and what are the new things that we have to study and understand.

In addition to that, we now have digital currencies. Namely, my children are now thirteen and seventeen and I am wondering how to raise children who are financially responsible, once digital money allows us to make many things that physical money does not. On the other hand, the physical money, if I hand it over to my sons, I know what they spent it on. And if we do something more extreme, I can give them a limited amount of money to spend on certain categories of things.

Therefore, the technological development of the world is creating many interesting opportunities, but it has also raised many questions. So, we have to continue studying as the world changes. And yet, we have to recognize that things that used to work ten years ago, might not work anymore today.

THAÍS: Ok! So, I would like to ask you a question about the three years we were in Kayma, in Israel, where we made many projects. And, the process of building trust, in which we begin to have more and more knowledge about the government. "Could you share with us a little bit of how this journey was? What was it like, the process of getting more and more government trust, the development of experiences with real people and the partnership with the Israeli government?"

DAN: I believe trust has many different facets when you work with the government. Hence, the first issue is trust in scientific methodology and in behavioral economics. Besides that, many people from the government are lawyers and economists, so they know about this. Therefore, it was very important to make the public servants recognize that people are irrational and we have to think about it. Finally, we could implement a code to deal with it, and it was very, very important.

In this sense, the first experiments we made were in order to create that trust. The experiment consisted of sending text messages to people who had an appointment in the health service, once in Israel there was a large percentage of people who had appointments and did not show up. So, we started sending messages to people and they started not to cancel. And this was very important to the health system. Moreover, in case they cancel the appointment, we could put someone else in their place. Then, they let us change this message.

From there, we started to ask ourselves about some points. Namely, what do people care about? About how much will it cost? With the fact that they want to be healthy for their family members? With the doctors or nurses who are waiting for them? Therefore, how could we use that information? So, there are many different versions about that subject. And, what we were shown is that by sending a very similar message to the one we had in the beginning, though including the information that another citizen could use their appointment if they did not show up, had very positive results. Well, this was a very simple and cheap intervention. However, it was incredibly powerful.

Because, this already existed; if you did not show up, someone would go in your place. But using a different approach to this in order to be able to optimize the work was very important. Therefore, this was a demonstration that our work could generate different results.

Another example that we studied with the authorities was of how to develop a form about the needs of the citizens. Thus, at the same time we made questions to people, we would also give them the safety that, if they need help, there would be support, several services and things that could be done to solve their problem. For example, if people have some issue with a tax authority, they could come to us and get help. The number of people who filled in the form was relatively high, if I remember well, nearly 40% of people. This resulted in the improvement of this framework for the tax authorities. In addition, people began to realize that they could solve these problems.

So, the following part was to make people take part in those experiments. As I said before, this is very hard. Then, we started on a small scale. In order to reduce the risk, we also said that we were doing a survey, something small. And yet, we said that it would not have any negative impact. So later, we could increase the scale. In Israel, for example, if someone hires a disabled person, they can get back the money spent with adjustments. Namely, if you need ramps, a wheelchair or something like that. But, as you can imagine, the government is "very worried" about this kind of process. Since, you will take more than a year to be reimbursed.

For this reason, many contractors do not care about this, because they believe that they will not take back the refund money. Thus, we wanted to encourage people, companies, to hire disabled people. However, the lack of trust made this irrelevant.

Therefore, on a small scale, we wanted to reduce bureaucracy, so that, instead of taking a year for this reimbursement, it would take only two weeks. From this initiative, people could trust this. However, we did not open this up to everyone, we just did it with a small number of contractors. Because we wanted to be sure that nobody was trying to cheat. Or, if they did, they would do it at a very basic level. So, we tried to reduce our exposure to risk, by doing a small experiment.

The third thing is that, we discovered that there is a great deal of mistrust between different ministers of the government. In order to help this situation, we tried to basically be very transparent and support everyone. In face of this, we discovered that they trusted us more than the other ministers. Hence, what we did was something that the government was incapable of doing without us. Despite being shameful, it is very good to know that there are people, like us, who can fill in this gap.
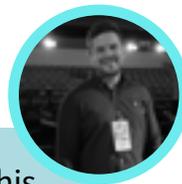
JOÃO: I do not want to miss the opportunity to link this conversation to the other one we had on Thursday, at this event. In this sense, Professor, you came here to talk to us about how the government should prepare for artificial intelligence, engineering, bioengineering, and how we can transform humanity and our daily life. And, if this is true, everything indicates that there is a revolution ahead.

Thus, from the perspective of behavioral economics, how can we delegate our decisions related to algorithms, in a scenario where we started to see progress, for instance, in bioengineering. In other words, we began to compensate for our irrationality. For example, "Do you think we can suppress our appetite for drugs?". Since, if you do not ingest anymore, you are actually changing your behavior at the biological level. Then, "How can behavioral economics deal with this new world? Is this relevant to the new world?" and "What do you think are the most relevant challenges the world will face in the coming years?"

DAN: I only have two minutes and this is a very complex question. So, I can use the excuse that the time is ending. But I am going to tell you that there is a very important question to be asked, concerning what we are trying to conquer as human beings. For instance, let's think about unemployment.

There is no doubt that there will be a higher level of unemployment when technology starts taking these places. However, we understand human beings and we understand that employment is not only about money. It is about the sense of purpose, of meaning, of contribution to society. And, when people do not have this sense, this purpose, they do not feel as part of something. They do not feel motivated. Therefore, we understand how it influences these changes. So, we should think about how to redesign this new world, in a way that fits everyone. In this sense, an economist would analyze the situation by saying: "Ok, we have a high level of unemployment".

But some people think that humanity is about more than just overcoming unemployment. We can think about mental health, about connecting with other people. We can also talk about volunteering, which gives people meaning for life. Consequently, all of this brings a range of very interesting questions. Thus, is it science, or philosophy, or philosophical sciences or social sciences? Thank you very much! I am sorry my time was too short. I have to go to my next meeting. Bye, Bye!

JOÃO E THAÍS: Thank you very much, Professor!

Freedom to transform funding of public goods

Vitalik Buterin

Lecture presented on July 8th, 2021, at the event Radical Futures, of ENAP

Lecture presenter:
Juliana Oliveira Domingues

Abstract: The lecture of Vitalik Buterin is about the platform which he created, called Ethereum, and the experiments made in this ecosystem using Quadratic Funding. Hence, he presents the results and some insights over the discoveries made during these processes. Besides that, he also talks about how technology could support changes towards public funding.

Keywords: ethereum platform, blockchain, quadratic funding, public funding

JULIANA: Good evening, everyone! Firstly, I would like to thank the National School of Public Administration (ENAP) and RadicalxChage, for the invitation to moderate such a great panel. It is an honor to be part of this amazing event. Twenty years ago, I had the pleasure of working at ENAP, as my first experience with the government, when I was an intern at the now extinct Department of Economic Protection and Defense.

And now, I am very happy to be here, even virtually, to take part in this important event that promotes groundbreaking thinking and novel actions to promote a more balanced and healthy democracy. In particular, the topic regarding financing of goods, which will be discussed at this panel and is extremely relevant. One of the greatest problems faced by society is the difficulty of encouraging and funding initiatives that have positive effects shared by the community, whose costs are not necessarily equally distributed; the so-called public goods.

In fact, one of the essential roles of the government is to deal with public goods, in order to make sure that they are accounted for proper encouragement. In this sense, the government must prioritize and establish the most pressing issues to invest in, instead of other projects that may be perceived as less urgent, once this creates an issue for democracy in general. So how do we make sure that the most important projects are chosen and are going to benefit most people? Or how to make the funding of public goods more efficient and democratic?

Thus, I think our panelist will bring some insights into the matter, by sharing their experiences. In this sense, we will start with Vitalik Buterin, the creator of Ethereum, a decentralized, open-source, blockchain-based platform, which supports and executes smart contracts. Currently, its cryptocurrency is the second most valuable of the market. Vitalik will share with us his inspiring work on Quadratic Funding and how it can be used as a solution for public goods funding in a democratic manner. So, I am very happy to give the floor to Vitalik. Thank you!

VITALIK: Thank you very much! So, what I wanted to talk about today is some insights on what Quadratic Funding is trying to do, and also on some of the key Quadratic Funding experiences that we had while trying to evolve with the Ethereum ecosystem. Some of the success and some of the learning experiences that we had. And basically, where I think Quadratic Funding could go from here.

So, I would like to start with some kind of recap of the division, a little bit of the math and the ideology behind the idea of Quadratic Funding. Hence, the idea is basically to try to create something that is kind of half way, which combines the best of both worlds between funding by donations - just people being able to finance projects by donating to them - and regular voting, when people just vote on which project they would like to fund, and whichever project gets the most votes wins.

The problem with these two extremes is that simple voting does not do a great job on reflecting differences in strength of preferences. In other words, simple voting does not do a great job on demonstrating the differences between someone who cares a little bit about a project being made and someone who cares a lot about it. On the other hand, donations, of course, do a very good job on telling this difference.

Because, if you care a little bit about something you donate 5 dollars, but if you care a lot about something you might donate 5,000 dollars. However, the problem with just relying on donations is that it suffers from "the tragedy of the commons[1]", so, it ends up overly favoring concentrated interests. For example, favoring small groups where each individual of the group gets a large benefit from some projects. And overly disfavouring groups where the benefit might be larger but it is much more dispersed. Therefore, there is "the tragedy of the commons", where no single person feels like their interest is represented.

[1] The tragedy of the commons is related to a situation in which the individuals, acting according to their own interests, act against the interests of the community, depleting common goods.

Hence, what Quadratic Funding does is being in the middle of these two. So, basically, the mathematical formula is, you take the square root of each individual contribution, then you sum up the square roots, and you take the square as the output. From this diagram, the green areas are the contributions, you interpret them as squares and the sides are the square roots and the big square which includes the green and yellow squares is the total output. Thus, the difference between the full square and the contributions themselves is what you get as the subside pool. See the diagram below:
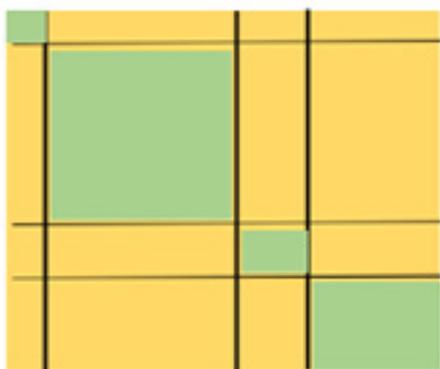
So, the point of Quadratic Funding is to assume that you have a subside pool and the goal is to try to figure out where or how you are supposed to distribute the subside pool to public goods. Therefore, the theory behind this is basically… Well, you can look at a couple of things.

First of all, one thing that you can see is that the more individuals contribute to a project, the higher the margin ratio is. For instance, in this diagram, you have 4 green squares and it is full of yellow squares. Then, if you imagine that you have 100 contributors (squares), consequently, you will have 9,900 yellow squares. Because of the way the formula works, the project that gets a larger more diverse set of people, gets a higher margin ratio than the project which gets a smaller and more concentrated group of supporters. And this is intended, the goal of this is to try to be more democratic than just asking for money from donors.

The other interesting effect is also that, the first dollar you contribute to a project, matters more than the second dollar. The second dollar matters more than the third dollar. The third dollar matters more than the fourth dollar, and so on. You can see this from the chart. For example, if you take the square from the top, and you imagine dividing it by four, so each side is done by two, and the yellow area goes down by a factor of two. So, four times more money, only twice as much matching. And this is also to encourage people who only care a little about some projects to still be willing to contribute. Because the smaller your donation, the larger the matching ration. So, there is a lot of mathematical theory that basically shows how, under some assumptions, this is the optimal way to gather information, which allocates money for public goods. One way to understand what is going on here, is that the contributions themselves are acting like a kind of torque. So, the contributions are both donations but they also help to direct which projects the subside pool is going to.

Therefore, these are the ideas. However, one thing that we know about this kind of complex math in economics and ideas is that, often it has a very complicated and unpredictable relationship with reality. So, the thing that we thought about is basically that, we have the Ethereum ecosystem, and it has a lot of need for public goods. Almost everything in the Ethereum ecosystem is public, for instance, open-source softwares, documentations, videos, podcasts, and so on. In other words, anything that people build or create in the Ethereum ecosystem becomes available for everyone. It is not like Apple Square[2].

[2]A way of paying for Apple products.

For instance, if you have two Apples and you try to sell them to Alice and Bob. But Alice is willing to pay seven dollars and Bob is willing to pay two dollars, then, you will sell it to Alice. However, with public goods you can not choose which subside of the community benefits and which does not. You just create something; release it and you hope it benefits everyone. And that is how the system works. But the Ethereum ecosystem, I think, is very much like that. The most interesting things in the Ethereum ecosystem are public goods. So, it is actually a great testing ground to see what we can try to use as a public goods funding mechanism and see what happens.

Moreover, before Gitcoin Grants, which was an experiment that started with the Gitcoin team, more than two years ago. Thus, the Ethereum community has many public goods. So, a lot of them are underprovided. Besides that, the Ethereum Foundation is the main fund allocator, with a budget of about 30 million dollars per year. I think it is a little bit more now. In addition to that, other fund allocators include wealthy ICO projects launched on top of Ethereum, there are "Whales" (wealthy ETH holders), and also, companies in the Ethereum ecosystem (for example: Consensys). In other words, a very small number of wealthy actors. In this sense, the idea is, what can we conquer with micro funding sources, in a more diverse and democratic way, so the projects that "Whales" and all of these Ethereum organizations miss, would still have a kind of second chance. If the community recognizes that these projects are valuable, they could still get some funding.

Therefore, basically, what happened was, there was this platform for supporting public goods within the Ethereum blockchain ecosystem, which was an implementation of Quadratic Funding. So, anyone could spin-off[3] a project, anyone could donate to any project, and the matching would get allocated according to the Quadric Funding formula. There have actually been ten rounds of Quadratic Funding (not six as the slide shows), with the subside pool funded by quite a lot of donors. Namely, the Ethereum Foundation and Consensys donated a lot at the beginning. But recently, there have been a lot of people who would like to be a matching partner. I can talk a bit about this later. In this sense, the goal was to try out Quadratic Funding in a real life setting and see what happens.

[3]The creation of an independent company through the sale or distribution of new shares of an existing business or division of a parent company.

Hence, round 1 and 2 were actually quite small and, in my opinion, not much happened. On the other hand, round 3 was probably the first round with significant size. And here we can see the Ethereum page with the top ten projects and how much funding they received. So, the white number is how much they got from donations and the green number is how much was allocated by the matching pool. Then, the two winners were the ETH HUB, a community which runs resources and where you can look up a whole bunch of information about Ethereum. And a lot of people love it, so it got 131 contributions, thus, it ended up getting a lot of matching. The other winner was Austin Griffith, who is an Ethereum developer and makes a bunch of tools that developers love. So, he got a lot of funding for it.

Round 3: the first round of significant size
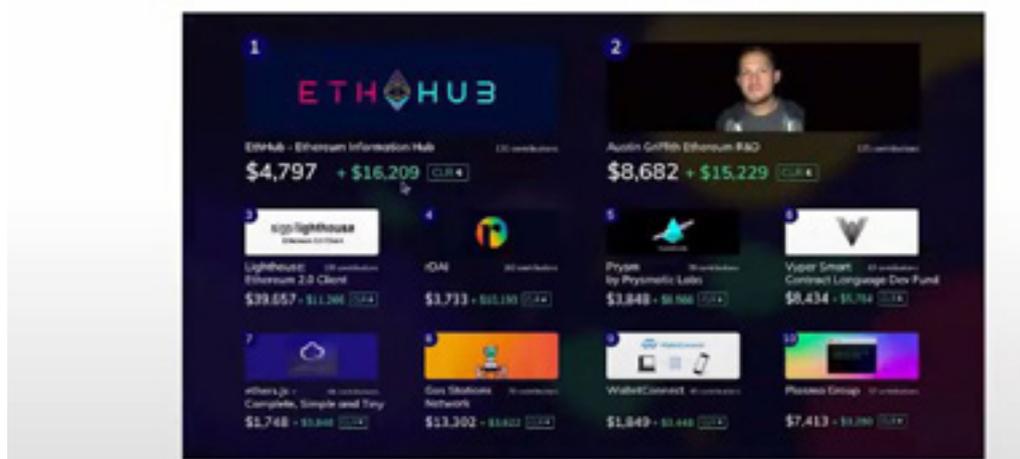
Therefore, the interesting thing which we started to see was that, among these projects that got funded, there were even projects that a lot of people, the community recognized as valuable. But not really projects that exist in centralized organizations, or were even looked at, like, they were not even under the radar in terms of supporting them. So, I think in this way Quadratic Funding actually ended up working pretty well. Since it ended up bringing up some projects that needed support to the foreground. Moreover, it essentially ended up not just being about allocating funds, but also to signal a way for the community to express what projects they identify as valuable. Accordingly, what did we learn? We learned something that, in my opinion, is boring but good. Namely, although the results were boring, the outcomes were broadly reasonable. For instance, people funded projects that we did not even realize were important. And the process itself made people feel more engaged in the community.

Furthermore, round 4, we ended up splitting it into "tech" and "media". We tried to separate the two categories and have separate matching pools for them, so they would compete against each other. And, this also ended up surfacing a lot of interesting projects.

Round 4+: split into "tech" and "media"

	CLR MATCHING ROUND 4 — Tech Grants	NUMBER OF CONTRIBUTIONS	TOTAL CONTRIBUTED	CLR MATCHING		CLR MATCHING ROUND 4 — Media Grants	NUMBER OF CONTRIBUTIONS	TOTAL CONTRIBUTED	CLR MATCHING
1	Tornado.cash	308	$3,648	$27,135	1	Week in Ethereum News	140	$3,191	$13,536
2	DAppNode	185	$2,984	$8,583	2	@antiprosynth	134	$2,420	$11,393
3	Sablier	172	$1,401	$8,020	3	EthHub	139	$2,150	$11,365
4	MetaGame	173	$1,226	$7,609	4	Bankless (Scholarships)	104	$2,093	$5,733
5	DeFiZap	177	$2,369	$6,807	5	David Hoffman	101	$1,399	$5,414
6	Gitcoin Sustainability	137	$7,120	$4,840	6	Wizards of DApps	86	$2,088	$5,258
7	Commons Simulator	118	$1,727	$4,475	7	Cryptotesla	75	$1,475	$4,682
8	Prysm	140	$3,601	$4,365	8	Ethereum Magicians	69	$633	$3,745
9	Uniswap	124	$1,715	$3,439	9	Zero Knowledge Podcast	60	$503	$2,998
10	Dapp.io	102	$900	$3,275	10	DeFi by Chris Blec	76	$2,975	$2,876

 On the "tech" side, it was fairly uncontroversial.
On the "media" side, this one interesting thing happened, the Gitcoin Quadratic Funding decided to fund Antiprosynthesis. Which is basically an Ethereum Twitter influencer. It just makes a lot of tweets which talk about Ethereum and points out things that are important and appreciated about Ethereum. However, this was controversial, for a couple of reasons. For instance, some people have this mentality that "twittering" is not real work, so it does not deserve 20,000 dollars. Because, this amount of money should go to people who really work. And also, it influences the community to separate. If the community wants to give any chance, to decide through their own donations, with this matching mechanism what is valuable, they can actually end up getting a lot of support.

Another interesting thing, which is pretty controversial is that, once you start talking about not just "tech", but also about, "media'', and also Twitter influencers, then, that is the sort of place where it is easy or there is more of a risk that some people will do things that do not just have positive consequences, but also negative ones. If the Twitter influencer posts something that is in any way polarizing, very culturally worried, very hateful to people, or in some way that people dislike. Then, that is something that very easily can have a very negative impact on the community. What Quadratic Funding does is to not give a way to provide the information which you think could generate a negative impact. Because all you can do is just donate, so, it is just a happy fluffy party. You can just use your money to credibly signal how awesome you think everything is. On the other hand, if you think that something is providing a negative value, there is not really a way for you to put that preference or opinion into the mechanism.

In round 5, we ended up doing an experiment where we allowed negative contributions. So basically, these were contributions which you provided a bit of money and it went to the matching pool, and then we also actually took away from the matching grids the amount of subsidy that would be given to that project. Namely, we could make a 5 dollars negative contribution and it would be taking away 300 dollars from some of the big projects. However, this ended up not working very well. The feedback that we got from the community was basically that although our project won you stole what we did. And they also felt downvoted, which made them feel terrible. Especially in face of the idea that "Gitcoin was supposed to be about the spirit of positivity". And negative contributions ended up just doing the opposite. However, for me, this was a bit of a conundrum (dilemma), once there is such a thing as negative externalities, and there is such a thing as projects which have positive externalities, but they are overrated by a lot of people. So, it needs to be, I think, if you want an equalistic good mechanism, some way for people to incorporate negative feedback into it. But adding mechanisms for negative feedback that actually work in a social context is really hard.

So, there are other examples of that. One of them is that people have a strong aversion to governments running programs where people can basically rat each other out to the government. So, people have a strong aversion to informing each other, like saying: "Hey, this person is doing something bad". And this is true even in these cases where the laws the government is trying to enforce, in that particular case, are very reasonable. Hence, there is just something about this idea of informing on someone else that is sort of perceived as people being bad "juju" (cursed, bad person or a snitch). Another example is that very few people are willing to give rates lower than five stars for things like, Uber, Airbnb, and so forth. So, there is this thing, not yet solved. I guess it is a cultural problem or challenge, of how to allow negative feedback without actually leading or turning that into a way of sowing discord. For instance, one piece of feedback that I got is that it would have been less bad if negative contributions were anonymous. So, we have not done this experiment yet, but I found it interesting. This is one of these open question marks, that I guess, I do not know the answer.

The rounds 6 to 9, they sort of have a lot of the same. There are a lot of interesting projects that got funded, even RXT Stock News[4], which people seem to really like. And also, very interesting. Once it was more than just about Quadratic Funding, it was Quadratic Voting and other interesting projects, like, Bankless, an Ethereum Podcast. Besides that, a lot of community resources, a lot of tech projects, that people found really valuable. There was even one case of a proposal to create for Ethereum an EIP-5050 Dime, which is a proposal to reform how transactions fee economics inside Ethereum work. People liked it. But the community started feeling that Ethereum, towards the development process, was dragging speed on implementing it. So, someone just started a project on EIP-5050 Dime development fund, and it just got a huge amount of funding. I think it got like, half of all the funding in the round 7 and in the round 8. And, that was fascinating! Because it was not just funding, it was also, basically, a way for the community to kind of collectively protest and say: "Hey guys, we really, really think this is valuable and we think you should take this priority more seriously". So, I thought that this was also, Quadratic Protesting.

[4]Technology which provides history, news and other vital information about stock trading and investments.

Moreover, another thing that we put a lot of focus on was the user experience in rounds 6 to 9, making it easier to contribute to any project. Also, trying to deal with forms of abuse that started to become more significant, as the mechanism got to a larger scale. So, basically, the challenges with all of these voting mechanisms are: One, if you can pretend to be a hundred people, you can have a hundred times more power. In this sense, if in voting it represents a hundred times more power, in Quadratic Voting, it is ten times more power, but that is still a lot. This means that there needs to be some way of identifying who is a unique individual, a real person who is participating in this voting. Which does not work really well in a blockchain based platform like Ethereum. Because blockchain based layers are pretty anonymous. But we did at Gitcoin Grants where we ended up adding a whole bunch of Ethereum based kind of layers on top that tried to provide a unique human verification. Which was interesting.

There were also other forms of abuse, like people trying to bribe others to make contributions. For instance, "I give you 5 dollars for you to donate to me 1 dollar". So, because of Quadratic Funding, I would also get explained over a match. It means that, the more contributors a project gets, the more matching funds it will get from the organizations which believe in it. So, this kind of abuse, so far, has been handled manually, like, projects that do that, will be exposed and get kicked off the platform. But I think, eventually, some more cryptographic approach, kind of similar to how secret ballots work in elections, is going to be required. So, there are some ideas around that.

I guess the general conclusions, about all these experiences of Ethereum, generally speaking of Quadratic Funding, worked really well. However, it indeed takes time to get up to speed. In this sense, round 1 did not work very well. Because it takes time for the community to actually get up to speed and be able to understand the fine gears of the mechanism. Then, to be able to participate well in it. Besides that, as the stakes get bigger, the potential for abuse also increases. So, it is not just Quadratic Funding, the mechanism theory also proved valuable as a form of signaling.

I guess the next question is, "Where should Quadratic Funding go from here?". And I think there are two answers for it, well, few answers. One is to continue working with the existing experiments, to try to see what is wrong with the results and if there are ways of improving the quality of the results. It involves improving the interface, also providing more means for people to talk about the projects they find valuable, adding braining systems. It might also mean just increasing the scale over time, so that we can deal with the attacks on a larger scale. And also, applying Quadratic Funding to contexts outside the Ethereum space. So, Deacon has already started doing this. He is thinking of the doubt stimulus in Colorado. They did fund OSS (Open-Source Software) which targets open-source projects in general. But there are plenty of other communities. I think there are both internet virtual communities, then also local communities, of a particular city, of a particular region. That would be an interesting, kind of natural next group that could try to use this mechanism. Then, we can keep going from there.

JULIANA: Thank you, Vitalik! We have some questions from the audience. So, I would like to start with Diego Costa, who is asking: "What kind of regulations should the developing countries have in place to enable that kind of financial environment?"

VITALIK: I guess, for Quadratic Funding, my perspective would be, at least in the short-term, this is the sort of thing that would be probably to experiment with local levels, or particular parts of larger scale governments, instead of separating that from everything else. So, if you pick a particular sector, if you just decide the sector will be funding public media, for example. If you want to support local experiments happening, then, I guess, most of the work is going to be done at the local level. Though, a main policy at a higher level will be required, I guess. And first of all, you will have to make sure that you are not doing anything to prevent this kind of experimentation. But I guess, some program of the government that contributes to any of the matching pools that are being done at the local level, or whatever the structure is, as long as it is reasonable. I do not know. I am just kind of thinking immediately here. And then, for things at a higher level, if you take funding media, for example. I think that just requires that there should be someone in that position who is willing to, kind of, be enterprising and just do interesting things. It requires having people in positions that have the opportunity to start things without having to go through a bunch of "red tapes" or have to do things in the way it has been done in the last 15 years.

JULIANA: The next question is from Fabricio Danny. "What happens for example, if I have a thousand dollars and I split it into a thousand donations of one dollar? Wouldn't that be like cheating on a large-scale?".

VITALIK: I got the question. It is a very important question. I alluded to this, when I was talking earlier. So, basically, the challenge for Quadratic Funding, you do need to have some kind of identity verification, or at least some way to verify that the contributions are coming from different people. So, if one person sends a thousand different contributions, it counts as one single contribution. Because if you do not do that, people can split their funds, and one person can pretend to be a crowd. And this is not just for Quadratic Funding, I think this is true for any formal mechanism that attempts to be more democratic than a market. So, I think the solution would be, to have some way, like, "proof of humanity" projects, or identity verification solutions. In other words, things that create some kind of cryptographic identity design, so it is hard for one person to get many of them. And, this sort of thing is hard to do. With this kind of solution, like Quadratic Funding, there is a huge incentive to try to cheat them. Hence, it is a difficult problem. But some projects have tried and have done reasonably well, so far. And, Gitcoin is already using some of these things. I think the challenge is to have this kind of solution continuously and making sure that they will also work on larger scales.

JULIANA: Next question, from Claudio Shikida. "In the real world, what would you say is the most common rhetorical argument politicians use against QF (Quadratic Funding)? I am trying to think on how to sell QF to politicians."

VITALIK: I honestly think that Quadratic Funding is still pretty initial, and many people are seriously opposing it. There are people who have doubts about it in their minds. And I think the kinds of doubts that people have so far, for instance, "Are the crowds wise?". If you spread out the decisions on them, like, how much a project should get funded across a large group of people? Or, even, do the people who donated 1 to 5 dollars actually have much incentive or just pressure of any kind, to be thinking what kind of things are actually valuable? Or, are they just following their immediate feelings? Which might generate some kind of noise to the signals. Therefore, that is one kind of critic that I have. I definitely heard from some people, "How do you shape Quadratic Funding, so it has some kind of goal or position or expertise or more focused on long-term thought?" And, to be fair, that is still an open problem. I think, at this point, we are not at the stage where we can credibly say that Quadratic Funding is going to fix anything. I do not think either big governments or companies or any kind of institution would replace their funding mechanism with Quadratic Funding, overnight. I think we are still at the experimenting stage. Besides that, the small-scale experimentations that we had so far, seem to have good results in practice. Hence, just like any new way of doing things, we need to keep going to find out what the problems are, and adapt to them. Moreover, maybe we will come up with something better than Quadratic Funding. Maybe we will discover that it is part of the learning process.

JULIANA: The next question is from Bennito. "Can you please make a comparison between the Ethereum funding ecosystem and the Polkadot voting system? How can both ecosystems benefit from the voting evolution?".

VITALIK: I am not very familiar with how the Polkadot voting system works. So, the thing that I can say, in terms of what I do know, is that the Polkadot community and its governance philosophy is much more willing to have activist governance, at layer one, than the Ethereum community. And Polkadot has a base layer on chain governance. And so, in Ethereum basically, there is not any "IFS" being printed to fund public goods, with the exception of the "IFS" that has been hard coded into the protocol to pay for block rewards, which funds the network security. Because that is the one public good that you can measure purely mathematically. So, when we are talking about Gitcoin Grants, and all these other funding mechanisms, they get funded by either individual organizations or other layers to projects that are on top of it. Or, application layer projects on top of Ethereum. I guess the trade-off is that the pool funding that you have if you just find things from application layer projects is smaller. So that is a great risk of the funding being insufficient. On the other hand, if you have layer one on chain funding there is a higher risk of capture. If you want to know what capture means, take one of the distopias that had already happened to us. For instance, what happened to EOS (a blockchain which works with smart contracts). They had their own chain governance for funding, based on delegated previous take. And people just ended up just paying large exchanges, ended up paying each other to pay for each other to get delegated seats. As a result, there was a sort of rich cabal of a couple of dozen people that quickly secured power inside the ecosystem. Therefore, eventually, the protocol had to be changed to prevent that kind of abuse. So, that sort of thing happening is, to me, the risk of any own chain governance. Hence, I continue to think that people who do not take these kinds of issues seriously enough. I guess we will see how that goes.

JULIANA: We just have a few more minutes, so this is the last question. "What kind of books, articles, and movies were fundamental in your intellectual journey? And what would you recommend for people getting started now?".

VITALIK: I have a weird and fun answer, so, recently, I have played the game "Sad Words of Catania", and the thing that fascinated me was that it was a metaphor. So, you know how, when one talks about politics, people often use chess as a metaphor. And the thing that I realized about it is that chess does not cover the complexity of real public interaction. Because chess is a two-player game, and public interactions are anything greater than a three-player interaction. Hence, there is a fundamental difference between a two-player game and a three-player game. And the thing that became obvious in the game "Sad Words of Catania", it is very easy to kind of charge ahead, instead of building your settlements and getting your points. But, if it looks that you are winning, everyone starts gaming up against you. Then, you will lose and someone else wins. In chess that does not happen. Once, if you manage to get lucky and eat the other guy´s queen, you basically won. Basically, the lesson from this is that, in a two persons-game, it is just you and the other person. And if the game is competitive, all you do is play strategies to get advantage over them. But still, it is a kind of mathematical track that you should understand. On the other hand, when the number of players goes above two, then, the most powerful strategy is organizing coalitions and discourage coalitions from being organized against you. And that is actually, fundamentally a very different style of playing. You have to think about issues like, if you use certain strategies, what will be your public image. So, the kinds of challenges that you deal with, end up being very much not like chess. I guess the conclusion is that. Thank you!

JULIANA:
Thank you very much, Vitalik!