# 1AC

## 1AC---Blockchain

### 1AC---Blockchain ADV

#### Contention 1 is BLOCKCHAIN.

#### Blockchain development is inevitable, but beyond the scope of antitrust---the narrow focus on the ‘firm’ is fundamentally inapplicable, creating an anticompetitive environment that’ll centralize applications and limit uptake.

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5 A WIN-WIN THEORY

The creation of a legal fiction around blockchain nuclei will benefit both antitrust and blockchain communities. By facilitating the enforcement of the rule of law, blockchain participants will indeed be able to enforce antitrust laws or be sanctioned when infringing them.

5.1 A Win for Antitrust

The theory of granularity helps create a legal fiction for public permissionless blockchains and private ones (whose governance is not vertical). Surely, other legal fictions will be proposed in the coming years. Regardless of its name, creating a legal fiction is a prerequisite for applying the rule of law to blockchain layer 1. The ability to do so is crucial.

First, the creation of a legal fiction ensures that blockchains do not escape antitrust enforcement for theoretical reasons. This is a prerequisite before discussing the technical barriers to enforce antitrust against illegal practices (see the following chapters). Second, assigning liability to the right entity ensures that whoever controls blockchains will have a strong(er) incentive to comply with legal requirements. The urge to play by the rules is always stronger when one knows that the rules could actually be enforced. As such, antitrust will not only protect actors that lie outside of blockchain ecosystems; it will also protect those inside the blockchain who cannot stop the anticompetitive practices. Antitrust will free blockchain layer 1 from these practices.

5.2 A Win for Blockchain

Creating a distinct legal fiction centered on blockchains’ nucleus will present an important step forward for related ecosystems. First, the creation of such fiction will attribute rights to blockchains’ nuclei. This will legitimize collaboration between blockchain participants in the nucleus that would otherwise have been prohibited. Indeed, I have explained that antitrust law defines a legal fiction (e.g., the firm) and then applies only to the effects that occur outside of it. Decisions that produce an effect outside of the blockchain nucleus will be submitted to antitrust law. In contrast, decisions taken by the nucleus whose effects are purely internal to that entity will be exempt from antitrust scrutiny.98

Second, creating a legal fiction will increase legal certainty pertaining to the application of antitrust law and regulation. Decades of research suggest that doing so will encourage investments,99 and will make entrepreneurs want to “embark” on the creation of innovative products and services.100 Blockchain communities say so themselves: regulatory issues and accompanying legal uncertainty are the most important reasons preventing greater investment and adoption of blockchain technology.101 The sooner a legal fiction is created, the better for the ecosystem. In its absence, one could imagine court decisions holding all blockchain participants liable for wrongdoings, even though most of them will not have the power to prevent these illegal practices.

Finally, the creation of a legal fiction will give the nucleus the right to institute legal actions and claim damages in cases of antitrust violation, whether caused by another nucleus or a non-blockchain entity. Going back to Christopher Stone’s writing, blockchain’s legal fictions will be able to institute legal actions in their name; courts will calculate injury to them, and relief will be run to their benefit. For example, one could imagine that a blockchain layer 1 (illegally) excluded from the market by another blockchain that engaged in predatory pricing could introduce a valid claim before the courts or antitrust agencies. In the following chapters, I will explain how this will play out when it comes to collusion and monopolization practices.

For all these reasons, creating an antitrust-related legal fiction will be invaluable for blockchain ecosystems and, ultimately, for decentralization. It will protect them from illegal practices that could hinder blockchain’s capacity to decentralize the economy. There is no doubt that centralized companies will multiply illegal behaviors toward blockchain ecosystems in the years to come, as we will see in the coming chapters. Being recognized as a legal entity will allow them to protect their interests and innovate toward decentralization.

6 CHAPTER SUMMARY AND BEYOND

In this chapter, 1 have used the theory of granularity to open the blockchain “black box.” First, I have discussed blockchain governance and shown how the influence of different participants neutralize their position. As no block- chain participant can control the blockchain by itself - and ensure its survival - I have explained that a group of participants may want to come together to achieve common goals. By doing so, they free themselves from other participants’ constraints and end up forming the blockchain nucleus.

The blockchain nucleus gives rise to an entity that should benefit from rights, but could also be held liable for illegal conducts. I have shown how this would work by analyzing relevant markets and market power, evaluating anticompetitive practices and assigning liability.

#### Anticompetitive exclusions and lack of legal certainty over the applicability of antitrust dry up investment and innovation, artificially centralizing digital ecosystems---applying antitrust solves.

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2 THE SPECTER OF NEUTRALIZATION

I hope to have convinced readers that antitrust law and blockchain contribute to similar, if not identical, objectives (i.e., preserving agents’ ability to act freely in the market, which entails the decentralization of decision-making processes).42 For that reason, one might expect that both communities would work hand in hand to achieve decentralization. And yet, despite pursuing a common goal, blockchain and antitrust may end up canceling each other out. Here’s why.

2.1 One Goal, Two Methods

Blockchain seeks the decentralization of decision making by eliminating intermediaries, while antitrust aims to achieve it by eliminating anticompetitive practices. They converge toward the same objective. That said, one should not be candid about how easy it will be to make them cooperate. First, the Sherman Act is concerned with trusts43 - hence the name “anti-trust”. Since there is no trustee in the sense of a third-party fiduciary in blockchain’s first layers, the target of antitrust laws is absent.44 Blockchain may thus undermine the *raison d'etre* of antitrust law, which will trigger epidermal reactions.

Furthermore, blockchain and antitrust may at times attack each other. Blockchain may be used to implement anticompetitive practices and be enforcement resistant, while antitrust may reinforce the role of intermediaries in the economy (by protecting them from different forms of anticompetitive exclusions) and label various blockchain behaviors as anticompetitive - regardless of the overall usefulness of these blockchain features.

In fact, antitrust law and blockchain ecosystems seek decentralization at two different levels. Antitrust law prohibits certain categories of conduct, creating tensions with tech communities without focusing much on digital architectures. Blockchain, on the contrary, seeks to decentralize by providing its users with a specific digital architecture. It does not prohibit (anticompetitive) practices where code allows. This creates tensions between them, as I show in Part 2 of this book. Their cooperation will require the identification of ways to deal with these mutual provocations, as I will explain in Part 3.

As things stand, both of these communities exhibit what Veblen called “trained incapacity” - the difficulty to think beyond a set of constraints and assumptions. Policymakers tend to believe that the law should be the most important constraint organizing our lives. For that reason, legal rules are often applied without looking for ways to coordinate with other constraints, including digital architectures.45 In the meantime, blockchain communities tend to view legal enforcement as an adversary, and not as an ally. As John Perry Barlow stated in 1996: “I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather.” After all, the law liberates, but it also implies illegality, lawsuits, liability assignment and sanctions. The antitrust and blockchain communities will gain from over- coming these biases.

2.2 The (Long) Road Ahead

If we want antitrust and blockchain to collaborate on a long-term basis, we need to talk about the problems that their cooperation will encounter along the way. The challenge before us is intricate.46 On the one hand, it is a matter of getting legal minds to recognize that technology can help achieve objectives that the law cannot achieve on its own. There are three reasons for this. First, blockchain provides a technical approach to the subject. It serves as a framework for decentralizing the economy by default, while antitrust mostly applies ex post by correcting past behaviors.47

Second, antitrust agencies’ detection rate remains low, meaning that illegal behavior often goes unpunished.48 And enforcement is costly, which makes it impossible to pursue all potentially illegal practices. This is particularly problematic in a world where illegal practices can be implemented through coding that quietly and immediately affects billions of users. Also, the rule of law is (unfortunately) inapplicable in some places. This is the case when the state bypasses legal constraints,49 and when jurisdictions are mutually unfriendly and do not enforce foreign laws.50 For example, enforcement of U.S. court judgments abroad can prove especially difficult in light of divergent rules on jurisdiction, requirements for special service of process, reciprocity and some foreign countries’ public policy concerns,51 including in Europe.52

Finally, antitrust law is complex and cannot be fully mastered by all companies - the compliance costs are high and many firms unwittingly infringe the law. Blockchains could therefore supplement antitrust by creating an architecture that leads to fewer anticompetitive practices.

On the other hand, blockchain communities would gain from working with (not against) antitrust law enforcers. That is because antitrust would eliminate practices that artificially centralize blockchain ecosystems and that blockchain architecture cannot stop or prevent. 1 will analyze them in Part 2. Doing so would also provide legal certainty, thus fostering investments and benefiting all the actors involved in commercial activities that rely on blockchain. For these reasons, one should think of antitrust and blockchain as allies - not enemies - as they both seek the same objective, while presenting complementary strengths and defects. Doing so would lead policymakers to promote and implement a new “law + technology” approach that recognizes that the benefits of cooperation outweigh those of one-off confrontations. A game theorist would represent that approach as illustrated in Figure 5.1.

#### Decentralizing the blockchain allows scalable transaction validation.

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2 BLOCKCHAIN INTERNAL FACTORS

The evolution of blockchain also depends on internal balances in terms of design and governance. Overall, choices that will be made within each blockchain will prove important for their evolution. As I show, it all comes down to human interactions.

2.1 The Trifecta: Intra-blockchain Evolution

A blockchain trilemma has emerged in the literature over the last several years. It can be summed up as follows: ensuring blockchain’s decentralization, scal- ability and security entails tradeoffs, at least in the short term. Although this makes sense on a technical level, it does not capture the entirety of our subject. Let us take a closer look. I have discussed decentralization at length through- out this book. It is blockchain’s central feature, in terms of both architecture and philosophy. “Scalability” refers to the ability to validate large volumes of transactions rapidly. Last, blockchain’s security hinges upon its ability to maintain integrity: that only desirable transactions take place - for example, by preventing double spending.42

To a certain extent, we have seen together that the mechanisms that ensure decentralization at different blockchain layers may conflict with security.43 This is what Awemany’s story in Chapter 1 revealed. Decentralization implies the distribution of power, limiting the ability to act unilaterally in case of an emergency. At the same time, decentralization can also affect the scalability of blockchain: Proof of Work is decentralized by nature, but it prevents the rapid validation of large transaction numbers. Conversely, a private blockchain can restrict access to the ledger or certain functions, raising security and scalability issues.44

In the long run, however, these three objectives are mutually reinforcing. The more a blockchain is decentralized, the more it stands out from the centralized platforms and services that readers know only too well. By differentiating themselves, blockchains attract users by offering a different value proposition. In turn, this generates scalability. The same goes for security, as the more participants use a public blockchain, the harder it becomes to alter the registry or perform a 51 percent attack. The blockchain trilemma is thus useful for thinking about what needs to be done, but it cannot provide a coherent analytical framework in the long term. It will become less relevant with technical advances, to the point where some blockchains will maximize these three objectives. Those who manage to do so will prosper.

#### Scaling blockchain unlocks its use for energy, waste, and supply chain sustainability---extinction.

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Two years ago nobody talked about blockchain. Now the distributed ledger technology behind cryptocurrencies like bitcoin is suddenly everywhere.

Enthusiastic experts predict that in the coming 10 years, blockchain will change the way we do everything, from financial markets to health records to supply chain management, and so much more. It's near impossible to name all the applications for the new technologies, but here are a few that will contribute to making our world a better place (or even save the planet).

Energy

Most visible for average users will be the impact of blockchain on the energy sector. The power grids of today are usually centralized oligopolies dependent on a very small selection of power sources (i.e. a few nuclear plants, augmented by oil and gas).

That means long distribution lines, bad management of demand, and susceptibility to power outages during earthquakes and other natural disasters.

A peer-to-peer blockchain-based energy system would reduce the need to transmit electricity over long distances. It will certainly reduce the need to store energy in inefficient ways, which means fewer batteries, for example, which are expensive and need a lot of raw materials whose extraction often causes massive pollution. Imagine if every house had a solar panel and a wind turbine, or produced electricity from new smart materials on the outer walls.

Add road surfaces that produce kinetic or solar energy, and add in all the existing infrastructure like nuclear plants, oil or coal. Now imagine every one of these sources could trade with every other source, all managed automatically by a computer system, with unfalsifiable records based on blockchain. And everyone gets paid for it into their digital wallet. This is the future of energy.

Waste Recycling

Current systems for recycling are often cumbersome and don't give enough incentives to participate. Even the best intentions fall foul to human greed and laziness.

Here then is the future of recycling: you identify yourself with your smartphone at any recycling station and deposit your empty bottles (or batteries etc.). The system scans what you deposit and credits your electronic wallet.

If done right, this system could enable users in countries without local recycling industries to get paid the same way as users in locations with large recycling operations.

Companies could set up recycling plants and literally collect garbage from anywhere in the world. It would make it easy to transparently track data like volume, cost, shipping data, and profit, and to evaluate the impact of each location, company, or individual participating in the program.

Think one step further and the recycling containers could be fitted with solar drone technology and fly themselves to the recycling center when full.

Supply Chain Management

The way we transport goods around the world is wasteful and damages the environment. Industry 4.0 is bringing us a revolution of already connected devices; 3D printing means more decentralized manufacturing in much smaller batches.

Blockchains can be used to track products from the manufacturer to the shelf and help prevent waste, inefficiency, fraud, and unethical practices by making supply chains more transparent.

They improve shipping ways, volumes, avoid empty shipments and will thus allow for fewer ships and trucks. Combined with drones and solar-powered airships we could even see pollutant-free solar shipments of individual consignments over long distances, secured, tracked and paid for through blockchain technology.

Or think about this: a blockchain enabled 3D-printer as a public service, secured, tracked, and monetized through blockchain.

The food industry is forging ahead hear with the tracking of origin and transportation paths of food.

Environmental Protection

From waste and transportation, it is an easy jump to the overall enforcement of environmental protection. Blockchain is ideally suited to manage records and incentives.

In can be difficult to track the real impact of environmental protection plans, agreements, or even international treaties. Very often incentives are misaligned, or corporate interests and even criminal elements prevent successful implementation.

Blockchain could discourage stakeholders from reneging on their commitments, misreporting progress, or giving in to pressure from nefarious players, because the technology would allow the reliable tracking of important environmental data.

After all, data in the public ledger of the blockchain is transparent and traceable forever. Environmental protection is at its core a contractual problem. Just like blockchain will revolutionize the storage and manipulation of legal records, it will reduce or eliminate fraud and manipulation of environmental schemes.

Development programs

Like environmental protection, development programs are contracts between remote parties that need to be enforced.

When you donate to a charity, non-profit, development program or similar entity, you hardly ever know what really happens with your money. Bureaucracy, corruption, and inefficiency are still common in the charity space. Blockchain technology can ensure that money intended to be a reward for conservation, or a payment to a specific cause, does not disappear into unintended pockets through bureaucratic labyrinths.

Blockchain-based money could even be released automatically to the correct parties in response to meeting specific environmental targets. This is particularly relevant in countries without modern banking structures. In particular, there are several schemes under consideration for the tracking of water usage in very dry areas of the planet.

Carbon Tax

In the current system, the environmental impact of each product is difficult to determine, and its carbon footprint is not factored into the price.

This means that there is little incentive for consumers to buy products with a low carbon footprint, and little incentive for companies to sell such products.

Tracking the carbon footprint of each product using the blockchain would protect this data from tampering, and it can be used to determine the amount of carbon tax to be charged on at the point of sale. If a product with a big carbon footprint is more expensive to buy, this would encourage buyers to buy products that are more environmentally friendly, and would therefore encourage companies to restructure their supply chains to meet the demand for such products.

Such a blockchain-based reputation system would compute a score for each company and product. This would make manufacturing more transparent, and discourage wasteful and environmentally unfriendly practices.

You could automatically see (e.g. by scanning a barcode on a product), if it was made by an environmentally sound low-carbon facility, or a wasteful polluter.

Access to credit

Just as it tracks financial payments and all the data mentioned above, blockchains could be configured to manage access to credit.

This would enable millions of people to escape poverty, by giving them easy access to small amounts of money and start their own business. Unlike the micro-finance banking model, such a credit blockchain would be entirely transparent and thus safe from abuse.

Summary

In short, blockchain technology allows the management of incentives.

Consumers, companies, and governments would immediately see the direct effects of their actions on the planet. The blockchain can be used to transparently track a variety of data like the carbon footprint of each product, the greenhouse gas or waste emissions of a factory, or a company's overall history of compliance to environmental standards.

Companies and individuals can be incentivized to act in an environmentally sustainable way through the availability of information, tokenized credits being issued for taking certain actions, or blockchain-based reputation systems.

There are many hurdles to overcome. We still do not know if the blockchain is really as safe and unhackable as promised. As a cybersecurity consultant I spoke to for this article said: "sooner or later, everything will be hacked."

There are still doubts about the usability of blockchain for micro-transaction, due to the time proof-of-work takes, and the energy cost associated with computing.

The final hurdle is the willingness of governments to change, and the willingness of participants to live in such a transparent world.

But I believe that managing incentives on the micro-level with blockchain could completely change the drivers of our economy, and benefit not only us but the future generations living on our planet.

#### Cryptocurrency reach a wide rollout---that builds resilience to survive inevitable existential filters.

Alex McShane 21, Writer and Head of Video for Bitcoin Magazine, BA from the University of Iowa, Degree from the University College Dublin, Degree from Kirkwood Community College, “Bitcoin and Existential Risk”, Bitcoin Magazine, 9/5/2021, https://bitcoinmagazine.com/culture/bitcoin-and-existential-risk-alex-mcshane

TL;DR - An existential risk is the possibility of an event or series of events that could drastically curtail humanity’s potential. A hypothetical global catastrophe could be anthropogenic or non-anthropogenic and internal or external in nature. The adoption of Bitcoin will better position us to address these risks as a society.

EXTERNAL NON-ANTHROPOGENIC

A catastrophic collision with an astronomical object, such as an asteroid impact would be an external non-anthropogenic risk. This has already occurred here several times. During the Permian Triassic period (ending 250 million years ago) an astronomical impact killed 90 percent of the species on Earth. It took tens of millions of years for life on Earth to repopulate and Earth’s intelligence potential to recover.

One interesting external non-anthropogenic risk is Earth’s reflected light, which could be measured by an external intelligence who then come to extinguish us. (The topic of our own signal bringing about this death by misadventure is discussed further below.)

What does this have to do with Bitcoin?

Generally, hard money facilitates greater innovation and technological process. At this point one might argue that if we do not migrate to some degree from Earth as a species, and are subsequently wiped out by an astronomical object impact or a super-volcanic event, the risk becomes anthropogenic in nature. We are a centralized species on a grand scale, and at this point one could say we have through consensus chosen to remain vulnerable to a single vector of attack by staying here.

Bitcoin is not only the hardest money known to man, it is the most responsible from this standpoint. Bitcoin as it currently operates is currency that can provide a monetary framework on which humans can achieve greater capital growth, collaboration, resource allocation, and therefore technological progress. Because the terminal supply of Bitcoin is capped, we can store value in it indefinitely as a society.

66 Million years ago the Cretaceous-Paleogene Extinction Event extinguished the life and intelligence potential of the non-avian dinosaurs. This series of events was external, and broadly non-anthropogenic in the sense that no form of life on Earth at the time contributed to its own demise, but more specifically, at the time of those astronomical impacts the first humans hadn’t split from chimpanzee lineages. This split is thought to have occurred between between 4 and 8 million years ago.

An important distinction between astronomical impacts or super-volcanic events of the past and such events if they were to happen today is that one could argue that our intelligence potential is now mature enough to tackle certain of the external existential risks. Today, the risk posed by an asteroid impact or something similar would still be external in its origin, but at what point does the burden of responsibility to migrate off of the planet fall upon our population? We can surely solve for some external existential risks, and in any case, no one is going to do it for us. You could say that failing to collectively pursue a solution when technically we could have would recategorize a civilization-extinguishing asteroid impact as an external but anthropogenic risk.

At what point do innovation dampening authoritarian states and their mandated broken money cause society to stall at a local optimum? Surely the government has already caused this. It’s only a matter of time before another object strikes the Earth with devastating consequence. I would argue it is irresponsible to continue life here with government money. Government money is an existential risk. Bitcoin is not only a solution, it is a societal responsibility.

INTERNAL ANTHROPOGENIC

Nuclear war is one example of an internal anthropogenic risk. That is, should nuclear war arise, it would be both self destructive, and relatively self contained on a cosmic scale. It follows that biological warfare is an internal anthropogenic risk, the reality of which we as a species can surely understand now. If I were to hazard a guess I would say virtual emergencies and cyber pandemics are next. These self constructed catastrophes are the government’s misguided attempts at proof of work. This is a topic for another time. Do not surrender your ability to think and speak freely.

The second law of thermodynamics can summed thus, processes that involve the transfer or conversion of heat energy are irreversible. The law indicates we have not observed a spontaneous transfer of energy from cold to hot. Another way to think of this is that there is no such thing as cold, only lesser degrees of hot. Nothing cannot transfer. So broadly, within a closed system, the second law of thermodynamics would indicate that all differences tend to level out.

So what has this got to do with Bitcoin?

Well firstly, all hardware is subject to entropy. The distributed nature of the blockchain increases the probability that it will survive centralized entropy. At Bitcoin’s inception, imagine a failure because Satoshi’s computer randomly crashed. Distributed networks are inherently hedged against this particular centralized form of existential risk.

The second law of thermodynamics also suggests that on a grander scale, relatively isolated (centralized) systems will degenerate more and more into disordered states. Proof of work, and network growth are two ways Bitcoin fights against falling into disrepair.

Bitcoin uses proof of work to stave off entropy. The system cannot stay dormant. It must continue to use proof of work to advance the state of the chain, and to fight entropy to secure the monetary value all of the users have stored in the network. The U.S. dollar, as many have pointed out, relies on proof of war, or distributed political energies to maintain dominance. Its methodology can be described as haphazard at best.

INTERNAL NON-ANTHROPOGENIC

One internal non-anthropogenic risk is that of a super-volcanic eruption, provided it wasn’t humans who brought about the eruption. Just like with external non-anthropogenic risks, Bitcoin alone cannot prevent them, but it can help humans prepare for them such that we may survive these relatively small intelligence filters the universe throws our way.

Bitcoin allows for fundamental capital accumulation and human innovation, and promotes collaboration to such a degree that we will find an increased collective problem solving power as humans the further Bitcoin adoption spreads. It is worth mentioning that Bitcoin also maintains and appreciates wealth to such a degree that often those of us to chose to live our lives on a Bitcoin standard will experience relatively greater freedoms, and vastly greater amounts of free time than our peers who chose to continue their lives on a fiat standard, and are perpetually working to outpace their chronic debt. Many Bitcoiners will likely forego that newfound free time to work and continue to provide value to others in whatever area interests them, because Bitcoin incentivizes the collaborative accumulation of capital but also the responsible reallocation of it.

EXTERNAL ANTHROPOGENIC

An external anthropogenic risk has the least probability of occurring. This is a problem of reach. Imagine human intelligence being sent into the cosmos and signaling or generally causing an external intelligence or astronomical object to come back to extinguish us. This is a most improbable extinction by misadventure.

The probability that we send messages of consequence into the cosmos that in turn cause some other far-flung intelligence, with knowledge enough to reach us, to come and bring about our own destruction is next to zero, but it isn’t zero.

I would posit that the probability increases every day that Bitcoin survives, with each person that chooses to hold Bitcoin over fiat, because on a fiat standard we are again, stuck at a local optimum at best, and each day the global monetary system devolves further into chaos. The fiat world may continue to be habitable chaos, but our technological progress and our greatest capacity for innovation cannot be achieved on a fiat standard.

A Bitcoin standard is not only our current best bet, it is the only monetary vehicle that will take us from here, or enable us to build technology that can effectively communicate with places in the universe where other intelligence has emerged. The other reason this fatal miscommunication is unlikely to occur is that once through a Bitcoin standard we have manage to build a society that can effectively reach and communicate at greater depths of the cosmos we will at that time have already become a multi-planetary, if not transitory, if not multi-solar system species. The topic of Bitcoin in space and planetary interoperability will be discussed in a later essay.

The most distant human made object from the earth is the Voyager 1, which is over 13 billion miles away. (For perspective, Apha Centuri, the nearest star system to Earth, is 25 trillion miles away.) Human radio signals have announced our presence and our intelligence to the cosmos since around 1900. The first human radio signals have all ready traveled 114 light years, that is 681,920,540,000,000 miles. Although the reach of our radio signals is very great, the probability of us being heard and subsequently extinguished is negligible. External anthropogenic risks are the least of our concerns at the moment.

As Bitcoin adoption grows, it serves to promote advances in artificial intelligence and nanotechnology. External anthropogenic risks will become more relevant to human intelligence at a much later time. External non-anthropogenic risks are similarly out of our hands for the time being. That is, at the moment there is nothing we can do to prevent the Sun from becoming a red giant star and subsuming the Earth.

But we do already have the monetary technology upon which to engineer solutions to some of these problems. We have the potential as humans to prevent internal global catastrophes, both those set on by us and not. Survival and longevity is arguably our greatest task as a species. Adopting Bitcoin, and protecting this network is proceeding with diligence and a long eye toward the future in all of our political and scientific affairs. The existential risks of living are great, though it is human nature for our ambitions to out pace our current abilities. The only evidence of life is change. To change is to exit fiat currency, it is to use Bitcoin instead.

#### Decentralized and competitive blockchain’s vital to IoT effectiveness.

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1.2 Blockchain and Other Technologies (Collaboration)

1.2.1 Blockchain and the Internet of Things

Technologies tend to accelerate each other,30 and for that reason, it is useful to analyze how they interact. Blockchain has direct implications for quantum computing, 3D printing, biotech and nanotechnologies, among others.31 In the subsequent developments, I will limit myself to discussing the IoT and AI, as blockchains may serve as an infrastructure for these two technologies, therefore shaping their use and developments.

To put it simply, the IoT is all about connecting the analog world to the digital one. Physical products are equipped with sensors or connectors that can send information or be controlled by online applications. There are over 20 billion IoT devices in circulation today and this number will likely triple by 2025.32 Each of these devices generates information that is then turned into data, thus accelerating the already exponential production of data. In fact, the world is expected to produce six times as much data in 2025 as in 2019.33

Blockchains could boost IoT. First, blockchains could be used as the infrastructure layer on top of which IoT ecosystems are built. Second, blockchains, combined with algorithms, could help monitoring devices and spot anomalies. Should, for example, a product malfunction, blockchain ledgers could help identifying why-without permitting the constructor to tamper it. Third, smart contracts could allow IoT devices to interact with each other on specified terms and ensure that they stick to them.34 Most of all, blockchain technology provides IoT systems with security. By eliminating a single point of failure, blockchains ensure continuity even when a server is down. Not so surprisingly, 86 percent of blockchain adopters are combining the technology with IoT solutions and this number will likely grow in the future.35

If blockchain technology does indeed become the infrastructure upon which most IoT systems are built, it will be necessary to ensure that the technology’s internal layers are free from economic coercion. If not, artificial forms of centralization will impact IoT markets - for example, notably through anticompetitive practices that affect the validation of transactions or that raise prices. We can find a direct relationship between these external applications and blockchain’s fourth and fifth layers.

#### IoT prevents pollinator collapse---extinction.

Tash Bandeira 20, Reporter at Ubibots, an Engineering Services Firm, “Saving the Bees with IoT”, Ubidots, 7/15/2020, https://ubidots.com/blog/saving-the-bees-with-iot/

Sometime in late 2006, beekeepers across North America started seeing drastically high losses among their western honey bee colonies. Less dramatic disappearances were also observed in Europe and around the world, causing significant losses in agricultural crops that depend on bee pollination to survive.

Now known as Colony Collapse Disorder (CCD), these sudden losses occur when most of a colony’s worker bees leave their queen and plenty of honey and pollen reserves behind. With few dead bees found nearby, the phenomena didn’t correspond to any previously known causes of bee death.

Without worker bees, hives die out and the repercussions go far beyond honey shortages. We see significant agricultural losses and accompanying economic effects worldwide. Approximately 75% of our food supply depends directly on honey bee pollination, which corresponds to a global worth of hundreds of billions of dollars. And with no end in sight for CCD, there’s a lot at stake in the bee crisis.

Scientists have yet to settle on a single cause for the decline - attributing it to a combination of pesticides, disease, nutritional deficiencies, and commercial beekeeping itself - so it’s unlikely there’ll be a simple resolution. The EU voted to ban the use of neonicotinoid pesticides in 2018 but in lieu of global policy change, innovative IoT solutions have already shown serious promise for helping bees survive.

The Internet of Stings

Being able to know when a colony is in trouble and act quickly is imperative to beekeeping. Traditionally, this has meant regular check-ins with the hive, a practice that comes with some disruption to bee life. But with IoT solutions that incorporate wireless in-hive sensors, beekeepers can better keep tabs on their colonies in real time and from a distance.

At the Polytech Sorbonne University in Paris, a student developed a precision beekeeping box that can take temperature, humidity and weight readings, as well as detect the presence of a queen bee. With the data displayed on their Ubidots dashboard, beekeepers can then take steps to decrease resource consumption and increase productivity.

In Costa Rica, college students developed the Ubidots-powered Internet De Las Abejas, a project aimed at controlling varroa mites. Varroas stick to bees, suck their hemolinph, and spread the diseases they carry - posing a major threat to honey bee health. In better controlling them, beekeepers can improve the quality of life of their hives, while also increasing honey production and pollen mobility.

Another approach, developed by researchers in Manchester, is the tagging of bees with RFID chips to track their movements. With location data, beekeepers can follow their comings and goings to better understand and predict their behavior. Grad students in Canada have also been studying the use of sensor data to listen in on beehives and detect communication patterns in the buzz.

But easily the biggest buzz in IoT-enabled solutions is the development of robot bees, or pollination drones. Straight out of a “Black Mirror” episode, RoboBees were introduced by Harvard University researchers in 2013. While their first iterations were limited to flying and hovering, they can now swim underwater and stick to various surfaces. Robotic bees of the future could potentially work farms like their natural counterparts, pollinating crops and helping offset population losses.

No matter what form our ‘IoBees’ solutions take, the collecting and sharing of data will give us profound insights into their lives. Researchers and IoT Entrepreneurs all over the world are realizing the potential of aggregating this data into IoT dashboards, creating IoT solutions that can be commercially offered to either the farmers or research institutions.

Such array of projects aimed at tackling the bee crisis shows the powerful potential for IoT to help save the bees that feed our world.

#### Federal antitrust signals a balanced, light-touch approach that reinvigorates U.S. global leadership on blockchain.

Matt Sandgren 21, Former Staff Director of the Senate Republican High-Tech Task Force, Former Senior Counsel on the Senate Judiciary Committee, Final Chief of Staff to Senator Orrin G. Hatch, Executive Director of the Orrin G. Hatch Foundation, “How New Regulations from Washington Could Lead to a Blockchain Brain Drain”, The Hill, 10/27/2021, https://thehill.com/blogs/congress-blog/technology/578834-how-new-regulations-from-washington-could-lead-to-a-blockchain

The internet is what it is today—with its ability to connect people across countries, time zones, and cultures—thanks to the friendly regulatory climate it was born into. Sadly, the regulatory climate of 2021 is far less welcoming to disruptive technologies. This is bad news for the future of U.S. innovation and the emerging blockchain industry.

Whether Washington takes a heavy-handed or a light-touch approach to crypto regulation over the next few months could make a multitrillion-dollar difference over the next few years. To understand how much we stand to lose as a result of bad blockchain policy, it’s first important to understand just how much we have gained as a result of good internet policy in the ’90s.

It’s easy to forget that the success of today’s internet behemoths was anything but certain in the early years of the tech boom. During the Dotcom Bubble of the late '90s, for example, many companies were dismissed as scams (and some of them were). But even the most promising companies were still seen as speculative bets, and their stock prices were subject to extreme volatility.

It’s also easy to forget that the very concept of the internet was foreign to most people in its early years. By today’s standards, it was slow, overly complex, and difficult to use by anyone without a strong technical background. Many dismissed the internet as a fad, including Nobel Prize-winning economist Paul Krugman, who made this prediction in 1998: “By 2005 or so, it will become clear that the internet’s impact on the economy has been no greater than the fax machine’s.”

Noted.

“A scam,” “a fad,” “a bubble,” “overly complex,” “too volatile.” Does any of this sound familiar? History doesn’t rhyme so much as it plagiarizes. And it’s impossible to ignore that the crypto skeptics of today use the same vocabulary as the internet naysayers of yesteryear.

Now imagine if U.S. policymakers had heeded the words of the internet’s critics in the mid-to-late ’90s. Imagine if they had cracked down on e-commerce, digital publishing, and fledgling social media platforms to preserve the old way of doing things. Imagine if they had shaped regulations to stem the free flow of physical goods, ideas, and information made possible by the internet.

The American people would have missed out on trillions of dollars in economic opportunity—and the bounties of the digital age would have gone to countries with more tech-friendly policies.

This is the risk we face today.

We find ourselves at the dawn of a new age of American innovation. Like the internet before it, crypto has the potential to redefine everything we know about how business, politics, media, finance, and even relationships work. But if legislators give in to crypto’s critics by taking a draconian approach to regulation, the U.S. will fail to reap the economic rewards of this world-changing technology—and entrepreneurs will flee to friendlier shores.

Even now, the stage is being set for a blockchain brain drain. Take the Senate-passed infrastructure bill, which includes a provision that would define crypto miners, validators, and even software developers as “brokers,” requiring them to report information to the IRS about anonymous blockchain participants that they would have no way of obtaining. In effect, this provision would kill the nascent DeFi (decentralized finance) industry and make it almost impossible for everyday Americans to invest in new cryptocurrencies. In other words, this latest move sends a hostile message to blockchain advocates: “We don’t want you here.”

At best, the Senate proposal belies a gross misunderstanding of how cryptocurrencies work; at worst, it exposes regulatory capture and the willingness of legislators to give in to special interests.

Sadly, the threat of bad regulation doesn’t end there. SEC Chair Gary Gensler has expressed his belief that many digital assets are not commodities but securities and should be regulated as such. Following this same logic, he’s signaled his intent to crack down on the use of stable coins—cryptocurrencies pegged to the value of the U.S. dollar. Americans are using stable coins to earn 4 to 8 percent APY on their savings through various lending programs. But the SEC wants to put a stop to these lending programs, ostensibly “to protect investors.” (What’s unclear is which government agency will protect investors from the unlimited money printing that is devaluing their dollar savings at a rate of 5.3 percent per year.)

Washington has gotten off on the wrong foot when it comes to crypto. But it’s not too late to correct course.

Regulation of crypto is not necessarily a bad thing. In fact, it’s a key step on the path to mainstream adoption. It’s critical, however, that policymakers shape regulation in a way that minimizes the risks of this new technology without eliminating its benefits. Congress found a way to do this with the internet in the ’90s. Section 230—while far from perfect and in need of reform today—paved the way for a flexible regulatory environment that allowed for many online companies to thrive. In the famous words of Jeff Kosseff, Section 230 contains “the 26 words that created the internet” (and, it’s worth adding, “trillions of dollars in economic wealth”).

Indeed, regulatory clarity is key to extracting maximum value from the emerging crypto economy, whether that value comes from DeFi protocols, decentralized forms of social media, tokenized assets, NFTs, or some other application of blockchain technology that we can’t even imagine today.

As policymakers seek to find the right balance on regulation, they should remember that the U.S. didn’t become the tech capital of the world by choking innovators with red tape. The U.S. became what it is today by taking a prudential approach to regulation—one that enabled the entrepreneurial spirit.

This is the same entrepreneurial spirit that inspired the private sector technological advances that made the Apollo moon landing possible. It’s the same spirit that brought about smartphones millions of times more powerful than the Apollo 11 guidance computers. And it’s the same spirit that has motivated a group of visionaries to push the boundaries of the digital frontier through blockchain technology.

Will Washington’s leaders stifle that spirit to the detriment of our economy and our reputation as a global leader in innovation? Or will they nourish that spirit to usher in the next chapter of the digital revolution?

Let’s hope they choose the latter.

#### That allows international standard-setting that leverages it for public benefits internationally.

Lou Kerner 18, Head Crypto Analyst at Quantum Economics, Partner at Blockchain Coinvestors Acquition Corp, MBA from the Stanford University Graduate School of Business, BA in Economics from UCLA, “A Call For U.S. Leadership in Crypto”, Medium, 7/6/2018, https://loukerner.medium.com/a-call-for-u-s-leadership-in-crypto-4b74d6deb4ad

Despite the striking fact that most of the programmers the U.S. has ever known are alive and working today, despite the fact that the U.S.’s technical capabilities are growing exponentially, despite that, the vast stretches of the unknown and the unanswered and the unfinished still far outstrip our collective comprehension.

No man can fully grasp how far and how fast we have come, but condense, if you will, the 50,000 years of man’s recorded history in a time span of but a half-century. Stated in these terms, we know little about the first 40 years, except at the end of them man had learned to use the skins of animals to cover them. Then 10 years ago, under this standard, man emerged from his caves to construct other kinds of shelter. Five years ago man learned to write and use a cart with wheels. The printing press came this year, and two months ago, the steam engine provided a new source of power. Last month electric lights and telephones and automobiles and airplanes became available. Only last week did we develop penicillin and television. Two days ago the internet browser was introduced. And earlier today, Satoshi wrote his white paper.

This is a breathtaking pace, and such a pace cannot help but create new ills as it dispels old, new ignorance, new problems. Now, when refer to “Crypto”, I mean the four technologies (blockchain, cryptocurrency, smart contracts, and zero knowledge proof), which collectively enable decentralization, all fueled by community. Surely these technologies promise disruption and high reward.

So it is not surprising that when it comes to Crypto our government would have us stay where we are a little longer to rest, to wait. But this city of New York, and this country of the United States was not built by those who waited and rested and wished to look behind them. Technological breakthroughs are driven by those who move forward — and we will continue to do so.

If this capsule history of our progress teaches us anything, it is that man, in his quest for knowledge and progress, is determined and cannot be deterred. The development of Crypto will go ahead, whether the U.S. regulators joins in or not. And I believe Crypto is one of the great adventures of all time, and no nation which expects to lead the world in technology can expect to lead while staying behind in the development of Crypto.

Our forefathers made certain that the U.S. rode the first waves of the industrial revolutions, the first waves of modern invention, and the first wave of the internet. This generation does not intend to founder in the backwash of the coming age of Crypto. We mean to be a part of it — we mean to lead it. For the eyes of the world will increasingly look at Bitcoin and blockchain and beyond. And those of us in Crypto are working to see it governed by a banner of freedom. We have vowed that we shall not see Crypto filled with scammers, but with scalable protocols that make the world a better place.

Yet the promise of Crypto can best be fulfilled if we in this Nation are there, and leading the way. In short, our leadership in technology, our hopes for a better future, our obligations to ourselves as well as others, all require us to make this effort, to solve these mysteries, to solve them for the good of all men, and to become the world’s leading Crypto nation.

We set sail on this new sea because there is new knowledge to be gained, and new rights to be won, and they must be won and used for the progress of all people. For Crypto, like all of technology, has no conscience of its own. Whether it will become a force for good or ill depends on [hu]man[s], and only if the United States occupies a position of pre-eminence can we help decide how this new technology evolves. I do not say that we should or will go unregulated against the misuse of Crypto any more than we go unprotected against the hostile use of cyber warfare. But I do say that Crypto can be developed and mastered without repeating the mistakes of past regulatory overreach.

Crypto’s development deserves the best of all [hu]mankind and its opportunity for community. But why, some say, Crypto? Why choose this as our next computing platform? And they may well ask why climb the highest mountain? Why, 75 years ago, fly the Atlantic?

We choose to to develop Crypto, and do the other things, not because they are easy, but because they are hard, because the goal of decentralization will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win.

It is for these reasons that I’m concerned by the inaction of our government to provide greater regulatory clarity. In the last months, we’ve seen progress in scaling like the Lightning Network. We’ve seen securities infrastructure like Templum and OpenFinance and Polymath being built.

To be sure, from a regulatory standpoint, we are behind. But we should not stay behind. This year, we should make up and move ahead. The growth of our science and education will be enriched by new knowledge of Crypto, by new decentralized governance mechanisms, by new token economics.

The Crypto community itself, while still in its infancy, has already created a great number of new companies, and tens of thousands of new jobs. Crypto is generating new demands in investment and skilled personnel, and New York and the U.S. can share greatly in this growth.

To be sure, all this comes with uncertainty of the role of government and fiat in the future. I recognize that the belief in Crypto’s potential is in some measure an act of faith , for we do not now know what benefits await us.

But I believe that we can develop a decentralized currency that can be used as a means of exchange. I believe we can leverage blockchain technology to provide identity for the 23 million children on this planet without identity papers. I believe we can use these technologies for voting purposes, and ensuring our elected officials follow through on their promises.

However, if we’re going to do all those things, and countless other positive things for mankind, then we must pass accommodating regulations. I‘m encouraged that New York and the United States are playing a big part in the development of Crypto,. With more regulatory clarity, we can solidify our leading position in Crypto, the greatest adventure on which [hu]man[ity] has ever embarked.

#### Globally collaborative blockchains prevent nuclear war from miscalc, accidents, and arms racing AND build global co-op, stopping existential threats.

Dr. Lyndon Burford 21, PhD in Politics and International Relations from the University of Auckland, Visiting Research Associate at the Centre for Science and Security Studies at King’s College London, Member of the New Technologies for Peace Working Group, a Part of the Vatican’s COVID-19 Commission, “Could Blockchain Technology Help Advance Nuclear Disarmament?”, Medium International Affairs Blog, 2/19/2021, https://medium.com/international-affairs-blog/could-blockchain-technology-help-advance-nuclear-disarmament-6efaab35e277

New and maturing technologies are often seen as possible drivers of conflict, not least in the context of rising nuclear risks. In 2019, for example, the UK House of Lords Select Committee on International Relations concluded, “The risk of the use of nuclear weapons has increased, in the context of rising inter-state competition, a more multipolar world, and the development of new capabilities and technologies.” In a recent policy report published by the Centre for Science and Security Studies at King’s College London, I explored the flipside of that coin. The trust machine: blockchain in nuclear disarmament and arms control verification looks at how blockchain technology could help to reduce nuclear risks, by strengthening systems to verify the dismantlement of nuclear warheads.

The ‘trust machine’

Blockchain is best known as the technology that underpins the cryptocurrency Bitcoin, but it already has a wide range of alternative uses in areas such as medicine, transport, manufacturing, finance and governance. During the COVID-19 crisis, blockchain was used to produce a cheap, reliable solution for contact tracing. In Syria, blockchain is being used to create a permanent record of potential war crimes, increasing the security and integrity of the data and strengthening its admissibility as evidence in future war crimes prosecutions.

Contests of legitimacy and value: the Treaty on the Prohibition of Nuclear Weapons and the logic of…

Blockchain is a de-centralized, digital record-keeping technology. It combines cryptography and social/economic incentives to build a shared, permanent, and virtually un-hackable record of events, without needing to trust a third party authority to manage the data. Unlike Bitcoin, which is a ‘public’ network that allows anyone to interact with it, a private blockchain creates a ‘permissioned’ network of participants who collectively store and manage data in a way that allows them to maintain extremely high confidence in the integrity of the data. The result is a shared, digital record of events — a blockchain — that is practically immutable, establishing a single, collective, and irrefutable ‘truth’ about the nature and sequence of events within the network. In a post-truth world, blockchain thus offers an invaluable technical foundation for cooperation among parties that have a limited basis to trust each other, leading to its nickname, ‘the trust machine’.

Blockchain as a disarmament mechanism

At present, extremely low levels of international trust hamper efforts to advance nuclear disarmament. The ongoing development of new nuclear weapons, warheads and increasingly capable ballistic missile defences are undermining the theories and practices of deterrence, and point to the resurgence of a spiral of mistrust that characterized the Cold War nuclear arms race. Developing robust, multilateral verification tools and processes could help to mitigate the trust deficit. It would enable countries to pursue their shared interests in nuclear disarmament — reduced costs, less chance of escalation and nuclear use, greater scope to cooperate on global threats like climate change and pandemics — by increasing confidence that other countries are fulfilling their disarmament commitments in good faith. One way to strengthen verification would be to use a private blockchain to manage and store the data that a disarmament process creates.

In a verified disarmament process, parties need to track and record things like the status and movements of individual inspectors and weapon parts, and the status and material holdings of different facilities. These activities create large amounts of data that need to be stored in a secure, permanent and transparent manner that also allows for its easy retrieval by permissioned actors. The core attributes of blockchain correspond closely to these requirements. The technology would allow parties to maintain very high confidence in the immutability of verification data, creating a strong technical foundation for future cooperation from a shared, trusted baseline.

International collaborations like the 25-country International Partnership for Nuclear Disarmament Verification and the Quad Nuclear Verification Partnership (made up of Norway, Sweden, the United Kingdom and the United States) are already exploring how nuclear-armed and non-nuclear-armed states can cooperate in verifying the dismantlement of nuclear warheads without revealing sensitive information. Blockchain could complement their approach, enabling countries to create a permanent, immutable record of verification data.

Nuclear weapons threaten the survival of humanity and divert tens of billions of dollars each year away from efforts to address other collective security challenges like mitigating and adapting to climate change and responding to pandemics like COVID-19. As such, we all share an interest in disarmament processes that can reduce the likelihood of deliberate or accidental nuclear explosions and free up urgently needed resources for other global security priorities. We owe it to ourselves and to future generations to consider all options that could help to advance nuclear disarmament. In addressing the regular obstacle of distrust between the nuclear powers, blockchain is one technological option that we should be exploring.

#### Blockchain secures missile siloes and radar facilities from malware---that stops nuclear war

Matt Culbertson 18, Vice President at BCW Global, BA from Arizona State University, “Blockchain, Nuclear War, and Artificial Intelligence: 2018’s Most Extreme Cybersecurity Forecasts”, LinkedIn, 3/13/2018, https://www.linkedin.com/pulse/blockchain-nuclear-war-artificial-intelligence-2018s-most-culbertson/

Start with the hype around blockchain this year, and why Wall Street has been so excited around these emerging technologies. A major reason for the hype is security. Imagine blockchain as a giant tower of math, with any transaction affecting the entire system. The idea of committing fraud for many cryptocurrencies and other blockchain applications, such as supply chain management, would require fooling the entire ecosystem. It’s as if you tried to insert an oversized Jenga block into a virtually unshakable 30,000 foot Jenga tower—there’s no way to make the block fit without the entire system rejecting it. We’ve simplified this example obviously. (Of note: In the lead-up to last year’s Black Report, Chris Pogue broke the news that many U.S. law firms have stockpiled bitcoin in order to pay off clients’ ransomware attackers.)

For years, there’s been far-fetched talk in Silicon Valley of starting over and re-inventing the internet. Blockchain technology is perhaps the most dominant proof of concept for this. As the theory goes, the internet was designed by naïve academics and never built for security. Right now, computer networks are like the human immune system: You can eat well and exercise (patch your software), but you’ll never be completely immune to viruses or breaches—for example, all it takes is a rogue employee. Research suggests half of data losses are due to insider threats.

Expect things to get worse before they get better. According to our research, most hackers could completely compromise a system in less than 15 hours, yet the average time to discover a breach is 250–300 days. In some cases, an organization can be years behind an attacker before they discover a beach.

Could Cybersecurity Flaws Lead to an Extinction-level Event?

There’s no shortage of highly funded think tanks predicting the biggest threats to humanity and the world order: war, nanotechnology, super-viruses, and artificial intelligence. For years, major tech executives and scientists like Elon Musk, Stephen Hawking, and Bill Gates have been raising public attention to the risk of the latter.

Some experts estimate 50-50 chances of a conflict with North Korea in 2018—though many similar claims are purposefully overhyped. More grounded estimates show the extraordinary difficulty of predicting a nuclear event. For instance, the Global Catastrophic Risk Institute cites research with a probability of nuclear conflict ranging from “once per 14 years to once per 100,000 years.” For perspective: during the Cuban Missile Crisis, President John F. Kennedy saw the chances of nuclear war as being as high as 50 percent—considerably worse than Russian Roulette.

In most of the think tanks’ scenarios for extinction-level scenarios, poor cybersecurity hygiene or failure of imagination around risks is a leading probability for sparking the event. Consider the risk of a nuclear incident from any number of scenarios when malware attacks a nuclear missile silo or radar facility.

In 1983, Soviet Lieutenant Colonel Stanislav Petrov may have prevented a nuclear war between the US and USSR by simply ignoring false computer warnings of a US nuclear strike. The radar readings of an imminent attack were the result of a malfunction. Picture an alternate version of history where it was a hack instead: In January, international policy think tank Chatham House reported US, UK, and other nuclear weapons programs are increasingly vulnerable to cyberthreats.

#### Policy must be certain and originate at the federal level to signal U.S. commitment to accommodative blockchain policy.

Michele Benedetto Neitz 21, Professor of Law at the Golden Gate University School of Law, Member of the California Blockchain Working Group, Affiliated Scholar at LexLab at the U.C. Hastings College of the Law, “How to Regulate Blockchain's Real-Life Applications: Lessons from the California Blockchain Working Group”, Jurimetrics Journal, 61 Jurimetrics J. 185, Winter 2021, Lexis

A. Why Create Laws Related to Blockchain Technology?

1. Protecting the Public from Harm

Blockchain technology is a complicated field, and innovation in this space is developing rapidly. This innovation will occur regardless of a legislature's reluctance or willingness to draft laws to regulate this industry. As state and federal legislators are struggling to define a regulatory scheme, members of the public who are excited about the possibilities of investing in something new like digital assets may suffer from harm.

This has, of course, already happened in various ways. In a recent high-profile example, members of the public were invited to invest in initial coin offerings (ICOs), buying tokens as a way to invest in start-up companies. 25 One study reported that approximately 78 percent of the ICOs offered in 2017 were actually scams. 26 In the United States, 33 percent of ICO investors believe that ICO operators "deceived them or withheld information from them." 27 The ICO market significantly cooled as federal prosecutors and the SEC began aggressively taking action against leaders of fraudulent ICOs, demonstrating how regulatory enforcement can indeed protect investors from harm. 28

[\*190] However, cryptocurrency scams are persisting beyond the ICO craze. The FTC recently warned the public that scammers are continually finding new ways to "trick people." 29 Members of the public are clearly at risk of a multitude of foreseeable--and unforeseeable--problems as applications of this technology develop, including fraudulent investments, breaches of privacy on blockchain platforms, digital identity theft, and insufficient data protection. Given these threats to the public, it is not appropriate for regulators to dawdle as blockchain applications continue to rapidly advance.

2. Attracting Innovation

While they work to protect the public, legislators and regulators can also use laws to signal their commitment to attracting blockchain-related companies to their locations. Some jurisdictions, including countries like Estonia and Switzerland 30 and U.S. states like Wyoming, 31 have already implemented regulatory schemes designed to win the interjurisdictional competition for blockchain business. 32

The resulting tension between protecting the public while promoting innovation lies at the heart of regulating digital assets and other applications of blockchain technology, as discussed in more detail in Section III.A. Despite the need for blockchain-related regulation, numerous challenges exist for lawmakers seeking to draft laws in this area--starting with the fact that the word "blockchain" does not have a commonly understood definition.

B. The Legislative Definition Problem

What is the legal definition of blockchain? This simple question has proved to be exceedingly difficult to answer. States considering blockchain legislation have focused on different characteristics of this new technology, meaning that "[d]efinitions in legislation introduced in 2018 in California, Florida, Nebraska and Tennessee differ[ed] from those of industry groups and from each other." 33 In some cases, the definitions were in conflict. 34 These inconsistent definitions [\*191] are problematic, as they "actually introduce legal uncertainty where it did not previously exist, and invite unnecessary and expensive litigation." 35

A clear definition of blockchain is necessary for legislative purposes as well, as it is required to help a jurisdiction create clear policies. 36 Moreover, a state's definition should enable policymakers and the public to focus on "the most unique value that the technology can deliver. It should be accessible to and understandable by the public, and yet technically specific enough to ensure that the [jurisdiction] can reap maximum benefit." 37 With such a high bar, legislators have understandably struggled to construct a working definition for this new technology.

The California Blockchain Working Group, after much discussion and debate, created a new definition of blockchain in 2020 for state legislative purposes:

"Blockchain" is a domain of technology used to build decentralized systems that increase the verifiability of data shared among a group of participants that may not necessarily have a pre-existing trust relationship.

Any such system must include one or more "distributed ledgers," specialized datastores that provide a mathematically verifiable ordering of transactions recorded in the datastore. It may also include "smart contracts" that allow participants to automate pre-agreed business processes. These smart contracts are implemented by embedding software in transactions recorded in the datastore. 38

The New York Senate took a simpler approach, defining blockchain as "a mathematically secured, chronological, and decentralized consensus ledger or database, whether maintained via internet interaction, peer-to-peer network, or otherwise used to authenticate, record, share and synchronize transactions in their respective electronic ledgers or databases." 39

Both of these definitions are technically correct, and they both reflect the policy decisions of their respective states. For example, California deliberately used the more flexible term "datastore," instead of "record" or "log," to reflect the verifiability of data shared amongst participants, the many use cases of this type of ledger, and the fact that many datastores could exist at once. 40

[\*192] One could argue that the lack of a uniform statutory definition is partly responsible for the patchwork nature of state blockchain regulation. After all, without a similar definition, it is nearly impossible to set policy goals and pass parallel legislation in multiple jurisdictions. However, the problem of inconsistent definitions is just the tip of the iceberg of interjurisdictional competition. 41 This competition is unlikely to subside even if the federal government or the Uniform Law Commission enacted a well-accepted, standardized definition of blockchain technology.

C. The Fast Pace of Blockchain Technology Development

Law always moves slower than technology. 42 This is partly because lawmakers and agencies can "struggle to capture emerging technologies in dusty regulatory frameworks." 43 For example, securities laws drafted in the 1930s could not have anticipated the sale of digital assets. 44 Even more recently drafted laws and regulations relating to the Internet do not fit blockchain technology. 45 Lawmakers must decide whether to fit this revolutionary technology within existing legal frameworks or start all over with new legislative schemes.

The constantly evolving nature of blockchain technology presents another challenge. This "industry is in its early stages of maturation," making it difficult to determine the initial policy choices that would lead to effective regulation. 46 There are also technical concerns still lurking within blockchain technology, such as locating the "weak points" that might be "gamed by bad actors," which could give rise to unanticipated legal problems. 47

Finally, even at this early stage, lawmakers must consider which aspects of the technology are important enough to regulate. Some of these are obvious, such as cryptocurrency and other forms of digital assets that involve sales to members of the public. But even within this category, it is "still too early to tell exactly which of the drivers of digital asset excitement is dominant," putting [\*193] "regulatory bodies in a tough position." 48 In this way, the wide variety of blockchain projects and the speed at which they are developing creates an additional barrier to effective regulation.

As an example, imagine a developer creates a brand-new digital asset and offers it to the public. How should regulators approach the regulation of this asset? Should regulators first consider the substance of the project, its connection to a decentralized ledger, its effect on consumers' privacy and security, or its potential to evade anti-money laundering and "[k]now [y]our [c]ustomer" laws 49 (or all of the above)? An effective regulatory scheme would need to include rules that are flexible enough to manage future technical developments as well as today's technologies. Otherwise, laws may need to be reconsidered and amended whenever a new technical application emerges.

D. Blockchain Technology's High Learning Curve for Lawmakers

Blockchain technology can be complicated and intimidating, and few lawmakers have training in computer science. A 2016 survey found only that only four of the 535 members of Congress had formal computer science degrees. 50 While the technical aspects of blockchain can be difficult to explain, most legislators can learn enough to understand the fundamentals. 51

New York's State Senate offers a case in point. The Senate's technical advisor reported that in 2019, "staffers and senators asked basic questions about blockchain and distributed ledger technology, prompting [the technical advisor] to develop an explainer presentation." 52 One year later, in 2020, many of the senators "appear more comfortable with the technology, which helps them see the value of [potential] legislation." 53

Legislators need not dive into minor technical details of blockchain to be able to regulate it. It is more important for legislators to focus on the function of blockchain and its practical applications, asking not "what is blockchain?" but [\*194] "what can blockchain do?" 54 Policymakers should focus on the use cases of blockchain, rather than its underlying technology. 55

Professor Angela Walch offered prescriptive recommendations for regulators learning about blockchain, advising them to cultivate their expertise (including self-education), consult with other regulators, follow the activity of standards organizations and academia, and "[w]atch and [l]earn" as the technology stabilizes. 56 Professor Walch also counsels lawmakers to "[a]dopt a [c]ritical [m]indset" in this educational process, to ensure they are not unduly influenced by hype or unreliable sources. 57

Legislators could also learn more about blockchain through the use of legislative working groups or task forces. For example, California's Blockchain Working Group drafted a report in accessible language, enabling state legislators to learn more about the technology and its potential applications for California in one comprehensive document. 58 The federal government has tried to follow this path. In 2019, a bipartisan group of senators proposed a bill directing the Secretary of Commerce to establish a federal Blockchain Working Group in 2019. 59 However, the bill, entitled the "Blockchain Promotion Act," is still currently in committee. 60

As a law professor who taught the first Blockchain and the Law class in San Francisco, I can anecdotally report that blockchain and cryptocurrencies are not easy concepts for nontechnical learners to grasp. However, over the course of one semester, my law students (most of whom did not have any technical training beforehand) were able to draft final reports and presentations not just describing the technology, but also analyzing the use cases deploying the technology. With a bit of time and effort, state and federal lawmakers can understand the potential for blockchain to transform their jurisdictions.

II. FIVE FACTORS FOR LEGISLATIVE CONSIDERATION

In light of the difficult nature of regulating blockchain, this Part offers five factors lawmakers should consider as they work to draft blockchain and crypto regulation.

[\*195] A. Policy Decision: Innovation vs. Protecting the Public Interest

In an ideal world, governments would be able to promote both innovation and the public interest. In reality, however, legislators usually need to debate and choose whether they will prioritize innovative technological development or consumer/public protection. This is especially true in the context of blockchain, since the public perception of blockchain varies widely. Many members of the public first heard of blockchain through Bitcoin, the digital currency. But early illegal use cases of blockchain technology also made headlines, including the infamous Silk Road darknet marketplace 61 and repeated cases of fraudulent theft through Initial Coin Offerings. 62 While the technology is neutral, blockchain can be used in malicious ways that harm the public. 63 Even well-meaning technology can implicate privacy and data protection concerns. 64

It is therefore "essential for both the industry and society that consumers and the capital market are protected from abuse." 65 No state or federal jurisdiction should enable blockchain technology to develop without guardrails to protect the public. The question is where those guardrails should lie. If states wait too long to regulate, the public may be harmed, and the costs of imposing requirements on industries that have already been established will be too great. However, if states develop restrictive regulations too early or the laws "become onerous," 66 businesses will relocate to more friendly jurisdictions. States in this position risk killing off innovation or pushing it to other states. 67 [FOOTNOTE] Blockchain businesses will move for regulatory reasons. See Daniel Kuhn, The Cryptocurrency Act of 2020 Is 'Dead on Arrival,' Washington Tells Sponsors, COINDESK (Mar. 11, 2020, 1:19 P.M.), https://www.coindesk.com/the-cryptocurrency-act-of-2020-is-dead-on-arrival-washington-dc-tells-sponsors [https://perma.cc/AP8X-KULR] ("Many projects are simply choosing to move elsewhere" because of regulatory uncertainty.). [END FOOTNOTE]

Part of the reason blockchain technology's applications are so challenging to regulate is that it "is difficult, if not impossible, for regulators to construct a framework that achieves clear rules, market integrity, and financial innovation." 68 This complex question explains the spirit of experimentation among states discussed in Part V, with some choosing restrictive regulatory structures, some choosing permissive approaches, and others choosing the middle. Regardless [\*196] of a jurisdiction's ultimate direction, legislators drafting blockchain legislation must evaluate how to protect the public while encouraging creative technological development.

B. Ethical Considerations

California was the first (and so far, the only) state to consider ethical considerations in the early stages of regulation. This author published the first law review article analyzing ethics in the blockchain industry in December 2019, 69 and also served as the primary drafter of the Ethical Considerations section in California's Blockchain Working Group report. 70

Depending on the type of blockchain at issue, numerous ethical issues may come up for regulators. For example, the increasing centralization of permissionless blockchains and the rise of permissioned blockchains may raise concerns about personal ethics, such as bias and conflicts of interest. As trends suggest that governance of blockchain systems is moving toward centralization, 71 individuals may have power to influence decisions made on that blockchain. If so, there is a potential for that individual's bias and conflicts of interest to come into play. 72

Although ethical discussions around blockchain appear slower to develop than the technology itself, several paradigms have been put forth advocating ethical considerations in this industry. 73 For example, the World Economic Forum recently asked participants and policymakers to sign on to its "Presidio Principles," an agreement to consider transparency and accessibility, agency and interoperability, privacy and security, and accountability and governance. 74 MIT's Digital Currency Initiative included the topic of blockchain ethics at its 2019 "Cryptoeconomics Systems Summit." 75

[\*197] In addition, the Beeck Center for Social Impact + Innovation at Georgetown University published the "Blockchain Ethical Design Framework," with a focus on six "root issues": "governance, identity, access, verification and authentication, ownership of data, and security." 76 This structure more specifically applies to developers, and is not a code of conduct or a legislative model, but it reiterates the idea that "we all share the responsibility to . . . demand intentional ethical approaches in the design and application of data and technology for social good." 77

California's Blockchain Working Group considered ethical issues related to social impact, including fairness, equity, accessibility, trust and transparency, and sustainability. 78 The Group proposed an ethical framework for the adoption of blockchain technology that is directed toward lawmakers as well as industry players. 79 This framework encompasses three main principles:

i. Address key ethical design goals

a) Seek societal benefit: Maximize good and minimize bad. b) Equity: Does this benefit all Californians, or only a few? c) Efficiency and effectiveness: How can we achieve ethical design and use cases without slowing innovation?

ii. Consider ethical uses of blockchain technology

a) Fairness: Is this technology designed and deployed in a fair, nondiscriminatory manner? b) Accessibility: Design to include the most vulnerable user. c) Responsibility: Anticipate and design for all possible uses. d) Sustainability: Create technology to advance sustainability, public health, and corporate social responsibility.

iii. Minimize unintended consequences

a) Are there unintended biases or conflicts in the design or use of this technology? 80 [\*198] b) Are any populations being unintentionally harmed by the way this technology is developing? c) Does this technology promote violations of local, national, or international law? 81

This useful framework offers guidance to regulators seeking to make sure they do not inadvertently violate ethical considerations, especially with hastily drafted legislation. Two examples illustrate the usefulness of this approach. First, it could be relatively easy to create a certification process for blockchain developers who provide services to the State of California. But will that certification process limit approval to developers with degrees from elite institutions? This type of action would raise equity concerns, as the blockchain industry should be working more toward diversity in gender, cultural backgrounds, and perspectives of industry participants. Second, could companies who advance environmentally sustainable blockchain development receive tax credits from the state? Although different jurisdictions may embrace different ethical principles, legislators should discuss these issues as they contemplate ways to regulate this new technology.

C. Transparency

Since "the rule of law requires transparency," 82 jurisdictions in the United States are governed by transparency laws. The federal government's administrative agencies must abide by the Administrative Procedure Act, which (among other things) orders federal agencies to act "transparently and fairly." 83 California's Bagley-Keene Act requires state boards or commissions (including working groups) to "publicly notice their meetings, prepare agendas, accept public testimony and conduct their meetings in public unless specifically authorized to meet in closed session." 84

Legislators are likely already aware of the government transparency laws in their jurisdiction, but there are other reasons transparency is especially important in the context of blockchain regulation. First, all stakeholders should be given the opportunity to weigh in on laws governing this nascent industry. 85 The industry players on the front line have valuable perspectives to share with legislators, and input from various stakeholders will create more efficient regulation. Moreover, the technology is moving quickly, and there may be applications of blockchain in development that legislators do not even know about yet. As the Cryptocurrency Act of 2020 revealed, 86 drafting laws without the collaboration of diverse stakeholders is ineffective.

[\*199] Second, although blockchain technology may eventually touch all areas of business, members of the public may be unaware of blockchain technology's potential. Legislative debates could double as community education opportunities, allowing people who would not ordinarily be interested in blockchain to attend Working Group meetings, task force briefings, and other public discussions of this new technology. Such meetings could be advertised to nontechnical professions and community organizations, and should be held in easily accessible public places and online. Legislators themselves could reach out to their nontechnical constituents and offer ways to connect them to educators and leaders in the blockchain industry. Such transparency could create a culture of innovation in a particular jurisdiction, while increasing public credibility for whatever regulations eventually develop.

D. Interjurisdictional Competition

States have been competing with each other since the beginning of the republic, and the competition has not decreased as our economy has become more complex. 87 In corporate law, interjurisdictional competitions are a common affair. The state that "wins" the race, creating the environment to attract the most businesses to that state, can secure both tax revenue and additional jobs for state residents. Delaware indisputably won the fight for corporate charters among states, with over 1.5 million legal entities, including 67 percent of all Fortune 500 corporations, incorporated there. 88 The reasons for Delaware's success include specialized legislation that is updated each year to adapt to technical and other changes, as well as a corporate-specific chancery court that can move cases quickly along. 89

When Limited Liability Companies (LLCs) were created in Wyoming in 1977, another interjurisdictional race was on. 90 Despite concerns that interstate LLCs would have problems without uniform LLC statutes among the states, "most states enacted LLC statutes before efforts to develop standardize statutes came to fruition." 91 As a result, only twelve states ultimately adopted uniform acts, and there is less uniformity for LLC statutes than for other business forms. 92

The same is happening now with statutes related to blockchain technology. States who can win the race to attract blockchain businesses to incorporate and domicile in their state can earn more than just increased tax revenues from start-up companies. Such a state could also create a reputation for being friendly to [\*200] technological innovation, a reputation that would have impacts beyond blockchain technology. For this reason, some states (including Wyoming, the first state to draft LLC statutes in 1977) jumped out first to enact permissive blockchain-and crypto-friendly regulations. 93

Before enacting regulations, however, state legislatures should ensure they are clear on the policies underlying those regulations. For example, as discussed in Section II.A above, states should consciously strike a balance between protecting the public and encouraging innovation. Without establishing prioritized policies in advance, a state may win the interjurisdictional competition in the short term but create unintended consequences, such as unnecessary litigation or public harm, in the long term.

E. Uniformity

As a member of the California Blockchain Working Group, this author asked industry leaders in late 2019 what they preferred to see in blockchain regulation. Each of them clearly and unequivocally stated that uniformity of regulation across the United States would be good for business. It would be much easier for blockchain businesses to plan and expand their operations if states were aligned on regulatory issues, particularly in the area of digital assets.

The Uniform Law Commission (ULC) has made several attempts to create a standardized approach to digital asset regulation. 94 In 2017, the ULC proposed the Uniform Regulation of Virtual-Currency Businesses Act to provide "a statutory framework for the regulation of companies engaging in 'virtual-currency business activity.'" 95 An accompanying "Supplemental Act" in 2018 provided rules related to commercial law and the Uniform Commercial Code. 96

These model acts had a short and controversial lifespan. No state enacted the model legislation, and only a handful of states introduced it. 97 Wyoming actively resisted the ULC's request to withdraw Wyoming's pending blockchain [\*201] legislation in favor of adopting the ULC's approach. 98 Wyoming's legislators noted that the ULC's model acts had not yet been enacted by any jurisdictions, and explained why they considered Wyoming's regulatory approach to be the superior one. 99 One month later, the ULC recognized the need to convene a committee to study how the Uniform Commercial Code could be amended in order to "deal with emerging technologies." 100 The ULC urged "states to refrain from enacting legislation pending the result of the committee's work," 101 an act suggesting that the ULC recognized flaws in its proposed acts. 102 Given the ongoing interjurisdictional race described in Section II.D, it seems absurd to ask states to wait on enacting blockchain legislation.

As of December 2020, only one state (Louisiana) had passed a virtual currency licensing statute based on the ULC's uniform act. 103 It is clear that, much like the race for corporate and LLC charters, the uniformity train has left this station. In the absence of federal legislation or effective model acts, states have already invested time and energy into drafting new laws. States like Wyoming, which has "actively decided to lead the charge in ensuring solvent, blockchain based" companies, 104 will not willingly give up their leading positions in this area.

III. THE CURRENT UNEASY MIX OF FEDERAL AND STATE BLOCKCHAIN REGULATION

Federal and state regulators are struggling to keep up with the fast pace of blockchain technology development. This Part will demonstrate how this struggle is creating a wide variety of regulatory approaches.

[\*202] A. Patchwork Agency Regulation

The federal government's attempt to regulate blockchain technology, particularly cryptocurrencies, is (to put it bluntly) a mess. Federal authorities interpret laws relating to blockchain and cryptocurrencies differently. 105 This confusing, piecemeal approach is epitomized by the struggle to determine how to even classify digital currency for regulatory purposes. The Internal Revenue Service (IRS) views cryptocurrency as property, the Securities and Exchange Commission (SEC) classifies such currencies as securities, and the Commodity Futures Trading Commission (CFTC) considers cryptocurrency to be a commodity. 106 There is clearly a need for a unified methodology, even just within blockchain's narrow use case of cryptocurrencies, but this confusion is not a surprising result when "neither Congress nor the SEC has formally elucidated which digital assets are securities and which are not." 107

Different agencies are sending different messages, creating "regulatory whiplash." 108 Some, like the CFTC, are inclined toward experimentation to support blockchain and cryptocurrency development, while others are more cautious. 109 All of the agencies seeking to regulate blockchain technology and its applications would benefit from consideration of the five factors listed in Part III. Below is a short explanation of three distinctive agency approaches.

[\*203] 1. SEC Safe Harbor Provision--A Work in Progress

The SEC missed its chance to establish a clear regulatory framework early in the life span of blockchain technology, instead adopting an approach characterized by delay and a series of reversals on important decisions. 110 The SEC's delay "simultaneously encouraged unscrupulous actors to take advantage of ambiguous regulations" and issue fraudulent tokens to Americans, while "driving away conscientious developers and entrepreneurs" to places with more developed laws. 111 The SEC's attempt to clarify its position in a limited area with the April 2019 issuance of a "Framework for 'Investment Analysis' of Digital Assets" has been called "too little too late." 112

In the meantime, SEC Commissioner Hester Peirce has earned the nickname "Crypto Mom." 113 In early 2020, she offered her take on the legislative problems related to blockchain technology, saying "[i]t is important to write rules that well-intentioned people can follow. When we see people struggling to find a way both to comply with the law and accomplish their laudable objectives, we need to ask ourselves whether the law should change to enable them to pursue their efforts in confidence that they are doing so legally." 114 Peirce clearly views law and regulation as a way to promote, not thwart, the development of blockchain and its use cases.

In February 2020, Peirce proposed a safe harbor provision for firms in the cryptocurrency space selling tokens to the public. 115 Peirce described her proposal as recognizing "the need to achieve the investor protection objectives of the securities laws, as well as the need to provide the regulatory flexibility that allows innovation to flourish." 116 The safe harbor proposal includes disclosure requirements for issuers and good faith obligations to ensure that token issuers are not fly-by-night companies. It also sets forth rules related to the purpose of token issuances and efforts to create liquidity for token users. 117

[\*204] The idea underlying the proposal is to "give new projects some breathing room where they can do their work without fear of being fined, arrested or having their offices raided." 118 This also filters "out the bogus projects that have no intention of building a workable, decentralized product." 119 Peirce appears to be seeking a way to protect consumers from unscrupulous token issuers while allowing companies to move forward with technical developments.

Many members of the blockchain industry welcomed the safe harbor proposal. The General Counsel for a cryptocurrency exchange declared, "Today we both congratulate and thank SEC Commissioner Hester Peirce . . . . This is a great day for the blockchain industry and the United States." 120 But the proposed safe harbor is just that: a proposal. It is not yet law, and may never become law. 121 Even so, the willingness of Commissioner Peirce to think outside of the box with this proposal has reinforced her reputation (and her nickname) within the blockchain community.

2. The Federal Reserve's Digital Dollar

The Federal Reserve revealed in February 2020 that it was working toward a potential central bank digital currency (CBDC). 122 A CBDC, colloquially [\*205] known as a "digital dollar," is not a token based on a decentralized blockchain. 123 It would instead be a "debt notation on a centralized ledger maintained by the Federal Reserve," which would use a centralized database to track consumer or business balances. 124 Individuals could "access funds through digital dollar wallets, which would also be managed by the Fed." 125

Although the digital dollar is different from a crypto asset on a blockchain, the policy issues at hand are quite similar. The Federal Reserve recognizes that these policies include financial stability and legal considerations, such as privacy concerns and protections for data and digital identity safety. However, the Federal Reserve clearly wishes to be on the cutting edge of the digital dollar debate, with one of its members noting that "it is essential that we remain on the frontier of research and policy development regarding CBDC." 126

At the time, there was pressure on the Federal Reserve to begin researching a digital dollar. China is creating a digital yuan, 127 and some argue that the United States is already "falling behind" other countries in developing a CBDC. 128 In addition, the surprise release of Facebook's Libra in 2019 (now rebranded as "Diem") apparently inspired the Federal Reserve to accelerate its research on the potential of a CBDC. 129 The arrival of the COVID-19 pandemic expedited the discussion, as millions of people around the world moved toward cashless payments. 130

The discussion of a digital dollar jumped quickly during the pandemic from the Federal Reserve to Congress. Drafts of congressional emergency pandemic relief legislation in March 2020 included a digital dollar concept to speed up the delivery of stimulus payments. 131 A Congressional Task Force on Financial [\*206] Technology held hearings on the issue in June 2020. 132 Indeed, "the question might be not if digital currencies will find their way into the financial system, but when--and how." 133 As federal lawmakers move toward the creation and regulation of a CBDC, they should be pondering how to encourage innovation while protecting consumers. In addition, anyone involved with the CBDC should consider transparency issues involving the input of multiple stakeholders, as well as ethical considerations such as concerns for unbanked populations.

3. Treasury Department Regulations to Increase Cryptocurrency Transparency

Unlike SEC Commissioner Hester Peirce and the Federal Reserve, U.S. Treasury Secretary Steven Mnuchin has taken a more cautious (and arguably negative) approach to cryptocurrency. 134 In February 2020, Secretary Mnuchin told the Senate Finance Committee that the Treasury Department would be enacting "stricter regulations around digital currencies to help expose 'secret' accounts and other nefarious activities." 135 Although Mnuchin acknowledged that "[w]e want to make sure that blockchain technology moves forward," he also noted that "[w]e want to make sure cryptocurrencies aren't used for the equivalent of old Swiss secret number bank accounts." 136

The goal of Treasury regulations will be to "ensure law enforcement can see where the money is flowing, and that it's not used for money laundering." 137 A March 2020 press release from the Treasury Department announced that the Department had held a meeting of "industry thought leaders and compliance [\*207] experts" on the issue of cryptocurrency regulation. 138 The press release also explained that as these regulations develop, Treasury will remain focused on preventing illegal conduct by "money launderers, terrorist financiers, and other bad actors." 139 The repeated use of such negative terms indicates the Department's adverse stance toward cryptocurrencies, as well as an example of lawmakers and regulators "still cling[ing] to an outdated trope where cryptocurrencies are used to underwrite criminal activity." 140

What can we make of this patchwork approach to regulation among U.S. federal agencies? Some may argue that it is better for the federal government to allow the blockchain industry and cryptocurrency markets to evolve before finalizing a regulatory structure. There can also be benefits to regulatory divergence, such as enhanced innovation as agencies compete to become the preferred regulator in a particular field. However, the absence of "intelligent rules and regulations that provide a clear and predictable framework for investors, issuers, and their lawyers" is complicating that evolution. 141 How can lawyers advise clients--such as start-up companies desiring to operate in the cryptocurrency sphere or offer tokens to investors--if it is unclear how such assets would be regulated? Policymakers are not sufficiently considering important factors, including transparency and uniformity, under this current approach.

Perhaps the problem is a lack of unity among federal agencies, who appear to be tripping over themselves to get in on the digital asset regulatory action. Federal policymakers may be concerned that they are not yet educated enough to make cohesive decisions about overarching regulatory frameworks, or they are waiting for Congress to step up. In any case, this confusion at the federal level is wreaking havoc on the blockchain industry in the United States. Innovative companies must risk inadvertently violating regulations (and having to pay the ensuing fines) just to push the industry forward. 142 Alternatively, companies are choosing to leave the U.S for other jurisdictions with better regulatory [\*208] clarity. 143 Piecemeal regulation among federal agencies is "not a substitute for transparent legislation or judicial rulings to guide market participants." 144

### 1AC---FTC ADV

#### Contention 2 is FTC.

#### FTC credibility is tanked by both unwillingness to launch bold antitrust AND a track record of losing in court, but Khan’s appointment is a window to revamp its policy.

Jessica Rich 21, Of Counsel at Kelley Drye & Warren LLP, Former Director of the Federal Trade Commission’s (FTC) Bureau of Consumer Protection (BCP), JD from the New York University School of Law, AB from Harvard College, Former Distinguished Fellow at Georgetown University’s Institute for Technology Law and Policy, “How Lina Khan’s FTC Does Business – What We’ve Learned So Far”, JD Supra, 11/9/2021, https://www.jdsupra.com/legalnews/how-lina-khan-s-ftc-does-business-what-3596839/

Since taking over at the FTC, Khan has quickly begun to remodel it. Some of these changes look like technical internal reforms, while others are major policy statements. Almost all have been fiercely opposed by Republicans and the business community.

In the past few weeks, Khan has begun holding commission meetings in public - something Democrats say makes the commission more open to scrutiny, but which the two Republican commissioners say makes it harder for them to negotiate compromises.

She has banned staff from making public appearances such as conference panel sessions, saying the commission has too much work to do. She has passed a rule which allows FTC staff greater leeway to pursue investigations in certain priority areas, giving them the power to issue their own subpoenas for documents and testimony.

Khan is also promising to help rewrite the US merger guidelines, a complex set of documents laying out what kinds of evidence regulators look for when deciding whether a merger is illegal.

And, in a pair of crucial decisions, she and her fellow Democratic commissioners voted to rescind two key FTC policy statements.

The first was written in 1995 during Bill Clinton's first term as president, and deemed that companies that had previously proposed unlawful mergers no longer had to notify the FTC before completing future transactions in the same market.

By undoing that policy, Khan said she hoped to stop companies simply trying again and again to complete a merger even after it had been rejected by regulators. The second statement was written in 2015 during the Obama administration and set down limits on when the FTC would prosecute a company for socalled "unfair methods of competition".

"These changes are going to make dealmakers think about things differently," says one senior Democrat working for the commission. "They are not filing an application, we are investigating as to whether there is a violation of the law. That is a fundamentally different way of thinking about things."

Meanwhile, the White House has given the FTC the even bigger task of helping rewrite the rules that underpin the American economy. Under the terms of a sweeping order signed by Biden last month, the commission has been asked to devise rules which would ban companies from stopping employees moving to rivals, and prevent pharmaceutical companies from paying generic rivals not to enter a certain market for a period of time.

The moves have delighted progressives, who say Khan's willingness to push through reform quickly shows she is serious about putting the commission back at the heart of Washington rulemaking and enforcement.

"The commission has been lazy," says Matt Stoller, director of research at the American Economic Liberties Project and a former colleague of Khan at the Open Markets Institute. "It has been a place where you send political cronies who don't have to do any work if they don't want to.

"This is such a different form of politics from the normal bullshit."

Republican concerns But if the reforms have pleased Khan's supporters, they have worried conservatives who say the commission lacks both the legal authority and the institutional capacity to do what is being asked of it.

For example, Khan says she wants to renew the commission's appetite for bringing cases against companies for "unfair methods of competition" - a vague category of corporate behaviour which allows the FTC to act even when there is no merger in question or when a company is not large enough to be a monopoly. She and fellow progressives argue that by not pursuing such cases the FTC has taken away one of its most powerful weapons.

Such behaviour is often very hard to prove, however. When the FTC charged Abbott Labs in 1994 with trying to rig a bid to supply the Puerto Rico government with infant formula, for example, it alleged the company's choice not to bid in one of the rounds provided evidence of collusion with rivals. Abbott Labs' lawyers, however, successfully used game theory to explain why a "no bid" could in fact have made rational economic sense.

More controversial is the idea that the commission is going to start writing wide-ranging new rules of its own, as envisioned in Biden's competition order. This would test the limits of the FTC's powers in both court and on Capitol Hill, critics say, and could end in Congress clipping its wings as it did in 1980 when the FTC was forced to subject its rules to Congressional review.

Sean Heather, senior vice-president for antitrust at the US Chamber of Commerce, says: "The FTC is writing its own rules and acting as prosecutor, judge and jury. This is deeply concerning for a regulatory agency with broad powers."

Christine Wilson says: "I believe competition rulemaking is institutional suicide."

If Khan wanted an indication of how courts might view her approach, she got one within weeks of taking over the commission. In June, a federal judge dismissed the commission's complaint against Facebook, its most high-profile in years.

The commission had argued the social media company had engaged in anti-competitive conduct for years, including by buying up potential rivals such as WhatsApp and Instagram. In June, however, a federal judge ruled the commission had failed to prove that Facebook had monopoly power.

Khan's critics worry that if the commission loses a series of high-profile court cases it will fatally undermine its authority. "If you lose enough cases your credibility evaporates," says William Kovacic, a former Republican chair of the commission. "You can lose it all - not right away, but you can lose it all."

For Khan's supporters, however, this criticism borders on the absurd. "Don't you think the FTC is already seen as weak?" says Rohit Chopra, a Democratic commissioner.

Progressives argue the FTC has for years only enforced competition rules against large companies in a fraction of the cases it should have. "Do you think there are only 10 anti-competitive mergers a year?" says Chopra. "I'm not sure it can get any worse."

"The FTC can put together legal teams that can match the best in the bar, punch for punch, in a major case," says Kovacic. "But the number of those teams is a couple, it is not 10."

For years the commission's budget and staffing levels have been chipped away. It now has roughly 50 per cent of the staff it had in 1980 and is currently trying to review a record number of mergers. In the first nine months of this fiscal year, the FTC received 2,573 notifications ahead of a large merger - already 50 per cent more than were received in the whole of last year.

Last week, the commission published a statement warning that it would not be able to review all mergers within 30 days of a notification being made, as required by law. Instead, the FTC said, if it had not had time to review a merger before it took place, it would reserve the right to take action even after it had been completed.

The commission is also facing an uphill battle to retain staff. Some people say they feel demoralised by the pace of change and irritated they have not yet met their new chair - something Khan's allies say is an unfortunate result of the pandemic. "There are only so many times you can hear that your institution has failed for years before you start to doubt your place in it," says one staff member.

#### Specifically---blockchain is a key priority.

Dr. David Morris 21, PhD in Media Studies from the University of Iowa, Former Academic Sociologist of Technology, CoinDesk’s Chief Insights Columnist, “Biden’s New FTC Chair Could Be a Big Web 3.0 Ally”, The Crypto Daily News, 6/16/2021, https://thecryptodailynews.com/2021/06/bidens-new-ftc-chair-could-be-a-big-web-3-0-ally/

Yesterday, the Biden administration named Lina Khan, a 32-year-old Columbia Law professor, as the brand new head of the Federal Trade Commission. Khan, who would be the youngest FTC head ever, is called a fierce critic of massive tech monopolies like Amazon. While there’s typically a knee-jerk resistance to regulation and regulators amongst blockchain advocates, Khan’s considerations make her a potential ally on huge points like privateness. Her antimonopoly work might additionally create substantial market alternatives for brand new sorts of tech companies – together with these constructing decentralized techniques and “Web 3.0.”

Enforcing U.S. antitrust regulation is a main a part of the FTC’s mandate, and Khan might be greatest identified for serving to redefine simply what a “monopoly” is. She has been essential, together with throughout seven years on the Open Markets Institute, in growing and selling the concept a firm could be a monopoly even when its practices drive prices down – even, the truth is, if its product is free to customers. That principle largely hinges on how the companies collect and use knowledge: Khan has been among the many loudest critics of the way in which Amazon makes use of knowledge gathered by its storefront, akin to by leveraging sales data to compete with third-party sellers who’re, a minimum of buyers, its prospects.

#### Failing to control blockchain violations will outstrip federal enforcement capacity, making traditional antitrust completely ineffective.

Drew Stanko 21, JD Candidate at St. John's University School of Law, BS in Economics from Villanova University, “Recent Developments and the Need for Nuance”, Journal of Civil Rights & Economic Development, 4/8/2021, https://www.jcred.org/shortreads/efforts-to-modernize-antitrust

I. IS NEW SCHOOL OFFICIALLY HERE?

In January 2007, the Economic Analysis Group at the Department of Justice Antitrust Division published a Discussion Paper entitled "Does Antitrust Need to be Modernized?" The paper reviewed whether "globalization and rapid technological change" necessitated changing federal antitrust laws. This Discussion Paper has proven prescient; it identified as a "key issue" the growing need for improving antitrust enforcement of alleged exclusionary conduct related to intellectual property.

Bipartisan support for antitrust reform has grown immensely since January 2007 due to heightened market concentration and Mergers & Acquisitions (M&A) rates in an increasingly complex digital economy. Senator Amy Klobuchar introduced antitrust reform legislation in February that would provide substantial funding increases to the FTC and the DOJ Antitrust Division, and the Biden Administration appears to be supporting efforts to modernize antitrust enforcement.

Recently, President Biden indicated intent to name two prominent "New School" antitrust attorneys and scholars, Lina Khan and Tim Wu, to positions in his administration. Kahn, who rose to prominence as a student at Yale Law School for "Amazon's Antitrust Paradox" and has since held positions at the Open Markets Institute and the FTC, will reportedly be nominated to serve as the Commissioner of the Federal Trade Commission. Wu is famous for coining the term "net neutrality" and authoring "The Curse of Bigness: Antitrust in the New Gilded Age," and he will serve on the National Economic Council as a special assistant to the president for technology and competition policy. Kahn and Wu have helped establish and develop the "New School" of antitrust jurisprudence, and both have taught related courses at Columbia Law School. Generally, the New School aims to prioritize "innovation, entrepreneurship, privacy, freedom of the press, and economic and civil liberties" rather than strictly focusing on "consumer welfare."

II. SENATOR KLOBUCHAR'S COMPETITION AND ANTITRUST LAW REFORM ACT:

Senator Amy Klobuchar, who spoke passionately about her concerns related to antitrust enforcement throughout her Presidential campaign, introduced antitrust reform legislation in February.

Sen. Klobuchar's proposal, the Competition and Antitrust Law Reform Act, aims to "give federal enforcers the resources they need [to] . . . strengthen prohibitions on anticompetitive conduct and mergers, and make additional reforms to improve enforcement." In order to accomplish these goals, the proposal would provide increased funding for the DOJ Antitrust Division and the FTC and would create a new FTC "Market Analysis" Bureau. While these structural and administrative reforms may receive bipartisan support, Sen. Klobuchar's proposal would also substantially alter the legal standards used to evaluate antitrust challenges under the Sherman and Clayton Acts, a change likely to be met with pushback by conservative economists and lawmakers. Sen. Klobuchar's proposal aims to accomplish important goals, but some argue the Sherman and Clayton Act amendments included in the legislation would "add friction to M&A Activity, stalling capital markets, reducing innovation and investment, and frustrating economic growth."

1. CLAYTON ACT REFORMS

Senator Klobuchar's proposal would modify the Clayton Act to "restore its original intent by amending it to include reference to 'exclusionary conduct.'" The legislation would define exclusionary conduct as "any conduct that would materially disadvantage . . . actual or potential competitors, or foreclose the ability of or incentive to compete." Currently, antitrust challenges require the plaintiff provide prima facie evidence that alleged anticompetitive effects of proposed mergers would result, and "proponents of the merger are then permitted to rebut by providing evidence that the merger will not have the feared anticompetitive effects."

The amendments would shift the presumption that "exclusionary conduct" presents a violative "appreciable risk" where such conduct is taken by a firm with a market share greater than 50% or otherwise wields significant market power. In turn, the burden would be on firms to prove the procompetitive market effects of the challenged conduct or merger rather than on the challenging entity to establish the anticompetitive impacts of the conduct that would result.

While it is important that antitrust reform efforts prioritize enforcement of anticompetitive exclusionary conduct, the legislation arguably defines the term overbroadly. Accordingly, the proposal may result in disincentivizing innovation that would ultimately benefit consumers and the overall economy. By presuming the illegality of any conduct taken by large firms that disincentivizes market entry or competition, the proposal risks unintentionally penalizing firms for achieving beneficial economies of scale or otherwise innovating to provide higher quality products more cheaply than competitors. Arguably, threatening firms with costly antitrust litigation whenever they undertake innovative conduct that negatively impacts competitors risks disrupting market incentives and stalling economic growth.

2. SHERMAN ACT REFORMS

Similarly, the Sherman Act would be modified to allow civil penalties of either 15% or 30% of a firm's US revenues for anticompetitive exclusionary conduct. Sen. Klobuchar has indicated that civil penalties are necessary because the existing remedies—injunctions, equitable monetary relief, and private damages—have not sufficiently deterred anticompetitive conduct. This may be true, but civil penalties of this size likewise risk stifling and disincentivizing innovation.

3. FUNDING ENFORCEMENT AGENCIES, FINANCING NEW "MARKET ANALYSIS BUREAU"

While the Sherman and Clayton Act reforms are unlikely to garner significant support from conservative lawmakers, the funding increases and creation of the FTC Market Analysis Bureau are more likely to win bipartisan support.

Increasing the funding available to the FTC and the DOJ would enable the agencies to hire more attorneys and would finance the creation of the Market Analysis Bureau. The MA Bureau would supplement the FTC's existing Competition, Consumer Protection, and Economics Bureaus. It would be tasked with conducting market, industry, and retrospective merger analyses aimed at helping the FTC develop a better understanding of the competitive conditions and underlying economic dynamics affecting complex markets. The creation of the MA Bureau is likely to gain support because it would demonstrate a commitment to ensuring continued reliance on empirical analyses rather than judicial or political discretion. Accordingly, these reforms would likely bolster enforcement efforts without necessarily adopting the "Big is Bad" approach that has historically divided lawyers and economists.

III. MODERNIZING ANTITRUST ECONOMICS

The Market Analysis Bureau would theoretically improve enforcement agencies' understanding of the economics underlying complex markets. This would provide enforcers with the tools needed to prosecute anticompetitive conduct that may have otherwise skirted enforcement due to the difficulty of establishing the negative economic effects of the conduct in question.

The complexity of the digital economy and increasing market concentration has made it more difficult for prosecutors to prove these anticompetitive results, but advances in machine learning and computational antitrust may assist in identifying and consistently enforcing antitrust violations.

While computational antitrust is certainly in its nascent stages of development, the early returns from Stanford's new Computational Antitrust Project are promising. The project's seminal article, authored by Project Director Thibault Schrepel, defines computational antitrust as a "new domain of legal informatics which seeks to develop computational methods for the automation of antitrust procedures and improvement of antitrust analysis." There are more than fifty global antitrust enforcement agencies participating in the project, including both the US FTC and the DOJ Antitrust Division.

Schrepel situates computational antitrust within "Antitrust 3.0," which he explains "is emerging but remains incomplete." At the core of Antitrust 3.0 is the goal of developing consistent enforcement frameworks designed to combat anticompetitive conduct in digital markets.

IV. OUTLOOK

In "The End of Antitrust History Revisted," Kahn "reviews" Wu's The Curse of Bigness and explains that the "task facing reformers is to translate their critiques into a positive vision, including legal rules and analytical frameworks." These analytical frameworks will be critical to ensuring that antitrust law promotes free market economics, rather than subjects firms to inconsistent judicial interpretation and prosecutorial discretion.

The majority of federal antitrust law applicable today was authored prior to 1915, and the unique challenges associated with prosecuting exclusionary conduct in digital markets have presented concerns for nearly twenty years. While bipartisan support for antitrust reform and emerging scholarship both provide legitimate reason to be optimistic about efforts to modernize federal antitrust law, it is important that reforms are nuanced enough to confront the complex problems they are enacted to address.

Accordingly, while Senator Klobuchar's proposal is certainly "well-intentioned," the budgetary reforms and creation of the Market Analysis Bureau should be separated from and passed without the proposed Sherman and Clayton Act amendments included in the legislation. The newly-appointed experts in the Biden Administration should be afforded the requisite resources to capitalize on the promise of New School antitrust jurisprudence and the development of Antitrust 3.0. By providing these resources, those leading antitrust modernization efforts will be equipped with the tools needed to create nuanced legal frameworks that reflect modern critiques and ensure consistent enforcement practices.

#### This will create a legitimacy crisis that threatens the foundational credibility of the FTC.

Dr. Thibault Schrepel 19, PhD in Antitrust Law from Université Paris-Saclay, LLM in International Law and Legal Studies from the Brooklyn Law School, Associate Professor of Law at VU Amsterdam University, Faculty Affiliate and Creator and Director of the Computational Antitrust Project at the Stanford University CodeX Center, “Collusion by Blockchain and Smart Contracts”, Harvard Journal of Law and Technology, 33 Harv. J. Law & Tec 117, Fall 2019, Lexis

V. CONCLUSION

Blockchain is a new and yet little-explored territory. It is, amongst other things, the Amazon 228 of tomorrow's collusive agreements: full of different life forms and new possibilities, the technology will give rise to unidentified creatures and dangerous species that we do not really know how to approach.

I have first shown that blockchain will be used to enhance the functioning of collusive agreements as we know them and that new forms of collusion linked to the technology conditions of access and use will appear as well. Second, blockchain will increase the stability of collusive agreements, providing them with a good life. Depending on whether the blockchain is public or private, a double paradox could emerge. One paradox is related to the visibility of all practices to colluders while ensuring their opacity to non-colluders. The other is associated with the fact that collusive agreements will be more robust during their lifetime by eliminating a large proportion of deviant behaviors, but will die in more brutal ways.

For these reasons, one can expect an increase in the number of collusive agreements along with an increase in their profitability, but not necessarily in their duration. The number of leniency applications may also drop because blockchain will reinforce trust during the lifetime of collusive agreements. This is largely due to the potential use of smart contracts because once again, "[o]ne of the greatest checks on crime is not the cruelty of punishments, but their inevitability," 229 which is precisely what smart contracts provide by automating punishments.

[\*164] The time has now come to detect collusion by blockchain and smart contracts, however difficult that may be. I have shown that some blockchains are more likely to induce collusive agreements than others. Antitrust and competition authorities may start with focusing their efforts on these blockchains and creating safe harbors for the others, for instance, by ensuring that no sanction will be imposed under antitrust and competition law for a specified number of years. Antitrust and competition authorities may also, when sending questionnaires to undertakings, ask whether they use blockchain, and if so, what type of blockchain, using which consensus, and for what purpose.

But perhaps it is even more urgent to adapt existing legal toolboxes before they become entirely ineffective, which implies considering a "law is code" approach and, generally speaking, transforming part of antitrust and competition law to become allies to blockchain core developers rather than mere threats. 230 It is said that "it is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail." 231 As true as this statement is, all we have in existing laws is one size of pliers. With the wrong tools, the most sophisticated technology requiring great precision will not be as adjusted as it could be. Antitrust and competition agencies are currently not equipped to fight collusive agreements by blockchain. This may cause a legitimacy crisis for antitrust and competition law that may become ineffective sooner than expected. Indeed, it is more than likely that the use of current regulatory tools will be prevented by the technical characteristics of blockchain. Agencies further need to start analyzing code and software programming. Without doing so, most illegal activities on blockchain will remain safe. The same is true for all practices outside of blockchain which use the Internet. To date, antitrust and competition agencies refuse to analyze the programming of platforms and software. This creates a legal loophole and encourages companies to commit anti-competitive strategies precisely here. 232

Without fundamental research on this subject, palliatives will continue to be present, risking the survival of blockchain 233-- or antitrust [\*165] and competition law. 234 Some propose the creation of an identity management system so that the real identities of blockchain users can be revealed. 235 Others have suggested "adding a regulatory node in the blockchain" to spy on it 236 or imposing fines to the core developers when blockchain is used for illegal activities. 237 Going even further, it has been said that public blockchains "governed by international institutions from the legal tradition" such as the United Nations should be created. 238 But in fact, these solutions are either ineffective or would jeopardize the utility of the technology as its applications rely on the key characteristics that I have exposed in our introduction and that would be challenged by these various initiatives. Let us recall first and foremost that blockchain is a fundamental technology that may create good for the world. 239 The creation of safe harbors 240 and regulatory sandboxes 241 will enable competition agencies to respond quickly to the challenges posed by blockchain, but in the end, only a re-conceptualization of the law will provide a satisfactory answer. 242 Without it, antitrust and competition law will face a second legitimacy crisis arising from the absence of decentralized regulatory mechanisms. After all, how can decentralized transactions be properly regulated by pyramidal rules and institutions?

#### Failure of FTC legitimacy crushes the effectiveness of the agency.

William E. Kovacic 15, Global Competition Professor of Law and Policy at the George Washington University Law School and Non-Executive Director of the United Kingdom Competition and Markets Authority, “Creating A Respected Brand: How Regulatory Agencies Signal Quality”, George Mason Law Review, 22 Geo. Mason L. Rev. 237, Lexis

Introduction

One determinant of a government agency's effectiveness is its reputation, or "brand." Much like a commercial enterprise, an agency develops a brand that signals quality to various observers. A good reputation can help the agency recruit skilled personnel, gain deference from courts, build credibility with business managers, and build popular support that can yield larger budgets and enhancements to its powers. An agency with a strong brand stands a greater chance of being effective than one with a weak brand.

This Essay considers how branding can affect the performance of the Federal Trade Commission ("FTC") and other agencies responsible for economic regulation. It analyzes how investments in building a good brand enable the regulatory agency to signal quality to various observers - insiders such as agency staff and outsiders such as businesses, consumer groups, courts, and legislators. Part I of this Essay defines the concept of a brand for public agencies. Part II then discusses why an agency's brand can be important to its effectiveness and identifies what types of agency activities either enhance or degrade an agency's brand.

The examination of agency branding has several purposes. One aim is to improve our understanding of how public agencies build a reputation, and to study the role of reputation in determining effectiveness. A closely related goal is to give public officials a better understanding of how they should approach the task of deciding what their agencies must do to prosper.

A further aim is to underscore the impact of institutional design and managerial incentives on agency performance and to illuminate how design choices and incentive schemes influence the development of a well-respected, coherent agency brand. Various design choices - for example, whether to give the competition agency a single function or a multi-purpose substantive mandate, whether to govern the agency by a single executive or [\*238] by a board, whether to integrate the tasks of prosecution and adjudication in a single body or to unbundle them among distinct entities - affect the capacity of the agency to enhance the quality of its brand. Incentives that give incumbent leaders reason to make investments in long-term agency capacity and quality have the same effects.

I. Brands and Public Institutions

Public institutions, such as competition or consumer protection agencies, build reputations or "brands" that the agency's own employees and external observers associate with the agency. 1 Brands perform two functions for the public agency. The first function is informational. 2 A good brand conveys a good sense of what an agency does. It communicates, at least in a general way, the scope of the agency's responsibilities and the aims that motivate the agency in the exercise of its powers.

A brand also signals institutional quality. For an agency such as the FTC, the foundations for a good brand are sound substantive programs (e.g., cases, regulations, reports), sound procedures (e.g., meaningful disclosure of information, rigorous testing of evidence, regular assessment of outcomes), strong capabilities (e.g., deep expertise in economics and law), and a healthy culture (e.g., thoughtfulness, integrity, courage, and a commitment to continuous improvement). 3 For several reasons, explained below, a strong brand is a valuable asset for a regulatory agency.

#### FTC leadership on blockchain establishes a model for other countries to apply to AI and machine learning.

Bojana Bellamy 19, President of Hunton Andrews Kurth LLP’s Center for Information Policy Leadership; Terry Calvani with the Freshfields Law Firm, Former Commissioner and acting Chairman at the Federal Trade Commission; Eduardo Perez Motta, Senior Partner at the SIA Law and Economics Firm and Former President of the Mexican Competition Authority, COFECE, and, also, a Former Chair of the International Competition Network, Rod Sims, Chairman of the Australian Competition and Consumer Commission; Andy Wyckoff, Director of the OECD’s Directorate for Science, Technology, and Innovation, “The FTC’s Role in a Changing World,” FTC, 3/26/2019, https://www.ftc.gov/news-events/events-calendar/ftc-hearing-11-competition-consumer-protection-21st-century

And I think it is important that we, in Europe, do not believe that our way is the only way and I think we must be also humble to take on some of the US best examples. But then the US also, we've got expectations, the US federal privacy debate is going to sort of stir up and come up with perhaps some new ways of dealing with some of these issues. So I think building on that respect for differences, but also what brings us together is really a good way forward. I talked about some of the joint policy initiatives. I really think this would be a great way to bring us together. Think about facial recognition or blockchain or machine learning or Internet of Things, drones, all of that would be amazing.

For example, a case study to bring us to work on something which is proactive, which isn't kind of reactive, confrontational, adversarial, but actually we're creating something better for the world ahead. Of course, cooperation and enforcement is important and I think, as some in Europe, do not believe any of the complaints end up in the right hands. I think that's where the FTC can also help and ensure that the EU-led complaints that are sent to the US actually get heard properly and get enforced potentially or there is a feedback loop back. I think that would be helpful as well.

And then the final point I would like to add, which is something around -- more around, as Eduardo has said, about the leadership role of FTC. I really think actually FTC has got something to teach other regulators just because of its breadth and sort of experience in being a tough enforcer. Those of you who were in privacy for many years used to remember -- people used to say -- Europeans used to say, if only we had the FTC enforcement in the European law that would be the best combination.

So we always looked up to FTC as to how they enforce the law, how they manage, and I think that's something that FTC can really take on a great role, particularly with European regulators, who now have got similar enforcement powers. But, frankly, and I apologize, I know it's going to be online, they don't have the know-how, how to actually use these powers in the best way.

We've seen some Draconian enforcement in the EU without proper due diligence, without proper process, without proper transparency and proper lessons learned why that fine has been applied in this way and why it hasn't been applied that way. And I think this is something, Rod, I think you slightly talked about that. That is where I think FTC can help also, frankly, technically bring the other regulators a little bit up to higher level simply because of its standing and experience in enforcement.

MR. TRITELL: Thank you. I think we have a wonderful example how your questions can really stimulate the panel. (Laughter.)

MR. TRITELL: So feel free, please, to find those cards and send them up here and enhance the show.

So we're talking about conversions and joint projects of an exciting nature. One. way to potentially move those forward is through the vehicles of international organizations. Our hearings have touched many times on the OECD, ICN, ICPEN, we have UNCTAD, regional organizations like APAC, various privacy groups. There's a big menu of these venues, but resources are finite.

Let me ask where in surveying that spectrum do you think the. FTC should allocate, its resources and what should they seek to accomplish in some of these important international fora? Rod?

MR. SIMS: Well, I wouldn't mind just -- I'll answer that question, but it's just backing up to what --

MR. TRITELL: Or come back to any other point, please.

MR. SIMS: Well, what Bojana just said, the -- we notice this quite a lot in our consumer work because we are a consumer and a competition regulator, and because most of our staff do both competition and consumer work, we don't separate them out. I think we're fairly unique in that. But it just strengthens that process, that know-how in competition, which you've got to have to be in the game.

When you translate that into consumer work, it's just so immensely powerful. I think, on average, we would take larger companies to court for breaches of consumer law than we do for competition law. We've recently taken Ford, Hines, Apple to court for breaches of our consumer law. We've got large fines.

Perhaps the biggest development in Australia is we've just convinced the government, under the heading of advocacy, to align the penalties for breaches of competition law and consumer law. So now the penalties will be the same. Previously, the. penalties were much lower for consumer law, which is a terrible thing.

The harm you can do through misleading consumers is visibly as bad as it can be from cartels. There is just no doubt about that. I can give you numerous examples. So I just want to back up that point, that the strength of being the regulator that does a number of things is important. I guess it leads into my point that I think ICPEN is the organization that perhaps needs that extra bit of work, whether it's capacity building with new jurisdictions, whether it's more coordinated action amongst the members, whether it's common approaches and practices, but really just raising up the profile of consumer work.

I have to say I continually get irritated when I'm at international meetings, you get the sense that competition work is held to be in some way superior to consumer work. That is complete, rubbish. They are. equally important. If you want your market economy to work for the benefit of consumers, you need effective competition law and you need effective consumer law. They can both equally do great harm.

And so I just think we've got to raise it up.

MR. TRITELL: I think you have a sub silentio round of applause in the room there, Rod. (Laughter.)

MR. TRITELL: Not to mention from Bojana who mentioned privacy --

MS. BELLAMY: And privacy as well. So we --

MR. TRITELL: -- which we think of as part of our consumer protection.

MR. SIMS: I can't talk about privacy, but --

MS. BELLAMY: The three-headed Medusa. It's the three heads, right?

MR. SIMS: But I would happily push it to privacy, absolutely. Well, the same point applies and it was Bojana's point that got me in there. The same point applies.

MR. TRITELL: Would anybody else like to come in on where, we should focus our efforts in the international organizations.

Eduardo, you talked about maybe we. ought to be going to the next step. So if you'd like to elaborate on that.

MR. MOTTA: Well, yes. I could, in a very general way, elaborate a little bit more on that. Let me first -- let me start with the main features of the ICN. The main features of the ICN, in my view, is that it's a soft law organization, it's a consensus organization. It's a consensus organization. That goes very much in line with what happens in the WTO. It could be risky, but that's the reality.

It's a beautiful system, organization, it's a beautiful network. It uses, very efficiently, the communication technologies and so on. And the main products that are created by the ICN are this best international practices standards, practical guides and toolkits, and they organize workshops for members. I mean, that's in a very general and a schematic way.

Well, the first question is that has been, in my view, the ICN has been one of the most efficient networks I have ever seen, international networks that I have ever seen. When I compare how the ICN was created and what was the situation in the context of the WTO discussion on trade and competition, which was one of the elements that provoked the creation of the ICN, and if you see that, that was 2001 more or less -- I think it was 2001 with 15 members in the ICN.

Today, they have more than 114 members. In 2001, the WTO was working generally well. We were in the middle -- in the start of a new round, the Doha Round. At that time, the ICN was created and the ICN has been much more effective, frankly, than organizations like the WTO.

But my point here is that the international context in which we are living is highly complicated. I mean, there are a lot of nationalistic pressures, national champions, pressure from different countries, developed and developing countries at the same time. That has become, I would say, a more systemic, risky problem for markets. And that doesn't mean -- I mean, the most important elements is how to show that markets in a competition scenery is one of the most important instruments you have in order to create not only efficiency in your economy, but also equality of opportunities for economic players, for economic agents, but also at the same time a quality of opportunities for consumers.

So in that situation is where I think it is needed to give an additional impulse to an international organization like -- or an international network like the. ICN. And maybe -- I mean, I'm basically suggesting to reflect on the possibility to create a new organization, a new international organization of -- this could be consumer and competition agencies. And that should be a more -- in my view, should be a more formal organization in order to generate an international pressure for the evaluation and valuation of the importance of markets in that context, in the context of competition.

So to think about the possibility of having a formal and permanent secretariat, that makes a difference because today what you have is the members are the secretariat itself. So it's difficult to differentiate what a jurisdiction is saying or what the organization is saying because the word is the same. So in my view, you need someone that is more independent than the agencies in order to advocate for competition in different jurisdictions.

It has to be a product, in my view, from an international agreement with some cooperation mechanism, but also some monetary mechanism. That's the most -- I mean, this is a difficult task. I'm not saying that it is not. It's a real challenge. But, frankly, what we. are living internationally is a challenge, itself today.

Sorry for taking --

MR. TRITELL: No, no, a lot of food for our continued thought. Andy, from the OECD perspective, what role can you see from the OECD and how can the FTC effectively engage within the OECD, for example, in the consumer committee or in the privacy activities of the organization?

MR. WYCKOFf: I'll touch on that in just one second. Eduardo provokes me because my part of the OECD has done a lot on telecom dereg, particularly in Mexico. Here's maybe an example we can begin to think about because we. did something in 2012. It helped inform the decisions in the regulatory reform that went on in creating an independent regulator even then. We followed up in 2017 and looked at implementation. What really went on? And that's now become a lessons learned that the rest of the region now is beginning to look at. So I think there's a model for what he's saying.

The FTC -- I speak under the Chair here of my Consumer Policy Committee, Hugh Stevenson, already plays a huge leadership role at the OECD. There's two areas if I had to put on my Christmas list from FTC, where I would like to see them push. One is on this evidence base that many people have talked about. We love statistics at the OECD and comparative --

MS. BELLAMY: Data.

MR. WYCKOFF: Data. Comparative indicators, and can we begin to look at things as we get, for example, like data breach laws from around the world. Can we begin to compare these and get some -- it may not be apples to apples, but at least fruit to fruit to look at.

The other is really leadership work that happened in 2010 again led by the FTC on our consumer policy toolkit. I think they began to open the thinking on both behavioral economics and the informational economics, which I think is important. And following up on that -- and we've begun to do some work on consumer attitudes towards trust. It goes to what people are saying. It may not be such big differences as people think, but also doing some more experimental work, such as on personalized pricing, which we're beginning to see proliferate in many different areas. These are areas where I think there's a lot of international interest and where the FTC could play a leading role.

MR. TRITELL: Well, leading right into our next topic, which is the FTC’s leadership role, I think that there was a point in time when the FTC had so much longer and deeper experience in some of these areas that it was a default and natural leader. Now, we live in a very multipolar world in all of these disciplines, and it prompts me to wonder what does it mean to be a leader in this environment. Is it important for the FTC to be perceived as and to be a thought and policy leader? If so, how can the FTC exercise effective leadership internationally, including on emerging issues and with agencies that operate in very different environments?

So let me just run down the table for anybody who would like to offer thoughts on this study with Bojana.

MS. BELLAMY: Yeah, sure. So I’ve got a very long wish list, which I will submit in writing probably to my friends at FTC. But, Andy, to continue where you kind of stopped, I would really love the FTC -- I think there is some leadership vacuum first, let me say, in the privacy regulatory community at the moment, and I think FTC would be very well placed to fill that vacuum, together with some other across the world are kind of wanting to seek that new leadership role.

So one area where I would like to see some work would be in the area of fairness, fair processing, fairness and unfairness, you know. In the majority of data privacy laws we have requirements with fair processing, yet nobody knows what it means. Yet here, FTC statute and work is based on unfair trade practices. There is unfairness methodology that FTC can teach us a lot in this world of AI and machine learning as to what creates harms to consumers, what and how do we measure that and how we, as organizations, think what is fair and what is not fair.

I think this will be a great opportunity not just for bilateral, multilateral regulatory corporation, but together with the organizations who are implementing this in the practice as well. FTC anonymization test, again for those of you in the privacy geek community is still standing the test of time where frankly everybody else says there’s no such things as anonymous data because everything about me doesn’t matter. If you know who I am, but you know everything about me, that’s good enough to identify me. Well, I think FTC has done some really great thinking in the past and we need to revive that leadership and kind of, again, convergence with some others.

Risk-based approach to regulation and enforcement and investigation is something that I think FTC again is best placed to teach the rest of the world. We live in a world where data is everywhere. Every company, to your point, is today a data company, Rod. I mean, I keep hearing this from manufacturing companies to financial companies who say we are data and tech companies today. So in that world, we really need different ways of approaching that.

And then a final point, I would like to say that this whole topic of incentivizing what good looks like and rewarding good behaviors, I think there is something about that that we need to exploit more. I’ve been head of privacy for a huge multinational company for 12 years, and trust me, when we got good praises from a regulator, that gave me a bigger budget, that gave me more standing internally, that got me to speak to the CEO and the board much quicker than any penalty and any fine did.

I think realizing what motivates companies and motivates people to behave well and be good corporate citizens in this new interconnected world, I think there is work to be done there. And I do remember FTC consent decrees that I have read as I was a practitioner, every single consent decree said to me, here is how they reward companies who actually do something while in privacy. That’s what DOJ said. Data -- I think somebody mentioned before, that’s what the SEC does, that’s what US sentencing guidelines do.

#### There’s a narrow window to establish international norms for safe development---the FTC’s key.

Jessica Newman 21, Research Fellow at the UC Berkeley Center for Long-Term Cybersecurity, AI Policy Specialist with the Future of Life Institute, Research Advisor with The Future Society, 2016-17 International and Global Affairs Student Fellow at Harvard’s Belfer Center, MPP from Harvard University, BA from the University of California, Berkeley, “Cooperation on Artificial Intelligence”, Georgetown Journal on International Affairs, 7/13/2021, https://gjia.georgetown.edu/2021/07/13/now-is-the-time-for-transatlantic-cooperation-on-artificial-intelligence/

The European Union and the United States have not always agreed on the regulation of digital technologies, but closer cooperation is needed to prevent the proliferation of harmful artificial intelligence and to help shape global AI norms that support democratic values, equity, and human rights. The recent launch of the EU-US Trade and Technology Council, together with the new EU AI regulatory proposal, provide a critical window of opportunity for deeper engagement.

Many assume that the European Union is the world’s technology watchdog, while in contrast the United States is an unruly digital Wild West. Media, policymakers, and the general public have been quick to fit the long-awaited EU regulatory proposal on artificial intelligence (the Artificial Intelligence Act, or AIA) into this bifurcated framing. Journalists have suggested that the AIA may “widen the regulatory gulf” between the EU and the US when it comes to reining in the riskiest AI applications. Researchers have called it “a direct challenge to Silicon Valley’s common view that law should leave emerging technology alone.”

However, this framing of a “gulf” between the EU and US on AI regulations is both overstated and counterproductive. The under-regulated AI industry is hurting Americans and Europeans alike, and AI’s risks, like algorithmic amplification of polarization and extremism, cut across borders. Not only do the allies’ perspectives align on various issues, but they are actively courting further cooperation on common challenges.

In mid-June, US President Joe Biden and European Commission President Ursula von der Leyen launched an EU-US Trade and Technology Council (TTC) at the US-EU Summit in Brussels. The TTC comprises ten working groups, with issues including standards cooperation for emerging technologies, data governance and technology platforms, and the threat posed to human rights by technology’s misuse. It remains to be seen, however, how much either ally will invest in this Council or how effective the TTC will be at advancing cooperation on critical AI issues going forward.

The release of the AIA, and the more recent launch of the TTC, present critical and time-sensitive opportunities for engagement. Failing to take advantage of this opportunity for transatlantic cooperation on AI would be a mistake with wide-ranging consequences for both AI and the state of democracy.

Divergent Approaches?

The EU’s proposed AI regulation differs from previous US federal government attempts by establishing oversight mechanisms to mitigate the risks of AI systems. The AIA views some applications of AI, such as AI-based social scoring, as presenting unacceptable risks that must be banned outright because they pose a clear threat to people’s safety and rights. It considers other applications, like using AI to evaluate eligibility for public services or a job, high risk because of their impact on people’s livelihoods and the potential for bias. High risk AI systems are subject to significant obligations before they can be placed on the market.

In contrast, a 2020 memo from the White House Office of Management and Budget on Guidance for Regulation of AI highlights a distrust of regulation that defined the Trump Administration’s approach to AI policy. The memo states, “Federal agencies must avoid regulatory or non-regulatory actions that needlessly hamper AI innovation and growth.” The memo also suggests that AI’s risks should be considered alongside potential benefits.

However, there has been a shift in the US AI policy environment under the Biden Administration, with louder calls for accountability and regulation. Although Biden has yet to make AI a priority, there is greater recognition of the risks the technology can pose and signals that the administration will take AI policy seriously. Vice President Harris has previously endorsed a bill to establish federal AI policy and has criticized the ways that AI can perpetuate bias. An Executive Order signed on Biden’s first day in office established an Equitable Data Working Group and the appointment of Dr. Alondra Nelson to lead the Office of Science and Technology Policy promises a commitment to pursue equitable AI.

The US does already have some protections in place against high-risk AI systems. Real-time biometric surveillance by law enforcement, prohibited in the AIA with some exceptions, has already been banned by numerous cities in the US. A statement of intent issued by the Federal Trade Commission the same week as the AIA release explains that AI products are not outside the scope of its consumer protection laws. Companies will need to adhere to FTC guidelines to ensure AI systems are transparent, explainable, fair, and empirically sound.

In fact, some have asserted that the FTC’s notice has more teeth than the AIA in the near-term. For example, the FTC has committed to holding companies accountable for preventing the proliferation of racially-biased or unreliable algorithms. Meanwhile, it may take years for individual EU member states to adopt the AIA, lessening the immediate impact on Big Tech compared to what some had expected. Under the AIA, most AI technology will not be subject to any regulation and while producers of high-risk AI systems face regulatory requirements it appears that assessments will not be made available to the public. In short, the EU approach may be less of a “burden” than some feared, while the US policy landscape may be less permissive than it may first appear.

More important than the US’s and EU’s willingness to establish regulatory frameworks is the significant overlap in what their frameworks intend to accomplish. The US and EU aim for not only the development of AI, but the development of trustworthy AI. Both have adopted the OECD AI Principles, which provide common benchmarks on issues including sustainable development, human rights, democratic values and diversity, and accountability, among others. The US’s and EU’s support of the Principles has helped to establish a shared language for global AI norms and governance.

Cooperation as a Strategic Goal

Greater transatlantic cooperation on AI is a stated goal of both the US and the EU. A European Commission program for a transatlantic agenda from December 2020 first proposed the EU-US Trade and Technology Council. The Council was an opportunity for allies to work together on critical technologies and to encourage the establishment of digital governance that promotes shared values of human dignity, individual rights, and democratic principles. The agenda described this as “a once-in-a-generation opportunity.”

The US has also highlighted the importance of international cooperation on AI, most recently by accepting the EU’s invitation to launch the TTC. The US has launched the National AI Initiative which intends to support further opportunities for cooperation with strategic allies on research and development, assessment, and resources for trustworthy AI systems. “International Cooperation” is also one of the six strategic pillars outlined on the newly re-launched AI.gov website detailing US AI priorities.

Transatlantic cooperation is widely supported by US industry stakeholders, in part to promote regulatory compatibility. For example, the TTC was endorsed in a blog post by Karan Bhatia, Google’s Vice President of Government Affairs & Public Policy, and in a statement of support from the Information Technology Industry Council. The final report from the National Security Commission on Artificial Intelligence (NSCAI), a multistakeholder group including numerous AI industry leaders, also has a chapter on creating a favorable international technology order. The NSCAI advises the US to establish an International Science and Technology Strategy and argues that “like-minded countries must work together to advance an international rules-based order, protect free and open societies, and unleash economic innovation.”

Given the allies’ many common goals, the AIA should not be seen as a challenge to the US. Instead, the proposal is an important first step and an opportunity to prevent AI uses that violate human safety and fundamental rights. The US and EU can now work together to further clarify and prevent high-risk AI uses, and establish shared AI standards. While the recently-launched TTC provides a valuable platform for this work and will support regulatory policy cooperation and convergence, a handful of working groups only partially focused on AI may struggle to meet these objectives. Additional pathways that deserve consideration include increasing capacity for information sharing and pooling resources for larger scale research on critical topics.

Why Now?

As governments scrambled to control the spread of COVID-19, many turned to AI technologies for help – to better understand the virus, track outbreaks, and help provide care. In some cases, this has justified the implementation of pervasive surveillance systems, which are now being used for troubling ends. As just one example, a facial recognition camera network in Moscow, originally implemented to help enforce quarantine restrictions, was later used to detain dozens of protestors voicing opposition to President Vladimir Putin. AI-enabled surveillance systems have proliferated across the globe, and the scale and scope of “digital authoritarianism” has increased for years, amplified by the use of AI to automate censorship and surveillance systems.

While the United States has worked to develop standards and principles for the use of AI around the world and sought to protect human rights and fundamental freedoms, these actions have failed to stop the misuse of AI. Concrete cooperation with the European Union, which has been lacking, could create a stronger alliance to counter the rising wave of digital authoritarianism. The launch of the TTC shows that President Joe Biden understands this dynamic. He recently said the “transatlantic alliance is back,” and explicitly highlighted the need to shape the rules that will govern the advance of AI, among other consequential technologies.

Importantly, greater transatlantic cooperation on AI is not just in the self-interest of the US and the EU; it can benefit democracies and human rights around the world. The alliance will be even stronger if it looks outward and facilitates international, inclusive dialogues, including with countries from the Global South. Fostering an equitable and responsible digital future requires incorporating critical, yet underrepresented, voices into AI governance discussions and decision-making.

Forgoing greater cooperation on AI between the US and EU would be a shortsighted mistake. There is a narrow window of opportunity to prevent the proliferation of harmful AI and to help shape global AI norms. The time for transatlantic cooperation on AI is now.

#### Extinction.

Karina Vold 21, Philosopher of Cognitive Science and Artificial Intelligence & Assistant Professor at the University of Toronto's Institute for the History and Philosophy of Science and Technology, & Daniel R. Harris, Retired Lawyer and Foreign Service Officer at the US Department of State, “How Does Artificial Intelligence Pose an Existential Risk?,” Oxford Handbook of Digital Ethics, Ed. C. Veliz., pp 1-34

4.1 AI Race Dynamics: Corner-cutting Safety

An AI race between powerful actors could have an adverse effect on AI safety, a subfield aimed at finding technical solutions to building “advanced AI systems that are safe and beneficial” (Dafoe, 2018, 25; Cave & Ó hÉigeartaigh, 2018; Bostrom, 2017; Armstrong et al., 2016; Bostrom, 2014). Dafoe (2018, 43), for example, argues that it is plausible that such a race would provide strong incentives for researchers to trade-off safety in order to increase the chances of gaining a relative advantage over a competitor.21 In Bostrom’s (2017) view, competitive races would disincentivize two options for a frontrunner: (a) slowing down or pausing the development of an AI system and (b) implementing safety-related performance handicapping. Both, he argues, have worrying consequences for AI safety.

(a) Bostrom (2017, 5) considers a case in which a solution to the control problem (C1) is dependent upon the components of an AI system to which it will be applied, such that it is only possible to invent or install a necessary control mechanism after the system has been developed to a significantly high degree. He contends that, in situations like these, it is vital that a team is able to pause further development until the required safety work can be performed (ibid). Yet, if implementing these controls requires a substantial amount of additional time and resources, then in a tight competitive race dynamic, any team that decides to initiate this safety work would likely surrender its lead to a competitor who forgoes doing so (ibid). If competitors don’t reach an agreement on safety standards, then it is possible that a “risk-race to the bottom” could arise, driving each team to take increasing risks by investing minimally in safety (Bostrom, 2014, 247).

(b) Bostrom (2017, 5-6) also considers possible scenarios in which the “mechanisms needed to make an AI safe reduces the AI’s effectiveness”. These include cases in which a safe AI would run at a considerably slower speed than an unsafe one, or those in which implementing a safety mechanism necessitates the curtailing of an AI’s capabilities (ibid). If the AI race were to confer large strategic and economic benefits to frontrunners, then teams would be disincentivized from implementing these sorts of safety mechanisms. The same, however, does not necessarily hold true of less competitive race dynamics; that is, ones in which a competitor has a significant lead over others (ibid). Under these conditions, it is conceivable that there could be enough of a time advantage that frontrunners could unilaterally apply performance handicapping safety measures without relinquishing their lead (ibid).

It is relatively uncontroversial to suggest that reducing investment in AI safety could lead to a host of associated dangers. Improper safety precautions could produce all kinds of unintended harms from misstated objectives or from specification gaming, for example. They could also lead to a higher prevalence of AI system vulnerabilities which are intentionally exploited by malicious actors for destructive ends, as in the case of adversarial examples (see Brundage et al., 2018). But does AI safety corner-cutting reach the threshold of an Xrisk? Certainly not directly, but there are at least some circumstances under which it would do so indirectly. Recall that Chalmers (2010) argues there could be defeaters that obstruct the self-amplifying capabilities of an advanced AI, which could in turn forestall the occurrence of an intelligence explosion. Scenario (a) above made the case that a competitive AI race would disincentivize researchers from investing in developing safety precautions aimed at preventing an intelligence explosion (e.g., motivational defeaters). Thus, in cases in which an AI race is centred on the development of artificial general intelligence, a seed AI with the capacity to self-improve, or even an advanced narrow AI (as per §3.1), a competitive race dynamic could pose an indirect Xrisk insofar as it contributes to a set of conditions that elevate the risk of a control problem occurring (Bostrom, 2014, 246; 2017, 5).

4.2 AI Race Dynamics: Conflict Between AI Competitors

The mere narrative of an AI race could also, under certain conditions, increase the risk of military conflict between competing groups. Cave & Ó hÉigeartaigh (2018) argue that AI race narratives which frame the future trajectory of AI development in terms of technological advantage could “increase the risk of competition in AI causing real conflict (overt or covert)”. The militarized language typical of race dynamics may encourage competitors to view each other “as threats or even enemies” (ibid, 3).22 If a government believes that an adversary is pursuing a strategic advantage in AI that could result in their technological dominance, then this alone could provide a motivating reason to use aggression against the adversary (ibid; Bostrom, 2014). An AI race narrative could thus lead to crisis escalation between states. However, the resulting conflict, should it arise, need not directly involve AI systems. And it's an open question whether said conflict would meet the Xrisk threshold. Under conditions where it does (perhaps nuclear war), the contributions of AI as a technology would at best be indirect.

4.3 Global Disruption: Destabilization of Nuclear Deterrents

Another type of crisis escalation associated with AI is the potential destabilizing impact the technology could have on global strategic stability;23 in particular, its capacity to destabilize nuclear deterrence strategies (Giest & Lohn, 2018; Rickli, 2019; Sauer, 2019; Groll, 2018; Zwetsloot & Dafoe, 2019). In general, deterrence relies both on states possessing secure second-strike capabilities (Zwetsloot & Dafoe, 2019) and, at the same time, on a state's inability to locate, with certainty, an adversary’s nuclear second-strike forces (Rickli, 2019). This could change, however, with advances in AI (ibid). For example, AI-enabled surveillance and reconnaissance systems, unmanned underwater vehicles, and data analysis could allow a state to both closely track and destroy an adversary’s previously hidden nuclear-powered ballistic missile submarines (Zwetsloot & Dafoe, 2019). If their second-strike nuclear capabilities were to become vulnerable to a first strike, then a pre- emptive nuclear strike would, in theory, become a viable strategy under certain scenarios (Giest & Lohn, 2018).

In Zwetsloot & Dafoe’s (2019) view, “the fear that nuclear systems could be insecure would, in turn, create pressures for states— including defensively motivated ones—to pre-emptively escalate during a crisis”. What is perhaps most alarming is that the aforementioned AI systems need not actually exist to have a destabilizing impact on nuclear deterrence (Rickli, 2019; Groll, 2018; Giest & Lohn, 2018). As Rickli (2019, 95) points out, “[b]y its very nature, nuclear deterrence is highly psychological and relies on the perception of the adversary’s capabilities and intentions”. Thus, the “simple misperception of the adversary’s AI capabilities is destabilizing in itself” (ibid). This potential for AI to destabilize nuclear deterrence represents yet another kind of indirect global catastrophic, and perhaps even existential, risk insofar as the destabilization could contribute to nuclear conflict escalation.

5. Weaponization of AI

Much like the more recent set of growing concerns around an AI arms race, there have also been growing concerns around the weaponization of AI. We use “weaponization” to encompass many possible scenarios, from malicious actors or a malicious AI itself, to the use of fully autonomous lethal weapons. And we will discuss each of these possibilities in turn. In §5.1 we discuss malicious actors and in §5.2 we discuss lethal autonomous weapons. We have combined this diverse range of scenarios for two reasons. First, while the previous Xrisk scenarios discussed (CPAX and an AI race) could emerge without malicious intentions from anyone involved (e.g., engineers or governments), the scenarios we discuss here do for the most part assume some kind of malicious intent on the part of some actor. They are what Zwetsloot & Dafoe (2019,) call a misuse risk. Second, the threats we discuss here are not particularly unique to AI, unlike those in previous sections. The control problem, for example, is distinctive of AI as a technology, in the sense that the problem did not exist before we began building intelligent systems. On the other hand, many technologies can be weaponized. In this respect, AI is no different. It is because AI is potentially so powerful that its misuse in a complex and high impact environment, such as warfare, could pose an Xrisk.

5.1 Malicious Actors

In discussing CPAX, we focused on accidental risk scenarios—where no one involved wants to bring about harm, but the mere act of building an advanced AI system creates an Xrisk. But AI could also be deliberately misused. These can include things like exploiting software vulnerabilities, for example, through automated hacking or adversarial examples; generating political discord or misinformation with synthetic media; or initiating physical attacks using drones or automated weapons (see Brundage et al., 2018). For these scenarios to reach the threshold of Xrisk (in terms of ‘scope’), however, a beyond catastrophic amount of damage would have to be done. Perhaps one instructs an AI system to suck up all the oxygen in the air, to launch all the nuclear weapons in a nation’s arsenal, or to invent a deadly airborne biological virus. Or perhaps a lone actor is able to use AI to hack critical infrastructures, including some that manage large-scale projects, such as the satellites that orbit Earth. It does not take much creativity to drum up a scenario in which an AI system, if put in the wrong hands, could pose an Xrisk. But the Xrisk posed by AI in these cases is likely to be indirect—where AI is just one link in the causal chain, perhaps even a distal one. This involvement of malicious actors is one of the more common concerns around the weaponization of AI. Automated systems that have war- fighting capacities or that are in anyway linked to nuclear missile systems could become likely targets of malicious actors aiming to cause widespread harm. This threat is serious, but the theoretical nature of the threat is straightforward relative to those posed in CPAX, for example.

One further novel outcome of AI would be if the system itself malfunctions. Any technology can malfunction, and in the case of an AI system that had control over real-world weapons systems the consequences of a malfunction could be severe (see Robillard, this volume). We’ll discuss this potential scenario a bit more in the next section. A final related possibility here would be for the AI to itself turn malicious. This would be unlike any other technology in the past. But since AI is a kind of intelligent agent, there is this possibility. Cotton- Barratt et al. (2020), for example, describe a hypothetical scenario in which an intelligence explosion produces a powerful AI that wipes out human beings in order to pre-empt any interference with its own objectives. They describe this as a direct Xrisk (by contrast, we described CPAX scenarios as indirect), presumably because they describe the AI as deliberately wiping out humanity. However, if the system has agency in a meaningful sense, such that it is making these kinds of deliberate malicious decisions, then this seems to assume it has something akin to consciousness or strong intentionality. In general we are far from developing anything like artificial consciousness and this is not to say that these scenarios should be dismissed altogether, but many experts agree that there are serious challenges confronting the possibility of AI possessing these cognitive capacities (e.g., Searle, 1980; Koch and Tonini, 2017; Koch, 2019; Dehaene et al., 2017).

5.2 Lethal Autonomous Weapons

One other form of weaponization of AI that is sometimes discussed as a potential source of Xrisk are lethal autonomous weapons systems (LAWS). LAWS include systems that can locate, select, and engage targets without any human intervention (Roff, 2014; Russell, 2015; Robillard, this volume). Much of the debate around the ethics of LAWS has focused on whether their use would violate human dignity (Lim, 2019; Rosert & Sauer, 2019; Sharkey, 2019), whether they could leave critical responsibility gaps in warfare (Sparrow, 2007; Robillard, this volume), or whether they could undermine the principles of just war theory, such as noncombatant immunity (Roff, 2014), for example. These concerns, among others, have led many to call for a ban on their use (FLI ,2017). These concerns are certainly very serious and more near term (as some LAWS already exist) than the speculative scenarios discussed in CPAX. But do LAWS really present an Xrisk? It seems that if they do, they do so indirectly. Consider two possible scenarios.

(a) One concern around LAWS is that they will ease the cost of engaging in war, making it more likely that tensions between rival states rise to military engagement. In this case, LAWS would be used as an instrument to carry out the ends of some malicious actor. This is because, for now, humans continue to play a significant role in directing the behaviour of LAWS, though it is likely that we will see a steady increase in the autonomy of future systems (Brundage et al., 2018). Now, it could be that this kind of warfare leads to Xrisks, but this would require a causal chain that includes political disruption, perhaps failing states, and widespread mass murder. None of these scenarios are impossible, of course, and they present serious risks. But we have tried to focus this chapter on Xrisks that are novel to AI as a technology and, even though we view the risks of LAWS as extremely important, they ultimately present similar kinds of risks as nuclear weapons do. To the extent that LAWS have a destabilizing impact on norms and practices in warfare, for example, we think that scenarios similar to those discussed in §4.3 are possible—LAWS might escalate an ongoing crisis, or moreover, the mere perception that an adversary has LAWS might escalate a crisis.

(b) A second scenario, described by Geoffrey Hinton, is that killer drones, equipped with explosives and deep learning neural net technology, could (somehow) learn to function independently of their human controllers (Robinson, 2016), and the system could then go on a rampage and destroy humanity. The bracketed “somehow” here is a critical piece of the story. Perhaps the control system has been hacked, in which case we are back to the malicious actor scenario described in §5.1. Or perhaps there is a malfunction, of the sort also described in §5.1. In this latter case, the malfunction could manifest in the form of a “hard takeoff” in which the system undergoes rapid recursive self-improvement (unintended by the designers) and then develops goals that are inimical to human interests. In such a case, we would be at the start of an intelligence explosion and would confront the kind of Xrisk already characterized by CPAX (§3). Our only point here is that upon closer examination, it's hard to see how this scenario looks distinct from ones previously discussed. Hence, the weaponization of AI can pose an indirect Xrisk in several different ways. In general, the more control an automated system has over weaponized systems that can cause real-world destruction, the greater risk there is of that system becoming a target for attack by malicious actors or of there being greater harm due to any accidental system malfunction.

6. Conclusion

Humanity is facing an increasing number of existential threats, many of which are of our own creation. Thankfully, there are also an increasing number of scholars, from a wide range of fields, studying the nature of these risks and strategizing how to mitigate them. But the field of Xrisk studies is still relatively young. There are significant debates being had over how to define the concept of Xrisk, how to understand its sources, and what methodologies should be used to assess these risks. When it comes to Xrisks from AI, these debates continue. Early concerns around AI Xrisks focused on the possibility of an intelligence explosion and the subsequent pathway to a scenario in which a powerful superintelligent AI has misaligned objectives from humanity. These concerns have not gone away, but they have evolved over time. This chapter has provided an up- to-date critical survey of these arguments, both old and new, looking at different foreseeable pathways towards AI Xrisk, possible global disruptions resulting from the emergence of an AI race dynamic between nations, and the weaponization of AI. In particular, we have tried to make the structures of each of these concerns more explicit, such that readers can begin to critically engage with them.

#### Embedded blockchain principles let antitrust create safe harbors for productive AI innovation

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In the third part of this book, I discuss how I think antitrust law should be enforced in the blockchain space. In order to do so without undermining blockchain ecosystems, a shift in legal and technical paradigms is necessary. This notably entails transforming mentalities, legal tools and competition policy. In fact, implementing a collaborative approach will become increasingly necessary. On the one hand, “the cyberspace is no longer some peripheral dimension. It increasingly has become the place where people organize themselves and define what happens in the real world.”1 On the other hand, the digital space is putting up a strong resistance to legal enforcement by constantly increasing the speed of activities. That resistance is particularly relevant when it comes to blockchain. If law and technology are at odds, both will fail to maximize social welfare. For that reason, West Coast code (programming) and East Coast code (laws and regulations) can no longer oppose each other; they must collaborate.

Against this backdrop, I first detail what it takes to make blockchain and antitrust work together from a conceptual point of view (Chapter 13). I show that this raises unique challenges and offer a solution to them, using the full scope of the so-called “law is code” approach. Second, I discuss what needs to be done to ensure cooperation between blockchain and antitrust from a practical perspective (Chapter 14). To this end, I introduce a proactive agenda for regulating blockchain activities. As I explain, this approach would lead policy- makers to establish comfort zones - that is, innovation hubs (allowing firms to raise questions and seek clarifications), regulatory sandboxes (testing grounds for businesses supervised by regulatory bodies) and safe harbors (similar to sandboxes, but with no limit in time or scale). They would also switch the focus of their enforcement activities on certain practices.

I then discuss how blockchain can be used to support antitrust agencies’ activities. I contend that regulators should use blockchain technology to make regulatory enforcement more horizontal, and I discuss the decentralization of decision-making mechanisms. In support of this, I explain what futarchy is and show how it could support authorities. If they collaborate, blockchain and antitrust can create a strong infrastructure upon which markets may thrive, including the Internet of Things and artificial intelligence (Chapter 15).

#### Harnessing the upside benefits of AI prevents extinction

Dr. Themistoklis Tzimas 21, PhD in International Public Law and Political Science from the School of Law of the Aristotle University of Thessaloniki, “Chapter 2: The Expectations and Risks from AI”, in Legal and Ethical Challenges of Artificial Intelligence from an International Law Perspective, Springer, 2021, pp. 9–32 Open WorldCat, https://doi.org/10.1007/978-3-030-78585-7

Therefore, it is only natural to be at least skeptical towards a future with entities possessing equal or superior intelligence and levels of autonomy; the prospect even of existential risk looms as possible.7

AI that will have reached or surpassed our level of intelligence make us wonder why would highly autonomous and intelligent AI want to give up control back to its original creators?8 Why remain contained in pre-deﬁned goals set for it by us, humans?

Even AI in its current form and narrow intelligence poses risks because of its embedded-ness in an ever-growing number of crucial aspects of our lives. The role of AI in military, ﬁnancial,9 health, educational, environmental, governance networks-among others—are areas where risk generated by AI—even limited— autonomy can be diffused through non-linear networks, with signiﬁcant impact— even systemic.10

The answer therefore to the question whether AI brings risk with it is yes; as Eliezer Yudkowski comments the greatest of them all is that people conclude too early that they understand it11 or that they assume that they can achieve it without necessarily having acquired complete and thorough understanding of what intelli- gence means.12

Our projection of our—lack of complete—understanding of the concept of intelligence on AI is owed to our lack of complete comprehension of human intelligence too, which is partially covered by the prevalent and until now self- obvious, anthropomorphism because of which we tend to identify higher intelligence with the human mind.

Yudkowski again however suggests that AI “refers to a vastly greater space of possibilities than does the term “Homo sapiens.” When we talk about “AIs” we are really talking about minds-in-general, or optimization processes in general. Imagine a map of mind design space. In one corner, a tiny little circle contains all humans; within a larger tiny circle containing all biological life; and all the rest of the huge map is the space of minds-in-general. The entire map ﬂoats in a still vaster space, the space of optimization processes.”13

Regardless of what our well-established ideas are, there are many, different intelligences and even more signiﬁcantly, there are potentially, different intelli- gences equally or even more evolved than human.

From such a perspective, the unprecedented—ness of potential AI developments and the mystery surrounding them emerges as not only the outcome of pop culture but of a radical transformation of our—until recently—self—obvious identiﬁcation of humanity with highly evolved and dominant intelligence.14

The lack of understanding of intelligence and therefore of AI may be frightening but does not lead necessarily to regulation—at least to a proper one. We could even be led into making potentially catastrophic choices, on the basis of false assumptions.

On top of our lack of understanding, we should add a sentiment of anxiety as well as of expectations, which intensiﬁes as an atmosphere of emergency and of expected groundbreaking developments grows. The most graphic description of this feeling is the potential of a moment of singularity, as mentioned above according to the description by Vinge and Kurzweil.

As the mathematician I. J. Good–Alan Turing’s colleague in the team of the latter during World War II—has put it: “Let an ultraintelligent machine be deﬁned as a machine that can far surpass all the intellectual activities of any man however clever. Since the design of machines is one of these intellectual activities, an ultraintelligent machine could design even better machines; there would then unquestionably be an “intelligence explosion,” and the intelligence of man would be left far behind. Thus the ﬁrst ultraintelligent machine is the last invention that man need ever make, provided that the machine is docile enough to tell us how to keep it under control.”15 This is in a nutshell the moment of singularity.

The estimates currently foresee the emergence of ultra or super intelligence—as it is currently labelled—or in other words of singularity, somewhere between 20 and 50 years from today, further raising the sentiment of emergency.16 We cannot even foretell with precision how singularity would look like but we know that because of its expected groundbreaking impact, both states and private entities compete towards gaining the upper hand in the prospect of the singularity.17

Despite the fact that such predictions have been proven rather optimistic in the past18 and therefore up to some extent inaccurate, there are reasons to assume that their materialization will take place and that the urgency of regulation will be proven realistic.

After all, part of the disappointments from AI should be blamed on the fact that certain activities and standards, which were considered as epitomes of human intelligence have been surpassed by AI, only to indicate that they were not eventu- ally satisfactory thresholds for the surpassing of human intelligence.19 Partially because of AI progress we realize that human intelligence and its thresholds are much more complicated than assumed in the past.

The vastness’s of deﬁnitions of intelligence, as well as its etymological roots are enlightening of the difﬁculties: “to gather, to collect, to assemble or to choose, and to form an impression, thus leading one to ﬁnally understand, perceive, or know”.20

As with other relevant concepts, the truth is that until recently our main way to approach intelligence for far too long was “we know it, when we see it”. AI is an additional reason for looking deeper into intelligence and the more we examine it, the most complicated it seems.

The combination of lack of complete understanding of intelligence, the unpredictability of AI, its rapid evolution and the prospect of singularity explain both the fascination and the fear from AI. Once the latter emerges, we have no real knowledge about what will happen next but only speculations, which until recently belonged to the area of science ﬁction.

We are for example pretty conﬁdent that the speed of AI intelligence growth will accelerate, once self—improvement will have been achieved. The expected or possible chain of events will begin from AI capacity to re-write its own algorithms and exponentially self—improve, surpassing human intelligence, which lacks the capacity of such rapid self—improvement and setting its own goals.21

We can somehow guess the speed of AGI and ASI evolution and possibly some of its initial steps but we cannot guess the directions that such AI will choose to follow and the characteristics that it will demonstrate. Practically, we credibly guess the prospects of AI beyond a certain level of development.

Two existential issues could emerge: ﬁrst, an imbalance of intelligence at our expense—with us, humans becoming the inferior species—in favor of non-biological entities and secondly a lack of even fundamental conceptual communication between the two most intelligent “species”. Both of them heighten the fear of irreversible changes, once we lose the possession of the superior intelligence.22

However, we need to consider the expectations as well. The positive side focuses on the so-called friendly AI, meaning AI which will beneﬁt and not harm humans, thanks to its advanced intelligence.23

AI bears the promise of signiﬁcantly enhancing human life on various aspects, beginning from the already existing, narrow applications. The enhanced automation24 in the industry and the shift to autonomy,25 the take—over by AI of tasks even at the service sector which can be considered as “tedious”—i.e. in the banking sector—climate and weather forecasting, disaster response,26 the potentially better cooperation among different actors in complicated matters such as in matters of information, geopolitics and international relations, logistics, resources ex.27

The realization of the positive expectations depends up to some extent upon the complementarity or not, of AI with human intelligence. However, what friendly AI will bring in our societies constitutes a matter of debate, given our lack of unanimous approach on what should be considered as beneﬁcial and therefore friendly to humans—as is analyzed in the next chapter.

Friendly AI for example bears the prospect of freeing us from hard labor or even further from unwanted labor; of generating further economic growth; of dealing in unbiased, speedy, effective and cheaper ways with sectors such as policing, justice, health, environmental crisis, natural disasters, education, governance, defense and several more of them which necessitate decision-making, with the involvement of sophisticated intelligence.

The synergies between human intelligence and AI “promise” the enhancement of humans in most of their aspects. Such synergies may remain external—humans using AI as external to themselves, in terms of analysis, forecasts, decision—making and in general as a type of assistant-28 or may evolve into the merging of the two forms of intelligence either temporarily or permanently.

The second profoundly enters humanity, existentially—speaking, into uncharted waters. Elon Musk argues in favor of “having some sort of merger of biological intelligence and machine intelligence” and his company “Neuralink” aims at implanting chips in human brain. Musk argues that through this way humans will keep artiﬁcial intelligence under control.29 The proposition is that of “mind design”, with humans playing the role that God had according to theologies.30

While the temptation is strong—exceeding human mind’s capacities, far beyond what nature “created”, by acquiring the capacity for example to connect directly to the cyberspace or to break the barriers of biology31—the risks are signiﬁcant too: what if a microchip malfunction? Will such a brain be usurped or become captive to malfunctioning AI?

The merging of the two intelligences is most likely to evolve initially by invoking medical reasons, instead of human enhancement. But the merging of the two will most likely continue, as after all the limits between healing and enhancement are most often blurry. This development will give rise, as is analyzed below, to signif- icant questions and issues, the most of crucial of which is the setting of a threshold for the prevalence of the human aspect of intelligence over the artiﬁcial one.

Human nature is historically improved, enhanced, healed and now, potentially even re-designed in the future.32 Can a “medical science” endorsing such a goal be ethically acceptable and if yes, under what conditions, when, for whom and by what means? The answers are more difﬁcult than it seems. As the World Health Organi- zation—WHO—provides in its constitution, “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or inﬁrmity”.33

Therefore, why discourage science which aims at human-enhancement, even reaching the levels of post-humanism?34 Or if restrictions are to be imposed on human enhancement, on what ethics and laws will they be justiﬁed? How ethically acceptable is it to prohibit or delay technological evolution, which among several other magniﬁcent achievements, promises to treat death as a disease and cure it, by reducing soul to self, self to mind, and mind to brain, which will then be preserved as a “softwarized” program in a hardware other than the human body?35

After all, “According to the strong artiﬁcial intelligence program there is no fundamental difference between computers and brains: a computer is different machinery than a person in terms of speed and memory capacity.”36

While such a scientiﬁc development and the ones leading potentially to it will be undoubtedly, groundbreaking technologically-speaking, is it actually—ethically- speaking—as ambivalent as it may sound or is it already justiﬁed by our well— rooted human-centrism?37

Secular humanism may have very well outdated religious beliefs about afterlife in the area of science but has not diminished the hope for immortality; on the contrary, science, implicitly or explicitly predicts that matter can in various ways surpass death, albeit by means which belong in the realm of scientiﬁc proof, instead of that of metaphysical belief.38

If this is the philosophical case, the quest for immortality becomes ethically acceptable; it can be considered as embedded both in the existential anxiety of humans, as well as in the human-centrism of secular philosophical and political victory over the dei-centric approach to the world and to our existence.

From another perspective of course and for the not that distant philosophical reasons, the quest for immortality becomes ethically ambiguous or even unacceptable.39 By seeking endless life we may miss all these that make life worth living in the framework of ﬁniteness. As the gerontologist Paul Hayﬂick cautioned “Given the possibility that you could replace all your parts, including your brain, then you lose your self-identity, your self-recognition. You lose who you are! You are who you are because of your memory.”40

In other words, once we begin to integrate the two types of intelligence, within ourselves, until when and how we will be sure that it is human intelligence that guides us, instead of the AI? And if we are not guided completely or—even further—at all by human intelligence but on the contrary we are guided by AI which we have embodied and which is trained by our human intelligence, will we be remaining humans or we will have evolved to some type of meta-human or transhumant species, being different persons as well?41

AI promises tor threatens to offer a solution by breaking down our consciousness into small “particles” of information—simplistically speaking—which can then be “software-ized” and therefore “uploaded” into different forms of physical or non-physical existence.

Diane Ackerman states that “The brain is silent, the brain is dark, the brain tastes nothing, the brain hears nothing. All it receives are electrical impulses--not the sumptuous chocolate melting sweetly, not the oboe solo like the ﬂight of a bird, not the pastel pink and lavender sunset over the coral reef--only impulses.”42 Therefore, all that is needed—although it is of course much more complicated than we can imagine—is a way to code and reproduce such impulses.

Even if we consider that without death, we will no more be humans but something else, why should we remain humans once technologies allow us be something “more”, in the sense of an enhanced version of “being”? Why are we to remain bound by biological evolution if we can re-design it and our future form of existence?

Why not try to achieve the major breakthrough, the anticipated or hoped digita- lization of the human mind, which promises immortality of consciousness via the cyberspace or artiﬁcial bodies: the uploading of our consciousness so that it can live on forever, turning death into an optional condition.43

Either through an artiﬁcial body or emulation-a living, conscious avatar—we hope—or fear—that the domain of immortality will be within reach. It is the prospect of a “substrate-independent minds,” in which human and machine consciousness will merge, transcending biological limits of time, space and mem- ory” that fascinates us.44

As Anders Sandberg explained “The point of brain emulation is to recreate the function of the original brain: if ‘run’ it will be able to think and act as the original,” he says. Progress has been slow but steady. “We are now able to take small brain tissue samples and map them in 3D. These are at exquisite resolution, but the blocks are just a few microns across. We can run simulations of the size of a mouse brain on supercomputers—but we do not have the total connectivity yet. As methods improve, I expect to see automatic conversion of scanned tissue into models that can be run. The different parts exist, but so far there is no pipeline from brains to emulations.”45

The emulation is different from a simulation in the sense that the former mimics not only the outward outcome but also the “internal causal dynamics”, so that the emulated system and in this particular case the human mind behaves as the original.46 Obviously, this is a challenging task: we need to understand the human brain with the help of computational neuroscience and combine simpliﬁed parts such as simulated neurons with network structures so that the patterns of the brain are comprehended. We must combine effectively “biological realism (attempting to be faithful to biology), completeness (using all available empirical data about the system), tractability (the possibility of quantitative or qualitative simulation) and understanding (producing a compressed representation of the salient aspects of the system in the mind of the experimenter)”.47

The technological challenges are vast. Technologically speaking, the whole concept is based on some assumptions which must be proven both accurate and feasible.48 We must achieve technology capable of scanning completely the human brain, of creating software on the basis of the acquired information from its scanning and of the interpretation of information and the hardware which will be capable of uploading or downloading such software.49 The steps within these procedures are equally challenging. Their detailed analysis evades the scope of this book.

Some critical questions—they are further analyzed in the next chapters—emerge however: how will we interpret free will in emulation? What will be the impact of the environment and of what environment? How will be missing parts of the human brain re-constructed and emulated? What will be the status of the several emulations which will be created—i.e. failed attempts or emulations of parts of the human brain—in the course of the search for a complete and functioning emulation? Will they be considered as “persons” and therefore as having some right or will they be considered as mere objects in an experimental lab? How are we going to decode the actual subjective sentiments of these emulations? Essentially, are emulations the humans “themselves” who are emulated or a different person? Even further what will human and person mean in the era of emulation?

From a different perspective, the victory over death may be seen as a danger of mass extinction, absorption or de-humanization. In this new, vast universe of emulations will there be place for humans?50

From the above—mentioned discussion, it becomes obvious that at a large extent, the prospect of risk or of expectation is a matter of perspective, for which there is no unanimous agreement in the present. This may be the greatest danger of all, for which Asimov warned us: unleashing technology while we cannot communicate among us, in the face of it.

The existential prospect as well as the risks by AI may self-evidently emerge from technological advances but are determined on the basis of politico—philosophical or in the wider sense, ethical assumptions. This is where the need for legal regulation steps in. Such a need was often underestimated in the past in favor of a solely technologically oriented approach—although exceptions raising issues other than technological can be found too.51 The gradual raising of ethic—political, philosoph- ical and legal issues constitutes a rather recent development, partially because of the realization of the proximity of the risks and of the expectations.

The public debate is often divided between two “contradictory” views: fear of AI or enthusiastic optimism. The opinions of the experts differ respectively.

Kurzweil, who has come with a prediction for a date for the emergence of singularity—until 2045—expects such a development in a positive way: “What’s actually happening is [machines] are powering all of us,” Kurzweil said during the SXSW interview. “They’re making us smarter. They may not yet be inside our bodies, but, by the 2030s, we will connect our neocortex, the part of our brain where we do our thinking, to the cloud.”52

In a well-known article—issued on the occasion of a ﬁlm—Stephen Hawking, Max Tegmark, Stuart Russell, and Frank Wilczek shared a moderate position: “The potential beneﬁts are huge; everything that civilization has to offer is a product of human intelligence; we cannot predict what we might achieve when this intelligence is magniﬁed by the tools AI may provide, but the eradication of war, disease, and poverty would be high on anyone’s list. Success in creating AI would be the biggest event in human history. . . Unfortunately, it might also be the last, unless we learn how to avoid the risks.”53

#### The plan solves:

#### 1. UPDATING.

#### Prohibiting violations in the infrastructure level establishes a collaborative relationship between blockchain and antitrust that infuses technological principles into legal enforcement.

Dr. Thibault Schrepel 21, PhD in Antitrust Law from Université Paris-Saclay, LLM in International Law and Legal Studies from the Brooklyn Law School, Associate Professor of Law at VU Amsterdam University, Faculty Affiliate and Creator and Director of the Computational Antitrust Project at the Stanford University CodeX Center, Blockchain + Antitrust: The Decentralization Formula, p. 247-249

1.2 Enforcement

1.2.1 Not this...

Enforcement is the second pillar of a collaborative approach between law and tech, antitrust and blockchain. I realize that this may seem counterintuitive; enforcement is, by definition, confrontational. In reality, distinct types of enforcement can lead to varying degrees of confrontation: some harm the entire blockchain, while others target the sole perpetrators of illegal practices. One should avoid the former, as it would reduce blockchain’s usefulness and thus deprive policymakers and regulators of an important ally. It is in the interests of both communities to encourage the latter.

I concluded the first part of this book by underlining that making law and tech work toward the same objective implied bearing with some assaults by each on the other. This means that blockchain communities should not only tolerate antitrust sanctions, but also facilitate them, because they ultimately lead to further decentralization. It also means that antitrust agencies and courts should direct their enforcement activities in a specific way. Overall, they should seek to preserve blockchain. This will be challenging, as agencies generally conduct their enforcement activities one case after the other, without such a long-term objective. That being said, agencies could still achieve the overall goal of enabling blockchain technology to flourish while ensuring case-by-case enforcement.

For that, agencies should avoid enforcement activities against practices that directly arise from the intrinsic characteristics of a blockchain. For example, public permissionless blockchains distribute information throughout the marketplace, including the number of transactions implemented by specific users, the fees being paid and so on. This transparency could lead to antitrust concerns, especially when it comes to tacit collusion.14 Nevertheless, because this essential feature makes markets more fluid and mitigates information asymmetry,15 enforcement activities should not be directed at it.

The same goes for the opacity that blockchains create. As we have seen together, the identity of a blockchain’s participants and the content of their transactions are protected by encryption. Yet one should not consider this a relevant element in European competition law for presuming the intention to collude (moral component), for systematically making cartelization on block- chain a restriction “by object” rather than “by effect,” or for easing the burden of proof on antitrust agencies. Doing so would deter legal uses of blockchain.

More generally, it is important to underline that all blockchain participants agree to the same set of rules. That should not be seen as an illegal agreement between them, even though it affects their economic behavior. Agreeing to the same rules is, in fact, necessary for blockchain’s survival, as it creates consistency in the blockchain ledger in the absence of central coordination. It solves the Byzantine Generals Problem, according to which a central power is always needed to coordinate actions and maximize outcomes. That applies to forks, which should only rarely be seen as illegal (as I discussed in Chapter 8), because they create checks and balances within each blockchain. Let me reiterate that without consensus regarding the rules and their modification, the whole system would collapse, as the ledger integrity could not be maintained. All practices engaged by the blockchain nucleus to ensure survival, such as their forks and modifications of the core client, should thus be presumptively legal as far as antitrust enforcement is concerned.

1.2.2 ...but that!

I recommend that antitrust agencies focus their enforcement activities on practices that affect the “real space”, and on practices that defeat blockchain’s purpose.

As I discussed in Chapters 9 and 11, the first type of practice covers the use of blockchains to support firms’ efforts to collude or monopolize markets. These practices have a strong and direct impact on consumers. Detecting this type of behavior will require proactive actions by antitrust agencies. If they engage in such actions, enforcement in the field will increase consumer welfare.

The second category concerns practices that centralize blockchain ecosystems artificially. More specifically, agencies should target practices that centralize the infrastructure level of a blockchain. As I have explained, that level has a critical influence on the decentralization of other levels. Prohibiting artificial forms of centralization at that layer will free most of the ecosystem from coercive forms of power. In doing so, it will make blockchain a more potent ally to antitrust law. Furthermore, this type of enforcement will prove increasingly important over time. If blockchain adoption continues to increase, it could very well become a key infrastructure for the world economy. At that point in time, the artificial centralization of blockchain will become antitrust agencies’ top enforcement priority.

Overall, directing enforcement activities toward these two types of practices would free blockchain, and its economic ramifications, from the most restrictive practices without diminishing its usefulness or creating resentment within blockchain communities. Antitrust would thus become the ally of blockchain ecosystems and would start being perceived as such.

#### 2. LEADERSHIP.

#### Going bold builds FTC’s brand and secures a foothold for future experimentation.

Philip J. Weiser 17, Hatfield Professor of Law and Dean Emeritus at the University of Colorado Law School, Former Senior Advisor for Technology and Innovation to the National Economic Council Director in the White House, “Entrepreneurial Administration”, Boston University Law Review, 97 B.U.L. Rev. 2011, December 2017, Lexis

Introduction

A core failing of today's administrative state and modern administrative law scholarship is the lack of imagination as to how agencies should operate. On the conventional telling, public agencies follow specific grants of regulatory authority, use the traditional tools of notice-and-comment rulemaking and adjudication, and are checked by judicial review. In reality, however, effective administration depends on entrepreneurial leadership that can spearhead policy experimentation and trial-and-error problem-solving, including the development of regulatory programs that use non-traditional tools.

Entrepreneurial administration takes place both at public agencies and private entities, each of which can address regulatory challenges and earn regulatory authority as a result. Consider, for example, that Energy Star, a successful program that has encouraged the manufacture and sale of energy efficient appliances, is developed and overseen by the Environmental Protection Agency ("EPA"). 1 After the EPA established the program, Congress codified it and, eventually, other countries followed suit. 2 By contrast, the successful and complementary program encouraging the construction of energy efficient buildings, the well-respected Leadership in Energy and Environmental Design ("LEED") standard, was developed and is overseen by a private organization. 3 After it was developed, a number of governmental authorities endorsed it and [\*2013] have encouraged LEED-certified construction projects with both carrots 4 and sticks. 5 Significantly, although neither the Energy Star program nor the LEED standard were originally anticipated by any regulatory statute, both have had tremendous impacts.

The Energy Star and LEED case studies exemplify the sort of innovative regulatory strategies taking root in the modern administrative state. 6 Despite the importance of entrepreneurial administration in practice, scholars have failed to examine the role of entrepreneurial leadership in spurring policy innovation and earning regulatory authority for an agency (or private entity). 7 This oversight is most unfortunate in the case of technologically developing fields where experimental regulatory strategies - as opposed to traditional notice-and-comment rulemaking or adjudication - are often essential. 8 In short, administrative law needs an account of agency action that explains why entrepreneurial leadership matters in government and how agencies should operate. 9

[\*2014] This Article: explains that the conventional view of agency behavior - following the specific direction of Congress or the President and using notice-and-comment rulemaking or adjudication processes - does not capture how public agencies and private entities develop innovative regulatory strategies and earn regulatory authority as a result. In particular, this Article: explains how governmental agencies like the EPA and private entities like the United States Green Building Council ("USGBC") (which oversees the LEED standard) depend on entrepreneurial leadership to develop experimental regulatory strategies. It also explains how, in the wake of such experiments, legislative bodies have the opportunity to evaluate regulatory innovations in practice before deciding whether to embrace, revise, reject, or merely tolerate them. To be sure, such experimental strategies are not always preferable to traditional administrative rulemaking and adjudication, but considering experimental strategies and evaluating whether they would be more effective than traditional regulatory approaches is.

Legal scholarship on experimental regulation is well-developed in the context of states serving as laboratories of democracy. 10 Scholars have not, however, discussed the significant role that federal agencies and private bodies can play in experimenting with regulatory strategies in advance of congressional action. 11 Scholars have also failed to examine the role of entrepreneurial leadership in developing successful experiments. This Article: does just that, highlighting the importance of entrepreneurial leadership in government, discussing a number of [\*2015] emerging regulatory experiments, and suggesting how Congress should evaluate such experiments.

This Article: proceeds in four parts. Part I examines the traditional model of regulation and the emerging alternative models of agency action through co-regulation, developing best practices through convening, and encouraging private regulation. In so doing, it underscores that entrepreneurial leadership and a culture of experimentation and trial-and-error learning is essential to developing the best solution. Part II discusses the relevant criteria for evaluating such experiments and examines potential objections to the earned regulatory authority model. Part III discusses four case studies of experimental regulatory strategies: (1) the USGBC's development of the LEED standard; (2) the Federal Trade Commission's ("FTC") oversight of information privacy and data security practices; (3) the National Institute of Standards and Technology's ("NIST") development of a strategy for cybersecurity readiness; and (4) the Department of Health and Human Services' ("HHS") oversight of electronic health records. In all of these cases, the private body or federal agency acted to oversee an emerging technology or issue (often in advance of explicit congressional direction and guidance), allowing Congress to observe the strategy in action and evaluate it after the fact. Part IV examines the concept of policy entrepreneurship, explaining both the barriers and opportunities it faces in the modern administrative state.

I. The Traditional Model and Emerging Realities

The traditional model of regulation relies on notice-and-comment rulemaking and agency adjudication. 12 Under this model, the output - the starting point for traditional administrative law analysis - is generally a form of positive law developed and enforced by a government agency through traditional tools (rulemaking or adjudication). 13 As Professors Charles Sabel and William Simon have observed, this model, "pejoratively called command and control, is identified with rule-bound bureaucracy and deference to ineffable expertise." 14

The traditional model can be depicted neatly as a hierarchy. 15 Congress sets a specific policy direction and empowers an administrative agency to implement that policy. The agency, in turn, uses either its rulemaking or adjudication authority to implement that direction. Finally, owing to the agency's expertise and congressional authorization, courts review the agency's action with deference.

[\*2016] Driven by technological changes and globalization, regulatory agencies increasingly are looking to alternative regulatory strategies, many of which fit under the "New Governance" label. 16 In some cases, innovative regulators experiment with new approaches to address emerging issues and fill gaps in the existing regulatory regime. In other cases, an agency might experiment with a co-regulatory strategy (where the agency integrates its authority with private sector efforts); exercise its authority in creative ways, such as developing best practices through convenings; or rely on private regulation. In that last category, as is the case with Energy Star, the government agency (or private entity, for that matter) can certify compliance with best practices, thereby sharing valuable information with the public and shaping norms of behavior. 17 In each of the above examples, the regulatory agency acts not within a hierarchy, but within a network. 18

[\*2017] The traditional, hierarchical model follows a familiar, step-wise approach to regulation. 19 The first step is establishing a standard of conduct. 20 The second step is implementing that standard of conduct, generally through a monitoring regime. 21 The final step is enforcement, in which parties are sanctioned for any failures to comply with the rules. 22 This model of regulatory action still holds strong in some areas, but it is no longer - and should not be - the exclusive strategy for addressing emerging policy issues.

In the emerging, networked environment, regulatory agencies find themselves with a range of options and tools for developing standards of conduct, monitoring behavior in the marketplace, and enforcing or encouraging compliance. The conversation around such emerging solutions has taken a number of forms, sometimes under the headings of "responsive regulation," "experimentalism," or "New Governance." However framed, there is a pressing need for more adaptable approaches that can operate effectively in technologically changing environments or in fields where the circumstances differ across geographic (or other) contexts. 23 To address emerging challenges, regulatory agencies will increasingly be called upon to experiment with non-traditional regulatory strategies, requiring legislatures to monitor and evaluate the effectiveness of innovative regulatory initiatives after the fact.

A. The Limits of the Traditional Regulatory Approach

The traditional model of regulation is coming under strain in the face of increasing globalization and technological change. 24 Consider, for example, the traditional model of drug and medical device approval used by the Food and Drug Administration ("FDA"). The legacy model of regulation envisioned the FDA reviewing a drug and making an up-or-down decision on whether to approve the marketing of the drug. 25 By putting all of the pressure on the front [\*2018] end (ex ante), the legacy model creates two sets of challenges: (1) the pre-approval process takes a long time, costs a lot of money, and, in some cases, unnecessarily delays access to potentially beneficial drugs; and (2) the lack of a post-approval review process allows drugs to "be marketed despite evidence that they were doing unanticipated harm." 26 Unfortunately, the second type of error - a lack of responsiveness to on-the-ground realities - reinforces the first type of error, creating more pressure on the FDA to withhold approval until it satisfies itself that the relevant drug or device will not cause harm. 27

Congress is well aware of the limits of traditional ex ante regulation. In the food and drug arena, it has worked to update the FDA's model of regulation. In the Food and Drug Administration Amendments of 2007, for example, Congress gave the FDA increased flexibility to approve drugs and require ongoing research as to how the drugs work, called for an improved Adverse Event Report System at the agency, and mandated a framework for monitoring drug efficacy in practice. 28 More recently, the FDA established fast-tracks for approving drugs and medical devices that promise life-saving breakthroughs. 29 As the FDA explained with respect to the medical device review process, "reducing premarket data requirements while increasing postmarket requirements for devices subject to a [Pre-Market Approval], when appropriate, can assist the FDA in making medical devices available to patients sooner than if following the traditional premarket review pathway." 30

[\*2019] This Article: , while sympathetic to the need to reform existing regulatory structures, does not focus on this issue. 31 Rather, it explains how considerable flexibility for a range of alternative options exists within current structures and is already being used by agencies and private entities to great effect. As such, this Article: describes the underappreciated model of earned regulatory authority, calls for a more self-conscious use of this model, and explains how agencies can spearhead and implement this model successfully through entrepreneurial leadership and a culture of trial-and-error problem solving. 32

The role of a more imaginative approach to regulation relates back to the "responsive regulation" movement led by Ayres and Braithwaite. On their account, regulatory strategies can be conceptualized as an "enforcement pyramid," with "persuasion" on the bottom and "license revocation" at the top (as the regulatory equivalent of the death penalty for a regulated firm). 33 In all cases, a responsive regulation approach emphasizes dialogue and engagement around the impact of regulatory efforts in practice. 34 In so doing, it underscores that regulators need not always use their traditional tools (notice-and-comment rulemaking and adjudication). Rather than reflexively adopting traditional approaches, regulatory agencies can (1) embrace and oversee self-regulation (enforced self-regulation or co-regulation), (2) convene stakeholders to develop best practices, or (3) persuade parties to develop private regulatory initiatives. The next three Sections discuss each strategy in turn.

[\*2020]

B. The Promise of Co-Regulation

Even when using its traditional authority, an agency can operate more nimbly and effectively by integrating its efforts with private bodies who have expertise in the field. Where that integration involves the explicit embrace, oversight, and enforcement of actions by private bodies, the model of regulation is aptly described as "co-regulation." 35 For a successful use of co-regulation, consider the FCC's use of frequency coordinators to assign rights to use the wireless spectrum. As I have explained previously:

One notable self-regulatory program that the FCC has overseen is the use of frequency coordinators, which manage voluntary cooperation in the use of point-to-point microwave links and private land mobile radio systems. In that context, the coordinator evaluates requests for new licenses and certifies that such new licenses will not cause undue interference to established users. Consequently, while the FCC is the authority that grants or denies licenses as a formal matter, it routinely relies on and defers to the judgment of the frequency coordinator. This deference to the frequency coordinator facilitates cooperation around the use of the relevant licenses. 36

The importance of this co-regulation model is that the FCC's delegation of authority enables practical problem-solving on the ground by the frequency coordinator. As Dale Hatfield, a former Chief Engineer at the FCC, explained, this system works because it encourages the local engineers to "sit down together, solve these problems, and say let's figure out how to do it," limiting the need for the FCC to use its backstop authority. 37

The FTC's partnership with the Better Business Bureau's National Advertising Division ("NAD") operates in a functionally similar fashion to the FCC's use of frequency coordinators. 38 Notably, the NAD has developed an [\*2021] effective model of dispute resolution around misleading advertising issues, deciding an array of issues and referring cases, where necessary and appropriate, to the FTC. 39 Because the NAD has developed such a trusted program, FTC leaders have praised its work and relied on it to carry the laboring oar in this area, 40 leaving the FTC's residual authority as a backstop. In particular, the NAD refers cases to the FTC where a party refuses to participate in its process or comply with a decision. 41

Learning from the NAD model, the European Union is working with the European Advertising Standards Alliance to develop a similar approach to overseeing false advertising claims. 42 In this case, however, the governmental authority is actively involved in developing and supporting this body rather than integrating its work after the body developed on its own. 43 In short, government can either embrace existing bodies as part of a co-regulation strategy or stimulate and steer the development of new ones.

C. The Role of Best Practices and Agency Convened Efforts

For many regulatory agencies, the opportunity to act as a "convenor," to develop best practices, and to create "soft law" or norms is an important part of their mission. As former FTC Chair Bill Kovacic explained with regard to the FTC, "Congress gave the FTC capacity to serve as a convenor - to engage in a diverse array of activities that facilitate norms development," including "what we now call "soft law' measures (e.g., self-regulatory standards, proposed guidelines)." 44 In particular, Congress specifically authorized the FTC to collect information and develop reports on topics not immediately related to cases or regulatory matters before the Commission. 45 In Kovacic's view, the FTC has used its convening authority effectively, "improving understanding, building consensus, and supplying focal points for norms development" through thoughtful reports that distill key issues. 46

[\*2022] For a range of agencies, the role of developing and championing best practices is on the rise, 47 reflecting a number of trends. First, many agencies find themselves without sufficient authority to promulgate binding rules as new technologies emerge. Second, even where an agency may have formal authority, it might be reluctant to use it in the face of an emerging technology where it needs to act more quickly than formal notice-and-comment rulemaking allows. Third, the agency may lack sufficient confidence that a prescriptive rule is warranted and thus leaves open a range of options, merely narrowing the field of possibilities and pointing entities in the right direction. 48

To develop best practices effectively, an agency must invest significant resources in the enterprise. Stated generally, this effort involves "horizontal modeling rather than hierarchical direction" and is "a method of regulation in which central administrators provide advice and disseminate information, instead of mandating a one-size-fits-all regulatory scheme." 49 In an increasing number of cases, best practices focus not only on U.S. firms, but also those across the world, requiring that the regulatory agency coordinate its international counterparts. 50 Moreover, to develop emerging best practices, it is important that agency staff take the time to learn the details of "the regulated entities first-hand, develop a strong sense of emerging processes, and … [share] knowledge of these processes with staff at other locations." 51

Where an agency (or a private entity) identifies and disseminates a best practice, it acts as a "norm entrepreneur." 52 As discussed in Part III, the FTC has performed this role in the online privacy and data security contexts, articulating and recommending a set of best practices. 53 One virtue of this role - like soft law more generally - is that it may well make the adoption of more formal regulation less necessary. 54 To the extent that the articulation of the relevant [\*2023] norm itself does not overcome the collective action problem and catalyze compliance with a norm, a certification regime (like Energy Star) for those who are compliant (along with naming and shaming) might do so.

One path for catalyzing compliance, which can be labeled as "jawboning" or "threats," involves the use of apparent legal authority - say, opening up an investigation - to achieve a desired result. In a provocative article, Professor Tim Wu defends the use of "threats," calling for norm entrepreneurship by agency leaders and the development of limiting principles for the practice. 55 In criticizing Wu's argument, some commentators have characterized it as condoning lawless conduct. 56 In that spirit, I previously criticized the FCC's use of its merger review authority to secure outcomes in other contexts that were not specifically related to the merger. 57 I also called the FCC's use of "arm twisting" controversial when done without full transparency and a willingness to take formal action. 58 Finally, I noted that the tactic is "dangerous" if the agency is not willing and able to follow through with formal regulation if the called-for behavior does not take place, as the meaningless nature of the threat will become plain and the agency will lose credibility. 59

Any agency that develops best practices should be aware of the potential risks of such an effort. For starters, if an agency's identified best practices are allowed to become stale, some private actors might stick with them and fail to improve their practice. Second, given that there is no judicial oversight of best practices development, 60 it is important that agencies pre-commit to a level of procedural regularity and fairness in how they develop them. Third, without either carrots or sticks related to best practices, an agency may find it difficult to generate attention or catalyze compliance. 61

[\*2024]

D. Private Regulation

As exemplified by the LEED building standard, a private regulatory initiative can drive behavior toward a social goal. Given the need to respond to emerging issues more adaptably than traditional regulatory processes allow, public agencies may be tempted to rely on private bodies. 62 In the internet environment, for example, a range of issues are managed by multi-stakeholder organizations, which use "dialogue to develop voluntary norms and best practices." 63 Similarly, in the environmental field, a range of "private activity generates pressure on environmental behavior without resulting in a statute, regulation, agency enforcement action, or court decision for review by scholars and policymakers." 64

The role of private, multi-stakeholder efforts in internet governance is the U.S. government's official policy. 65 Since the development of the internet's basic technical standards in the 1980s and 1990s by groups like the Internet Engineering Task Force ("IETF") and the World Wide Web Consortium ("W3C"), "these entities have largely established the norms and standards for the global internet, but they are little known to the general public." 66 The U.S. government recently fully embraced this model, recognizing the need for internet policy and governance issues to be developed in an adaptable and global fashion. 67 This embrace includes supporting the Internet Corporation for Assigned Names and Numbers ("ICANN") as an independent, international body to oversee the internet's numbering system. 68

In the internet context, two private regulatory efforts bear notice, as both exist in tandem with legal and regulatory oversight. First, the Copyright Alert System (overseen by the Center for Copyright Information) was a cooperative effort between broadband providers and content providers focused on addressing [\*2025] piracy in peer-to-peer networks. 69 This initiative, which existed for four years, 70 provided some measure of guidance to the broadband industry on what sort of "repeat infringer" policy was reasonable. 71 In light of recent court decisions holding a broadband provider liable for failing to develop an appropriate repeat infringer policy, the guidance from this organization could be considered best practice and protect a provider from liability, 72 although its cessation of operations may limit its impact. Second, the Broadband Internet Technical Advisory Group ("BITAG") is a multi-stakeholder organization that seeks to define best practices and broadband network management ahead of any FCC action under its network neutrality regime. 73 In its most recent regulatory decision on network neutrality, the FCC highlighted its openness to "obtaining objective advice from industry standard-setting bodies or similar organizations," specifically citing BITAG as an example. 74

Both the Center for Copyright Information and BITAG relied on a mix of industry representatives and public interest advocates and operated in an open, transparent, and consensus-based manner. 75 Like frequency coordinators and the [\*2026] NAD, the bodies confronted the challenge of earning their legitimacy and claim to regulatory authority. If such efforts succeeded, the FCC and copyright courts would regard their guidance as meaningful, just as the FTC and courts do with respect to the actions of the NAD. 76

In the environmental realm, the Marine Stewardship Council ("MSC") is an instructive case study on how a multi-stakeholder private regulatory initiative can have a major impact. The MSC, founded by the World Wildlife Fund and Unilever, was launched to address the concern about fisheries operating in a sustainable fashion. 77 As one commentator explained, "the MSC administers standards for sustainable fisheries, updates the standards periodically with input from a stakeholder advisory group, evaluates fisheries, and allows those fisheries that meet certain criteria to label their fish as MSC-certified." 78 The MSC standard focuses on three core concerns: (1) maintaining sustainable fish stocks; (2) minimizing any adverse environmental impact; and (3) managing the fishery effectively, including compliance with relevant legal requirements. 79 Under the MSC-administered regime, independent private auditors must assess compliance with the relevant standards and compliant products can be labeled as such. 80 Indeed, the MSC regime allows any organization with concerns related to certification to make a formal objection during the certification process. 81

[\*2027] The MSC provides a powerful example of how private regulation can work even when not reinforced by public regulation. 82 By 2012, sixty percent of the fish caught in U.S. fisheries for human consumption were MSC-certified and major corporations, such as Wal-Mart and McDonald's, had committed to selling only MSC-certified, wild-caught fish. 83 Moreover, the MSC's private regime drove compliance with the nonbinding Code of Conduct, developed by the United Nations Food and Agriculture Organization, by making it part of its requirements. 84 After surveying this regime and formal regulatory efforts to address the issue, one commentator concluded that the MSC model was more successful than traditional regulatory efforts in this area and that "private regulation is best situated to address the complex problem of fisheries depletion." 85

In short, private regulatory efforts, such as those led by multi-stakeholder organizations, can influence private behavior whether they operate in tandem with public regulatory oversight or in a vacuum created by a lack of regulatory oversight. Whether they operate in the backdrop of public oversight or as a standalone effort, private bodies need to establish their legitimacy to influence behavior on the ground. To do so, they must have sufficient independence from those they oversee, enabling both regulators and consumers to trust their judgments (including determinations of compliance). 86

[\*2028]

E. Hacking the Bureaucracy

In most situations, Congress and agencies think along traditional lines and agency leaders continue on the established path of agency regulation, under-utilizing the alternative models discussed above. 87 There are a number of reasons for this dynamic, including the power of "path dependency and bureaucratic entrenchment." 88 Even more powerfully, the incentives for policymakers are often to avoid Type 1 errors - those visible errors of commission - that arise when trying a new strategy that might fail. By contrast, the hidden Type 2 errors - ones of omission - are permissible and a regular feature of bureaucratic inertia. 89

On one account, the challenge of leading a bureaucracy is captured by the reality that governmental employees, who enjoy civil service protection, can tell their politically-selected leaders, "I was here long before you arrived and will be here long after you are gone." In practice, such explicit defiance is the exception. Regardless of whether bureaucratic inertia is willful or based on an entrenched tradition governmental agencies are built to continue the same course. Consequently, any course corrections require energetic leadership. 90 And governmental employees are generally conditioned "to be quiet, take orders, and do their jobs in a repetitive way." 91 On the positive side, governmental employees tend to have a service orientation and are mission driven, meaning [\*2029] that effective engagement around the mission and purpose of the agenda can catalyze innovation and collaboration. 92

Bureaucratic inertia and autopilot administration not only prevent innovative programs from being developed, but also can lead existing programs to be administered badly. Take, for example, the development of the healthcare.gov website. After Congress passed the Affordable Care Act, a health care economist, David Cutler, encouraged the White House to treat the administration of the law more like "launching a start-up than passing a law." 93 In particular, Cutler made clear that the default strategy - using the existing personnel at the Center for Medicare and Medicaid Services ("CMS") - for administering the law was a recipe for failure. 94 In an assessment ignored by the White House, he explained that CMS "is demoralized, the best people have left, IT services are antiquated, and there are fewer employees than in 1981, despite a much larger burden." 95

Cutler's call for an entrepreneurial approach to implementing the Affordable Care Act was rejected by President Obama. 96 Perhaps fearing the need to manage political warfare with House Republicans or responding to the HHS' interest in protecting its turf, President Obama agreed to, in Cutler's words, pile "new responsibilities onto a broken system." 97 As this episode underscores, even when the current system is flawed, the pressure to use it is powerful. As a result, the healthcare.gov website cost $ 800 million to develop, whereas Twitter, which serves a similar number of users and is of comparable complexity, cost only $ 60 million. 98

The redeeming part of the healthcare.gov story is that it demonstrates that treating a government project like a startup can work. After the failed rollout of healthcare.gov (which only enabled six people to sign up for insurance on its first day), President Obama essentially embraced Cutler's recommendation, [\*2030] authorizing Todd Park, Mikey Dickerson, and a team of entrepreneurs to operate in a new structure that was called "tech surge." 99 This project, like a good startup, approached the challenge of building an effective website from first principles. Rather than ask how the government had done IT projects before, the team innovated (for government) in a number of important ways, including using Amazon Web Services to support the site. 100 In developing the new website, it broke from the traditional bureaucratic process of "waterfall" development (where every step is prescribed and locked-in) and used "agile" development (where the process is iterative and evolves along the way). 101 Finally, the team built a login system for $ 4 million (with annual maintenance costs of $ 1 million) to replace the initial version that did not work well and cost $ 250 million to build (with $ 70 million annual maintenance costs). 102

In an important legacy of this effort, Park and Dickerson continued to work in government after fixing healthcare.gov, developing the new U.S. Digital Service ("USDS"). 103 The goal of the USDS is to lure a range of talented technology professionals to the federal government, including data scientists, product managers, and product designers. 104 The USDS, in turn, provides guidance to government agencies on questions like how they can use Amazon Web Services. 105 In short, the USDS supports entrepreneurial leadership in government; and as Park said, it develops "people who can hack the technology, as well as people who can hack the bureaucracy." 106

The healthcare.gov story now has two parts. The first is the cautionary tale about government's traditional inertial default setting - that is, to do things as they were done before. The second underscores that entrepreneurial leadership [\*2031] in government is both possible and important, and can lead to transformative results. 107

The positive legacy of the healthcare.gov story is that entrepreneurial leaders in government can free their agencies from "the mental grip of conventional structures on the capacity to consider alternatives." 108 In so doing, such leaders can facilitate the development of alternative regulatory strategies. Similarly, governmental agencies face the challenge of overcoming the institutional bias that "experts may myopically focus on issues within their area of expertise and thereby fail to recognize that a decision would benefit from accessing other bodies of knowledge or ways of thinking." 109 In short, an important role of entrepreneurial leadership in government is to examine issues through the lens of first principles. 110

The concept of policy entrepreneurship recognizes that an entrepreneurial mindset and skillset can be applied to governance to foster innovative results. Professor Adam Sheingate, for example, defines the concept as the "skillful manipulation of politics [that] somehow results in the creation of a new policy or a new bureaucratic agency, creates a new institution, or transforms an existing one." 111 This type of leadership can also be seen in the development of, for example, the MSC program, the FTC's oversight of online privacy, and the Energy Star program. In a world where the best solutions may well require new models of regulation, it is critical that agency leaders experiment with new solutions. 112

[\*2032] A significant hurdle for entrepreneurial leadership in government - and a foundation of the inertial default setting - is the lack of acceptance of failure as an outcome. In practice, this means that governmental agencies often reflexively turn to traditional regulatory models and do not consider untested alternatives (often out of fear of failure). 113 This instinct mirrors the old private sector saw that "nobody got fired for buying IBM." 114 Citing the fear of failure and risk aversion, former Massachusetts Governor Deval Patrick explained, "there may be no industry less susceptible to innovation than government." 115 There are, however, exceptions, including the Defense Advanced Research Projects Agency ("DARPA"), which makes a conscious effort to promote a "risk-taking and failure-tolerant culture." 116

In the entrepreneurship environment, failure is a normal state, providing data, an opportunity to iterate, and a spur to refine a product offering. 117 Consequently, entrepreneurs celebrate the need to "fail fast" on new experiments by trying them on a small scale and determining as quickly as possible whether they can work. 118 As two advocates of innovation in government put it, "[a] [\*2033] culture of innovation means continuously exploring and adopting new processes in an ecosystem where risk is incentivized, not precluded." 119 Similarly, entrepreneurial leadership in government authorizes calculated risk-taking and, more importantly, provides cover for trial-and-error learning when the trials do not produce the envisioned results. 120 Unfortunately, leaders who support experimentation and are willing to accept the inevitable failures, are the exception, not the rule. 121

The basic entrepreneurial methodology of experiment-measure-iterate is captured in Eric Ries's classic book, The Lean Startup. 122 A core thesis of the book, widely accepted in the entrepreneurial community (and ignored by most legal scholars), 123 is that companies should develop and market a "minimum viable product," solicit feedback from actual customers, and improve it based on that data. 124 At Facebook, this philosophy was adopted and embodied in its mantra, "done is better than perfect." Citing that mantra, one commentator explained that "had Facebook waited so much as a year to perfect its model, the company might very well be where MySpace is today." 125

The Ries philosophy is famously captured in a feedback loop representing the cycle of innovation. 126 The core idea is to embrace experimentation, gather data [\*2034] (whether it signals success or failure), and iterate. 127 The lean startup model, represented by the following diagram, focuses on taking ideas from prototype to feedback to improvement: 128

This lean startup model echoes the style of software development championed by open source software, which calls for releasing code that can be viewed and improved by a community of users and developers. In what Eric Raymond dubbed "Linus's Law," in honor of the founder and coordinator of Linux, the open source maxim is "given enough eyeballs, all bugs are shallow." 129 This approach has spread far beyond open source, enabling "business webs where focused companies partner others to innovate and create value." 130 Although this [\*2035] approach and a commitment to prototyping and testing solutions is novel in government, it is starting to take root, with promising results. 131

With respect to the fear of failure, government operates quite differently than the entrepreneurial world. In government, the perceived costs of failure are sufficiently high that many governmental leaders decline to introduce a new initiative for fear it will fail or refuse to admit that an existing program is failing, even though that admission is a necessary predicate for improvement. To be sure, there are cases like the initial healthcare.gov rollout where the failure is readily apparent and must be fixed. In other cases, however, governmental leaders stand by programs where the data backing up its effectiveness is either uncertain or doubtful.

For an instructive case of governmental leaders refusing to acknowledge the limitations of a program, consider the case of the EPA's Performance Track program. When created, the program was supposed to highlight those companies with stellar environmental records. 132 In practice, however, it ultimately became, as EPA Administrator Lisa Jackson put it, "just one of those window-dressing programs that has little value." 133 Similarly, the EPA Inspector General criticized the program as ineffective, noting that it did not provide "a new model for achieving" its stated goals and very few companies met their stated goals. 134 Nonetheless, the Bush Administration did not make any real changes to the program before the Obama Administration cancelled it. 135

The Performance Track program story, like the failure to acknowledge the failings of the healthcare.gov website earlier, underscores that the hesitancy to acknowledge failure is a major challenge in governmental administration. If governmental leaders refuse to acknowledge failures, they undermine the ability to learn - and iterate - from mistakes and instead allow failed programs to [\*2036] continue during a period of denial. 136 Or, as Lawrence Summers put it while reflecting on the healthcare.gov debacle, it is crucial to resist the "overwhelming temptation for everyone involved [in a project] to circle the wagons and promise rapid repair so as to hold critics at bay." 137

Another challenging dynamic for governmental leaders to address is the impact of unconscious bias. It is normal for those involved in a project to believe that it is working, following what Nobel Laureate Daniel Kahneman calls "confirmation bias." 138 As one commentator put it, a challenge for those evaluating regulatory experiments is that those "deeply involved in the implementation of a particular regulation are likely to see the benefits of such a project far more clearly than the costs." 139 As commentators have explained, there are a number of strategies for overcoming this bias, including using red team-blue team exercises, appointing a Devil's Advocate, and creating a process for deliberate decisionmaking. 140 Of course, as happened in the Performance Track situation, new leadership is able to bring a fresh perspective. Ideally, however, existing leaders can step back and ask, "if a new leader came in and took a fresh look, what would she do?" 141

[\*2037] The role of entrepreneurial leadership in encouraging candid reflection and criticism is essential. As former FTC Chair Bill Kovacic and David Hyman explain, agencies develop an institutional culture and a reputation (or a brand, as they put it). 142 In some cases, that brand can be one of reliability and commitment to data-driven decisionmaking. An important role of an entrepreneurial leader is to develop and maintain that commitment. In the case of Underwriters Laboratory ("UL"), for example, its early leadership did just that, building up "UL's reputation for reliability by creating organizational structures, administrative routines, and oversight systems designed to prevent mistakes and misconduct." 143 To get past the natural status quo bias, an entrepreneurial leader should welcome diverse ideas, criticism, different options, and experimentation. 144 In Part II, to explain how policy entrepreneurship can earn regulatory authority, I discuss how experimental initiatives need to establish their effectiveness, legitimacy, and accountability to be embraced as lasting regulatory regimes.

#### It also improves overall resource efficiency and investigation accuracy.

Almudena Arcelus 21, Principal at Analysis Group, Mihran Yenikomshian, Vice President at Analysis Group, and Noemi Nocera, Associate at Analysis Group, “Mitigating Antitrust Concerns When Competitors Share Data Using Blockchain Technology”, Harvard Journal of Law and Digital Technology, Harv. J.L. & Tech. Dig. (2021), Spring 2021, Lexis

C. Transparency for regulators

Implementing transparency in the network design can improve regulators' ability to investigate claims of antitrust violations. First, blockchain networks could be designed to provide antitrust investigators with a clear audit trail of the life cycle of an asset as it moves through a firm's supply chain, providing critical information to investigators as they assess when and how a firm's products transformed from raw materials to a finished good. Second, networks can be designed to provide investigators with more accurate, reliable, and comprehensive transaction data across an entire firm, rather than the piecemeal and inconsistent data that regulators often receive. Last, we could imagine the development of a blockchain, potentially accessible only by select parties or regulators, that contains industry-wide transaction data, which could provide an unmatched tool for investigators. Furthermore, the standardized data format in a blockchain may lead to faster resolution of potential antitrust investigations.

Whether or not these particular strategies would be effective in a real-world setting will depend on the industry or business context, the design of the blockchain network at issue, and the effectiveness of governance and regulatory oversight.

V. CONCLUSION

Because of its potential to change the way many governments' and firms' services currently operate, blockchain technology has attracted extensive press coverage. Although antitrust concerns exist in relation to blockchain adoption and data sharing between competitors (including access to information, collusion, abuse of dominance, and enforcement), blockchain serves mainly as a data management tool. How it affects competition will depend on network design and regulatory oversight, among other things. When examining antitrust concerns, industry observers as well as regulators should assess blockchain technology according to its specific implementation and its role in the wider framework within which it is used.

### 1AC---Plan

#### Plan: The United States federal government should prohibit anticompetitive horizontal control by participants collaborating to ensure blockchain survival.

### 1AC---Solvency

#### Contention 3 is SOLVENCY.

#### Prohibiting anticompetitive practices by the blockchain nucleus creates a principled basis to apply antitrust to distributed ledgers without overbroadening liability for all users.

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2 BLOCKCHAIN’S LEGAL FICTION

In this section, I introduce the theory of granularity and outline how it enables the application of antitrust law to blockchains. Transactional by nature, that theory aims to explain public permissionless blockchains beyond the simple cost reduction framework. It seeks to translate accurately the governing reality of such blockchains, creating for the purpose a new legal fiction that encapsulates blockchain without forcing it into inadequate boxes.

2.1 Dynamics of Blockchain Governance

The theory of granularity, to which one may want to provide a semantic explanation, frames blockchain governance as a new transactional institution. By doing so, it fills the gap created by the impossibility of applying the theory of the firm to public permissionless blockchains.

2.1.1 Semantic explanation

In “The Nature of the Firm”, Ronald Coase distinguished between organizations and organisms.3 While firms are organizations, blockchains are clusters of organisms that, by nature, are spontaneous. Their functioning must be analyzed and understood this way so that antitrust and competition law can be properly applied when necessary.

The present chapter introduces the theory of granularity for the purpose. Generally, the notion of granularity defines the size of the smallest element in a system - that is, an organism. Thus, this theory aims to analyze the role played by each component of a blockchain. Unlike the firm, where vertical control is exercised over its components, blockchains are made up of horizontal governance mechanisms. This reinforces the importance of each organism, as one cannot merely assume that they will follow one coordinated direction.4 One must then study blockchain’s smallest organisms, the role they play and their dynamism.5 It is only by analyzing the granularity level that blockchain governance can be properly understood.6

2.1.2 Understanding blockchain governance

Blockchain is a space in which different forms of power are being exercised. However, unlike the firm, in which one exercises a power of command and control, I have explained that no single actor can entirely control a public permissionless blockchain.7 As a result, multiple interests can compete within the same blockchain; they may even be opposed. Blockchain “contribute[s] to the realization of a number of individual objectives which no one knows in their totality”8 For that reason, one must study the different types of power that are generally found within public permissionless blockchains to understand which interests may eventually prevail over others. In doing so, we should keep in mind that “people who think the purpose of blockchains is to completely expunge soft mushy human intuitions and feelings in favor of completely algorithmic governance (emphasis on ‘completely’) are absolutely crazy.”9

I study blockchain power games by analyzing what I have described as the fifth blockchain level in Chapter 4: the governance layer. That level sits on top of more technical ones, and it appears to be central in defining the activities at the levels above. Furthermore, different constraints come into play in blockchain governance - namely, economic, political, logical, sociological, architectural and legal ones. Understanding how these constraints interact is a challenge; but it is essential in order to get a grip on who holds control over blockchain layer 1 and how that power is exercised over other participants.

A distinction between all three categories of public permissionless blockchain participants is helpful in this regard - namely, between founders or core developers (I will often present them together for the sake of simplicity), users and miners. I show that although each blockchain has its specificities, the above-mentioned groups will use the same mechanisms to express their preferences,10 and will encounter the same limits if they act on their own. Eventually, their powers may suffer from four constraints that Lawrence Lessig described with his “pathetic dot theory”: law, markets, social norms and architecture.11

As for private blockchains, I have explained that they mimic that structure to different degrees, depending on their original design. The closer they are to public permissionless blockchains, the less the theory of the firm will be transposable to them. The following developments then become relevant for public permissionless as well as private blockchains.

2.1.2.1 The power of founders and core developers'2

Blockchain founders and core developers are those who implement the original rules of a blockchain.13 They design the code software and determine which consensus protocol will be used.14

Although core developers work on the fourth level of blockchain - its infra- structure - they interact with other blockchain participants at the fifth level. Indeed, one may stress that the blockchain architecture limits their power, as they lose any form of direct control over other participants once they put the blockchain online.15 For most blockchains (but not all!),16 founders and core developers cannot unilaterally impose any changes17 or control who may propose protocol updates.18 For instance, any Bitcoin Improvement Proposals must be voted upon, according to miners’ computing power, before they get implemented.19 Indeed,“[t]he nature of Bitcoin is such that once version 0.1 was released, the core design was set in stone for the rest of its lifetime,”20 unless the majority agrees to change it.

The more participants are included in those voting procedures, the more decentralized that blockchain layer is.21 The opposite is also true. For instance, Decred22 and Tezos23 are cryptocurrencies with more centralized governance systems. One of Tezos’ principal characteristics is the ability to amend its consensus when necessary.24 The presence of off-chain and side-chain governance mechanisms, usually controlled by developers, should also be closely studied.25

It remains that core developers do not control who can use the blockchain at the platform layer26 or who can build applications on top of it.27 That is because blockchain founders and core developers cannot impose changes on the blockchain code, interface, application, data or benefice.28 Their main role is thus close to that of “advisors,”29 but their influence is limited by blockchain participants’ desire to maximize their own benefit, which may lead them, should they disagree with core developers, to refuse the implementation of new rules, to move to a rival ecosystem or to fork the blockchain.30 Social norms further limit them because they may fear not being influential enough to prevent hard forks.

Hard forks result in backward-incompatible software updates. When they do not obtain a sufficiently broad consensus among miners,31 hard forks cause the chain to split in two, permanently. Indeed, miners who do not follow the new block validation requirements will be unable to add their blocks to the latest version of the blockchain, as the core client will automatically reject them as non-compliant. Instead, a new chain of blocks will form, creating a split: two chains following different rules. These forks limit the core developers’ willingness to act against the interests of other participants.32 And core developers may also fear soft forks, although to a lesser degree. Soft forks happen when new rules are implemented, but when the blocks following the original rules are not rejected from the chain. These modifications are backward-compatible, accommodating miners who implement the change and those who do not. Nevertheless, one should underline that these limits on core developers’ power are linked to the decentralized nature of blockchain governance, which is not a necessary feature, but needs to be enacted.33 New blockchains may appear in which greater power is given to the founders and core developers.34

However, such blockchains will suffer from two inherent limits. First, the extent to which a (re)centralized blockchain could thrive remains to be seen.35 Such blockchains could deplete trust by confining power in the hands of a few, thus disincentivizing users from joining them. Second, a (re)centralized block- chain could function less efficiently than a truly decentralized one, because all its participants would no longer be in a position to improve it. This lack of efficiency, even if it only concerned certain types of transactions, could hinder these blockchains - which probably explains why, to this day, they have not prospered.

2.1.2.2 The power of users36

On permissionless public blockchains, users propose new transactions. Anyone can become a user.37 Users exercise substantial power over the blockchain, since their decision to use it (or not) is central to the blockchain’s economic and social value.38 Their influence extends from influencing transaction fees39 to providing additional value by developing and using applications running on top of the platform layer.40 They can also force hard forks on the blockchain.41 However, their power is limited by the fact they cannot (easily) exercise coordinated control, as their actions are highly decentralized and spontaneous.42 This creates an architectural limit and makes their behavior primarily dependent on prices.43

2.1.2.3 The power of miners44

On permissionless public blockchains, miners validate transactions assembled into blocks. Any participant can become a miner.45 Miners follow the rules encoded in the fourth blockchain level (e.g., the Bitcoin Core client).46 They can comply with a different set of rules, but they will then waste computing power by producing an orphaned block, thus losing potential rewards. Following the main client’s rules is miners’ dominant strategy.47 If they coordinate their behavior, miners can influence a blockchain by realizing a 51 percent attack,48 thus forcing a soft fork.49 The risk is higher when miners are grouped into mining pools.50 In such a scenario, the blockchain protocol is changed to loosen the rule-set enforced by full nodes.51 Such a change occurs when enough hashing power, or energy expended to mine a cryptocurrency, is devoted to it.52 The power of miners to start soft forks is nonetheless limited by both the blockchain’s architecture53 and social norms - they must convince blockchain participants operating as nodes to run the new version of the software.54 Miners also suffer from market constraints, as initiating a soft fork may decrease the value of the tokens they own.55 The price mechanism also guides their actions, creating a strong market-related constraint. Finally, even if a fork were created, the new community would have the strenuous task of convincing other users to join it.56 For example, Bitcoin had been forked over 100 times at the time of writing. Over 30 of them are considered failures, while another 29 projects are no longer capable of transacting. Among the remaining forks Just a few are considered valuable.57

2.1.3 The blockchain power game

This overall balance of power, common to all public permissionless block- chains, is the general analytical framework (as illustrated in Figure 7.1) within which to analyze whether one of these groups, on a case-by-case basis, has sufficient influence to qualify as control under antitrust or competition law.

On top of all that, core developers, users and miners may also store a copy of the blockchain ledger. When doing so, their computers are labeled as light nodes if they store only a subset of the blockchain ledger and full nodes if they store a copy of the entire blockchain.58

Although these nodes are passive and cannot be designated as actors in the blockchain, they ensure its integrity. This role carries power. First, blockchain participants who are nodes may alter their copy of the blockchain.59 Second, they may also (threaten to) validate blocks in which there is double spending.60 Their job is indeed to prevent users from spending the same token twice by allowing miners to verify the proposed transaction against a list of previous unspent transaction outputs. They protect blockchains value. However, their power is mainly limited by the fact that they cannot either control or influence transactions.61

This is the blockchain power game. It is well balanced, and technical solutions (called “layer 2” solutions) are constantly provided to maintain that balance. But these solutions are insufficient to maintain balance when different groups of blockchain participants come together to escape these constraints to the detriment of the broader ecosystem. When this occurs, they are exercising control over the blockchain.

2.2 The Blockchain Nucleus

Thus far, the theory of granularity has allowed me to determine the different forms of power enjoyed by blockchain participants. I must now detail how to identify a legal fiction controlling the blockchain.62 To this end, I explain what a blockchain nucleus is and then analyze its influence over other blockchain participants. 1 then describe how to define such a nucleus.

2.2.1 Usefulness and challenges

2.2.1.1 The nucleus

None of the three types of blockchain participants - core developers, users and miners - can impose their power on other groups to the point of taking complete control over the blockchain. Blockchains are indeed decentralized. They prevent the exercise of vertical power, and this differentiates them from firms in which a group, or sometimes even an individual, can control the other participants and “force them to collaborate,” so to speak.

That being said, even with horizontal and decentralized governance, a group of participants may achieve a form of control over the blockchain by collaborating, by circumventing (some of) the constraints imposed on them,63 and by changing them in the long run.64

I contend that such a coalition exists for each blockchain (at least, for the surviving ones),65 and I call it the nucleus. The nucleus includes all the participants who have a personal interest (albeit transiently) to collaborate toward the same long-term goal: ensuring the blockchain’s survival.66 Its members do not compete as they are, together, trying to maintain and expand their blockchain. Their short-term interests may diverge from time to time67 - for example, when two miners are racing to mine new blocks.68 Still, they seek to ensure blockchain integrity and systematically promote the same blockchain instead of other ones.

2.2.1.2 Usefulness

Assessing which participants have joined forces and are thus part of the nucleus is essential to determine who ultimately controls the blockchain. Put differently, it leads to identifying the participants that can be held liable for a breach of antitrust law when it is shown that they have anticompetitively exerted their influence.69 Identifying the nucleus amounts to creating a legal fiction to which the law can be applied, but also to which rights can be granted (see Figure 7.2).

The nucleus should indeed become a legal fiction that can be liable for anticompetitive practices, but also able to claim damages. In that regard, determining the nucleus size will prove central. It will prove useful in cases of anticompetitive practices directed at a blockchain nucleus. When a legal entity - whether a blockchain nucleus or a firm - infringes antitrust law and causes damages to another nucleus, the latter must have the means to introduce a legal action, stand by its rights and claim damages. Assigning liability and granting rights to blockchain ecosystems are thus two sides of the same coin.

3 DEFINING THE NUCLEUS SIZE

Courts and antitrust agencies will face the task of determining the nucleus size. The further away a participant will be from the nucleus’s center, the more difficult it will become to genuinely include her or him in the nucleus. With distance, it will prove harder to show that she or he could have influenced other participants’ behavior. Only a case-by-case analysis can elucidate this question. This analysis should nevertheless be based on concrete and quantifiable frameworks to ensure legal certainty, limit legal errors and reduce regulatory costs. To this end, agencies should focus their investigation on economic agents’ ability to exert a horizontal power of command and control. They should also consider their capacity to interfere with the blockchain’s economic value and influence norms.70

Let me be more specific. The first element that should be factored in to determine which participants are part of the nucleus is the technical ability to exert a horizontal quasi-power of command and control. One must assess each blockchain’s architectural characteristics to determine whether a few users may impose such decisions on others. The more a group of users can control others, the more they can single-handedly contribute to the block- chain’s survival, and therefore be considered part of the nucleus. In fact, the original design of a blockchain can give one of the three groups of users more or less power. It can put them in charge of implementing the execution of transactions, designate them as miners or even enable them to change the design a blockchain’s design unilaterally. Some blockchains might also use several mechanisms based on the platform layer to create governance (whether off-chain or side-chain).71

The second element is the ability of each participant to interfere with the blockchain’s economic value.72 When some users govern the pricing structures, the blockchain’s attractiveness or economic incentives, they have indirect control over the blockchain. This ability can be assessed by looking at technical elements. For instance, the capacity to change the size of each block, which may alter the number and types of transactions, is a sign of control. The same goes for the power to propose modifications to the core code to attract new participants. Finally, the more a participant has invested in the blockchain, the more he has an incentive to control its economic value.73 For that reason, previous investments in a blockchain can show agencies where to look for the nucleus.

The third element is the ability to influence a blockchain’s norms.74 Here, “norms” are defined as the “constraints imposed not through the organized or centralized actions of a state, but through the many slight and sometimes forceful sanctions that members of a community impose on each other”75 - that is, the unwritten rules that one often feels compelled to follow.76 The more a participant can incentivize others to behave in a certain way - on pain of rejection from the community - the more they exercise control over the blockchain’s general direction.77 For example, when core developers can influence other participants into accepting all of the modifications they would like to apply to the core (e.g., by arguing about the necessity for technical upgrades, security failures, bugs...), they effectively pilot part of the blockchain.

4 THE THEORY OF GRANULARITY IN ACTION

The theory of granularity would enable agencies to identify a blockchain’s nucleus. It would thus permit the creation of a legal fiction to which antitrust can be applied. In turn, this would impose new obligations upon blockchain participants while simultaneously giving them new means to challenge anti- competitive behavior. This theory would make it possible to analyze relevant markets and market power in antitrust proceedings. The theory of granularity would also make it possible to impute anticompetitive practices to a given set of blockchain participants.

#### Antitrust is limited by application only to the ‘firm’, defined by vertical control---modifying this with targeted prohibitions prevents blockchain centralization.

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The second part of this book is dedicated to artificial centralization - namely, anticompetitive behaviors that take place on blockchains or are facilitated by them. 1 contend that studying these practices is essential to make blockchain and antitrust law function as allies; indeed, no sustainable cooperation is possible without addressing (and preparing for) the situations in which mutual aggressions will occur.

To this end, I first analyze the extent to which antitrust laws are currently applicable to blockchains. I show that the theory of the firm is central to modern antitrust (Chapter 6) and that it cannot be transposed to all blockchains. For that reason, I propose a new approach - dubbed “the theory of granularity”- which allows for the creation of a legal fiction, placing blockchain’s activities (back) under the rule of law (Chapter 7). I explain that implementing that approach would benefit all the players in the blockchain ecosystem. This would clear the way for law enforcers to apply the rule of law and, in turn, would help eliminate the most harmful practices and encourage investments. Once the question of applicability has been cleared up, I turn to how antitrust law could be applied to anticompetitive practices. To this end, I begin by looking at collusive practices, whether they concern the blockchain itself (Chapter 8) or make use of the blockchain to affect the “real space” (Chapter 9). 1 explain that these practices tend to centralize decision making power and thus contribute to the “artificial” centralization of different levels of block- chain ecosystems and the economy.

Part 2 closes by examining abuses of market power. I first show that the analysis of market power on blockchain raises several difficulties, and I offer suggestions to overcome them (Chapter 10). I then analyze the practices that may result from such power and show that they are heterogeneous (Chapter 11). I draw a risk map. Finally, I conclude by studying different forms of blockchain concentration (Chapter 12). I draw a distinction between hostile and mutually agreed concentrations and explain how these may recentralize blockchain.

6. The theory of the firm

1 LEGAL FICTIONS

The concept of “legal fiction” is central to all legal systems, although regulation and court decisions refer to it only infrequently. I first explain its meaning by taking a brief detour through... trees and forests. I then show why it is useful for the present study.

1.1 Trees as a Legal Fiction

Christopher D. Stone is a law professor in the United States. In 1965, after a stint at the University of Chicago,1 he joined the University of Southern California Law School, where he taught several subjects, including public international law and property law. One day in the fall of 1971, as he was nearing the end of a class, he asked his students the following question: “What would a radically different law-driven consciousness look like?” As he walked out of the classroom, down the corridor to his office, he wondered why he had asked such a strange thing. “How could a tree have rights,” after all? Days went by, and still he continued to wonder. He soon became convinced that the answer to his question should be positive and decided to make it known.

In October that same year, he got in touch with the Southern California Law Review's editor in chief. The Supreme Court had taken up a case, Sierra Club v. Morton, that touched upon his question. Although Stone did not think he would be able to publish his article before the case went to trial, he hoped that Justice William O. Douglas - who had agreed to write the preface to a symposium issue of the Review - would at least see the draft of his article. His strategy paid off. Although the Supreme Court decision did not follow his thesis, Justice Douglas wrote a dissent in which he held that: “Contemporary public concern for protecting nature’s ecological equilibrium should lead to the conferral of standing upon environmental objects to sue for their own preservation. See Should Trees Have Standing?”2 In 1974, Stone published a book in which he developed his theory further.

1.2 The Concept of Legal Fiction

Christopher Stone’s book is a pillar of modern thinking on the subject. Of course, the argument concerning what is a legal person - or a legal object to which rights are attributed - did not originate in the 1970s. Since medieval times, scholars have considered what rights should be attributed to corpo- rations3 - a debate they centered on the question of legal fictions. A “legal fiction” is presumably defined as a fact created by courts or legislation to help legal ruling.4 Stone poses three conditions for the creation of a new one:

They are, first, that the thing can institute legal actions at its behest, second, that in determining the granting of legal relief, the court must take injury to it into account; and, third, that relief must run to the benefit of it.5

A company meets these criteria. Legal systems have recognized them as a legal fiction for hundreds of years.6 Corporations are, in the words of John Sherman, “artificial person[s] without fear of death, without a soul to save or body to punish;”7 and yet they are at the center of our modern economies. Not only has the law “been able to exploit to its advantage and to maximize for its needs” the fact that corporations are persons; but also, they can file legal actions, suffer from damages and benefit from relief. One can find traces of that recognition in the Rolls of British Parliament in 1444: “they [the Master and Brethren of the Hospital] by that same name mowe be persones able to purchase Londez and Tenementz of all manere persones.” Here, the Hospital was recognized as a legal fiction.

As for the process of establishing legal fictions - once the criteria are known to be met - three methods have been used,8 whether by the courts (in common law) or by the legislature (in civil law). The first is by assertion, where one thing is declared to be true. For instance, one may say that corporations are persons. The second is by assumption - more specifically, by an irrefutable presumption that may morph into a legal fiction. For instance, one may say that corporations are presumed to be persons. The third is by deeming. Here, X is deemed to be Y, which creates a disconnect between the reality before deeming the fact, and after.

1.3 Legal Fiction and Blockchain

If legal fictions are so convenient, why not create a multitude of them? The first objection is the necessity to agree on the desirability of the objective they ought to achieve. When courts use legal fictions to deny minorities their fundamental rights, the objective is achieved, but society does not come out better.9 The second objection relates to the balance of power. Bentham called legal fictions “the stealing of legislative power” when courts create them. The third objection relates to the difficulty of creating a coherent legal system. Companies are legal persons, and although they can be charged with criminal activity, these crimes are committed by physical entities (persons). One must therefore put in place adequate measures to ensure that any illegal activity by a firm can be put to an end (that its perpetrators cease to act). The fourth and final objection concerns the systematization of the law. The creation of legal fictions leads to the elimination of case-by-case analysis, at least partially. For instance, a firm will always be a legal person. That may create difficulties because it entails giving the firm all the fundamental rights given to us, humans.

On the other hand, creating legal fictions significantly improves legal certainty. First, this applies to the entities directly concerned, which as legal fictions may bring actions under their own name and can thus be compensated for any damage they might unjustly suffer. It also creates legal certainty for all those who interact with these legal fictions, as trading partners can indeed bring legal actions against them. It helps when legal fictions rather than individuals benefit from illegal practices and cases where several individuals are responsible for a behavior. In short, although the creation of legal fictions is an exercise that requires precision, it unlocks a range of potential interactions that can greatly benefit society.

I intend to explain that creating a new legal fiction for blockchains is essential to their decentralization. I have argued that decentralization is the capacity of subjects to determine their competence. That requires recognizing their legal existence before transferring such capacity. Doing so will also allow them to introduce proper legal actions and prevent illegal behaviors being turned against them.

2 THE FIRM IN ANTITRUST

Antitrust’s most common legal fiction is the firm. That legal fiction has developed little since the 1930s and Ronald Coase’s work. For that reason, one may wish to understand its premises to get a grasp of modem antitrust law.

2.1 The Theory of the Firm

The economic literature regarding the emergence of firms emphasizes the importance of transaction costs and the ability to reduce them thanks to top-down control. To this day, that theory has provided the bedrock for modem microeconomic analysis.

2.1.1 Highlights of Ronald Coase’s article

In 1937, when he was 21 years old, Ronald Coase published “The Nature of the Firm.”10 It contains no mathematics and is just 20 pages long, but it remains one of the most-cited publications in economic theory today." One can hardly overstate its impact.12

In it, Coase sought to answer the following question: if markets are efficient, why do firms emerge? Coase responded simply and elegantly, stressing that firms make it easier to organize certain exchanges. Coase introduced the concept of transaction costs without naming it - referring to all the expenses the parties must incur to complete a transaction - and explained that firms exist to minimize these costs.13 Indeed, a transaction involves different costs - the costs of finding economic agents on the market, negotiating, drafting a contract and so on. By internalizing these various externalities, firms reduce the cost of economic transactions. Firms were thus seen as an institutional device for the first time.14 Coase opened the firm “black box.”15

He then explained why firms reduce these costs. His explanations came down to the power of command and control.16 Firms are hierarchically organized: orders and directions are given from the top and trickle down the hierarchy. This reduces the scope for costly opportunistic behavior that might otherwise make transaction unprofitable. Put differently, the reduction of these costs is often achieved by collaboration between employees, while market participants outside the firm are compelled to compete.

In Coase’s words, “in place of the complicated market structure with exchange transactions is substituted the entrepreneur-coordinator, who directs production.”17 Reductions of costs follow, as “by forming an organisation and allowing some authority (an ‘entrepreneur’) to direct the resources, certain marketing costs are saved.”18 Coase thus defines the “firm” as “the system of relationships which comes into existence when the direction of resources is dependent on an entrepreneur.”19 On the contrary, this kind of efficiency is not found in the market, where free economic agents compete under emergent orders. One can thus define the boundary between the firm and the market: where control stops, the firm’s perimeter stops.

Coase particularly emphasized the firm’s ability to deal with contingencies during the performance of a contract. While firms manage long-term relationships, the market mainly permits short-term contracts based on the price mechanism.20 Thus, Coase argued, “it seems improbable that a firm would emerge without the existence of uncertainty”21 in the market. This assumption is based on the theory of incomplete contracts, according to which the contracting parties cannot anticipate all the situations that may arise during their contract’s performance.22 The firm helps in creating a way to settle disputes, which as a result reduces all the upfront costs related to the management of potential conflicts. Here again, Coase put the firm’s ability to exercise control at the center of his demonstration. He was awarded the 1991 Nobel Prize in Economics for “his discovery and clarification of the significance of trans- action costs and property rights for the economy’s institutional structure and functioning.”23

2.1.2 Coase’s impact

Coase’s article put transaction costs at the center of modem economics, making them “the ultimate unit of microeconomic analysis.”24 Although Coase complained in 1988 that the concept was “largely absent from current economic theory,”25 it has transformed the perception of the firm from a pro- duction function into a governance structure.26

This transformation of economic thinking heavily influenced Oliver Williamson, among many others.27 He researched the optimal design of firms28 and helped to open the firm “black box” even further, putting the firm’s “control instruments”29 and the “means by which to infuse order”30 at the center of his analysis. Williamson was awarded the Nobel Prize in Economics in 2009.

Alternative theories to those of Coase have also developed. For instance, incentive theory portrays the firm as an incentive system that uses various instruments combining authority, ownership and compensation to ensure that all employees contribute their best to the firm’s interests.31 The theory holds that firms must adopt institutional arrangements that ensure survival by aligning these incentives. They are thus a nexus of written and unwritten contracts between different economic actors in which each contractual relationship is an agency relationship, whose optimal configuration must be discovered. According to the proponents of this theory, there is no difference in nature between firms and the market. Both are said to depend on contractual relationships that do not imply any exercise of authority or control. As I will explain, none of these alternative theories is currently being used in antitrust and competition law.32

2.2 A Pillar of Modern Antitrust

Although Coase’s theory was developed in the 1930s, modem antitrust is still constructed on the basis of this theory and has not adapted to changes in the nature of firms. Why is that? One may find a satisfying explanation in the fact that the nature of economic hierarchies has changed little to this day. Even the apparition of online platforms and aggregators has not changed the structure consisting of minimizing transaction costs thanks to vertical power. In a nutshell, Coase’s theory is here to stay. As a matter of fact, and as we are about to see, all modem antitrust case laws and regulations are based on the above-mentioned article, whether in the United States or Europe. More specifically, Coase’s theory helps point out where control is being exercised and, therefore, where the firm’s boundaries are. Antitrust and competition law applies to all entities defined accordingly.

2.2.1 The firm’s boundaries in antitrust and competition law

The Sherman Act in the United States and the TFEU in Europe are both the subject of extensive case law. The vast majority of the jurisprudence is not concerned with the question of the firm - that is, the person that is the subject of antitrust and competition law. The firm’s structure has transformed very little since the introduction of these two texts; it has become more complex, but has not changed in nature.33 For that reason, litigation generally involves other issues subject to further disagreement. Nevertheless, blockchain’s emergence forces us to reassess the definition of a “firm,” to analyze whether decentralized groups can be captured by antitrust law as currently conceived or if blockchains should be captured through another theory. In the United States, antitrust provisions apply to all “persons”34 affecting trade and commerce by unlawful restraints and monopolies.35 According to Section 7 of the Sherman Act:

the word ‘person,’ or ‘persons,’ wherever used in sections 1 to 7 of this title shall be deemed to include corporations and associations existing under or authorized by the laws of either the United States, the laws of any of the Territories, the laws of any State, or the laws of any foreign country.36

The text does not further define the term “person”; it simply establishes exemption regimes for which antitrust is not applicable - mainly concerning federal government agencies and instrumentalities.37

The case law is more informative. In *Copperweld*,38 the Supreme Court stressed that although “[n]othing in the literal meaning of [the Sherman Act] excludes coordinated conduct among officers or employees of the same company,”39 there is “general agreement that § 1 is not violated by the internally coordinated conduct of a corporation and one of its unincorporated divisions.” On that basis, the Court held that “there can be little doubt that the operations of a corporate enterprise organized into divisions must be judged as the conduct of a single actor,” therefore exempting these operations from Section 1 of the Sherman Act.

The Supreme Court was dealing with possible intra-group collusion for the first time with this decision.40 One can only guess what would have been its reasoning before Coase’s article (1937). The fact remains that *Copperweld* follows a Coasian logic:41 the firm uses vertical control to save transaction costs; antitrust law must recognize the fact and exempt from Section 1 of the Sherman Act all agreements between two legal entities bound by such a control relationship42 In the words of the Supreme Court:

The intra-enterprise conspiracy doctrine looks to the form of an enterprise’s structure and ignores the reality. Antitrust liability should not depend on whether a corporate subunit is organized as an unincorporated division or a wholly-owned subsidiary. A corporation has complete power to maintain a wholly-owned subsidiary in either form. The economic, legal, or other considerations that lead corporate management to choose one structure over the other are not relevant to whether the enterprise’s conduct seriously threatens competition.

In the end, “courts must examine whether the conduct in question deprives the marketplace of the independent sources of economic control that competition assumes” “when making a single-entity determination.”43 Only when “general corporate actions are guided or determined” by “separate corporate consciousnesses” can two entities be seen as two separate firms in antitrust law.44 One must make no mistake about it: only control makes the firm and defines its scope.45

In Europe, the theory of the firm as defined by Coase is also the basis of modern competition law.46 Article 1 of Protocol 22 to the European Economic Area Agreement defines the “firm” as “any entity carrying out activities of a commercial or economic nature,” but the concept is not properly delimited in the black letter of EU law. However, the case law defines “undertakings” as “every entity engaged in an economic activity, regardless of the legal status of the entity and the way in which it is financed.”47 The legal form of the entity offering the economic activity does not matter.48 In fact, as the CJEU made clear in Shell, “undertakings” are economic units rather than legal units.49 Here again, the concept of undertaking takes Coase’s path-breaking article as a starting point.50

That definition of the “firm” is still incomplete, as it does not define its boundaries. For instance, in Imperial Chemical Industries, the CJEU ruled that the degree to which it carried out “the instructions given” by a company was essential in analyzing the independence of a subsidiary; and that “where a subsidiary does not enjoy real autonomy in determining its course of action in the market,” the prohibitions set out in Article 101 of the TFEU were inapplicable.51 The CJEU further held in Akzo Nobel that “the actual exercise of decisive influence”52 defines firm limits in competition law; and that “it is sufficient for the Commission to prove that the subsidiary is wholly owned by the parent company to presume that the parent exercises a decisive influence over the commercial policy of the subsidiary.”53 In the end, a firm encompasses all the elements over which control is exercised, as in the United States.54 For instance, in Hydrotherm, the CJEU found that a natural person, a limited partnership and another undertaking made up a single economic unit when they were all controlled by the same natural person.55 That logic derives from Coase’s “The Nature of the Firm.”56

2.2.2 The firm as a pillar of antitrust and competition law

The definition of the firm’s boundaries helps in three fundamental steps of antitrust and competition law: (1) determining whether the law should apply; (2) assessing practices; and (3) and assigning liability. First, establishing the firm’s boundaries helps determine the extent to which antitrust and competition law applies. U.S. antitrust law provides several exemptions to different types of entities, which require both the identification of the firm and an understanding of its activities. European competition law applies only to undertakings that carry out an economic activity. Once again, it is then necessary to identify the firm’s boundaries to determine the activities carried out.

Second, establishing the firm’s boundaries is essential when agencies assess the legality of business practices.57 In terms of collusion, U.S. and European courts have recognized that two legal entities that are part of the same eco- nomic unit - that is, the same firm - cannot be held guilty of collusion, as one cannot agree with oneself.58 Antitrust prohibits several forms of cooperation outside the firm, while it always permits cooperation within the firm. The logic is similar in terms of monopolization and abuse of a dominant position. As a company cannot abuse its market power against itself, abuses of power are illegal only when they affect other firms. Above all, defining the boundaries of firms is essential to analyze market power (and thus whether Section 2 of the Sherman Act or Article 102 of the TFEU is applicable to a given case) and the ability to engage in anticompetitive practices. Control indeed confers the firm with the power to implement practices - including the ability to raise prices, which is often central in antitrust cases.

Finally, identifying the boundaries of firms is essential to assign liability.59 Liability for anticompetitive practices rests with the parent company that ultimately controls other entities if such control has been exercised.60 This logic stems from the classic distinction between ownership and control.61

It is safe to assume that antitrust law will capture the activities of blockchain participants at their individual level.62 For example, one could imagine that a miner is considered a company on his own; after all, miners are operating an economic activity. Nevertheless, analyzing whether the entire blockchain layer 1 could be deemed a firm for the purpose of antitrust law is essential if agencies are to understand and apprehend anticompetitive practices that are carried out beyond the simple framework of the individual. For example, suppose a blockchain is implementing practices to exclude another blockchain from the market. In that case, one will want to punish these practices rather than each individual action leading to the entire scheme. I will return to these practices in the coming chapters.

In other words, defining the firm’s boundaries is a necessary step in understanding competitive dynamics, in analyzing practices and eventually, in assigning antitrust liability to the blockchain when, as an entity, it seeks to achieve survival through anticompetitive ways. It is thus essential to carefully consider the elements that are taken into account when defining “firms” under antitrust law. I showed that in the United States, as in Europe, only one element matters: control. This reasoning is problematic when it comes to blockchain.

# 2AC

## Blockchain ADV

## FTC ADV

## OFF

### T Scope Exemptions---2AC

#### Blockchain is exempted---antitrust is not applicable

Dr. Thibault Schrepel 21, PhD in Antitrust Law from Université Paris-Saclay, LLM in International Law and Legal Studies from the Brooklyn Law School, Associate Professor of Law at VU Amsterdam University, Faculty Affiliate and Creator and Director of the Computational Antitrust Project at the Stanford University CodeX Center, Blockchain + Antitrust: The Decentralization Formula, p. 107-108

4 CHAPTER SUMMARY AND BEYOND

I have explained that legal fictions achieve specific objectives by granting rights to subjects and entities. Their creation is a strenuous exercise, and for this reason courts and legislatures are reluctant to design new ones. Antitrust law, for instance, has been based on the same legal fiction as was theorized the 1930s. Ronald Coase’s early work defines the “firm” as a zone in which vertical control is exercised to reduce transaction costs.

Over the last several decades, the theory of the firm as developed by Coase has become a crucial part of antitrust analysis. It is used to define entities to which antitrust laws apply and to characterize and assess anticompetitive practices. The creation of an “inside” and “outside” the firm thus guides both collusion and monopolization cases.

But one cannot transpose the theory of the firm to blockchain layer 1, as it does not feature the same vertical control. The absence of vertical control averts antitrust law, meaning that most of the behavior within that layer cannot be sanctioned. This is problematic for blockchain communities, as applying antitrust could benefit them by eliminating illegal practices. It is thus necessary to create a new legal fiction around that layer - Chapter 7 makes a proposal along those lines.

#### ‘Expanding the scope’ increases the general range to which antitrust applies. Their distinction is totally arbitrary.

Christopher L. Sagers 21, James A. Thomas Distinguished Professor, Cleveland State University. Law & Faculty Director, Cleveland-Marshall Solo Practice Incubator, "Sagers Email," JDi Debate, December 2021, https://jdidebate.blogspot.com/. brackets inserted for readability.

Jordan Di <jordandi505@gmail.com>

Fri, Dec 3, 11:17 AM

to C.SAGERS

Hi Jordan!

It's very nice hearing from you, and I'm sorry I'm just getting back to you. Your question was stimulating for me to think about, and I'm glad you've had a chance to review and think about that old book I edited.

So, I wound up writing a really long answer that I am afraid will be counter-productive. It seems very possible that you are asking a much simpler question than I thought, and I just misunderstood it. I'm sorry if that's the case, but the following is what I've got to share.

It turns out I've heard about this competition and its reliance on that book, but only because another participant also asked me for clarification. I wasn't involved in setting up the competition or designing the resolution, and questions from participants were the first that I heard anything about it. I also should say that I've never participated in debate and don't know anything about it, so I don't know how useful the following feedback will be.

But I will confess that I don't think the resolution was a very good idea, at least not as it is written.

A. What I Really Think

To me, the problem is that this idea of the "scope" of antitrust has no established legal meaning and very little practical significance. It isn't used in actual practice and it would have no real, legal significance in any actual antitrust case. It was a convenient shorthand that I came up with for organizing the materials in that book, and it also had one theoretical value to me, but that's it. Most antitrust lawyers I've worked with understand it what I meant by it, but it doesn't have any precise meaning or doctrinal significance. I don't think the term was even really used before that book. I almost literally made it up.

So, it sounds like participants in this competition are getting hung up on whether particular exclusions from antitrust liability are issues of "scope" or issues of something else, but I don't believe there is any good reason to worry about it. It almost literally doesn't matter, except maybe in the one theoretical sense that I mentioned. (I'll say something about that in a second.) For example, you mentioned the "investment" exception from the Clayton Act, and you ask whether it should be thought of as a "limit" on the "scope" of antitrust. But I find myself asking . . . so what? What difference would it make if that is a matter of "scope" or it is something else?

Moreover, what even is a "scope" issue? If antitrust is held not to apply in a given case, is it because that conduct was beyond the "scope" of antitrust, or was it because, even though antitrust applied to the challenged conduct, the conduct just wasn't illegal? For example, say that a manufacturer enters into an exclusive distribution agreement for 6 months with a distributor, prohibiting the distributor from carrying the products of a competitor. Contracts like that are so plainly not illegal--because it is for such a short period of time--that some lawyers say they are "per se legal." So, are 6-month exclusive distribution contracts outside the scope of antitrust, or are they subject to antitrust but legal? We could ask the same question about investment purchases under the Clayton Act. They are automatically legal so far as [Section 7] s. 7 is concerned. But does antitrust not apply at all, or does antitrust apply and just hold those purchases legal?

(I can answer these questions for myself, because I have a working definition of my own of what "scope" means. In my mind, the manufacturer and its sales are subject to antitrust, because it is exchanging a thing of value for money, but not all of its conduct is illegal. Likewise, I think of purchases of stock as always being subject to the Clayton Act, but sometimes legal under it. But my working definition in itself has no legal or policy significance, really.)

Like I said, I did have one theoretical purpose for thinking about antitrust "scope" as one, unified doctrine, and encouraging other lawyers to think of all the various doctrines that govern antitrust applicability as one doctrine, that should be made theoretically coherent. But the purpose I had in mind was different than what participants in the competition seem to be thinking about.

I thought that thinking of a "scope" of antitrust could force judges and lawyers to think more coherently or holistically about the several different doctrines that can be used in particular cases to exclude conduct from antitrust applicability. It would make them think about the fact that the different doctrines often clash with one another theoretically--they generate different results on similar facts for no good reason. As one example, the McCarran-Ferguson Act mostly exempts insurance from federal antitrust so long as a given insurance company's conduct is subject to some state legal requirements in a given case. Courts typically don't require active state oversight of the company in order for MFA immunity to apply. The question is just whether there is some regulation. But in non-insurance cases, the mere fact that a defendant is subject to some state law is definitely not enough to exempt it from antitrust. Usually, in those cases, the so-called "state action immunity" requires that a state statute explicitly authorizes the challenged conduct and​ a state actor actively oversees it. So very similar cases could come out with opposite results for no better reason than that one case involves insurance and the other does not.

But a problem, as you might see from this example, is that thinking through the differences in different scope doctrines gets extremely​ complex. Just that one example requires you both to really understand the McCarran-Ferguson Act and its caselaw and​ the law of state action immunity, and​ have a reasonable understanding of substantive antitrust in general, before you can even reasonably think about whether and how the doctrines should be revised for greater coherence. Because I think most practicing antitrust lawyers would find that a challenge, I can't imagine how non-lawyer undergraduate debate competitors are supposed to do it.

OKAY, so, all of that said, I would like to add one other sense in which it does actually kind of matter in real cases whether a legal rule goes to the applicability of antitrust or merely goes to the legality of the underlying conduct. As I'm sure you know, lawsuits can be dismissed before they go to trial. If a defendant moves to dismiss and persuades a court that antitrust doesn't even apply to the defendant's conduct, then the case can be dismissed at a very early stage in the litigation. If the court believes that antitrust applies to the defendant's conduct, but there is some substantial reason to believe that the conduct doesn't violate antitrust, then getting pre-trial dismissal will probably take longer and be more difficult. Real-world parties care about this kind of thing a lot​, because getting early dismissal is much cheaper for defendants and leaves plaintiffs with much less hope of securing any sort of settlement. But I can't believe that procedural niceties like that are actually of interest in your competition.

So, with my apologies, I think it would have been a lot better if the organizers of the competition wrote the resolution in a way that is much more specific. It should have asked something like, "should federal antitrust prohibit XYZ conduct by online commerce platforms" or something like that. Just asking whether the "scope" should change is hardly asking any question at all, because the word has so little clear meaning or significance.

B. What Is Probably More Useful

All of that was probably not hugely useful to you, since it's my background navel-gazing.

I hope the following might be more practical advice, though again I was never involved in debate, so you'll have to be the judge of whether it's useful or not.

If I were to talk about the resolution you quoted, I would begin by saying what I mean by the "scope" of antitrust. To me, it means the general range of conduct to which the Sherman, Clayton, and FTC Acts apply, which roughly means exchanges of things of value within the domestic United States and imports. That is very broad, but then I would point out that that scope is and always has been riddled with specific exceptions. And then I would say that I do (or do not) favor reining in those exceptions. That is, I wouldn't argue about "scope" in some abstract sense, and instead would say that we should read all of the existing exemptions as narrowly as possible. You wouldn't necessarily have to argue about individual exemptions, although discussing particular examples might be helpful. Anyway, to argue that I favor narrowing the existing exemptions, I would point out that when antitrust applies to particular conduct, it effectively requires that conduct to be regulated by the ordinary market forces of capitalism. It requires leaving that conduct to the whims of supply and demand, without interference from private agreements, exclusionary conduct, or anticompetitive consolidations. I would argue that that is generally a good thing--markets do a pretty good job of allocating resources, and ordinarily work better than either government or private intrusions. If you were going to make that kind of argument, you would say that we should generally narrow and limit all those dozens of statutory and caselaw rules that say that antitrust should not apply to particular cases. We should make it really hard, in all cases, for defendants to argue that their conduct should be exempt from antitrust. (Btw, that is nominally what the courts say. Though they now honor it only in the breach, the courts still constantly repeat rote platitudes that markets are great, Congress wants markets to regulate conduct without the interference of private parties, and for those reasons that all exemptions and immunities are narrowly applied.)

If I were required to argue that I disfavor it, I would say that in fact the forces of supply and demand are often ill-suited to regulate particular kinds of conduct. I don't personally believe that, but it's an easy enough argument to make. You say that markets are clumsy, that they have negative and unanticipated consequences in all kinds of ways, and so we have to apply antitrust carefully. You would argue that we should make it relatively easy for a defendant to say that in a particular case it should enjoy protection under some statutory exemption or the statute action immunity or the labor exemption or whatever, because imposing antitrust and the full force of unbridled price competition often harms other values that we care about.

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So, I have a bad feeling that this is too long, too beside the point, and to confusing, and I'm afraid I may have done more harm than good. I hope that some of it was helpful to you, and if I can be of any more help, I will try.

Best of luck to you, and thanks for reaching out.

Chris

### ADV CP---2AC

#### Unregulated AI causes data pollution---extinction

Dr. Asaf Lubin 22, Associate Professor of Law at Indiana University Maurer School of Law and a Fellow at IU’s Center for Applied Cybersecurity Research (CACR), JD and LLM from Yale University School of Law, LLB from Hebrew University, “Big Data and the Future of Belligerency: Applying the Rights to Privacy and Data Protection to Wartime Artificial Intelligence”, in Handbook on Warfare and Artificial Intelligence, Ed. Geiss & Lahmann, https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=3919195

IV. The Risks of an Unregulated AI Military Environment

The previous two sections have demonstrated the ways by which IHL and IHRL are underperforming in the regulation of the development and deployment of AI military application. What are some possible risks that could materialize from an under-regulated AI military environment?

The first risk has to do with Omri Ben-Shahar has called “data pollution,” which are “the external harms from collection and misuse of personal data.”48 At the heart of all AI applications stands an unremitting stream of data.49 Data is the fuel that runs AI design-labs and assembly lines, but it is also a type of waste generated as a by-product throughout the AI systems' life cycle. An ever-increasing volume of information is sensed, collected, stored, analyzed, and disseminated every day both for and during war. Such a massive data enterprise is vulnerable to abuse in ways that have so far gone under-appreciated. As a group of researchers recently noted that the use of AI could threaten “digital security”, “physical security”, and “political security.” Among other things, the use of AI to automate tasks involved in surveillance, persuasion, and deception “may expand threats associated with privacy invasion and social manipulation.”50 When Elon Musk warns of AI as humanity’s “biggest existential threat” comparing it to “summoning a demon,”51 one should not limit their imagination to only a rogue killer robot, à la The Terminator. Perhaps more significantly we should worry about a terrifying AI-driven data ecosphere that chips away at our political institutions and intuitions while eviscerating fundamental protections on human dignity.

Such an ecosphere is exacerbated by the involvement of private partners in these projects. Indeed, the U.S. military “a latecomer to the AI revolution, and government spending on AI is dwarfed by the private industry.”52 The military is thus forced to rely on private companies who bring with them not only large sets of structured and unstructured personal data, but also problematic commercial practices in utilizing such data. This new AI military industrial tech complex is even bigger and more dangerous to our liberties and democratic processes than the one Eisenhower warned about some 70 years ago.53 The new complex raises questions about the very ability, let alone desire, of the government to adequately protect international human rights, civil liberties, and digital freedoms in the production of these AI applications and technologies. It is worth recalling that even before the AI revolution, experts were already ringing the alarm bells on U.S. privatization of intelligence––suggesting that such outsourcing has “gone too far.”54 We now therefore find ourselves in a particularly peculiar position. As highlighted by Melody Guan:

“Another challenge the United States faces in exercising judicious public authority in tech is the particularly outsized political influence of its large corporations. These play a deciding role in determining American society’s economic and political policies by means of campaign contributions, lobbying, access to and representation of corporate elite amongst politicians, and rights of corporate personhood. Today it is no longer even clear where the line between the public sector and the corporate sector ends. On one hand, the autonomy of private tech companies allows for a check against government overreach. Corporations can resist military involvement, government censorship, and assistance with federal investigations... On the other hand, the corporatocracy makes it difficult for the government to reign its tech companies on behalf of its citizens, even if it were become interested in and adept at AI policy…. [T]here has been little material change to the existing manners of transgressive harvesting and utilization of user data [by AI developing tech giants]. The poor regard for personal protection and rights in the current unregulated state of affairs shows us that we cannot simply rely on the goodwill of tech companies. Indeed, the nature of corporations themselves may expose them to lawsuits if they fail to prioritize the interests of their shareholders over debatable moral concerns. We need a citizen-centric government to shepherd the ethical and fair use of technology.”55

Not only that, but an escalating superpower arms race in AI is further casting a shadow on the prospects of collective consensus building around basic ethical standards for data governance. “Today, the United States lags behind China and Russia in terms of national AI strategy. While the United States government and the Department of Defense continues to figure out the place of AI in society and government, our adversaries have already made it a national priority.”56 As the world’s powers continue to compete in “a contentious global landscape where advantage in military AI could make a real difference to the balance of power,”57 there is a growing concern that law and ethics will fall by the westside.58

### Partnership CP---2AC

#### Any ambiguity over legal status creates industry doubt and equivocation---that nukes development

Kimberley Rust 19, JD Candidate at the University of Sheffield Law School, “Block-chain Reaction: Why Development of Blockchain is at the Heart of the Legal Technology of Tomorrow”, Legal Information Management, 19 (2019), 3/1/2019, Lexis

The future of blockchain

In spite of the above, which suggests that blockchain does have a great capacity to change and advance legal technology, current developments have not been subject to a DLT-revolution. Why is this?

It would be foolish to claim there are no barriers to blockchain′s development, or that the technology is perfect. Logistically, energy consumption and a lack of technical knowledge impedes the evolution of DLT. Energy requirements have reached astonishing levels, with one academic suggesting that that bitcoin mining necessitates a comparable amount of energy to the whole of Ireland′s electricity consumption. 13 Not only does this affect the cost of blockchain-supported technology, but makes this technology fragile to fluctuations in energy prices, with nodes likely to be located in jurisdictions with favourable energy prices, eroding the concept of decentralisation. 14 The relative novelty of blockchain has also meant a general lack of expertise to develop technology specifically for the legal industry.

A lack of regulatory clarity is possibly the greatest barrier to blockchain′s development. 15 Conflicts between blockchain and privacy law, fears over cybersecurity and ambiguity of liability remain huge obstacles which fuel industry doubt and equivocality, prompting firms, legislators and developers to err on the side of caution and avoid investing in blockchain development.

#### Firm-centric antitrust precludes remedies to intra-blockchain exclusions---granularity is key

Dr. Thibault Schrepel 21, PhD in Antitrust Law from Université Paris-Saclay, LLM in International Law and Legal Studies from the Brooklyn Law School, Associate Professor of Law at VU Amsterdam University, Faculty Affiliate and Creator and Director of the Computational Antitrust Project at the Stanford University CodeX Center, Blockchain + Antitrust: The Decentralization Formula, p. 131

4.2 Anticompetitive Practices

The theory of granularity enables agencies to analyze the effects of practices by recreating an “inside” and “outside” (the nucleus), which is essential for antitrust analysis. Ultimately, it enables them to assign liability to the nucleus while also granting rights to its participants.

4.2.1 The assessment of practices

Firms decide internally to partake in collusive agreements or monopolization practices, but antitrust law is mostly concerned with such behavior’s external effects.88 That distinction between the effects inside and outside the firm guides the analysis of all potential practices. This prevents the application of antitrust law to public permissionless blockchains. The absence of clearly defined boundaries for such blockchains at the platform layer precludes a distinction between what is inside or outside. Analyzing practices within blockchain ecosystems becomes immensely complex for that reason.

The delimitation of a blockchain nucleus reintroduces the possibility of analyzing internal and external effects, since it recreates borders - namely, inside and outside the legal fiction. One can easily understand this through the example of collusion. As entities cannot collude with themselves, one needs to delimit their boundaries to analyze whether a collusive practice has occurred. In that regard, only agreements between two different nuclei should be worrisome. Agreements between blockchain participants outside of any nucleus, de facto lacking any ability to control, should not trigger antitrust concerns. The same goes for monopolization and abuse of dominance cases. The theory of granularity makes it possible to define a legal fiction whose market power will be assessed in relation to others. In turn, this enables agencies to determine whether a legal fiction abused its power by analyzing the external effects of its behavior. This analysis is not possible when blockchains are seen only from a distance, because blurry decentralized entities in which no one exercises a power of command and control have no visible frontiers. The theory of granularity fixes that.

### States CP---2AC

#### State control of blockchain will be preempted

Patricia Fry 18, Former Chair of the Uniform Electronic Transactions Act Drafting Committee, Former Professor of Law at the University of Missouri-Columbia School of Law, JD from the Southwestern University School of Law, MA from California State University, Northridge, et al., “Joint Statement in Response to State "Smart Contracts" Legislation”, 4/4/2018, https://esignrecords.org/wp-content/uploads/2018/04/Joint-Ltr-State-Smart-Contracts-Legislation.pdf

Cryptographic signatures fall squarely within the definition of "electronic signature" set forth in UETA and ESIGN. Thus, if blockchain technology or smart contract code is used to create or effect an electronic signature, electronic record, or electronic contract, UETA and ESIGN ensure it is valid. Therefore, legislation seeking to define blockchain technology or smart contracts or to ensure smart contracts are legally enforceable, while well-intentioned, is harmful for the following reasons:

1. Redundancy. Redundancy is confusing, unnecessary, and potentially harmful if courts determine the legislature intended a different effect.

2. Inconsistency. Bills introduced in California, New York, Illinois, Nebraska, and Tennessee this year contain definitions of blockchain and smart contract inconsistent with each other (in some cases) and the definition published by the Chamber of Digital Commerce. The potential for a network of conflicting state laws is obvious.

3. Federal Preemption. ESIGN provides that any state law giving special effect to a specific technology is preempted. Moreover, conflicting state laws provide additional incentive for Congress to preempt those laws to remove barriers to interstate commerce.

### BBB DA---2AC

#### The plan has unique political support

Riley Adams 21, Senior Financial Analyst at Google, CPA, Contributing Writer at Kiplinger, Masters of Science in Applied Economics and Demography from Pennsylvania State University, Bachelor of Arts in Economics and Bachelor of Science in Business Administration and Finance from Centenary College, “How the Infrastructure Bill Could Change Crypto”, Kiplinger, 11/1/2021, https://www.kiplinger.com/investing/cryptocurrency/603692/infrastructure-bill-change-crypto

Though, there appears to be support for narrowing the definition. According to Gouldman, "There's a bipartisan consensus among Democrats and Republicans alike that cryptocurrency should be regulated carefully just as [the United States] did with the regulation in the early days of the internet."

This overly broad choice of language could have damaging effects if left unaltered, hence what has led to the bipartisan consensus (something rarely seen in Washington these days) that it needs to be fixed.

Given the broad bipartisan support, it stands to reason that if an amendment could be allowed to proceed, it would likely pass, fixing the issue.

#### That shields

Jason Mazzon 18, Professor of Law at the University of Illinois at Urbana-Champaign; Chicago-Kent Law Review, “Above Politics: Congress and the Supreme Court in 2017”, 8/9/2018, Volume 93

Absent, too, in the modern Congress is any real sense that the Supreme Court can be brought to heel: say, by constitutional amendment, by stripping the Court of funding, by hauling in members of the Court to justify their rulings before congressional investigatory committees, by appointing special counsels to review and report back on what the Court does, by impeaching the Justices (or locking them up), or by simply ignoring or defying judicial rulings. Perhaps the Court does not rule in ways that offend enough members of Congress (or their constituents) for them to invest the energy—and political capital—required to generate these sorts of measures. Perhaps, instead, members of Congress do not consider such measures appropriate in our constitutional system. In either case, modesty on the part of Congress is the result, even in an era when a single party controls both the Congress and the White House. The lesson for the Court is that so long as it continues doing—more or less—what is has done in recent years, it has very little to fear from the Congress.

Conclusion

After President Trump nominated Neil Gorsuch to fill the vacancy on the Supreme Court left by the death of Justice Scalia, fifteen House Republicans sponsored a Resolution that “the House firmly supports the nomination of Neil Gorsuch to the Supreme Court” and “the Senate should hold a swift confirmation of this nomination.”229 The proposed resolution died, without further action, in the Committee on the Judiciary. While Gorsuch was, of course, confirmed, the failure of the Republican-controlled House to pass a simple resolution supporting the nomination is telling. After an election season in which the Supreme Court figured very prominently, aside from the Senate’s confirmation of a new Justice, Congress in 2017 accomplished nothing with respect to the Supreme Court. Various bills and resolutions—some sponsored by Republicans, others by Democrats, and some garnering bipartisan support—targeted statutory and constitutional rulings by the Court and sought also to impose new regulations upon the Court’s activities. Even the most modest of these proposals failed to advance through the legislative process and become law. We like to think that the Supreme Court, guided solely by the rule of law, is above politics. The experience of 2017 suggests that the Court may also be above politics in the quite different sense that its rulings and activities are largely immune to political response and redress.

#### PC fails.

Ryan Telingator 21, B.A. in Political Science and Government from Bowdoin University, “When is Change Possible? Presidential Power as Shaped by Political Context, Constitutional Tools, and Legislative Skills”, 5/20/2021, https://digitalcommons.bowdoin.edu/honorsprojects/258/

My research does not support Greenstein’s theory. Instead, my findings align more closely with those of George Edwards in At the Margins, where he argues that the “national preoccupation with the chief executive is misplaced,” and that presidential power is, in fact, limited in the Constitution’s “purposefully inefficient system in which the founding fathers’ handiwork in decentralizing power defeats even the most capable leaders.”50

Instead of focusing on legislative skills as a source of presidential influence, Edwards argues that party support and public support are more important. Legislative skills are only critical for “members of Congress who remain open to change after other influences have had their impact.”51 In a time as polarized as today, where very few members of Congress are “open to chang[ing]” their vote, these skills play a minor role in legislative negotiations. Similar assertions are made in another book by Edwards, Predicting the Presidency. He argues that exploiting existing opportunities (consolidating existing party and public support) is much more important for presidential success than creating opportunities (convincing legislators to change their vote vis a vis legislative skills).52

Both Lyndon Johnson and Ronald Reagan are remembered for their exemplary political skills. The Johnson Treatment, a legislating strategy in which Johnson used his imposing 6’4”, 240-pound figure – literally physically and verbally bullying, cajoling, lobbying, and threatening – to get what he wanted out of people,53 remains infamous in presidential political literature. Similarly, Ronald Reagan, “The Great Communicator,” is still revered for his oratorial prestige. Although these legislative skills were useful in passing the pieces of legislation outlined in the case studies – Johnson gaining support from southern Democrats on the EOA and Reagan compellingly speaking in favor of the ERTA – they proved impotent in political contexts not conducive to change. After Vietnam for Johnson and after the passage of the ERTA for Reagan (in conjunction with the recession in 1982), the presidents’ policy windows closed. Their renowned legislative skills could not overcome an inopportune political context.

The case studies thus demonstrate the value of skills at the margins, but also exemplify their unsubstantial influence as the major factor driving policy. Again, the research suggests that political context is the most important factor in legislative change.

5.4 Applying Lessons to the Present: Predicting Biden’s Success

With an understanding that the political context largely drives a president’s potential for change, with skills helping on the margins, it is important to assess the 2021 political climate in order make an informed prediction about Biden’s prospects.

The COVID-19 pandemic opened a significant policy window for Biden. With a U.S. death toll nearing 580,000, massive unemployment, and a severe economic contraction, the pandemic was an all-encompassing problem that the entire country wanted addressed. Thus, the three streams of problem, policy, and politics converged to open the opportunity for the Biden administration to pass the American Rescue Plan. The Rescue Plan was signed into law in March and has received bipartisan support from the American public.54

President Biden claimed a mandate from his election, arguing that “millions of Americans” “voted for [his] vision,” giving “a clear victory” and tasking him to make his “vision real.”55 However, based on the extreme polarization in D.C., it is unlikely to become a quantifiable mandate that changes Congressional voting behavior.56 Polarization has made it impossible to win cross-party support, or, in Edwardsian terms, create new opportunities. There is deep political antagonism between parties, and even within parties,57 making any sort of bipartisanship near impossible.

### Biz Con DA---2AC

#### No spillover---blockchain is siloed from other areas.

Jiang Jiaying 20, LLB, LLM, SJD, incoming Hauser Global Fellow at NYU School of Law and Co-Leader of the Central Bank Digital Currency Project with the Paul Tsai China Center at Yale Law School, “Regulating Blockchain? A Retrospective Assessment of China's Blockchain Policies and Regulations”, Tsinghua China Law Review, 12 Tsinghua China L. Rev. 313, Lexis

Under the direction of the national policy objective on technology, blockchain-related policies and regulations pursue the same path of innovation. Technology innovation in the blockchain field possesses distinctive implications owing to the novelty of blockchain and its implementations. Thus, three secondary policy objectives unique to blockchain characteristics are: (1) [\*345] building a blockchain ecosystem connecting everything in cyberspace; (2) standardizing the blockchain industry; and (3) acquiring leading innovation capacities for blockchain.

#### Blockchain crackdown now.

Kellie Mejdrich 21, Senior Reporter at Law360, Financial Services Reporter at Politico, BA in Journalism from the University of Arizona, “‘Massive Wake-Up Call’: Crypto Faces Growing Legal Crackdown”, Politico, 8/17/2021, https://www.politico.com/news/2021/08/17/cryptocurrency-legal-crackdown-505595

Federal regulators are pursuing cryptocurrency startups in court and striking a growing number of legal settlements for rule violations, triggering complaints from the industry and sympathetic lawmakers who say it threatens a growing sector of the economy.

Over the past month alone, the Securities and Exchange Commission, the Commodity Futures Trading Commission and the Treasury Department announced more than $120 million in penalties aimed at digital currency exchanges and other service providers that officials said weren't complying with federal markets regulations and anti-money-laundering requirements. Several states also escalated their own crypto enforcement crackdowns this summer.

CFTC Commissioner Dan Berkovitz said in an interview that some cryptocurrency companies believe "the rules don't apply to them." He said regulators are now vigorously pursuing legal action to protect customers, ensure market integrity and prevent systemic risk. SEC Chair Gary Gensler also warned this month that crypto was rife with "fraud, scams and abuse" and that his agency was prepared to use its authorities "as far as they go" to police the market.

"This should serve as a massive wake-up call to the crypto industry," said Charley Cooper, a former CFTC chief operating officer now with software and blockchain technology firm R3. "A policy or a posture of ignoring Washington or showing disdain for Washington ... will ultimately be a failed strategy."

The enforcement actions are fueling debate about how cryptocurrency players fit into financial regulations. Federal regulators say the new digital currency platforms must adhere to existing rules, but industry players counter that it's not that simple and that it's time for Congress to pass new laws that are more tailored to crypto.

"This regulation by enforcement that we're seeing is not the way to go because it doesn't create good policy," said Kristin Smith, who advocates for the cryptocurrency industry as executive director of the Blockchain Association. "Regulators — in particular the SEC — think that the laws and regulations are crystal clear and that they're very easy to interpret. But for those of us on the other side of the table that are working in the industry and its ecosystem, the laws aren't clear, and it's very difficult to figure out how to apply them."

The market value of Bitcoin and other digital currencies hit $2 trillion again this week, meaning the stakes have never been higher for companies looking to enter the space. The movement has also spawned a whole sector of decentralized finance applications — so-called DeFi apps — that offer automated, autonomous trading and lending services with minimal human interaction. One such DeFi service, Poly Network, disclosed losing $600 million in a breach earlier this month.

Regulators in recent weeks have made clear they’re zeroing in on crypto exchanges and DeFi platforms.

Two high profile cases in August — a $100 million CFTC and Treasury settlement with crypto derivatives service BitMEX and a $10 million SEC settlement with digital asset exchange Poloniex — revolved around charges that the companies were operating unlicensed trading platforms. Another SEC settlement this month with decentralized lender DeFi Money Market accused its backers of selling more than $30 million in unregistered securities using so-called smart contracts and DeFi technology.

Some of the targeted crypto companies are trying to signal that they now take the rules more seriously. BitMEX CEO Alexander Höptner said in a blog post after his exchange's settlement that "crypto is becoming more responsible."

"We are committed to becoming a regulated exchange and are looking to set the benchmarks in this new era for crypto," said George Godsal, spokesperson for BitMEX operator 100x.

The federal cases came as five states including New Jersey, Texas and Kentucky took action against the startup BlockFi for offering interest-earning accounts that regulators say could be unregistered securities products.

BlockFi spokesperson Madelyn McHugh said the company believes its products and services are lawful and appropriate for crypto market participants, and that "we remain steadfast in our commitment to protect consumers’ rights to earn interest on their crypto assets."

"We’re hopeful that BlockFi will lead the charge in collaborating with regulators to define a regulatory path for our ecosystem going forward," McHugh said.

Lawyers tracking the cases said they showed that, even though some digital assets businesses assert certain laws don't apply to them, that doesn't stop the government from taking action.

"We've all been telling our clients and we've been telling people publicly for years that just because you come up with some name for something doesn't mean that the laws don't apply," said Stephen Palley, partner at the law firm Anderson Kill.

Vincent McGonagle, the CFTC's acting enforcement director, said in a statement that "there is a strong need for regulatory compliance in the digital asset market space and for bad actors to be identified and held accountable."

"The CFTC will continue to use the tools available to us to the fullest extent possible to closely monitor these evolving markets," McGonagle said. "The recent resolution with BitMEX and other enforcement actions by the commission, including those in the spot markets for digital assets, reflect our strong commitment to aggressively pursue actionable conduct within our jurisdiction."

Davis Polk partner Robert Cohen, former chief of the SEC's cyber unit, said that agency has taken an active approach to crypto enforcement since 2017, and it's no surprise it's continued under the Biden administration.

One of Trump-era SEC Chair Jay Clayton's final actions at the helm of the agency last December was to sue financial technology startup Ripple for allegedly selling unregistered securities in the form of the XRP cryptocurrency. The move triggered litigation between the SEC and Ripple that continues to this day over the extent to which digital currency should be regulated as an investment product.

"A question going forward is whether there will be progress on rulemaking and guidance for the community that provides the clarity and certainty needed to operate within the SEC’s regulatory system," Cohen said.

Some lawmakers are beginning to push back on the enforcement crackdown and warn there is an urgent need for Congress to draft new rules for the industry's business model.

Rep. Patrick McHenry of North Carolina, the top Republican on the House Financial Services Committee, said "regulation through enforcement hinders innovation."

"It's creating uncertainty in a really important and growing industry in the United States and globally,” McHenry said in an interview. “If we don't bring regulatory clarity here in this space, it's going to go to other regimes around the world that are more conducive for its development."

Rep. Don Beyer (D-Va.) has introduced legislation that would require the CFTC and SEC to issue new cryptocurrency rules. His bill would give the CFTC — which today regulates derivatives linked to things like oil and also fiat currencies — authority over digital assets. It would give the SEC — the U.S. stock market regulator — authority over digital asset securities.

McHenry has also proposed a bill that would convene a working group between the SEC, CFTC and industry to report on cryptocurrency regulation.

"The lack of legal clarity has hindered investment and innovation, and Congress should provide clear rules of the road for this growing market," Beyer said in a statement.

#### It’s a surgical approach that leaves most conduct to self-regulation---that reverses the perception of overreach.

Dr. Thibault Schrepel 21, PhD in Antitrust Law from Université Paris-Saclay, LLM in International Law and Legal Studies from the Brooklyn Law School, Associate Professor of Law at VU Amsterdam University, Faculty Affiliate and Creator and Director of the Computational Antitrust Project at the Stanford University CodeX Center, Blockchain + Antitrust: The Decentralization Formula, p. 240-244

3.2 Law + Code

3.2.1 Why together?

We are facing a conundrum. On the one hand, blockchain architecture requires us to find ways to prohibit illegal behaviors (and only those). On the other hand, confrontational law may hamper the technology and therefore reduce the common good or stay ineffective. It is crucial that we find a way around this conundrum. Blockchain code reveals, probably more than ever, the need for collaboration between law and technology: between policymakers, regulators and blockchain communities. This may spark a pivotal moment in legal history, forcing the creation of a new paradigm that leads to the emergence of hitherto unexplored synergies.29

If they work together, these two communities can put in place mechanisms to stop and punish anticompetitive practices once committed by creating a way for legal enforcement instead of trying to prevent all illegal practices from happening in the first place.30 That requires us to find a way for blockchain communities, alongside the regulator, to take practical actions when necessary and give them incentives to do so.

The code that underlies blockchain ecosystems is an ideal candidate to achieve this aim. Code is the language of technology and the principal determinant of behavior within a digital ecosystem. The maxim “code is law” describes that reality.31 As I have explained, blockchain’s architecture creates trust between participants. It is the same architecture that can build “too much trust,” leading to illegal practices because it creates (a sentiment of) impunity from the law. The occurrence of these practices therefore implies that one must adapt the architecture. If policymakers and regulators want the help of blockchain communities, they must translate the law into code so they can implement it and monitor its application.

This is the “law is code” ex-post approach I am arguing for,32 which I distinguish from other “law is code” ex-ante solutions that lead to the prohibition of practices before they even occur or automatic enforcement by code.33 In practice, ex-ante solutions suffer from the rigidity of code language and, above all, from our cognitive and imaginative limits.34 Instead, the “law is code” ex-post approach I am offering relies on, and allows, other constraints (law, market, norms) to play a part in deterring most illegal practices; and, when implemented, creates a gateway for legal enforcement.

3.2.2 Blockchain code

The “law is code” approach I suggest strikes what I find to be a satisfying MOAF balance. In terms of accuracy, modifying code to allow other constraints creates few false negatives and even fewer false positives. There is no need for overreaching regulations or to break the blockchain door altogether. This “law is code” approach is more surgical. In terms of manageability, it gives power to blockchain communities which are the first to implement and enforce blockchain code. Policymakers and regulators will trust new blockchain architectures; only the costs of verification will remain.

In terms of objectivity for private actors, one can trust that blockchain communities will know the rules they enforce. The extent to which these communities should enforce the rules on their own, or with the supervision of regulators, is debatable (see below). In terms of flexibility, that “law is code” approach is non-coercive, as it is agreed upon, implemented and enforced by blockchain communities. The more significant the role of the community agreeing to enforce these rules, the less top-down and coercive they will become. In the end, there is every reason to believe that such as “law is code” ex-post approach will achieve proper deterrence. If mechanisms are in place to deter and punish illegal practices, and if blockchain participants are made aware of these mechanisms, then the number of such practices will be significantly reduced. Again, as Beccaria said:

one of the greatest checks on crime is not the cruelty of punishments, but their inevitability ... the certainty of a chastisement, even if it be moderate, will always make a greater impression than the fear of a more terrible punishment that is united with the hope of impunity.35

Two mechanisms can be used in that regard: a first that allows communities to discourage and sanction anticompetitive practices, and a second that enables courts and regulators to “enter” blockchains. Both come with specific challenges. The first will partially recentralize blockchain, but it proves to be best for “targeting.” The second requires participants to trust the rule of law on top of the rule of code, but maximizes “objectivity,” since the regulator has no financial interest in the blockchain, unlike the other participants.

4 CHAPTER SUMMARY AND BEYOND

In this chapter, I started by analyzing the new challenges that blockchain creates for policymakers and regulators. I showed that blockchain has singular characteristics that require specific regulations in response. In the absence of such regulations, blockchain creates a nearly impenetrable fortress. One must then find a solution to make the law applicable. With that in mind, I introduced four principles against which to assess potential regulation: (1) accuracy, (2) manageability, (3) objectivity and (4) flexibility. I explained that one cannot maximize them all at once, as significant tradeoffs are involved.

Against this analytical framework, I have assessed distinct types of regulatory approaches. I concluded that a classic confrontational approach would not lead to good results. I explained this confrontational approach would either threaten the survival of blockchain technology or simply prove to be ineffective. Conversely, when law and code are combined, the results are more satisfactory. This collaboration implies that blockchain communities and regulators must find common ground to introduce mechanisms that sanction illegal practices when they are committed and, even before that, prevent them from taking place by relying on other constraints. In the next chapter, I detail the terms of this arrangement and explore how blockchain communities would ultimately agree to take part in the “law is code” approach that I have advocated for.

1 A POSITIVE AGENDA

In this section, I introduce a positive agenda that would lead agencies to create comfort zones and to direct legal enforcements toward certain specific practices. The objective is to create the right incentives for blockchain communities to implement the “law is code” approach described in Chapter 13 - that is, translating the law into code in a way that opens up ex post enforcement. This approach would lead to a cooperative relationship between law and technology. The result would be better legal protection for blockchain communities (which would suffer from fewer anticompetitive practices) while ensuring blockchain creates a positive impact outside the ecosystem.1 But getting there will require mutual concessions.

#### Confidence is irrelevant AND impact is inevitable.

Cameron Bagrie 18, Managing Director, Bagrie Economics, "Business Confidence Is a Hopeless Indicator. But That Doesn’t Mean the Economy Isn’t in Trouble," Spinoff, 08/09/2018, https://thespinoff.co.nz/business/09-08-2018/business-confidence-is-bullshit-but-that-doesnt-mean-the-economy-isnt-in-trouble.

The good news is that business confidence is hopeless as an economic indicator. The correlation with economic growth is poor and I largely ignore business confidence readings. Changes in direction can provide some insightful information – whether things are picking up or slowing down, but not the levels.

Businesses tend to be more upbeat regarding general confidence about the economy under a blue flag as opposed to a red one. Business confidence averaged minus 18 between 2000 and 2007. The economy (measured by real gross domestic product) grew on average by more than 3.5% per year. Yep, confidence was negative, but growth was positive. So, we ignore business confidence as an economic indicator. This is nothing new. It’s surprising headline business confidence figures receive so much attention.

Commentators make the constant mistake of saying the ANZ survey is a business confidence survey. The same applies to the NZIER’s QSBO. They are surveys of business views across an array of key indicators including prospects for growth, hiring, whether firms are planning to invest and experiences with inflation / costs. These indicators matter. Business confidence is one question.

The so-called “soft” or “perception” indicators are the hard data of tomorrow. They are estimates and view based but you can’t ignore them. They are well correlated with growth.

In a perfect world we’d have timely “hard” official data and statistics. We don’t. Official data comes with a lag. So, we need to rely on sentiment-based indicators if we want timely readings on the economy and a guide as to the year ahead.

The likes of the ANZ survey are showing a sombre mood when it comes to indicators that matter. The ANZ survey asks key questions about activity, employment, investment and profitability. When these indicators head to zero, which they have done now, growth can do the same. Those indicators were weak in 2000 during the so-called winter of discontent – and growth slowed to 0.9% year on year.

Growth did rebound. But back then the economy was early in the economic expansion. The economy is late in the business cycle this time around. The economy has tended to go through a ten-year cycle, so businesses are naturally looking more nervously over their shoulders at present. The economy is going through substantial economic change too and businesses are wary. There is little argument over the need to change the economy. However, there are serious questions about the actual economic plan and what the new economy looks like. That is a key issue that needs addressed.

Some of the weakness in survey measures could be put down to the way survey questions are phrased. Firms are asked their view and given three options; will conditions improve, stay the same, or worsen. For a lot of firms’ things are damned good. It’s telling that finding skilled staff is the biggest problem firms are facing. Businesses are facing capacity constraints. So, zero readings may reflect a levelling out at a high base.

#### Economy is dead.

Jeffry Bartash 12-18, Reporter, MarketWatch, "Sticky Inflation, Bigger Paychecks, Fading Stimulus," MarketWatch, 12/18/2021, <https://www.marketwatch.com/story/sticky-inflation-bigger-paychecks-fading-stimulus-how-the-u-s-economy-is-shaping-up-for-2022-11639758215>.

Americans are likely to face more big surprises in 2022. MarketWatch spoke with a handful of economists around the country about the big questions facing the U.S. as it enters a third year of the pandemic. Here’s what they had to say.

Omicron

The pandemic is still the biggest influencer of the economy by far.

“The virus is still boss. There is no guarantee that a worse variant won’t come along,” said corporate economist Robert Frick of Navy Federal Credit Union in northern Virginia. “Everyone wants to put the pandemic behind them, but it’s still the major factor.”

The good news is, the U.S. economy has largely adapted to the coronavirus and managed to keep expanding. “I do think wave upon wave, people are learning to live with this,” Federal Reserve Chairman Jerome Powell said last week.

The problem? No one knows what’s next. Take the omicron. It’s spreading faster than any other variant and is igniting a panic in Europe.

Omicron appears less deadly, but the U.S. will very learn soon just how much damage it can do by watching what happens in the United Kingdom, where it spread earlier and more rapidly.

End of stimulus

The Biden White House’s ambitious $2 trillion social-spending plan called Build Back Better appears stalled and might not pass at all.

Some economists contend the end of fiscal stimulus could lead to withdrawal symptoms in 2022. “We have been living off the government for two years now,” said Joel Naroff of Naroff Economic Advisors in Holland, Pa.

Still, most economists think the U.S. is primed to grow a frothy 3% to 4%.

How come? Americans amassed big savings during the pandemic, for one thing. Wages are also rising as at the fastest pace in decades because of a major labor shortage, putting even more money in people’s pockets.

Businesses, for their part, are investing heavily in technology to get around the labor shortage and to boost production.

“Just re-stocking the shelves is going to contribute significantly to U.S. growth,” said Luke Tilley, chief economist at Wilmington Trust in Philadelphia. “That’s an undercovered story.”

Inflation

The biggest increase in U.S. inflation in 2021 in almost 40 years caught Wall Street DJIA and Washington by big surprise. The yearly rate of inflation hit 6.8% by one measure and 5% by another.

The Fed is now scrambling to get ahead of the problem and reassure investors that price pressures will subside in the next year.

Pretty much every economist thinks inflation will slow, and slow sharply, next year. But few are on board with the Fed’s forecast that the rate of inflation will ease to 2.6% in 2022.

“I do think we will see inflation pressures ease over time, but I don’t think we are heading back to the sub-2% inflation rates that we have been accustomed to,” said Jim Baird, chief investment officer of Plante Moran Financial Advisors in Southfield, Mich.

Naroff agrees. “What is the new trend? The Fed keeps saying 2%. I don’t think that’s realistic.”

Interest rates

The combination of higher inflation and the Fed moving to phase out its own massive monetary stimulus for the economy is bound to nudge interest rates higher in 2022.

The central bank appears on track in 2022 to raise a key short-term rate its kept near zero during the pandemic for the first time since 2018.

Higher borrowing costs are likely to exert a small drag on the economy. The 30-year mortgage rate, for example, could climb to 3.75% from around 3% right now. Car loans could also become more costly.

Frick thinks higher rates will kill off the frenzy of home refinancing and restrain home sales. On the flip side, savers who took a beating during the pandemic could finally make a little money on CDs and bank deposits if inflation nosedives.

“A lot of people are being crushed by low rates and high inflation,” Frick said.

Labor shortage

Six months ago, just about every forecaster expected the millions of people who lost a job or left the labor force early in the pandemic to return to work. It didn’t happen.

Now many wonder if several million workers have left the labor force for good. Lots of baby boomers retired and record stock market gains have made it easier for them to stay at home.

“A lot of people have permanently removed themselves from the labor market,” Tilley said.

If he’s right, the labor shortage is not going way. But it’s not all a bad thing. Businesses might struggle to fill a near record number of open jobs, but workers will have more money in their pockets to spend.

Rising wages

One of the silver linings of the pandemic-induced labor shortage is that workers are reaping the bigger increase in paychecks in decades. Average hourly wages, for instance, have climbed almost 5% in the past year.

By contrast, wage gains barely grew more than 2% a year in the prior decade.

That’s not a bad thing, economists say. After all, corporate profits are at an all-time high. They can afford to pay more.

Even more important, consumer spending is the main engine of U.S. growth. It accounts for about 70% of all economic activity.

“Businesses are going to complain about it, but in the long run that is great for the economy,” Frick said. “People were getting used to a sub -2% economy. If we want to get back to 3%, we need to pay people more.”

Supply shortages

A series of bottlenecks — clogged ports, lack of warehouse space, too few truck drivers — have spawned the biggest supply shortages in decades. The gridlock is expected to fade eventually, but the problems will persist well into 2022.

The coronavirus is still a major disruptor, for one thing, and there’s too many weak links in the chain, so to speak, to iron out the problems quickly. Even the Fed can’t do much.

“You can raise interest rates to reduce demand, but you can’t raise interest rates to unload cargo ships or speed up production in Asia,” Baird said.

Many companies are plotting ways to secure more stable sources of supply. Some are even considering moving operations back to the U.S. from other countries like China. But that’s no quick fix, either.

“You can’t bring it all back to the U.S. very quickly,” Naroff said.

The unknown unknowns

Former U.S. Defense Secretary Donald Rumsfeld once quipped it was impossible to know what would happen in the future because of “unknown unknowns.”

Economists have been humbled by the past year — they were wrong a lot and missed many major developments. They will almost assuredly err again.

#### It’s resilient.

James Picerno 12-22, Financial Journalist, Seeking Alpha, "U.S. economy remains resilient, but headwinds may be brewing," Seeking Alpha, 12/22/2021, https://seekingalpha.com/article/4476407-us-economy-resilient-headwinds-brewing.

The good news: there’s a strong tailwind in Q4, which will help limit the damage in 2022’s Q1. The Atlanta Fed’s GDPNow model, for instance, is nowcasting US GDP growth at 7.2% annualized in the final three months of this year (as of December 16). That’s up sharply from Q3’s modest 2.1% increase.

### AT: Economy Impact

#### Decline doesn’t cause war

Dr. Stephen M. Walt 20, Robert and Renée Belfer Professor of International Relations at Harvard University, PhD in International Relations (with Distinction) from Stanford University, MA in Political Science from the University of California, Berkeley, “Will a Global Depression Trigger Another World War?”, Foreign Policy, 5/13/2020, https://foreignpolicy.com/2020/05/13/coronavirus-pandemic-depression-economy-world-war/

On balance, however, I do not think that even the extraordinary economic conditions we are witnessing today are going to have much impact on the likelihood of war. Why? First of all, if depressions were a powerful cause of war, there would be a lot more of the latter. To take one example, the United States has suffered 40 or more recessions since the country was founded, yet it has fought perhaps 20 interstate wars, most of them unrelated to the state of the economy. To paraphrase the economist Paul Samuelson’s famous quip about the stock market, if recessions were a powerful cause of war, they would have predicted “nine out of the last five (or fewer).”

Second, states do not start wars unless they believe they will win a quick and relatively cheap victory. As John Mearsheimer showed in his classic book Conventional Deterrence, national leaders avoid war when they are convinced it will be long, bloody, costly, and uncertain. To choose war, political leaders have to convince themselves they can either win a quick, cheap, and decisive victory or achieve some limited objective at low cost. Europe went to war in 1914 with each side believing it would win a rapid and easy victory, and Nazi Germany developed the strategy of blitzkrieg in order to subdue its foes as quickly and cheaply as possible. Iraq attacked Iran in 1980 because Saddam believed the Islamic Republic was in disarray and would be easy to defeat, and George W. Bush invaded Iraq in 2003 convinced the war would be short, successful, and pay for itself.

The fact that each of these leaders miscalculated badly does not alter the main point: No matter what a country’s economic condition might be, its leaders will not go to war unless they think they can do so quickly, cheaply, and with a reasonable probability of success.

Third, and most important, the primary motivation for most wars is the desire for security, not economic gain. For this reason, the odds of war increase when states believe the long-term balance of power may be shifting against them, when they are convinced that adversaries are unalterably hostile and cannot be accommodated, and when they are confident they can reverse the unfavorable trends and establish a secure position if they act now. The historian A.J.P. Taylor once observed that “every war between Great Powers [between 1848 and 1918] … started as a preventive war, not as a war of conquest,” and that remains true of most wars fought since then.

The bottom line: Economic conditions (i.e., a depression) may affect the broader political environment in which decisions for war or peace are made, but they are only one factor among many and rarely the most significant. Even if the COVID-19 pandemic has large, lasting, and negative effects on the world economy—as seems quite likely—it is not likely to affect the probability of war very much, especially in the short term.

### Dollar DA---2AC

#### There’s a global blockchain arms race---keeping the lead by setting standards early is key to leadership that stabilizes the dollar

Tal Elyashiv 21, Founder and Managing Partner at SPiCE VC, Founder and Board Member at Securitize, MBA from the University of British Columbia, BS in Math and Political Science from Bar-Ilan University, “A New Global Arms Race In Digital Finance Is Heating Up”, CNBC, 1/21/2021, https://www.cnbc.com/2021/01/21/op-ed-a-new-global-arms-race-in-digital-finance-is-heating-up.html

Today, we’re on the precipice of what could be the largest transformational period in global history. With the first Industrial Revolution, new technologies like assembly lines, factories and transportation fundamentally changed society. This time, instead of cogwheels doing the work, blockchain-based digitalization will continue to drive transactions. Specifically, this latest phase of progress has its sights set on a massive industry ripe for disruption: finance.

Digital finance and the monetary system is leveraging decentralized blockchain technology to modernize financial markets. Dominant players in these systems include the world’s biggest financial institutions and global central banks.

The rise of digital currencies and CBDCs

As tokenization is an inevitable trend, central bank digital currencies (CBDC) are surging in adoption, since they are simply one kind of a more generalized digital asset, albeit one that is bound to risk-free central bank money. The global rivalry in digital currencies is heating up as central banks from an increasingly wider swath of countries, including China, Hong Kong, Thailand, the EU, U.K., U.S., and Australia, explore potential use cases for tokenized money.

CBDC is the first place where we see top-down adoption of distributed ledger technology (DLT) from central banks and governments. The adoption of CBDCs will drive significant DLT ecosystem innovation and development that will impact financial organizations. The widespread adoption of DLT will extend beyond finance to other industry verticals like security, supply chains, healthcare, retail and ecommerce.

How institutional investors are buying into crypto via Anchorage

CBDCs will certainly make payments, settlement of deals and trading simpler, especially when it comes to global trade. It will also potentially change the role current institutions are playing regarding money and payments. CBDC implementation will also possibly make cross border payments simpler and much cheaper. One result of that will be the enablement of micropayments, allowing small businesses to be more competitive and eliminate the need for aggregators in order to make them economically viable, resulting in a different distribution of value.

Winners and losers are made from historic periods of societal shifts and advancements. The U.S. was obviously a dominant force during the first revolution. As the world embarks on a new transformational journey, who is driving it? The answer to this question is very complex and currently unclear, but there is an intense financial technology “arms race” brewing between the world’s superpowers for dominance in digital finance infrastructure and technology, spurring short-term competitive innovation with critical long-term implications.

“I believe that if America does not lead innovation in the digital currency and payments area, others will,” David Marcus, head of Diem, the cryptocurrency project founded out of Facebook, said in a statement to the U.S. Senate Committee on Banking, Housing and Urban Affairs.

Huw van Steenis of UBS said there will be a “three-horse race” around the future of money with private tokens and CBDCs developing in parallel with efforts to improve the current system. The implications of winning or losing the digital finance “arms race” are massive and far-reaching.

During the U.S. and USSR space race, NASA harnessed tremendous intellectual and technical capital to enable the moon landing and further space exploration, leading to a variety of spinoff inventions, from global positioning systems (GPS) to advances in flight technology to Velcro and even freeze-dried food. In the same way, blockchain-based digital finance technology is a means to the end of greater technological sophistication.

The three leaders in the digital currency arms race

More than 80% of the world’s central banks are exploring their own versions of digital currencies, but it’s China, the U.S. and the EU that have the resources, technology and infrastructure to determine the future of the digital economy. 2020 started with a major event within the financial world: the World Economic Forum in Davos, where the WEF released a toolkit for policymakers regarding the creation of CBDCs.

China

China is currently testing its digital yuan with a feature allowing people to send money to each other by simply touching their smartphones together. This particular effort is just one of many digital currency trials China is conducting across the country. These coordinated activities, in combination with their leadership in the crypto ecosystem (accounting for nearly 90% of trading volumes and hosting two-thirds of bitcoin mining operations), is giving China somewhat of an advantage.

Leveraging that first-mover advantage, China has ambitious plans to leverage U.S. innovation and its own digital currency to someday dominate other world currencies. As a purely aspirational endeavor, the jury is still out on whether they can actually achieve this goal.

Regardless, China is creating a significant advantage in this global race on CBDCs by investing in the technology and experimenting at a very fast pace. Even in the most isolated and underdeveloped areas, most people already use electronic forms of payment, like WeChat Pay, almost exclusively. We will continue to see advancement from China with regards to the digital yuan, where it’s currently enjoying a first-mover advantage over other digital currencies.

China has made the digital yuan a public priority, and it has an ambitious goal of competing with the U.S. dollar by creating a digital Asian alternative. China will be able to track and control the movement of money in and out of the country, which is much easier to do with a digital yuan. Given its political structure, China is able to move faster than the U.S. or Europe in implementing such changes.

Europe

Europe is in a strong position to create a CBDC, but unlike attempts by smaller, individual countries like Sweden, the size and scale of an EU digital currency would be sustainable long-term and could compete at scale. The European Central Bank is discussing launching a consideration phase for a digital euro this year and launching a digital euro is at least a five-year plan.

United States

The U.S. continues to lead in the innovation, regulation and implementation of blockchain-based digital securities, banking, payments, insurance, etc., but may not be as far along as others when it comes to CBDCs. Over the last decade, American innovators have built compelling innovations in blockchain, digital currency and cryptocurrency aimed at revolutionizing finance and creating new US tech superstars. And, as these technologies advance, they’re innovating industries beyond just finance, including retail, cybersecurity, supply chain management and so many more.

Tech leaders in the space like Securitize are paving the way for widespread adoption and access to liquidity by building the mechanisms for the industry to take hold. The benefits of CBDCs will propel the U.S. implementation of a digital dollar. The release of CBDC is not just a technical change, but it’s also the revamp of a financial system that is centuries old. US policymakers should continue to foster US leadership in technological financial innovation and ensure that the American people enjoy its benefits first.

“The United States usually wins when we unleash the power of our innovative, dynamic private sector, with the government setting the rules rather than building the products,” said Brian Brooks, former acting comptroller of the currency of the U.S. Treasury Department’s Office of the Comptroller of the Currency. “But either way, given the intense focus of other countries in this area, let me say that because of the important role of the US dollar, we need the United States to step forward on this field.”

The future of finance

What happens with CBDCs will have far-reaching implications on the future of digital finance, including cryptocurrency and digital securities. Much like the space race didn’t just put a man on the moon, but also catapulted the invention of important ancillary technologies, CBDC and DLT adoption will influence the forward-moving progress of every industry. There will be an exponential amount of innovations resulting from this digital finance arms race that we don’t even know about yet. The possibilities are endless and we’re just at the starting line.

Whoever leads this race and determines the outcome of its infrastructure and operation will most certainly gain a significant advantage and may have the possibility to spearhead many of the other innovations that come from this technology. The conversation of this tech competition between countries was even brought to the US Senate. China is far ahead in implementing real digital finance and currency programs as we speak, giving them a first-mover advantage in something as simple as experience.

The US and its regulatory bodies are still the gold standard and will ultimately set the pace and the rules. US-based innovators continue to roll out viable solutions, but which powerhouse will roll out the standard solutions first to control the space and our digital economic destiny?

#### The dollar’s resilient.

Dr. Daniel Drezner 17, Professor of International Politics at The Fletcher School of Law and Diplomacy at Tufts University, Ph.D. in Political Science from Stanford University, Nonresident Senior Fellow at the Brookings Institution, “Here’s The Thing About The Demise Of Dollar Diplomacy . . .”, Washington Post, 10/19/2017, https://www.washingtonpost.com/news/posteverything/wp/2017/10/19/heres-the-thing-about-the-demise-of-dollar-diplomacy/

Back in the depths of that crisis I wrote a small academic article arguing that the dollar wasn’t going anywhere as the world’s reserve currency: “Neither the opportunity nor the willingness to shift away from the dollar is particularly strong.” In essence, no coalition of countries possessed the economic opportunity or the geopolitical willingness to supplant the dollar.

As predictions go, that one has held up pretty well. Of course, the election of Donald Trump poses a new challenge to the system. One byproduct of an “America First” grand strategy is that allies may find fewer reasons to stick with the dollar beyond economic calculation. With the administration pursuing a mercantilist approach toward Japan, the Pacific Rim and NAFTA, it is worth asking whether they will continue to be so willing to hold dollars.

Don’t take my word for this. Barry Eichengreen, an economist, has literally written the book on the dollar’s post-2008 status. In his latest Project Syndicate column, Eichengreen observes the persistence of the dollar’s status. He also previews some new research about the role that geopolitical factors play in dollar holdings:

US diplomatic and military links encourage America’s allies to hold dollars. States with their own nuclear weapons hold fewer dollars than countries that depend on the US for their security needs. Being in a military alliance with a reserve-currency-issuing country boosts the share of the partner’s foreign-exchange reserves held in that currency by roughly 30 percentage points. The evidence thus suggests that the share of reserves held in dollars would fall appreciably in the absence of this effect. . . .

South Korea and Japan are thought to hold about 80% of their international reserves in dollars. One can imagine that the financial behavior of these and other countries would change dramatically, with adverse implications for the dollar’s exchange rate and US borrowing costs, were America’s close military alliances with its allies to fray.

Nor is it hard to imagine how this fraying could come about.

No, unfortunately it is not hard to imagine that. And this comes at the same time that some are speculating China will compel Middle Eastern oil exporters to start transacting in yuan rather than dollars.

So would a weakening of geopolitical ties threaten the dollar’s status? Sure, in theory. In practice, however, the TINA condition still holds: There is no alternative.

For countries to choose to leave the dollar, they have to prefer an alternative. At this moment the only two conceivable rivals remain the euro and the renminbi. The euro . . . um . . . has its issues. As for the renminbi, it’s tough for a government to promote a desirable reserve currency at the same time it clamps down with capital controls. Even if Japan or South Korea wants to diversify away from the dollar, it is doubtful that the diversification would go that far. And regardless of what central banks do, the private sector has excellent reasons to limit holdings of euro or renminbi.

So no, I’m not terribly worried about the status of the dollar. The geopolitical willingness to diversify might be increasing, but not by that much, and the economic opportunity for a switch has moved in the opposite direction over the past decade. Basically, it’s a wash.

But the hard-working staff here at Spoiler Alerts would like to close with a warning: When thinking about the U.S.-led order, pundits often point to the dollar’s role as an important sign that things have not changed all that much. My current research suggests, however, that if the current order starts to break down, the dollar will be the last pillar to fall. The reasons are variegated, but in essence, the reserve currency is the last pillar that an aspiring superpower should want to take on when challenging an existing hegemon. The switching costs are considerable, and the speed of the transition has the potential to be very rapid. Superpowers will only try to produce a reserve currency after they have a dominant position on all the other pillars in the global economy. There is a reason why the last vestige of British hegemony in the global economy was the pound sterling’s status.

So loyal readers should take comfort that the dollar is not going anywhere anytime soon. They should not take comfort, however, that the dollar’s status reflects persistence for other dimensions of American power.

#### The LIO is resilient

Bilahari Kausikan 20, Chair of the Middle East Institute at the National University of Singapore and Former Permanent Secretary of the Ministry of Foreign Affairs, Singapore, “Reports of the Death of Liberal International Order are Exaggerated”, Straits Times, 4/6/2020, <https://www.straitstimes.com/opinion/reports-of-the-death-of-liberal-international-order-are-exaggerated> [abbreviation in brackets]

But history has time and again shown that America is resilient and capable of immense efforts once roused. Despite Mr Trump, the US is gradually mobilising. It will eventually contain the virus in its own way.

Delayed responses by China and the US (and Europe) have increased the economic costs of the pandemic. But all of us will have to pay the bill.

This does not inspire great confidence in any of them.

CHINA'S 'MASK DIPLOMACY'

Beijing is now capitalising on its ability to contain the fire it allowed to spread in the first place. Its propaganda apparatus is in overdrive, touting China's success.

Beijing offers aid and advice, and contrasts its efforts with the West's fumbling responses, in the hope that its own culpability be overlooked.

Give credit where due: By considerable sacrifice, China did contain the fire relatively quickly. It would otherwise have been worse for everybody.

But I doubt that China's "mask diplomacy" will have more than a temporary effect.

Even before the pandemic, the trade war, Hong Kong, Beijing's bullying tactics, and mistreatment of Uighurs in Xinjiang, among other issues, were wearing some of the gloss off the China story. The liabilities as well as the benefits of Chinese BRI (Belt and Road Initiative) investments were already becoming clearer.

No country will ever shun China. But "mask diplomacy" will not totally reverse the greater caution and scepticism that were already manifest in many countries' dealings with China. The simple reason being that Beijing's approach to the issues that led to this change of attitude will not substantially change.

Over-eager efforts to change the narrative of China's role seem to have begun to back-fire. Triumphalism grates; there have been complaints about the reliability of Chinese masks and test kits rushed to Europe that are reminiscent of complaints about the quality of some BRI projects. The Chinese government may not be involved. But that is beside the point: China wants credit, China takes responsibility.

There are already signs of pushback against too crass Covid-triumphalism. There could also be more invidious lingering effects.

Mr Trump calling Sars-CoV-2, the coronavirus that causes Covid-19, the "Chinese virus" is racist and unacceptable.

The phrase and all it insinuates may nevertheless stick in people's minds even if they dare not voice the politically incorrect thought. After all, more than a century later, we still call the 1918 pandemic "Spanish flu". The long-term reputational effects of calling the virus "Chinese" could be invidious.

Kindergarten-like behaviour - the trading of insults and conspiracy theories - has paused. Both sides have said they will cooperate against the disease. That's all to the good.

But I will be surprised if the civility lasts. For both countries, their own interests defined in terms of domestic politics are the paramount considerations.

DOMESTIC INTERESTS FIRST

For all the talk of global cooperation, what this pandemic has shown is that in a crunch, all countries look to themselves first. This has always been the harsh reality, now thrown into stark relief.

A recent Gallup poll had 49 per cent approving of Mr Trump's handling of the Covid-19 crisis. A Pew survey gave him 50 per cent. Republican support was much higher. Will Mr Trump eschew racial labels or will he resurface them if he sees advantage for the presidential election?

The Chinese people do not seem to have entirely absolved the CCP of responsibility for its initial bungling. If it feels insecure, will the party hesitate to resurrect absurd conspiracy theories to distract the public and bolster the nationalism that legitimates its authority?

In the meantime, the already bad atmosphere of US-China relations has been further poisoned, making life difficult for all other countries.

In so far as mistrust of both has been enhanced, few countries anywhere, except the irredeemably compromised, are going to place all their bets on one side or the other. Most countries will try to simultaneously hedge and balance, seeking maximum strategic autonomy, while trying to maintain the best relationship possible with both the US and China.

What was already emerging before the pandemic was a fluid and dynamic system of asymmetrical multipolarity.

The US will still be at the top in most dimensions of power. China will occupy the second tier and continue to move towards a less unequal equilibrium with the US.

Shifting combinations of middle powers and smaller regional actors will continually arrange and rearrange themselves along the central axis of US-China relations, sometimes tilting one way, sometimes another, as their interests and circumstances dictate.

Navigating this system is not easy. It may get more complicated. But that was essentially where we already were before the pandemic.

ECONOMIC IMPACT

The serious economic impact could, however, lead to structural changes in the international order. However, I would still be cautious about drawing definitive conclusions.

Some tentative observations can be made: The pandemic has exposed the vulnerabilities of over-reliance on Chinese supply chains. Some corporations were already hedging their China risks because of rising costs and US-China trade tensions. A significant reorientation of supply chains could have profound implications for globalisation and the liberal international order.

What has already occurred may strengthen the hand of those who advocate "decoupling" and perhaps even facilitate separation of certain domains. But Japan's decades-long search for a viable "plus one" for a "China plus one" strategy suggests that it will not be straightforward to diversify out of China in a major way.

What is therefore at present unclear is the extent to which countries can reduce dependence on China, although some diversification will almost certainly occur.

Interdependence - which has been underscored by the speed with which the virus spread from China to the US and Europe - makes across-the-board systemic decoupling still highly improbable, unless the pandemic drags on for years or the virus mutates into a more lethal form that causes even greater panic.

It was much simpler for the CCP to command a halt to production, than for it to decree that production resume. What is needed to jump-start the economy and save businesses, increases systemic risks of debt.

Chinese economic policymaking is not autonomous. Chinese policymakers must juggle contradictory considerations to operate in the context of a global economy in which external demand will have a major impact. Sequential and mutually reinforcing contractions in China, the US and Europe will probably cause a global recession.

There will be domestic political consequences for all countries. Their exact nature cannot now be predicted, but they are unlikely to be pretty, and a turn inwards seems likely in many countries. Still, I would not be too hasty in proclaiming an end to the [LIO] liberal international order.

The period when that order was unchallenged was historically exceptional and short, only about two decades from 1989 when the Berlin Wall came down, to the global financial crisis. For half of the 20th century and almost all of the period since the second decade of the 21st century, international order was divided and contested. The pandemic may well catalyse a return to such a more historically normal order. That is a serious enough situation but not the same thing as a collapse of the existing order.

Over-dramatic predictions can become self-fulfilling.

# 1AR

## Dollar DA

### AT: Sanctions Impact

#### Sanctions are circumvented---best studies concur.

Saaransh Mishra 21, Researcher, Observer Research Foundation, "The Ineffectiveness of Economic Sanctions," ORF, 02/28/2021, https://www.orfonline.org/expert-speak/the-ineffectiveness-of-economic-sanctions/.

The rational logic behind sanctions is that since actors are concerned about economic outcomes, they would be compelled to commit towards certain behavioural norms as a result of expression of official displeasure through sanctions. For the West, sanctions are also meant to underpin a normative understanding of the world where moral motivations are created through punishment or shaming to discourage engagement in the sanctioned behaviour. Yet surprisingly, a landmark study spearheaded by economist Gary Clyde Hufbauer showed the success rate of sanctions at a meagre 34 percent in the 116 examined cases since 1914. A further reanalysis of the same data by political scientist Robert Pape pins the figure at an abysmal 4 percent.

The US first imposed sanctions against Myanmar in 1988 to curb human rights abuses inflicted by the military regime and more sanctions were added via legislations and executive orders over the following decades. Nevertheless, sanctions failed to bolster the Myanmar government’s scores on measures of civil liberties and political rights from 1990–2011. The government continued the usage of torture, murder, and disappearance to clampdown on political dissent and recurrent repression of ethnic minorities throughout the 1990s and 2000s. Extensive sanctions did not prevent India and Pakistan from acquiring nuclear capabilities, nor did sanctions against Russia prevent excesses in Ukraine or the undemocratic annexation of Crimea. Similarly, North Korea had conducted six nuclear tests despite the imposition of multilateral economic sanctions by the US in 2002 and the United Nations Security Council in 2006 with respect to the pursuance of its nuclear program.

Proponents of sanctions have recurrently cited South Africa as a textbook example of a state that has witnessed political change due to international economic pressures. However, it would be reductive to isolate the effect of sanctions from the multitude of other domestic and international factors that had actively contributed to bring the end of the Apartheid regime. Phil Levy from Yale argues that the effects of sanctions were convincingly trumped by other factors such as the sturdy political opposition of the black majority spearheaded by Nelson Mandela, the inefficiency and the mounting costs of the Apartheid system as well as the fall of the Soviet Union. Muammar al-Gaddafi’s renouncement of Libya’s nuclear program in 2003 and his admitted involvement in the 1988 Lockerbie bombings is also attributed to the prolonged imposition of sanctions by the US and the UN. Yet, the factors that led to these developments are debatable. Multiple Bush administration officials have emphasised the 2003 invasion of Iraq and the interdiction of a Libya-bound ship filled with nuclear-related components as crucial factors. Other experts have also credited the use of diplomacy through engaged bargaining instead of mere isolation as punishment as a decisive factor. The aforementioned examples vividly highlight the inability of sanctions to facilitate political change independent of other pivotal elements.

Sanctions primarily fail due to the globalised world we live in. When sanctions lead to closure of one market, targeted nations have the liberty to shift their economic focus to other markets and trading partners in order to maintain a respectable volume of trade. The big players like the US or the EU imposing sanctions is treated as an opportunity by other emerging yet major economies like India, China, and South Korea. The differences in foreign policy among countries has an instrumental role to play in the survival of sanctioned economies. For example, China’s long-term foreign policy of non-interference in the internal affairs of another state has been essential for the rise of China as Myanmar’s dominant economic ally since sanctions were imposed in the 1980s. World Bank figures indicate that Myanmar does US $5.5 billion worth of trade with China each year, constituting 33 percent of all imports and exports. In stark contrast, the US foreign policy’s incessant emphasis on the spread of democracy has meant that the US is not in the country’s top five trading partners. China has also continued to have sizable economic ties with heavily-sanctioned North Korea, with bilateral trade increasing ten-fold in between 2000–2015; reaching a peak in 2014 at US $6.86 billion. Thus, sanctions are essentially effective only against regimes that want to trade with the sanctioning regimes. Additionally, sanctions endeavour to propel behavioural changes by tarnishing the reputation of states that persistently flout globally accepted behavioural norms. It can be argued that sanctions moderately worked in South Africa because of its close alliance with the US throughout the Cold War because of which it cared about its reputation. But, it is futile to sanction pariah regimes such as North Korea and Cuba that are not sensitive to international public opinion.

### Turn---1AR

#### Concentration distorts crypto markets which collapses the financial system.

Florian Deuflhard & C.-Philipp Heller 21, Economic Analyst, NERA Economic Consulting; Associate Director, Antitrust & Compeition, NERA Economic Consulting, "Antitrust Economics of Cryptocurrency Mining," SSRN, 09/07/2021, pg. 2-4.

Some have argued that because blockchains do not follow the traditional models of vertical control characteristic of firms, antitrust law as practiced currently is not applicable.7 To restore its applicability, a new theory of granularity has been proposed instead.8 \*\*\*FOOTNOTE BEGINS\*\*\* See Schrepel (2020b). An alternative view is that antitrust law may also be adapted to be included within a blockchain, see Schrepel and Buterin (2020). \*\*\*FOOTNOTE ENDS\*\*\* Despite the complexity of applying antitrust law to blockchains, some attempts have already been made.9 These analyses typically focus on how blockchain-enabled services might compete with existing products and services.

We argue that the methodology commonly used in economics and antitrust law in traditional markets can be modified to the newly emerging cryptocurrency mining industry. When specific new market features are taken into account, existing economic tools remain valid and reveal some novel economic mechanisms. We abstract from alternative use cases of blockchain technology, e.g. smart contracts and decentralized finance (DeFi), and focus on markets within and across cryptocurrencies. We first consider a single relevant market for the mining of a cryptocurrency, e.g. Bitcoin, and on this basis analyze the implications of market power. We then discuss potential effects of miners potentially shifting computing power between distinct cryptocurrencies.

The mining of cryptocurrencies has gradually become more concentrated over time. 10 This contradicts the original vision by Satoshi Nakamoto that “one-CPU-one-vote” ensures a fully decentralized system. Not only do larger miners benefit from economies of scale and decreasing average costs, risk-sharing attributes of mining pools also allow risk averse miners to achieve more stable cash flows. This natural convergence towards more concentration mimics patterns in traditional markets, but the implications for economic efficiency may differ.

Both in traditional and cryptocurrency mining markets, greater market concentration may harm cryptocurrency users if a large firm abuses its dominance but may also benefit them if larger firms are more efficient than others or offer a higher quality product. In cryptocurrency mining markets, large miners may additionally engage in non-truthful behavior (so called “attacks”) endangering the security of the entire network, two of the most relevant attacks being double spending and selfish mining.

First, large miners controlling more than half of the market may spend the same cryptocurrency twice in two separate transactions (“double spending”). Due to their dominant markets share, they can select the longest blockchain alone by allocating their computing power to the blockchain including the flawed transaction.

In addition, a large miner (or a coalition of miners) may agree to ignore blocks mined by a specific miner (who is not part of the coalition). This could result in that miner being excluded from the market and enable the remaining miners to obtain a greater share of the mining rewards. Such a type of behavior was alleged by the plaintiff in a case filed in December 2018, though the claim was later dismissed. 11 UnitedCorp, a diversified technology company and investor in a variant of Bitcoin, Bitcoin Cash, sued Bitmain, the largest Bitcoin mining pool, for allegedly colluding with other mining pools to support a new cryptocurrency following a change of protocol of Bitcoin Cash.12

Second, even when controlling less than of the market, large miners may strategically hide successfully mined transactions from other miners (“selfish mining”). Depending on the system’s state, they may then broadcast those transactions with a delay wasting invested computing power of other miners in the process.

Third, large miners can potentially influence the degree of congestion in the network by strategically excluding transactions with lower transaction fees. Given limited entry of smaller miners, this can increase revenues even if excess demand is not an issue if cryptocurrency users pay higher transaction fees as a result.

Last, we analyze possible countervailing forces (“efficiency defenses”). In many jurisdictions, including the United States and the European Union, horizontal mergers increasing concentration may yet be approved if the notifying parties can show that the merger would result in efficiencies that will be passed on to consumers.13 Similarly, agreements among firms reducing competition may nevertheless be compatible under antitrust law if they generate sufficient efficiencies so that consumers benefit overall.14

While in principle mergers among miners may result in cost efficiencies, it is less clear whether such efficiencies benefit cryptocurrency users. The consensus protocols of many cryptocurrencies contain provisions for the size and average frequency of adding a block. Any increase in the efficiency of mining blocks will neither increase the capacity of the cryptocurrency for handling transactions nor will it increase the transaction speed. Since efficiencies tend to increase the merging firm’s market share beyond what a simple addition of market shares suggests, efficiencies may have a harmful effect if they make it more likely that a merged firm engages in harmful attacks. On the other hand, when smaller miners merge and experience efficiencies, this may reduce the market share of larger outside firms. If so, then efficiencies might also be brought forward in defense of a merger.

#### That collapses the value of crypto.

Florian Deuflhard & C.-Philipp Heller 21, Economic Analyst, NERA Economic Consulting; Associate Director, Antitrust & Compeition, NERA Economic Consulting, "Antitrust Economics of Cryptocurrency Mining," SSRN, 09/07/2021, pg. 14-15.

Another reason limiting the risk of 51% attacks is that such attacks undermine the value of the underlying cryptocurrency.43 Users of the cryptocurrency might stop using the cryptocurrency, as they are no longer assured that their transactions are completed correctly. As a result, the value of the cryptocurrency could plummet. The attacker, as an entity with a large mining operation and hence likely a big investment in the cryptocurrency, would thus face a potentially large write-off on its existing stock of investment in the cryptocurrency. This would need to be compared against the potential gain from a successful double spending attack.44

Even if the potential gain from maintaining the functioning of the network might prevail in some cases, some cryptocurrencies have already suffered 51% attacks.45 Ethereum Classic, a hard fork of the Ethereum blockchain, suffered three such attacks in the late summer of 2020, without a sharp decline in its value. Even if a successful 51% attack led to the collapse of a cryptocurrency, an attacker might still benefit from this as a result of its behavior off the blockchain.46 For example, an attacker may enter substantial short positions in the value of the cryptocurrency before starting its attack, thus benefiting from a decline in value. This is particularly problematic if the short position can be effectively hidden by the attacker.47

## BBB DA

### O/V---1AR

#### Warming won’t be catastrophic

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CLIMATE TRENDS

Beyond exhibiting extreme overconfidence in a cherry-picked analysis of climate-change causes, politicians and activists frequently ground their alarmism in frightening predictions about consequences that are likewise far from certain. This is not only true within the very new (and still quite unreliable) field of predictive climate science; it is true even in the context of ongoing climate phenomena. Indeed, politicians and journalists frequently characterize dramatic or unusual climate phenomena as the product of anthropogenic climate change, yet there is little evidence to support those claims.

For one thing, there is no observable upward trend in the number of “hot” days between 1895 and 2017; 11 of the 12 years with the highest number of such days occurred before 1960. Since 2005, NOAA has maintained the U.S. Climate Reference Network, comprising 114 meticulously maintained temperature stations spaced more or less uniformly across the lower 48 states, along with 21 stations in Alaska and two stations in Hawaii. They are placed to avoid heat-island effects and other such distortions as much as possible. The reported data show no increase in average temperatures over the available 2005-2020 period. In addition, a recent reconstruction of global temperatures over the past 1 million years — created using data from ice-sheet formations — shows that there is nothing unusual about the current warm period.

Rising sea levels are another frequently cited example of impending climate crisis. And yet sea levels have been rising since at least the mid-19th century. This rise is tied closely with the end of the Little Ice Age that occurred not long before, which led to a rise in global temperatures, some melting of sea ice, and a thermal expansion of sea water. There is some evidence showing an acceleration in sea-level rise beginning in the early 1990s: Satellite measurements of sea levels began in 1992 and show a sea-level rise of about 3.2 millimeters per year between 1993 and 2010. Before 1992, when sea levels were measured with tidal gauges, the data showed an increase of about 1.7 millimeters per year on average from 1901 to 1990.

But because the datasets are from two different sources — satellite measurements versus tidal gauges — they are not directly comparable, and therefore they cannot be interpreted as showing an acceleration in sea-level rises. Moreover, the period beginning in 1993 is short in terms of global climate phenomena. Since sea levels have risen at a constant rate, remained constant, or even fallen during similar relatively short periods, inferences drawn from them are problematic. It is of course possible there has been an acceleration in sea-level rise, but even still, it would not be clear whether such a development stemmed primarily from anthropogenic or natural causes; clearly, both processes are relevant.

A study of changes in Arctic and Antarctic sea ice yields very different inferences. Since 1979, Arctic sea ice has declined relative to the 30-year average (again, the degree to which this is the result of anthropogenic factors is not known). Meanwhile, Antarctic sea ice has been growing relative to the 30-year average, and the global sea-ice total has remained roughly constant since 1979.

Extreme weather occurrences are likewise used as evidence of an ongoing climate crisis, but again, a study of the available data undercuts that assessment. U.S. tornado activity shows either no increase or a downward trend since 1954. Data on tropical storms, hurricanes, and accumulated cyclone energy (a wind-speed index measuring the overall strength of a given hurricane season) reveal little change since satellite measurements of the phenomena began in the early 1970s. The number of wildfires in the United States shows no upward trend since 1985, and global acreage burned has declined over past decades. The Palmer Drought Severity Index shows no trend since 1895. And the IPCC’s Fifth Assessment Report, published in 2014, displays substantial divergence between its discussion of the historical evidence on droughts and the projections on future droughts yielded by its climate models. Simply put, the available data do not support the ubiquitous assertions about the causal link between greenhouse-gas accumulation, temperature change, and extreme weather events and conditions.

Unable to demonstrate that observed climate trends are due to anthropogenic climate change — or even that these events are particularly unusual or concerning — climate catastrophists will often turn to dire predictions about prospective climate phenomena. The problem with such predictions is that they are almost always generated by climate models driven by highly complex sets of assumptions about which there is significant dispute. Worse, these models are notorious for failing to accurately predict already documented changes in climate. As climatologist Patrick Michaels of the Competitive Enterprise Institute notes:

During all periods from 10 years (2006-2015) to 65 (1951-2015) years in length, the observed temperature trend lies in the lower half of the collection of climate model simulations, and for several periods it lies very close (or even below) the 2.5th percentile of all the model runs. Over shorter periods, such as the last two decades, a plethora of mechanisms have been put forth to explain the observed/modeled divergence, but none do so completely and many of the explanations are inconsistent with each other.

Similarly, climatologist John Christy of the University of Alabama in Huntsville observes that almost all of the 102 climate models incorporated into the Coupled Model Intercomparison Project (CMIP) — a tracking effort conducted by the Lawrence Livermore National Laboratory — overstate past and current temperature trends by a factor of two to three, and at times even more. It seems axiomatic to say we should not rely on climate models that are unable to predict the past or the present to make predictions about the distant future.

The overall temperature trend is not the only parameter the models predict poorly. As an example, every CMIP climate model predicts that increases in atmospheric concentrations of greenhouse gas should create an enhanced heating effect in the mid-troposphere over the tropics — that is, at an altitude over the tropics of about 30,000-40,000 feet. The underlying climatology is simple: Most of the tropics is ocean, and as increases in greenhouse-gas concentrations warm the Earth slightly, there should be an increase in the evaporation of ocean water in this region. When the water vapor rises into the mid-troposphere, it condenses, releasing heat. And yet the satellites cannot find this heating effect — a reality suggesting that our understanding of climate and atmospheric phenomena is not as robust as many seem to assume.

The poor predictive record of mainstream climate models is exacerbated by the tendency of the IPCC and U.S. government agencies to assume highly unrealistic future increases in greenhouse-gas concentrations. The IPCC’s 2014 Fifth Assessment Report, for example, uses four alternative “representative concentration pathways” to outline scenarios of increased greenhouse-gas concentrations yielding anthropogenic warming. These scenarios are known as RCP2.6, RCP4.5, RCP6, and RCP8.5. Since 1950, the average annual increase in greenhouse-gas concentrations has been about 1.6 parts per million. The average annual increase from 1985 to 2019 was about 1.9 parts per million, and from 2000 to 2019, it was about 2.2 parts per million. The largest increase that occurred was about 3.4 parts per million in 2016. But the assumed average annual increases in greenhouse-gas concentrations through 2100 under the four RCPs are 1.1, 3.0, 5.5, and an astounding 11.9 parts per million, respectively.

The studies generating the most alarmist predictions are the IPCC’s Special Report on Global Warming of 1.5°C and the U.S. government’s Fourth National Climate Assessment, both of which were published in 2018. Both assume RCP8.5 as the scenario most relevant for policy planning. The average annual greenhouse-gas increase under RCP8.5 is over five times the annual average for 2000-2019 and almost four times the single biggest increase on record. Climatologist Judith Curry, formerly of the Georgia Institute of Technology, describes such a scenario as “borderline impossible.”

RCP6 is certainly more realistic. It predicts a temperature increase of 3 degrees Celsius by 2100 in the average of the CMIP models. But on average, those CMIP models overstate the documented temperature record by a factor of at least two. Ultimately, models with a poor record of successfully accounting for past data and highly unrealistic future greenhouse-gas concentrations should not be considered a reasonable basis for future policy formulation.

### Link---1AR

#### Courts bypass gridlock and save PC, even if unpopular.

Mark Tushnet 8, Summer 2008; William Nelson Cromwell Professor of Law, Harvard Law School; Constitutional Commentary, “Book Review: The Obama Presidency and The Roberts Court: Some Hints from Political Science,” vol. 25

What can the courts do for a resilient regime? Presidents and Congress have limited time and political energy. They will spend them on what they regard as central issues. But at any time there will be "outliers" - geographic regions as yet uncommitted to the regime's constitutional understandings, or substantive areas that plainly require change if those understandings are to become deeply implanted in society, yet politically too touchy or relatively unimportant to Congress. "For the affiliated leader, enhancing judicial authority to define and enforce constitutional meaning provides an efficient mechanism for supervising and correcting those who might fail to adhere to the politically preferred constitutional vision" (pp. 105-06). The courts can serve as a convenient but essentially administrative mechanism for bringing these outliers into the constitutional order. n16

In addition, the courts may have rhetorical resources unavailable to presidents. Their obligation to explain their decisions, and the fact that they make decision after decision, means that they have an opportunity to develop a reasonably general account of the resilient regime's constitutional understandings. In Whittington's words, "It is the classic task of judges within the Anglo-American tradition ... to render new decisions and lay down new rules that can be explicated as a mere working out of previously established legal principles" (p. 84). Presidents, in contrast, only sporadically make speeches illuminating those understandings.

More boldly, affiliated presidents may try to use the courts to "overcome gridlock" (p. 124) caused by the strategic positions recalcitrant opponents of the new constitutional regime may occupy. And, if not "use the courts," at least rely on the courts to take the initiative, because "the Court can sometimes move forward on the constitutional agenda where other political officials cannot" (p. 125). "Coalition leaders might be constrained by the needs of coalition maintenance," but "judges have a relatively free hand" (p. 125). This "use" of the courts, though, poses risks. The courts may push the regime's constitutional principles further and faster than is politically wise, and the regime's political leaders may find themselves on the defensive. Indeed, in this way the courts can contribute to making a resilient regime vulnerable, which may be part of the story about the Warren Court and the demise of the New Deal/Great Society regime. n17

Preemptive presidents face a special strategic problem. Sometimes they take office because they manage to persuade the public that they remain committed to a resilient regime's constitutional vision even if in their hearts they want to transform the regime. n18 At other times they take office as a regime becomes vulnerable, but do not themselves have the program, vision, or charisma to be reconstructive presidents themselves. n19 They are likely to face opposition in Congress and to some degree in the courts. But they can turn divided government to their advantage by seeking judicial confirmation of executive prerogative. The judges in place might be sympathetic to such claims for doctrinal and political reasons. They will have "inherited from affiliated administrations" (p. 169) doctrines supporting executive authority. And, though Whittington doesn't make this point explicitly, they may see the preemptive president as an accident, soon to be replaced by an affiliated one whose exercises of presidential power they will want to endorse. Finally, preemptive presidents need to get their authority from somewhere when they face congressional opposition, as they will. They don't have much of their own, but they can try "to borrow from the authority of the courts in order to hold off their political adversaries" (p. 195).

One final point before I move to some speculations about the future of judicial supremacy. Whittington emphasizes the growth of judicial supremacy during the twentieth century, both in terms of the judges' self-understanding and, perhaps more importantly, in terms of the degree of political commitment to judicial supremacy (p. 25). He suggests that politicians have had increasingly strong reasons to support the Supreme Court. The reconstructive presidency of Ronald Reagan was less ambitious than that of Franklin Roosevelt (p. 232), assuring the American people that Reagan's policies would strengthen rather than destroy the social safety nets that Roosevelt and Lyndon Johnson's regimes had created. Even a reconstructive president could hope that the Supreme Court would assist in articulating regime principles in the way the Court ordinarily does for affiliated presidents. Further, drawing again on Skowronek's account of the ways in which regimes leave a residue even after they have been displaced, Whittington describes the doctrinal thickening that occurred during the twentieth century with respect to essentially every possible ideological and political commitment a President could have (p. 283). Doctrinal thickening means that every member of a ruling coalition will have some basis in constitutional law for its assertions that the Constitution requires satisfaction of its policy preferences, and that the Court cannot possibly satisfy all the demands on it. n20 So, for the future, we might expect Presidents to have increasingly ambivalent views about the Supreme Court. In the twenty-first century, the Supreme Court will be useful and annoying to every President - useful because the Court can serve to articulate regime principles and can do some policy work that Presidents would rather not expend time and political capital on, and annoying because the Court's failure to satisfy all the demands emanating from a President's political supporters will put pressure on the President to do something about the Court.

#### They’re insulated from backlash

Erwin Chemerinsky 17, April 1; Professor of Law at UC-Berkeley, J.D. from Harvard University; William & Mary Law Review, “In Defense of Judicial Supremacy,” [vol.](https://scholarship.law.wm.edu/cgi/viewcontent.cgi?article=3693&context=wmlr) 58

Accordingly, in deciding who should be the authoritative interpreter of the Constitution, the answer is the branch of government that can best enforce the Constitution’s limits against the desires of political majorities. By this criterion, the federal judiciary is the obvious choice. It is the institution most insulated from political pressures.27 Article III of the Constitution provides that federal court judges have life tenure unless impeached and that their salary may not be decreased during their terms of office.28 Unlike legislators or the President, they never face reelection.29

Furthermore, the method of federal judicial selection reinforces its antimajoritarian character. Unlike the House of Representatives, whose members are elected at the same time, or the Senate, where one-third of the members are chosen in each election, the President appoints the Court’s members one at a time, as vacancies arise.30 Generally, no single administration is able to appoint a majority of the Court or the federal judiciary. The result is that the Court reflects many political views, not just the one that dominates at a particular time.

Other reasons exist, too, why the judiciary is the branch of government that is best suited to enforce the Constitution and should be deemed its authoritative interpreter. First, the judiciary is the only institution obligated to hear the complaints of a single person. For the most part, the federal judiciary’s jurisdiction is mandatory. Although the Supreme Court can choose which cases to hear, a lower federal court must (with relatively rare exceptions)31 rule on every case properly filed with it.32 Long ago, Chief Justice Marshall wrote, “It is most true that this Court will not take jurisdiction if it should not[] but it is equally true[] that it must take jurisdiction if it should.... We have no more right to decline the exercise of jurisdiction which is given, than to usurp that which is not given.”33

#### They face no ideological or political pressure.

Erwin Chemerinsky 17, April 1; Professor of Law at UC-Berkeley, J.D. from Harvard University; William & Mary Law Review, “In Defense of Judicial Supremacy,” [vol.](https://scholarship.law.wm.edu/cgi/viewcontent.cgi?article=3693&context=wmlr) 58

Third, as the branch most insulated from day-to-day politics, the judiciary is the branch most willing to enforce the Constitution in the face of strong pressures from political majorities.42 Even if the legislature and executive were to listen to all claims and respond on the merits, they are still less likely to uphold the Constitution against the intense opposition of their constituents. This insulation is what moved Alexis de Tocqueville to remark that “the power vested in the American courts of justice of pronouncing a statute to be unconstitutional forms one of the most powerful barriers that have ever been devised against the tyranny of political assemblies.”43

The argument is not that legislators act in bad faith and disregard their oath to uphold the Constitution, although this sometimes happens. Rather, it is that constitutional interpretation inherently requires choices as to what the Constitution should mean—how its abstract values should be applied in specific situations. These choices are best made by an institution whose primary commitment is to the Constitution, not to gaining reelection. Professor Owen Fiss observed that “[l]egislatures ... are not ideologically committed or institutionally suited to search for the meaning of constitutional values, but instead see their primary function in terms of registering the actual, occurrent preferences of the people.”44 The people can trust the judiciary much more to decide, for instance, whether the Constitution should protect the speech activities of a politically unpopular group like the Nazi Party.45 Because the Court is committed to upholding the First Amendment and is not faced with intense pressure from constituents, it is also in a better position to decide whether the right of privacy includes the right of a woman to decide whether to have an abortion or whether school prayer violates the Constitution.46

#### They’re politically detached

Erwin Chemerinsky 17, April 1; Professor of Law at UC-Berkeley, J.D. from Harvard University; William & Mary Law Review, “In Defense of Judicial Supremacy,” [vol.](https://scholarship.law.wm.edu/cgi/viewcontent.cgi?article=3693&context=wmlr) 58

Constitutional interpretation is a process of deciding what values are so fundamental that they should be safeguarded from political majorities.48 It makes little sense to entrust these decisions to those same political majorities. The judiciary’s insulation and commitment to decisions based on the merits make it far better suited for this task.49 Professor Alexander Bickel remarked:

[C]ourts have certain capacities for dealing with matters of principle that legislatures and executives do not possess. Judges have, or should have, the leisure, the training, and the insulation to follow the ways of the scholar in pursuing the ends of government. This is crucial in sorting out the enduring values of a society.50

Constitutional interpretation requires an institution to serve as the nation’s moral conscience—an institution responsible for identifying values so important that they should not be sacrificed and reminding the country when its own most cherished values are being violated. At times, the Supreme Court has functioned in exactly this way: as a moral conscience holding the nation to its highest values.51

We should trust the legislature least when the question is the constitutionality of a statute it has enacted. Allowing the same body to both enact laws and determine their constitutionality is no way to protect constitutional values. Review by another branch of government creates a necessary check on the majority.52 The executive veto provides something of a check, but Congress can override a veto.53 Moreover, the President is electorally accountable, at least in his first term, and may feel the same pressures as Congress.54 The judiciary is most detached from both the enactment of laws and the implementation of policies.

### Link---AT: Plan Not Court

#### 3. Courts do it

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Overall, defining the relevant market implies that courts,

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agencies and regulators should adopt a “law + technology” approach. In turn, this would require that they analyze and understand blockchain’s code. If they do not do so, they have no choice but to substitute the analysis of the underlying technology to one of business structure, leading to curious results that do not correspond to market realities.