## 1AC

### Blockchain---1AC

#### Advantage 1---BLOCKCHAIN

#### Blockchain development is inevitable, but beyond the scope of antitrust---the law’s 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 will reach a wide rollout---that builds resiliency to survive inevitable existential filters

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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.

#### 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

### Antitrust---1AC

#### Advantage 2---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

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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

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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 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.

#### Robust competition enforcement’s key to naval and air power that prevents great power war AND spurs diverse city innovation

Ganesh Sitaraman 20, Professor of Law at Vanderbilt University, JD from Harvard Law School, MPhil from the University of Cambridge, AB from Harvard College, “The National Security Case for Breaking Up Big Tech”, The Knight First Amendment Institute at Columbia University, 1/30/2020, https://knightcolumbia.org/content/the-national-security-case-for-breaking-up-big-tech

An alternative approach to innovation is one that relies less on protectionism for national champions and more on market competition and on public investment in research and innovation. Competition, as noted already, can be a powerful motivator for innovation. When big tech incumbents face little competition, society forgoes the innovation benefits that come from competition. Who knows if Instagram or WhatsApp could have dethroned Facebook’s primacy and developed even more new and innovative products? Facebook’s moves to acquire those firms prevented us from ever finding out. What small businesses might emerge if they didn’t have to compete with Amazon Basics on Amazon’s Marketplace? Unwinding mergers and separating platforms from companies that do business on the platform would help spur competition and lead to innovation.

Some might argue that robotics, AI, and quantum computing are so resource-intensive that an ecosystem of smaller companies engaged in fierce competition would mean that no company would have the resources available to invest in those next-generation technologies. There are a few responses to this argument. First, it is not clear that breaking up and regulating big tech would prevent those firms from having the considerable resources to develop the technologies of the future. Facebook would still have billions of users, even without Instagram and WhatsApp, for example. Amazon’s platform would still have enormous market power.

Second, and more importantly, part of the answer is that the decision to break up and regulate tech companies should be accompanied by public investment in R&D. One of the primary arguments for the national champions view is that monopolists have the resources to be able to invest in innovation because they do not face competitive pressures. 65. Baker, supra note 58, at 578 (describing the Schumpeterian view and linking it to R&D capacity). But any system of innovation operates against a backdrop of laws and public policy. 66. Some scholars have suggested that resolution to the Schumpeter-Arrow debate depends on an industry-by-industry assessment. See, e.g., Mark A. Lemley, Industry-Specific Antitrust Policy for Innovation, 3 Colum. Bus. L. Rev. 637, 651–52 (2011). But it is not clear that industry-by-industry assessments on antitrust enforcement alone can resolve this debate. Industries operate under different policy background conditions — including, for example, intellectual property rules, industrial policy, and R&D funding—and it may be that the optimal path is for policymakers to revisit policy choices in multiple areas. The ability to capture the gains of innovation depends on intellectual property law. The possibility of winning government contracts for frontier projects that require innovation is determined by procurement policies. And, of course, an alternative to monopolist investment in R&D is public investment in R&D. These policy choices all shape the innovation ecosystem, and it is not at all obvious why society has to accept national champions instead of thinking about revising these laws and policies more broadly. Given the emphasis that proponents of national champions place on research and development, it is worth noting that historically, as Mariana Mazzucato has argued, government has been a significant driver of innovation through its research and development efforts. 67. Mariana Mazzucato, The Entrepreneurial State: Debunking Public vs. Private Sector Myths (2013). Today, one could easily imagine the government spending considerable sums of money on R&D in artificial intelligence, robotics, quantum computing, augmented and virtual reality, and other technological research.

Public investment in research has a variety of benefits. First, because it is not tied to the profit motive and business model of a single company, it covers a wider range of subjects, leading potentially to innovations that would otherwise go undiscovered. Public investment extends to basic research that does not have immediate or foreseeable commercial applications. It could also include research into areas that might challenge the incumbency and business models of existing companies.

Second, and relatedly, public investment into research is less likely to be geared toward improving surveillance capacity. As long as the biggest companies have surveillance, personalized targeting, and behavioral response at the heart of their business models, research and innovation within those companies will likely be geared, in no trivial part, toward improving those activities. A digital authoritarian country might see that as a valuable public goal, but it is not at all clear why a free and democratic society should. Public-sponsored research might instead be directed toward a variety of socially beneficial uses other than continual improvement of individual monitoring and behavioral reactions. Notably, as there are more opportunities in research outside of the big tech companies, many talented people might choose to work on a wider range of problems.

Third, public investment in R&D has the potential to spread the benefits of technology, innovation, and industry throughout the country. At present, much of the country’s technological and intellectual prowess is concentrated in a few regions, the most prominent being northern California, Seattle, and Boston. Geographic inequality has a variety of negative consequences—economic, social, and political. 68. Ganesh Sitaraman, Morgan Ricks & Christopher Serkin, Regulation and the Geography of Inequality (draft on file with the authors).But, as economists Jonathan Gruber and Simon Johnson show in their book Jump-Starting America, there is no reason that public investment couldn’t spur successful economies in dozens of mid-sized cities all over the country, with spillover benefits for their regions. 69. Jonathan Gruber & Simon Johnson, Jump-Starting America: How Breakthrough Science Can Revive Economic Growth and the American Dream (2019). Unlike government action, technology companies have no reason to develop the capacities of all regions of the country. Amazon’s so-called competition for its second headquarters is a good example. After much public attention, the company settled on New York City and a suburb of Washington, D.C., two superstar cities.

Artificial intelligence, of course, requires considerable data in order to improve precision and accuracy. One of the arguments for big tech is that such companies alone are able to collect this data and use it. But there is no reason why this has to be the case either. Consider two alternate possibilities. First, the United States could create a public data commons that would be highly regulated to protect privacy. The public data commons would include publicly available data from a variety of government sources, and qualifying businesses, local governments, or nonprofits could train their machines using this data. Any new data they collect from users could then be fed back into the data commons (de-identified), so that the data commons improves in quality and quantity of data over time. 70. Ben Gansky, Michael Martin & Ganesh Sitaraman, Artificial Intelligence is Too Important to Leave to Google and Facebook Alone, N.Y. Times (Nov. 10, 2019), https://www.nytimes.com/2019/11/10/opinion/artificial-intelligence-facebook-google.html [https://perma.cc/7LUR-H3RT].Second, we could imagine requiring big tech companies to make their data available in interoperable formats. If these companies effectively have a monopoly power over data, then they could be regulated as monopolies—and one condition of their continued protection as monopolies could be enabling access to the datasets. Again, there is no legal or regulatory reason why these kinds of policy options are impossible. And in either case, they would enable a larger number of players to innovate than does the status-quo, stand-pat approach to protecting big tech from competition.

Big Tech and the Defense Industrial Base

Concentration in the tech sector also threatens the defense industrial base due to higher costs, lower quality, less innovation, and even corruption and fraud. 71. On some of these concerns, see, e.g., Jacques S. Gansler, William Lucyshyn & Michael Arendt, Competition in Defense Acquisitions, Univ. Md. Ctr. for Pub. Pol’y & Priv. Enterprise (Feb. 2009) (noting that competition is essential in the defense sector for economic efficiency, innovation, quality, and performance). Each of these dynamics has already been a problem for America’s over-consolidated defense industrial base. As technology becomes more and more central to defense and national security, it is likely that these same dynamics will replicate themselves with big tech companies. This will become a national security threat, both directly, in terms of the quality and speed of procurement, and indirectly, by reducing innovation and functionally redirecting defense budgets from research spending to higher monopoly profits.72. Id. at 2 (“Competition within the defense market is not only necessary to efficiently meet day-to-day military needs, but is also the lynchpin for successful military modernization—as a means for spurring innovation of transformational technologies and for bringing the best weapons to the battlefield quickly and affordably.”).

Conventional economic theory suggests that monopolists have the ability to increase prices and reduce quality because consumers are captive. When it comes to defense spending, the Government Accountability Office commented in 2019 that “competition is the cornerstone of a sound acquisition process and a critical tool for achieving the best return on investment for taxpayers.”.At the same time, the GAO observed that “portfolio-wide cost growth has occurred in an environment where awards are often made without full and open competition.” 75. Id. at unnumbered page preceding table of contents.Indeed, it found that 67 percent of 183 major weapons systems contracts had no competition and almost half of contracts went to a handful of firms. Of course, consolidation also means that the Defense Department is in a symbiotic relationship with these big contractors. Some startup executives wanting to sell to the government thus see the Pentagon as “a bad customer, one that is heavily skewed in favor of larger, traditional players,” and they don’t feel like they can break into the sector.76.

Standard stories about political economy and capture also suggest that these firms will have outsized power over government..As Frank Kendall, the former head of acquisitions at the Pentagon, has said, “With size comes power, and the department’s experience with large defense contractors is that they are not hesitant to use this power for corporate advantage.”. In the defense context, that means monopolists retain power (and profits), even if they overcharge taxpayers and risk the safety of military personnel in the field.

In an important article in The American Conservative on concentration in the defense sector, researchers Matt Stoller and Lucas Kunce argue that contractors with de facto monopoly at the heart of their business models threaten national security. They write that one such contractor, TransDigm, buys up companies that supply the government with rare but essential airline parts and then hike up the prices, effectively holding the government “hostage.” They also point to L3, a defense contractor that had ambitions to be a “Home Depot” for the Pentagon, as its former CEO put it. L3’s de facto monopoly over certain products, according to Stoller and Kunce, means that it continues to receive lucrative government contracts, even after admitting in 2015 that it knowingly supplied defective weapons sights to U.S. forces.

Consolidation also threatens U.S. defense capacity. The decline of competition, according to a 2019 Pentagon report, leaves the military vulnerable to “sole source suppliers, capacity shortfalls, a lack of competition, a lack of workforce skills, and unstable demand.” 81. U.S. Dep’t of Def., FY2018 Industrial Capabilities Annual Report to Congress 52-54 (May 13, 2019).With a limited number of producers, there is less talent and knowhow available in the country if there is a need to build capacity rapidly. 82. Id. at 53 (describing that, for a sole source manufacturing in the naval context, “it is difficult to recruit and retain qualified personnel to operate the equipment because technical schools have stopped training on the equipment, given its age.”).In 2018, the Defense Department released a report on vulnerable items in the military supply chain, including numerous items in which only one or two domestic companies (and, in some cases, zero domestic companies) produced the essential goods.83. U.S. Dep’t of Def., Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States (Sept. 2018).

How did the United States lose so much of its industrial base? The combination of consolidation and global integration is part of the story. As Stoller and Kunce argue, companies consolidated in the 1980s and 1990s while shifting emphasis from production and R&D to Wall Street-demanded profits. Globalization then allowed them to shift production overseas at a lower cost. The result was to gut America’s domestic industrial base—and, in many cases, to shift it to China, which engaged in a decades-long strategic plan to develop its own industrial base. The result, in the words of the 2018 Defense Department report, is that “China is the single or sole supplier for a number of specialty chemicals used in munitions and missiles.” In other areas too, the risks of losing access to critical resources are real. Describing the problem of limited carbon fiber sources, the same Pentagon report notes, “[a] sudden and catastrophic loss of supply would disrupt DoD missile, satellite, space launch, and other defense manufacturing programs. In many cases, there are no substitutes readily available.”84. Id. at 49.

As technology becomes more integral to the future of national security, it is hard to see how big tech will not simply go the way of the big defense contractors. Corporate mottos not to “be evil” are long gone, 85. Tanya Basu, New Google Parent Company Drops ‘Don’t Be Evil’ Motto, Time (Oct. 4, 2015) https://time.com/4060575/alphabet-google-dont-be-evil [https://perma.cc/T5SN-GEXP].and big tech companies spend millions on conventional Washington, D.C., lobbying efforts. 86. Amazon, Apple, Facebook, and Google spent a combined $55 million on U.S. lobbying in 2018. Cecilia Kang & Kenneth P. Vogel, Tech Giants Amass a Lobbying Army for an Epic Washington Battle, N.Y. Times (June 5, 2019), https://www.nytimes.com/2019/06/05/us/politics/amazon-apple-facebook-google-lobbying.html [https://perma.cc/AV7V-67BY].Over time, as contracts move to tech behemoths, there will no longer be competitive alternatives, and the Pentagon will likely be locked into relationships with big tech companies—just as they currently are with big defense contractors. 87. See, e.g., William E. Kovacic & Dennis E. Smallwood, Competition Policy, Rivalries, and Defense Industry Consolidation, J. Econ. Perspectives, Fall 1994, at 91, 92 (“As the industry shrinks, many horizontal mergers will feature acute tension between claimed efficiencies (such as cost reduction) and the weakening of competition as a procurement discipline.”).Some commentators suggest that robust antitrust policies are a problem because only a small number of tech companies can contract for defense projects. 88. Jon Bateman, The Antitrust Threat to National Security, Wall St. J. (Oct. 22, 2019), https://www.wsj.com/articles/the-antitrust-threat-to-national-security-11571784197 [https://perma.cc/7BJK-GRK9].But there is another way to look at it: The goal should be to encourage competition in the tech sector so that there are multiple contractors available. As former secretary of homeland security Michael Chertoff has said, defending the antitrust case against Qualcomm, “a single-source national champion creates an unacceptable risk to American security—artificially concentrating vulnerability in a single point. … We need competition and multiple providers, not a potentially vulnerable technological monoculture.”89.

The consequence of consolidation in tech is that taxpayers will likely see higher bills even as innovation slows due to reduced competition. Worse still, every taxpayer dollar that goes to monopoly profits—whether in the form of higher prices or fraud and corruption—is a dollar that is not going toward innovation for the future. A concentrated defense sector means not only less innovation due to the lack of competition in the sector; it means that funding that could have been available for innovation instead gets redirected via monopoly profits to the pockets of big tech executives and shareholders.

Conclusion

It is perfectly understandable why big tech companies don’t want to be broken up or regulated. They are profitable, growing, and powerful. It is also perfectly understandable why they deploy national security arguments to defend against the prospect. National security arguments have long been a trump card in law, policy, and politics, forming an exception to the normal rules that govern the economy.

But if we take seriously national security imperatives in a time of great power competition, the case for shielding big tech from competition is surprisingly weak. Tech companies are not competing with China so much as integrating with China, and their integration comes with threats to the United States. The best route to broad and transformative innovation is competition coupled with public spending on R&D–not concentration into monopolies. Rather than threatening national security, breaking up big tech will help bolster it.

#### Decline of naval power causes nuclear war

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More Ships Allow for More System Management

Institutions write strategy documents, in no small part, to plead for more resources, selling their centrality to U.S. security. But much of the maritime services’ case, however self-serving, happens to be true, backed up by data on 270 interstate maritime conflicts. The data show that U.S. naval power correlates to a strong downward effect on the frequency and escalation of maritime conflicts (Figure 1) and that maritime conflicts are increasing relative to territorial disputes. The future of conflict is likely to be maritime. This is especially the case if one holds the liberal belief that great-power competition is as much a matter of international system maintenance, conflict management, and public goods provision as it is direct military confrontation between superpowers.

The most likely friction points between China and the United States will be at sea, in the air, and in space: the global commons. China is involved in 10 ongoing maritime disputes (Russia in nine). But that leaves 77 disputes around the world — 80 percent — that do not involve a great-power opponent of the United States. Actively managing, if not resolving, these potential crises is an important part of maintaining a liberal order, making the world safer for commerce, and making other states more amenable to U.S. leadership. A hallmark of U.S. liberal grand strategy is dispute resolution and conflict management, and in the modern era, these clashes occur more often at sea than on land. Territorial disputes (e.g., Kashmir and Nagorno-Karabakh) have declined over the past two centuries, but contentious maritime claims (e.g., the Spratly Islands and the Aegean Sea) have increased significantly.

One major reason why maritime disputes will continue to increase is climate change. Unlike the most recent National Security Strategy, National Defense Strategy, and National Military Strategy, the sea services explicitly acknowledge its existence. The maritime strategy observes that climate change threatens “coastal nations with rising sea levels, depleted fish stocks, and more severe weather” and also claims that “[c]ompetition over offshore resources, including protein, energy, and minerals, is leading to tension and conflict.” Both statements are on firm empirical ground. Data show that climate volatility, especially variability in rainfall, exacerbates the risks for militarized clashes at sea. Warmer oceans increase scarcities in many fisheries stocks by changing migration patterns, increasing fish mortality rates, and changing water acidity levels, and thus, we may see greater escalation over contested fishing grounds in the future. The use of maritime militias by countries like China, Vietnam, and the Philippines to defend fishing grounds is not surprising as states expand security measures to protect their citizens’ access to fish stocks.

There are, of course, many causes for the relative increase in disputes at sea, but it is undeniable that the rise in maritime disputes correlates to a decline in U.S. naval tonnage as a percentage of the world’s navies (Figure 1). Rising sea powers as diverse as Russia, Egypt, Indonesia, India, Iran, and North Korea have sought to expand sovereignty over maritime spaces, increasing risks for future conflicts. These regional conflagrations are risky, too, because major power wars often arise through alliance ties and the failure of extended deterrence.

The data show that, while maritime crises rarely escalate to open military conflict, naval power is the only maritime capability that deters escalation. No matter how capable or large a state is in terms of broader measures of power, naval forces are essential for this task.

Erik Gartzke and Jon Lindsay argue in a forthcoming article in this series that states that build more surface ships and submarines and challenge their neighbors’ maritime sovereignty claims fight in more militarized conflicts. By this logic, naval investments by China, Japan, and Taiwan would increase the risks for clashes at sea, and these have occurred. But, rather than the growth of individual fleets, it is the regional naval *balance*, and the role played by the United States in it, that matters most. Senkaku/Diaoyu conflicts have not resulted in war largely due to naval parity between these actors and the capability balance that the United States offers. The data show, more generally, that maritime disputes between evenly matched naval powers are more likely to be settled through peaceful negotiations. This supports the strategy’s claim that “[a]ctivities short of war can achieve strategic-level effects. The maritime domain is particularly vulnerable to malign behavior below the threshold of war and incremental gains from malign activities can accumulate into long-term advantages.” Plenty of evidence exists to support a larger fleet regardless of who is in the White House.

#### City-based innovation prevents extinction

Greg Clark 21, Group Advisor for Future Cities at the HSBC Group, Former Research Scholar at the London School of Economics and Political Science, Degree from the University of Cambridge, Former Harkness Fellow at Columbia University, “Global Cities Desperately Need New Leadership Models”, 12/8/2021 https://hbr.org/sponsored/2021/12/global-cities-desperately-need-new-leadership-models

The world’s population centers are the critical places for the future of our planet. Where people settle and how they coexist with the planet will define the endgame in the story of human life. Will we spoil our habitat or remake it?

Whether we think of such cities as consumption markets, infrastructure hubs, innovation ecosystems, decision-making centers, sharing platforms, or visitor destinations does not really matter. They are all these things—and much more. We have come to call them “cities” because they serve and seek to empower citizens, but this word is now so overused and sometimes so contentious that it may just be better to think of them as population centers—places where people are concentrated. In the quest to avoid human extinction, such places are ontologically important.

On this planet, there are some 10,000 cities where we humans make our home, according to Cities in the World, the European Commission, and the Organisation for Economic Co-operation and Development.

Meanwhile, the United Nations World Population Prospects says we are on the road to 9 billion city dwellers by 2080. Currently, about 600 cities drive our global economy and fuel our national treasuries, 200 cities are the centers of national policy and lawmaking, and 100 cities are the hubs of corporate enterprise.

Anyone who wants to argue against the idea of an urban world needs to articulate the alternative. How would you distribute and serve 9 billion souls without using cities as the primary platforms? What are the environmental and social consequences of alternative models?

We know, from all the amassed science of success, that leadership is critical to how countries and companies survive and thrive. We read books about national heroes and about great corporate leaders. But we focus less frequently on how population centers are led and guided by wise people and what the leadership imperative is for a place that is not a nation and not a business venture. The leadership of cities is a niche discussion.

In our post-pandemic, climate-alarmed world, being a city leader is just about to become the most important job on the planet. The next 50 years will be a great reckoning, and it has already started. Can we equip our cities to avoid the extinction of our species?

Three ideas should drive our quest:

Cities are seriously underpowered. Most of our cities are subjected to an inadequate version of democratic government that leaves them with the wrong municipal geographies, insufficient financial resources, weak policy frameworks, short-term mandates, and overly dominant national governments that do not understand the interactions of different forces locally in a given place. National governments recognize the opportunity of a century of urbanization but are largely unwilling to couple it with the decentralization of power it requires. So cities are orphaned by nation-states.

Place leadership is a collective task. Public bodies, civic groups, asset owners, investors, and businesses must work together with citizens to shape choices and frame change. Cities are both a means to optimize the interplay of different changes, such as in energy, transport, environment, and public health, and also a platform for collective behavior change among citizens and businesses. Cities can motivate and inspire the changes we need, because they enable and require sharing of the same place for multiple purposes by large numbers of people. Place-based leadership can induce innovation.

Soft power is therefore essential for cities to succeed. Cities need to be convening platforms for innovation and joint endeavor. They cannot achieve the changes required without building and driving coalitions. The more collaboration, the more easily the big reforms that build greater formal competence are acquired. Well-orchestrated soft power leads to reforms that generate hard power.

We can already see a new generation of city leadership platform types beginning to emerge in multiple locations.

Over the past 20 years, Manchester, U.K., has steadily built a grand coalition of nine neighboring municipalities working together with universities, investors, and businesses committed to a place-leadership agenda that has enabled the delegation of new authority, the acquisition of new financial powers, and the creation of new leadership structures in a “combined authority” for the city region.

The Greater Sydney Commission is a new kind of city regional leadership platform where civic leaders are selected for their expertise to shape a long-term agenda beyond the short-term mandates and political cycles, but are accountable to and influential upon them.

Barcelona Global has been established as a coalition of corporations, institutions, entrepreneurs, academics, skilled migrants, and investors who want to help shape the Barcelona of 2050. The coalition is working at the spaces within and between the formal levels of governance: municipal, state, national, and European Union.

In China, the emergence of the great city clusters in the megaregions of the Greater Bay Area, the Yangtze River Delta, and the Jing-Jin-Ji region shows a new scale for subnational leaders to oversee and coordinate networks of interdependent cities.

In Colombia, we observe proactive citizen leadership in Medellín and civic-minded business leadership in Bogotá, fostering new tools and platforms for place leadership to emerge.

As we emerge from a global pandemic, the quest for effective city leadership is more important than ever. New models of shared leadership are finally arriving, but is it too late? We need these models, as well as other innovative ideas and approaches, to become the fabric of our global urban infrastructure in order to have successful cities. Our collective future depends on it.

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

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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

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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.

#### 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

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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.

### Plan---1AC

#### PLAN

#### The United States federal government should prohibit anticompetitive practices by nucleus participants at the root layer of blockchains.

### Solvency---1AC

#### SOLVENCY

#### Prohibiting anticompetitive practices by the blockchain nucleus of creates a principled basis to apply antitrust to distributed ledgers without over broadening 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.

## 2AC

### Blockchain ADV---2AC

#### It makes all antitrust enforcement far more taxing AND forces an agency ramp up

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The second element concerns the technical difficulties created by blockchain, as it will complexify the work of antitrust agencies. First, blockchain protects users’ identities. That is all the more so with public blockchains, where there is no need for the creator of a blockchain to approve users. Second, the transactions recorded on the blockchain are encoded and cannot be decrypted by anyone other than the parties to a transaction. This encryption also protects colluders by preventing agencies from tracing the history of their collusion. Third, even if users’ identity and purpose of their transactions were known, the deletion of the data contained therein by agencies would remain quite challenging (to say the least).73 In this respect, perhaps the exit of companies with the automatic destruction of information by smart contracts would be preferable to a leniency application with no subsequent possibility of eliminating the collusive agreement, or at least, the information illegally published.

The third element is linked to the fact that, besides its technical characteristics, blockchain enables colluders to manage the risk of detection. In turn, this should reduce the number of leniency applications. Most of these procedures are indeed started by colluders who fear being discovered. Technology helps in that regard. This is all the more true with private blockchains, as they can be set up so that only specific users can access the entire blockchain. This will limit their ability to hand over incriminating information to antitrust agencies. As a result, when choosing between leniency and an exit through smart con- tract,74 there is every reason to believe that blockchain would, at least partially, overshadow leniency applications.

How worrying is all this? At first sight, the expected decrease in the number of leniency applications may seem problematic, as antitrust agencies rely heavily on them to detect collusive agreements.75 According to the Organisation for Economic Co-operation and Development (OECD), the per- centage of cartel cases detected through leniency applications is reported in the survey to range between 45 and 55 percent for countries such as Canada, Chile, Germany, Korea and New Zealand, and over 85 percent for the European Union.76 In the United States, more than 90 percent of the penalties imposed by the DOJ in recent years are linked to investigations assisted by leniency applicants.77 This report shows a reactive policy by antitrust agencies. It also signals to companies that a well-designed collusive agreement that frames and rectifies disagreements has a good chance of (extended) survival.78 By undermining leniency programs’ effectiveness, blockchain will force competition agencies to become proactive again, failing which companies will have a growing sense of impunity from antitrust and competition law. Only a strengthening of proactive detection will increase the risk of punishment and force companies to seek leniency again.79

#### Tons of antitrust now

Jon Swartz 12-28, Senior Reporter for MarketWatch, “Big Tech Heads for ‘A Year of Thousands of Tiny Tech Papercuts,’ But What Antitrust Efforts Could Make Them Bleed?”, MarketWatch, 12/28/2021, https://www.marketwatch.com/story/big-tech-heads-for-a-year-of-thousands-of-tiny-tech-papercuts-but-what-antitrust-efforts-could-make-them-bleed-11640640776

Antitrust enforcement of Big Tech is expected to take place on a scale never before seen in 2022, following years of escalating rhetoric from Washington.

So far, Wall Street has shrugged as the five companies under the microscope — Google parent Alphabet Inc. GOOGL, -0.92% GOOG, -0.91%, Facebook parent Meta Platforms Inc. FB, -2.33%, Apple Inc. AAPL, -0.35%, Amazon.com Inc. AMZN, -1.14%, and, yes, Microsoft Corp. MSFT, -0.88% — have been targeted by governments and rivals across the globe. Despite a steady drumbeat of negative headlines, tech’s quintet of heavy hitters boasted a cumulative market value of nearly $10 trillion as 2021 neared an end, after producing a collective $2.4 trillion in revenue over the past two years of pandemic misery.

The stock prices of tech companies have only been “minorly impacted because investors do not tend to make decisions based on the mere possibility of legislation,” Ashley Baker, director of public policy at the Committee for Justice, told MarketWatch.

Many investors have simply looked back on history and shrugged, according to one Silicon Valley venture capitalist.

“There is more antitrust noise, but investment people remember the Microsoft and IBM IBM, -0.19% [antitrust investigations] in which waves of innovation followed those investigations and proved they did not own the industry,” Alexandra Sasha Johnson, president of Global Tech Symposium, a Silicon Valley investment conference, told MarketWatch. “Until the Big Tech companies buy each other, this is not a problem.”

For more: Big Tech was built by the same type of antitrust actions that could now tear it down

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This could finally change in 2022 as it did in the late 1990s, when some tech companies struck a cautious stance during the Justice Department’s investigation of Microsoft for monopolistic practices, Syed said.

“The difference is that we’re talking about interconnected companies that own an industry versus just one company [with Microsoft],” she said. “And there is bipartisan support, which makes it easier politically.”

More on the antitrust challenges facing Big Tech in 2022

Amazon has mostly avoided antitrust scrutiny, but that may change in 2022

Possible Justice Department lawsuit looms over Apple, which is facing scrutiny worldwide

Google enters 2022 battling antitrust actions on multiple fronts — with more likely to come

Facebook’s acquisitions of Instagram and WhatsApp are antitrust targets, but its metaverse mergers may be the victims

Microsoft has avoided U.S. antitrust scrutiny, but Europe is a different matter

With more than a dozen pieces of anti-tech legislation, a plethora of lawsuits and regulatory fines escalating in the U.S. and abroad, as well as the Biden administration rounding out Big Tech’s nightmare team of government agency heads, 2022 is shaping up as a seminal year for tech regulation after decades of inaction.

In rapid succession this year, Biden named and nominated an antitrust team of Tim Wu (to the newly created position of head of competition policy at the National Economic Council), Lina Khan (chair of the Federal Trade Commission) and Jonathan Kanter (head of the antitrust division of the Justice Department). Each is a heralded anti-monopolist advocate who has written extensively on the topic or represented companies making antitrust claims against Big Tech.

The trio have been referred to as members of a “New Brandeis movement,” named after Supreme Court Justice Louis Brandeis, whose decisions limited the power of big business in the early 20th century. With the New Brandeis trifecta in place, and Congress evaluating more than dozen possible anti-tech bills, next year is “shaping up to be the year of Tech Takedown,” Bhaskar Chakravorti, dean of global business at the Fletcher School at Tufts University, told MarketWatch.

More troubling for tech CEOs, he said, are the “many tiny actions at the FTC, Justice Department and Congress that will continue to keep feeding the news cycles with a steady stream of actions” that add up to a “a year of thousands of tiny tech papercuts.”

Big Tech’s treacherous path to antitrust enforcement has three potentially damaging roads: federal agencies challenging acquisitions and mergers; legislation tailored to stimulate competition and curtail the influence of tech’s dominant platforms; and federal and state lawsuits.

Closer scrutiny of M&A activity

The biggest immediate impact from the Biden administration’s all-out assault could be a cooling-off period of frenzied mergers and acquisitions by the biggest players. Regulators have been empowered with examining past deals and more strenuously inspecting tech’s latest purchases.

Major movement is already happening on the M&A front because, as lawyers and executives told MarketWatch, the FTC and Justice Department have new leadership empowered to more closely review and approve mergers while they await legislation and court actions. A non-binding presidential executive order largely seen as aimed at Big Tech announced a policy of greater scrutiny of mergers over the summer, and the FTC and Justice Department each would receive $500 million in new funding to boost staff working on antitrust enforcement as part of the House-passed reconciliation bill awaiting Senate action.

The FTC is signaling greater oversight over deals, requiring affirmative consent on certain transactions, which may prolong uncertainty on merger agreements. The agency has already sued to block the largest semiconductor deal ever — Nvidia Corp.’s NVDA, -0.59% proposed $40 billion acquisition of U.K.-based chip-design provider Arm Ltd., saying the deal would “distort Arm’s incentives in chip markets and allow the combined firm to unfairly undermine Nvidia’s rivals.”

Another FTC antitrust probe, into Meta’s plan to acquire VR fitness app Supernatural for $400 million, is underway, according to a report by The Information.

The Justice Department’s direction is less clear at this point, but signals from Kanter’s confirmation hearing point to “vigorous enforcement” of antitrust laws.

“Personnel is policy. With the trifecta of Khan, Kanter and Wu, there is a new sheriff in town,” Luther Lowe, senior vice president of public policy at Yelp Inc. YELP, -0.66%, told MarketWatch. “Efforts by Amazon and Facebook to recuse Khan, and Google’s attempt to recuse Kanter, is like arsonists asking for firefighters to be removed from a fire.”

### FTC ADV---2AC

#### 4. Courts will enforce the plan faithfully

Charles S. Dameron 16, Yale Law School, J.D. 2015. "Present at Antitrust’s Creation: Consumer Welfare in the Sherman Act’s State Statutory Forerunners." https://www.yalelawjournal.org/note/present-at-antitrusts-creation-consumer-welfare-in-the-sherman-acts-state-statutory-forerunners

Notwithstanding occasional invocations of the judiciary’s “common law” authority over the Sherman Act, federal courts have, since the Act’s earliest days, expended great energy attempting to divine the legislative purpose behind it.5If the Sherman Act were truly a blanket grant of common law-making authority to federal courts, they would hardly need to undertake such searching inquiries. The Supreme Court’s and lower courts’ close attention to the Sherman Act’s language and legislative history indicates that they have sought to abide by their constitutional role as interpreters of federal statutes.6

It is therefore more precise to say that the judiciary enjoys an especially wide authority to fill statutory gaps when interpreting the Sherman Act due to the Act’s ambiguous language, its constancy over time, and the fact—peculiar in light of many modern regulatory regimes—that Congress did not assign rulemaking authority to an administrative agency. These traits do not imply that federal courts may pursue whatever antitrust policy they find most desirable or wise; courts are obliged to follow the statute’s contours to the extent that they can perceive those contours.7

### Forecasters CP---2AC

#### ‘Should’ is advisory, not mandatory

Michael Thomas Liburdi 21 Jr., Judge on the United States District Court for the District of Arizona, JD from Arizona State University, BS from Arizona State University, “Garcia v. United States”, 2021 U.S. Dist. LEXIS 51519, \*10-11, 2021 WL 1056294, 3/18/2021, Lexis

1. Discretionary or Mandated Act

The United States first argues that "there was no specific and mandatory federal statute, regulation or policy that mandated the placement of additional or more specific flash flood warning signs or posters at the Water Wheel Parking Lot and/or adjacent trailhead." (Doc. 20 at 4.) The United States points to Forest Service manuals and [\*10] Sign and Poster Guidelines (the "Guidelines") to show that the language therein "are not regulations or mandates." (Id. at 5.) The Garcias respond by arguing that the Guidelines' applicable language gives the United States "no choice but to coordinate the development of appropriate warning signs to mitigate the hazard." (Doc. 23 at 6-7.) The Court finds the United States' argument more persuasive.

Discretion was conferred upon the Forest Service both explicitly and implicitly. Discretion was conferred explicitly through use of the permissive term "should." See *Sabow v. United States*, 93 F.3d 1445, 1452 (9th Cir. 1996) (describing "should" as "suggestive, not mandatory") (citation omitted); *Marshall v. Anaconda Co.*, 596 F.2d 370, 375 (9th Cir. 1979) (noting that the "'[s]hould . . . unless' language is clearly [m]ore advisory"). Section 7.7 of the Guidelines concerns flash flood hazard site signage at developed recreational sites. (Doc. 20-4 at 70.) This section provides:

The Flash Flood Hazard site sign or poster . . . *should* be posted at all developed recreation sites that the Forest Service has determined are vulnerable to flash flooding. Hydrologists and recreation managers *should* advise on the need for Flash Flood Hazard site signs or posters. Flash flood hazard site signs or posters should be posted on information [\*11] boards and/or at other prominent locations so that the signs are likely to be seen by all visitors.

(Id. (emphasis added).) "Should" is defined as: "guidance for a recommended but not mandatory practice with deviations allowed where engineering judgment or engineering study indicate a deviation is appropriate."3 (*Id.* at 30.)

#### ‘Resolved’ doesn’t require certainty

Merriam Webster’s 22 Online Dictionary, ‘resolved’, <http://www.merriam-webster.com/dictionary/resolved>

intransitive verb

1: to become separated into component parts

also : to become reduced by dissolving or analysis

2: to form a resolution : determine

3: consult, deliberate

4: to progress from dissonance to consonance

#### The CP 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.

#### The CP’s slow

Gerald Steinberg 1, Center for Strategic Studies, Jerusalem Post, 9/21/2001, Lexis

Instead of time-consuming negotiations and diplomatic coalition building, President Bush, as the leader of the world's only superpower needs to demonstrate his determination and power through clear action. This does not mean that long-standing allies such as NATO (including Turkey) and partners such as Israel, Japan, South Korea, Taiwan, India and even Russia and China should be ignored. Consultation and cooperation are important, but the US must also provide an unambiguous lead. Those states that are serious about anti-terrorist policies will follow, including Egypt, Saudi Arabia, Jordan, Kuwait and many other Arab and Islamic countries which are themselves threatened by fundamentalist Islamic terror.

### 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.

### Regulation CP---2AC

#### Ex ante regulations are too rigid and confrontational---antitrust is the sweet spot

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. 240-241

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 [FOOTNOTE] 34 If only because unexpected elements cannot be computed in advance, see Nassim Nicholas Taleb, The Black Swan: The Impact of the Highly Improbable (Penguin Books, 2010): 1-10 (explaining that inductive reasoning does not allow us to tackle never-before-seen events - the “Black Swans”). [END FOOTNOTE] 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.

#### It’ll get misapplied or watered down

Stacey L. Dogan 9, Professor of Law at the Northeastern University School of Law, and Mark A. Lemley, William H. Neukom Professor at Stanford Law School and Partner at Durie Tangri Lemley Roberts & Kent LLP, “Antitrust Law and Regulatory Gaming”, Texas Law Review, 87 Tex. L. Rev. 685, March 2009, Lexis

A. Relative Expertise

It is true, as the Court emphasized in Trinko and Credit Suisse, that antitrust courts are generalist courts, while regulatory agencies tend to specialize in a particular industry and its problems. That specialization should, all other things being equal, mean that expert regulators will do a better job than judges or juries of reaching the right result. But all other things are far from being equal. Antitrust courts have two significant advantages over regulatory agencies when it comes to promoting competition.

First, antitrust courts try to promote economic efficiency, while regulators often don't. For decades, efficiency has served as the sole criterion on which to judge antitrust rules. And courts have had more than a century to hone those rules to achieve that end. Without question, courts have made mistakes in the past. But there is a strong consensus among antitrust scholars that the wave of cases in the last thirty years has largely moved antitrust in the right direction, eliminating any significant risk that antitrust enforcement will do more harm than good. 53 Scholars may fight over whether a Chicago School or a post-Chicago School approach will achieve the right result in specific cases, 54 but for the most part they are tinkering at [\*697] the margins: the law and the scholarship have converged with respect to both the proper goals of antitrust and the general rules that will achieve those goals.

Regulation, by contrast, is frequently not even intended to achieve economic efficiency through competition. Occasionally that is due to a legislative judgment that competition is impossible, though the number of industries thought to be natural monopolies for which markets won't work has shrunk dramatically in the past four decades. 55 Industry regulation that excludes entry in order to promote a natural monopoly, as telephone regulation did before 1984, is not likely to achieve a competitive outcome.

More often, the goals of the legislators who establish regulatory agencies, or the goals of the regulators who run those agencies, are to achieve something other than competition. Indeed, many regulations are aimed precisely at eliminating competition, like the government-sponsored raisin cartel in Parker v. Brown or any of its modern descendants, the crop-support programs administered by the Department of Agriculture. It should be obvious that regulations intended to reduce competition will not promote it. But even if the regulation is not directly inimical to competition, competition is frequently irrelevant to, or at best a minor consideration in, a regulator's agenda. Regulators may care about the safety and efficacy of a drug, for example, and may only incidentally worry about whether there is competition in the sale of that drug. They may seek to reduce traffic deaths or air pollution by mandating the use of technology, regardless of the effect that mandate has on the price manufacturers can charge or the number of products manufacturers sell. These are laudable goals, to be sure, but they are not competition-related goals. An agency tasked with achieving these goals is likely to ignore threats to competition from the industry it regulates so long as those threats do not compromise its core mission. Thus, in Allied Tube & Conduit Corp. v. Indian Head, Inc., 56 the state and local governments that enacted into law the privately drafted code of the National Fire Protection Association were interested in stopping fires; doubtless they thought little if at all about the competitive effects of the code, even though it turned out that the code was drafted by interested private parties with the purpose of impeding competition rather than promoting fire safety. 57

Even those agencies whose mission expressly involves the consideration of competition issues will not necessarily make it their first among potentially [\*698] conflicting priorities. The SEC, for example, which as Justice Breyer pointed out is dedicated to improving market information and expressly considers competition among other issues in setting regulation, 58 is first and foremost an investor-protection and information-disclosure agency, not an agency that investigates and weeds out cartels or other anticompetitive practices. It is unlikely to devote much in the way of time or resources to such issues, because even if it is tasked to consider such issues, they do not reflect the agency's primary purpose. Similarly, even an agency like the Federal Communications Commission (FCC), which is directly focused on competitive conditions in a particular market, may naturally pay attention primarily to that market and give less if any attention to the effect its rules might have on competition in adjacent markets or on competition from unanticipated new businesses. This arguably explains the FCC's willingness to largely ignore the effects its decisions have on Internet communications; it is telecommunications, not the Internet, that the FCC is tasked to regulate. 59

Agencies that view competition as secondary - or view it through the lens of a particular industry's characteristics and interests - are less likely to create and enforce rules that optimally encourage competition. 60 At a bare minimum, therefore, the industry-specific expertise of an agency must be balanced against the competition-specific expertise of the specialist antitrust agencies: the Federal Trade Commission (FTC) and the Department of Justice's Antitrust Division.

### Capitalism K---2AC---A

#### It’s strategic duplicity that implodes capitalism from within. The commons fails.

Dr. Brian Massumi 18, Professor in the Department of Communication Sciences at the University of Montréal, Ph.D. in French Literature from Yale University, and Dr. Erin Manning, Professor of Philosophy and Cinema at Concordia University, Ph.D. in Political Philosophy from University of Hawaii, “A Cryptoeconomy of Affect”, The New Inquiry, 5/14/2018, https://thenewinquiry.com/a-cryptoeconomy-of-affect/

It would be very naive of us to think you could just walk out of capitalism. We’re not that naive. Neoliberalism is our natural environment. We therefore operate with what we call strategic duplicity. This involves recognizing what works in the systems we work against. Which means: We don’t just oppose them head on. We work with them, strategically, while nurturing an alien logic that moves in very different directions. One of the things we know that the university does well is that it attracts really interesting people. The university can facilitate meetings that can change lives. But systemically, it fails. And the systemic failure is getting more and more acute. And so what we imagine is that the Institute, assisted by the 3E Process Seed Bank, will create a new space that might overlap with some of the things the university does well, without being a part of it (or being subsumed by its logic).

MASSUMI.— Going back to the question of value, we want to create an economy around the platform that does not follow any of the usual economic principles. There will be no individual ownership or shares. There will be no units of account, no currency or tokens used internally. The model of activity will not be transactional. Individual interest will not be used as an incentivizer. What there will be is a complex space of relation for people to create intensities of experience together, in emergent excess over what they could have created working separately, or in traditional teams. It’s meant to be self-organizing, with no separate administrative structure or hierarchy, and even no formal decision-making rules. It’s anarchistic in that sense, but through mobilizing a surplus of organizing potential, rather than lacking organization. You could also call it communistic, in the sense that there is no individual value holding. Everything is common.

MANNING.— Undercommon.

MASSUMI.— Yes, undercommonly. The undercommons is Fred Moten and Stefano Harney’s word for emergent collectivity, which is one of our inspirations. We want to foster emergence and process, but at the same time find ways of making it sustainable. That means that the strategic duplicity has to extend to the economy as we currently know it. We have to be parasitical to the capitalist economy, while operating according to a logic that is totally alien to it.

What we’re thinking of is making the collaborative process moving through the platform function according to the radically anti-capitalist principles we were just talking about, centering on the collective production of surplus values of life, and separating that from the dominant economy by a membrane. A membrane creates a separation, but at the same time allows for movements across. It has a certain porosity. The idea is that we would find ways, associated with the affect-o-meter we were describing earlier, to register qualitative shifts in the creative process as it moves over its formative thresholds, and moves back and forth between online operations and offline events. What would be registered is the affective intensity of the production of surplus value of life, its ebbs and flows. The membrane would consist in a translation of those qualitative flows into a numerical expression, which would feed into a cryptocurrency. Basically, we’d be mining crypto with collaborative creative energies—monetizing emergent collectivity. The currency would be “backed” by the confidence we could build in our ability to keep the creative process going and spin it off into other projects, as evidenced by the activities of the Three Ecologies Institute as an experiment in alter-education.

On the side of the membrane facing the monetary economy, we would be producing a recognizable, quantifiable movement of value. But the membrane would shelter the creative process going on inside the platform from being colonized by that logic. We’d try to have the best of both worlds. It would be essential that the currency not be just a speculative vehicle that joins the crowd of coins. Our economic space would have to inhabit an ecology of other economic spaces experimenting with adapting blockchain and post-blockchain autonomous organization to cooperative endeavors. The key, once again, is finding workable solutions to the problem of how to use qualitative analysis to register movements of creative intensity—how to coax numbers into an alliance with qualities of experience. There is a new concept being developed by Nora Bateson that she calls “warm data” that has a similar goal, in relation to basic science, that we’d like to hook into.

MARC.— You want to use blockchain to create a parasitic economy that reappropriates speculative finance to generate profit from collaborative events. You are working within the immaterial level that the movement to occupy public spaces only gestured at, and uses the collaborative spirit common to any movement. Do you consider yourself to be “occupying” the abstract?

MANNING.— If we’re “occupying an abstraction,” we’re doing it in a way that is extraterritorial. All of this is a thought experiment that we want to help sow, but needs to be continued by others, and with others. It will be interesting if it manages to produce process seeds that get away from us and end up going beyond anything that we could have imagined. I’m not sure what Brian would say, but my feeling is that if we’re occupying anything, it’s the imagination. The postcapitalist imagination.

MASSUMI.— Another way of saying it is that we are talking about creating what’s often been called a temporary autonomous zone, but recognizing that we’re all complicit with capital, and not pretending we can just step outside that and go our merry way. If you do that, you only end up carrying unexamined presuppositions with you, and everything breaks down. We want to work from and with that complicity, using strategic duplicity. That doesn’t mean being deceptive. It means working in two registers at once.

We want to create a temporary autonomous zone (TAZ), following anarcho-communist logic, while at the same time being able to articulate it to the existing neoliberal economy, because like it or not, those are the conditions under which we live, and its grip is so tentacular, reaching not only all around us but inside of us, that you have to work hard and with great technique to start loosening the grip. You have to find ways of inhabiting the present, while setting off sparks of futurity that prefigure a postcapitalist world to come. So it’s an occupation in the sense that it’s a cohabitation. The TAZ isn’t a world apart. It’s a pore in the world as it is, in which something else can grow. It’s a relational space that you can enter without the conceit that you’re leaving the existing world. It starts by supplementing, rather than purporting to replace right away. Hopefully that supplementation grows and takes more and more of our cohabitation in, to the point that it can rival the dominant economy.

#### Organizing failure and bureaucracy make the commons unsustainable---but, blockchain unlocks it

Tom Cassauwers 20, Writer for Ozy, Freelance Journalist from Belgium, Currently Writes About Startups, Technology, Social Movements and Latin America, “Who Really Loves Blockchain? Socialists”, Ozy, 12/6/2020, https://www.ozy.com/the-new-and-the-next/who-really-loves-blockchain-socialists/397843/

WHY YOU SHOULD CARE

Cryptocurrencies have traditionally been driven by libertarians. Now socialists are embracing blockchain as a weapon against capitalist states.

Cryptocurrencies and blockchain have traditionally been the preserve of the libertarian right.

A growing number of socialists see blockchain as the weapon their political movement needs, from helping fund protest movements to avoiding sanctions and increasing government accountability.

To many millennials, Adrian’s sharp turn to the left is recognizable.

After graduating from college, he had student debt and a job he describes as shitty, in addition to working as an Uber driver. “I went deeper into left-wing theory during this period,” says Adrian (because Adrian doesn’t want his radical politics to interfere with his life, he asked that we not use his real name). “But I was also searching for ways to make rent. Which made me have a closer look at stocks and eventually cryptocurrencies.”

As Adrian got hooked on blockchain, a whole new world opened up. “It was a wormhole from there,” he says. “I realized we could automate away the capitalists.”

It’s an idea that a small but growing set of left-wingers are exploring. Cryptocurrencies like Bitcoin, blockchain and the underlying technology have traditionally been the preserve of the libertarian right. Many of the field’s leading figures are libertarians, and some of their economic beliefs are foundational for the community.

Socialists, though, are increasingly embracing the potential of blockchain to assist their political plans. This year Cryptocommunism, a book by French philosopher Mark Alizart, was translated into English. Yanis Varoufakis, the former finance minister of Greece and a left-wing icon, has repeatedly mused about the uses of Bitcoin for the left. The socialist government of Venezuelan President Nicolás Maduro started a botched cryptocurrency experiment in 2018 to evade U.S. sanctions. Adrian himself hosts a podcast about cryptocurrencies and has founded a Reddit community called r/CryptoLeftists.

“Leftists often see blockchain as a libertarian toy that’s only good for buying drugs, which I think is wrong,” says Matthew McKeever, executive associate editor of the academic journal Inquiry and a research assistant at the University of Hong Kong. McKeever doesn’t consider himself a socialist, but he has written about the relation between socialism and blockchain. “The technology has elements that deserve attention from the left,” he says.

WITH BLOCKCHAIN, YOU DON’T NEED TO DEPEND ON A CENTRALIZED AUTHORITY.

Broadly speaking, blockchain could serve socialists in two ways. The narrow option is to use blockchain technologies to better organize. A cryptocurrency might be used to allow money transfers to persecuted activists, similar to how Wikileaks received donations in bitcoin after its accounts were blocked for leaking classified information. Nigerian activists have used cryptocurrencies to raise funds for their recent protests against police brutality, after traditional banking channels were shut off. “For socialists, it could be good to organize without taking a detour through large capitalist companies, whose interests are anti-aligned with yours,” says McKeever.

But beyond that, blockchain might also be useful to build a socialist economy. Adrian mentions a hypothetical case in which the government might be able to distribute housing through blockchain and cryptocurrencies.

Capitalism, says Adrian, allows individuals to accumulate infinite amounts of capital, and in turn buy up houses as investments. To transition this to a system based on need, a token, or coin, which gives every citizen the right to a house, could be used. The community would then decide which categories of people are eligible for which houses. A single person, for example, might get a different token, and in turn access to a different selection of houses, than a couple with three children. In this way, blockchain would allow socialists to distribute goods and services without a market. “We need to distribute housing based on need, instead of through the market,” Adrian says.

The Venezuelan experiment with the petro, a cryptocurrency backed up by oil, is the odd one out. The attempt had more to do with evading U.S. sanctions than moving to socialism.

But even beyond Venezuela, traditional libertarians don’t agree with the cryptosocialists’ views. “Cryptocurrency technology is fundamentally libertarian,” says Diego Zuluaga, associate director of financial regulation studies at the libertarian think tank Cato Institute.

For him, libertarianism doesn’t just mean free markets. He argues that cryptocurrencies preserve the ability of individuals to do with their money as they please, instead of centralizing that power. And for Zuluaga, the plans of leftists like Adrian run counter to that fundamental libertarian belief about cryprocurrencies. “Most socialists like hierarchies,” he says. “They just want to replace private sector hierarchies with public sector ones.”

“They don’t know what they’re talking about,” responds Adrian, noting how capitalist economies are still highly centralized. Cryptosocialists argue that turning to blockchain could eliminate bureaucrats from the equation. “With blockchain, you don’t need to depend on a centralized authority,” Adrian says, returning to his housing example. “The alternative is for a socialist government to organize the housing supply, which creates technocratic dependencies.”

Blockchain would also be open source, allowing citizens to review the software underlying government decisions. In a sense, it would help avoid an age-old problem for socialism: that its utopian sentiments tend to get bogged down in stale bureaucracies. To back this up, Adrian references socialist philosopher Friedrich Engels: “He said that we need to transition the state from a government of people, to the administration of things.” Perhaps blockchain is the revolution that socialism needs.

#### Blockchain creates sustainability AND solves their impact

Michael Macaulay 21, Full-Stack Ethereum Developer, Software Engineer at LiveArt.io, BA in Digital Communication from Carson Newman University, “The Socialist Case for Cryptocurrency”, Medium, 9/2/2021, https://medium.com/geekculture/the-socialist-case-for-cryptocurrency-f162b8c1508

Socialists propose different paths forward to fix the many problems we face. However, they tend to ignore Cryptocurrency as an option.

Cryptocurrency hardly fixes every problem in the modern world. Far from it. But it can address many grievances that socialists have in the modern west.

Socialism is a loaded term. So let’s define it before we get into it. Just so we’re on the same page.

Socialism is the political idea of social ownership of the means of production. The means of production being businesses and property.

Basically, the people who work the businesses should also be the owners.

Socialism often gets confused with communism. Communism advocates for state ownership of the means of production.

When people criticize socialism for “not working,” they are really criticizing communism. Many socialist policies in Scandinavia, Europe, and even the US to an extent have produced good outcomes.

For example, Universal public education and the 40 hour work week are socialist policies.

Hopefully we’re on the same page now. And we can explore how cryptocurrency can promote socialist ideals without state intervention.

Universal Access to Finance

Access to basic financial services is a must. If you don’t have a bank account, you can’t start a business or safely save your own money.

There are billions of people across the world who don’t have any chance in the free market because they don’t have access to financial services.

As socialists would point out, because it’s not profitable to provide those services.

Cryptocurrency is easy to access as long as you have an Internet connection.

In theory, you could be homeless living in Sub-Saharan Africa. And if you have a laptop, you can create an Ethereum wallet and start earning cryptocurrency.

And if you luck out, you could end up becoming very wealthy in the process.

The important distinction is that cryptocurrency provides you the opportunity in the first place. The bank won’t even let you try.

Metamask is never going to do a background check on you. They don’t care if you are living in extreme poverty.

Anti-Inflation

Inflation is the big problem with a government backed currency. They can’t stop printing it. this is how most people get their start in cryptocurrency to begin with.

Inflation disproportionately hurts the lower classes. Their survival is dependent on their wages. And inflation slowly makes those wages worth less and less.

You can’t artificially create more Bitcoin or Ethereum.

Your crypto might be vulnerable to price fluctuations, but that can play in your favor. A smart trader can buy low and sell high. But inflation will always hurt you.

Inflation hurts rich people too. Don’t get me wrong. Which is why most of the new printed money goes directly into their businesses.

Rigged free market

It’s no secret that most of the printed money goes directly into businesses. Drives up stock prices. Makes the business owners wealthier.

They claim it’s to “stimulate the economy.” But most people have figured out that it only stimulates their economy. Not ours.

This allows big business to maintain monopolistic control of the free market. Which makes competing with them all the more difficult.

A lobbyist has a better ROI than innovation.

Cryptocurrency is unique because it isn’t vulnerable to that kind of regulation. The code that powers bitcoin can’t be turned off. Or edited by the government.

Anti-monopoly

Look, at the end of the day, cryptocurrency is open source software. That means it’s very hard to monopolize it.

Microsoft has a monopoly with Windows because the code that makes it run is closed source. You’re not allowed to look at it.

If a cryptocurrency project had some kind of flaw, but was otherwise a great project, it can easily be fixed.

Developers can create their own version of the code, fix the problem, and release it as a new, separate project.

So, let’s say there’s a cryptocurrency project that lets you trade rare crypto coins. But, the creator forces you to pay a 50% fee.

That would suck. Other developers would be able to fork the code. Remove the fee. And let everyone use it.

Cryptocurrency Connect Workers to the Business

The traditional economy looks something like this. A wealthy person starts a brick and mortar business. Hires locals to come in and work it. He pays the employees a set wage and the business owner collects any of the upside.

The Internet disrupted this to an extent. Sites like YouTube, Fiverr, Uber, etc.

Now, the workers simply use these websites as a platform to find work. Whether they’re content creators or freelancers.

But there are a few big problems. The most important being the platform itself. It has complete control over these workers.

They can arbitrarily delete your account without warning, and take a large percentage of any money you make.

For example, YouTube takes a whopping 45% of all your revenue.

That’s where cryptocurrency and blockchains come in.

As Vitalik Buterin put it, “Whereas most technologies tend to automate workers on the periphery doing menial tasks,” Buterin says, “blockchains automate away the center. Instead of putting the taxi driver out of a job, blockchain puts Uber out of a job and lets the taxi drivers work with the customer directly.”

The platform itself will be autonomous code. Code that cannot be edited or manipulated.

The best example right now is Uniswap. It’s a decentralized cryptocurrency exchange.

There is no central authority controlling everything. There are only traders and liquidity providers. That’s it. No middlemen. No rule makers. No bullshit.

As tech continues to get better, this will be the norm for large platforms.

Every single giant tech company that controls a massive platform of workers and creators will be replaced by a Decentralized cryptocurrency competitor.

This is going to be a revolution for workers. They’ll be able to build up their skills. Sell those skills on the decentralized web. Get paid in crypto. And that’s it.

And what’s even more exciting is that every platform will use a native token. Uniswap issues Uniswap tokens that act as governance tokens.

Who gets those tokens? The users! The people who make the platform run to begin with.

This is going to do more to democratize the workplace than any other socialist policy in history.

Final Thoughts

Cryptocurrency is popular with the political right. You can’t ignore the anti-government freedom crowd.

But cryptocurrency addresses loads of socialist ideals. And what’s better — it will be decentralized socialism. No governments or unions required.

Cryptocurrency is building a utopian future. Constructed with code and powered by computers. Where workers will own their own product without a profiteering middleman reaching into their pockets.

The future crypto-powered world is going to be a utopia for everyone. Workers included.

#### Financial stability is improving. Ignore fear mongering.

Tobias Adrian 17. Financial Counsellor and Director, Monetary and Capital Markets Department, IMF; previous Senior Vice President, Federal Reserve Bank of New York and Associate Director of the Research and Statistics Group; PhD, Economics, MIT. “Assessing Global Financial Stability.” Presentation at the London School of Economics. October 27. <http://www.imf.org/en/News/Articles/2017/10/27/sp-102717-assessing-global-financial-stability>.

There are good news: near-term financial stability risks are lower, driven by a decline in macroeconomic and emerging market risks.

As outlined in the IMF’s most recent World Economic Outlook, the upswing in global activity has gained further steam, with global growth projected to rise to 3.6 percent in 2017 and 3.7 percent in 2018—in both cases 0.1 percentage point above our previous forecasts, and well above the global growth rate of 3.2 percent in 2016. This is laying hopes for a sustained recovery and should allow for the eventual normalization of monetary policies.

The core of the global financial system is stronger. Systemically important banks and insurers continue to enhance their resilience by raising capital and liquidity, addressing legacy issues, and adapting their business models to the evolving regulatory and market environment.

In emerging markets, capital flows are rebounding, driven in part by stronger fundamentals. Portfolio inflows to emerging market economies are on track to reach $285 billion in 2017, more than twice the total over the past two years. The cost of financing is low, and their currencies and equity prices have strongly appreciated this year.

Globally, supportive monetary and financial conditions and buoyant financial markets have helped foster growth and repair balance sheets.

### BBB DA---2AC

#### It won’t pass.

Jeremy Dillon 1/3, Emma Dumain, Nick Sobczyk, George Cahlink, Reporters at E&E Daily, “What’s Ahead For ‘Build Back Better’: 4 Scenarios”, Energy & Environment Daily, 1/3/2022, https://www.eenews.net/articles/whats-ahead-for-build-back-better-4-scenarios/

2. No deal

Even for Democrats vowing to return to negotiations in the new year, Manchin’s opposition may be too much to overcome.

That could mean no deal at all ahead of the 2022 midterm elections, and the bill’s demise. Most prognosticators see Democrats losing seats in the House in November, imperiling their majority there. The Senate is likewise considered in danger for the party.

Outside the climate portions of the package, Manchin has still not consented to allowing an expansion of the child tax credit. Excluding that provision is considered a dealbreaker for many Democrats. And even though Jayapal discussed compromise yesterday, progressives have also been cool to keep shrinking the bill.

Manchin has been upfront about his concerns about the package, especially as it relates to inflation and the national debt. Those concerns are unlikely to ease in the first weeks of 2022, which could further entrench the Energy and Natural Resources Committee chair.

Bad blood between Manchin and White House staff may also prove problematic. Manchin allies have blamed leaks from the White House and its decision to blame him for the bill’s delay as souring the senator to the entire budget reconciliation effort. Burnt bridges need to be repaired.

Manchin was direct in his criticism of "Build Back Better" and deployed GOP talking points. The White House responded by accusing the senator of breaking his word. But both sides seem to have cooled that heated rhetoric after Manchin and Biden talked via phone before Christmas, according to POLITICO.

Still, Manchin’s statement of opposition specifically targeted the climate portion of the bill as a key hurdle to his support. As part of that statement, he cited a fear that the bill’s provisions could disrupt grid reliability.

“If enacted, the bill will also risk the reliability of our electric grid and increase our dependence on foreign supply chains," he said. "The energy transition my colleagues seek is already well underway in the United States of America."

Manchin already killed a key policy to address climate change, the Clean Electricity Performance Program, and he has publicly raised doubts about electric vehicle tax credits and charging grants.

Even if the White House can get Manchin on board again, Sen. Kyrsten Sinema (D-Ariz.) also remains a wild card. And some of Manchin’s goals, including raising taxes on the rich, have encountered Sinema’s veto. The right balance could prove difficult to find.

#### PC is thumped.

Brian Bennett 12/29, Brian Bennett covers the White House for TIME Magazine, “It’s Shaping Up to Be a Tough 2022 for Joe Biden. Here Are His Biggest Challenges,” TIME, 12/29/2021, https://time.com/6129917/joe-biden-2022/

Joe Biden enters his second year in office down in the polls, with a pandemic dragging on and nearly a third of Americans still hesitant to get vaccinated, a recovering economy strained by inflation and an unpredictable supply chain.

He’s presided over the roll out of trillions of dollars in healthcare funding and stimulus payments, seen the unemployment rate drop to 4.2%, made COVID-19 vaccines available for free to everyone in the country over 5 years old, and signed a trillion dollar infrastructure law. But voters, fatigued by the uncertainties of the pandemic, have seemed reluctant to give him credit, and by fall, Biden’s approval rating dropped below 50%.

That puts him in a precarious position heading into 2022. With an evenly divided Senate and a narrow majority in the House, Democrats may lose control of Congress in the midterm elections in November. The checklist of what Biden wants to accomplish in his second year in office has to be ticked off with a limited amount of political capital, and a limited amount of time.

Infighting among Democrats has already delayed the next raft of Biden’s priorities, including expanding paid family leave and access to health care and child care. And campaign promises to pass voting rights legislation and police reform have seen little progress.

#### 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.

#### U.S. action alone fails.

I&I 21, Issues & Insights Editorial Board, “There’s Nothing The U.S. Can Do To Affect Global Temperature”, Issues & Insights, 9/7/21, https://issuesinsights.com/2021/09/07/theres-nothing-the-u-s-can-do-to-affect-global-temperature/

“We simulated the environmental impact of eliminating greenhouse gas emissions from the United States completely,” Dayaratna said in testimony.

“Simulation results indicate that if all carbon dioxide, methane, and nitrous oxide emissions were to be eliminated from the United States completely, the result in terms of temperature reductions would be less than 0.2 degrees Celsius, 0.03 degrees Celsius, and 0.02 degrees Celsius, respectively. These temperature reductions would also be accompanied by minuscule changes in sea level rise (less than 2-centimeter reduction).”

This isn’t hard to understand when it’s put next to the fact that more than half of the world’s human greenhouse gas emissions are produced by 25 cities, all but two of them in China, none of them in the U.S.

It’s truly asinine to believe that Washington and our state lawmakers can do anything about greenhouse gas emissions when China and India have been busy building hundreds of coal plants and that, as of last year, 350 coal-fired power plants were under construction worldwide. China – which, we must point out, produces most of the solar panels installed in the West in factories powered by that country’s “mountain” of coal – is not going to yield to John Kerry’s embarrassing begging that it cut emissions. Beijing will do only what it wishes.

#### Warming won’t be catastrophic.

Dr. Benjamin Zycher 21, Senior Fellow at the American Enterprise Institute, Doctorate in Economics from UCLA, Master in Public Policy from the University of California, Berkeley, and Bachelor of Arts in Political Science from UCLA, Former Senior Economist at the RAND Corporation, Former Adjunct Professor of Economics at the University of California, Los Angeles (UCLA) and at the California State University Channel Islands, and Former Senior Economist at the Jet Propulsion Laboratory, California Institute of Technology, “The Case for Climate Change Realism”, 6/21/2021, https://www.aei.org/articles/the-case-for-climate-change-realism/

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.

## 1AR

### Cap K---1AR

#### It eliminates worker exploitation AND promotes ecological sustainability

Hannes Gerhardt 20, Associate Professor of Human Geography at the University of West Georgia, “Blockchains: Building Blocks of a Post-Capitalist Future?”, The Transnational Institute Long Reads, 11/6/2020, https://longreads.tni.org/blockchains-post-capitalist-future

The above cases may seem disparate, but they share a common interest in using “cryptographic ledger technology,” often referred to as “blockchain,” as a way of rethinking the valuation inherent in market-based pricing. By offering new, non-capitalist ways of measuring and pursuing value(s), blockchain promises the ability to pursue an alternative economic path to capitalism as we know it. Assuming the social and political power to do so, what would such an endeavor look like?

Valuation within capitalism

Before turning to the technology, it is important to be clear about the dysfunctional value system dominating the current economic order. In Ancient Rome, the thinker Publilius Syrus captured what would later become capitalist dogma when he said, “everything is worth what its purchaser will pay for it.”

Today, the obfuscated workings of the market — Adam Smith’s “invisible hand” — is seen as an omnipotent super-computer cranking out the current value of everything in the form of price. Following Marx, this simple reduction of value to what price it will fetch on the market happened when the basic rationale animating economic interactions shifted from one of pursuing commodity exchanges, facilitated by money (C-M-C), to using commodities as a means to gain more money (M-C-M). Money here becomes the marker of all the value in the world.

Such a valuation system, which is the very foundation of capitalism, leaves no room for any considerations of derived or inherent value, let alone ethical values. The consequences are clear: the reduction of labor to price leads to exploitation; viewing commodities as disconnected from labor results in the alienation of workers and consumers; and the never-ending externalization of environmental costs precipitates the collapse of global ecosystems.

Logically, therefore, any counter-capitalist movement must explore ways in which values — not one sole overarching value — can be re-incorporated into valuation by internalizing aspects of the economy that are generally excluded or hidden from view — both the good and the bad. Today, technology-inspired efforts, as illustrated in the examples above, are being pursued to do precisely this.

Blockchain and beyond

Blockchain is a digital, decentralized database of value-exchange transactions — essentially a ledger. It is open for anyone to see, like a shared Google document. Those who take part in viewing and building the ledger are called nodes. The ledger is established in a linear sequence of encrypted, time-stamped datasets, or “blocks.”

It is almost impossible to tamper with the ledger owing to a number of ingenious security measures, of which the most important is that the blockchain is based on the consent of the majority of nodes, i.e. it is a decentralized, peer-to-peer security system with no central site that could be compromised. The far-reaching contribution blockchain offers is the ability to create and maintain incorruptible records of monetary, product, or labor exchanges, among many other things, with no centralized intermediary such as a bank, a boss, or a government.

We are now also beginning to see the unfolding of second- and third-generation blockchain technologies, which have moved beyond capturing value transfers to establishing entire systems of value exchanges using smart contracts. A smart contract is a blockchain-enabled “if-then” program in which a particular event is triggered if a certain condition is met, which can be assessed by peer-to-peer or automated systems.

For instance, Sensorica’s value accounting system would be based on self-reporting and group verification. The information supplied by fishermen claiming Fishcoin could be assessed via a combination of autonomous sensing equipment, audits and reliance on users’ honor. Smart contracts can also be bound together into larger systems using artificial intelligence (AI) applications to create distributed autonomous organizations. Think here of Sensorica’s entire open value network being coded — from articles of association to bylaws — meaning that its complete production environment would have been created to function autonomously according to specific norms and values.

Despite its potential to make short shrift of centralized rent extractors and bosses, it is important to acknowledge that blockchain is not inherently progressive. In fact, it embodies the libertarian sentiments that are entrenched in capitalism’s market-centered value system. This means that technology-inspired, counter-capitalists have to fundamentally re-design, repurpose and re-govern blockchain’s underlying code.

FairCoin, for instance, successfully circumvented the ridiculous amounts of energy required by the verification system of traditional blockchains by re-coding the procedure through which blocks are added. FairCoin has also embraced open, democratic governance arrangements for managing its code in order to avoid the often opaque and guarded decision-making structures employed in systems like Bitcoin.

Some commons-oriented code writers are even developing cryptographic ledger systems beyond blockchain whereby anonymous, “trustless” networks are replaced by interlinked trusting groups, thereby enabling greater speed and scalability of data processing. One such effort is the biomimicry-inspired “Holochain,” a blockchain-like code described as a “method and reward structure for storing and accessing data and applications among users themselves.”

The ultimate aim of the Holochain project is to overcome the internet’s server-dependent centralization by using the participants’ excess computer processing power and hardware storage to create a true peer-to-peer internet, or “Holo network.”

Such a network will eventually require the widespread adoption of HoloPorts, the hardware that enables computer power sharing, as well as decentralized Holo applications that will run in the Holo network. The Holo apps, or Happs, will generally be aimed at making use of and expanding the peer-to-peer nature of the network, ranging from alternative social media platforms, such as Junto, to energy monitors and distribution systems such as Redgrid.

Re-valuing and de-fetishizing

How could this fancy new code challenge the human and environmental degradations caused by capitalism’s valuation system? We know that the current value system reduces labor to an exploitable commodity. In Sensorica’s open value network, however, the exploitation of labor is directly challenged by creating a value accounting system that is inherently meritocratic and fair, where work done within one project can also be credited if it is picked up by another. It is a commons-based peer-to-peer production arrangement rooted in fundamentally non-capitalist values — collaboration, openness, decentralization — yet one that its proponents believe can compete with and ultimately replace capitalist actors in the marketplace.

Developing such a system has been one of Sensorica’s main goals and it is now seeking blockchain-based solutions to increase its functionality, scalability and security. Holochain is one of the leading contenders to build this infrastructure.

The idea of coding commons-centered environments such as these is also the impetus for the creation of the Economic Space Agency (ECSA), a global collective of counter-capitalist economists and computer scientists seeking to expand and scale up the values-infused production pursued by the likes of Sensorica. According to Tere Vadén at ECSA, the aim is to create environments for economic interaction that “… encode incentive mechanisms and choose specific valuation metrics of non-monetary assemblages (from relationality, trust, and quality to land, labour and material goods) in smart contracts.”

Importantly, the values being coded into these environments, which can expand far past a single enterprise to encompass trans-local economies, are not limited to labor but can also address environmental issues. According to David Dao, a pioneer in employing distributed autonomous organizations to further sustainability, “we now have accessible tools to efficiently engineer economic incentives in a cheap and scalable manner…by distilling (crypto) incentives into code, we are now able to treat economics simply as software .” Driven by this conviction, Dao founded GainForest, which uses a combination of smart contracts to link donors, forest communities and sophisticated verification systems to fund and support sustainable forest stewardship, specifically in the Kayapo Indigenous territories in Brazil.

Beyond exploitation, capitalism creates a sense that goods and services are stand-alone things whose value is directly captured in their price, thereby obscuring how this value is actually derived. This is what Marx called “commodity fetishism.” This view of commodities significantly contributes to workers’ alienation because it breaks down the inter-personal relationship between producer and consumer. It also leads to a disconnect between consumer and nature.

Turning again to Sensorica, the voluntary, empowered and justly remunerated labor that could be made feasible on a large scale through blockchain-enabled, open value networks could be a way to return a sense of ownership of the labor provided. FairCoop is another instance in which workers’ alienation is challenged by facilitating self-employment with the help of the alternative FairCoin cryptocurrency. Similarly, Fishcoin challenges the disconnect between producers and consumers inherent in commodity fetishism through more transparent supply chains.

By meticulously documenting the various stages in production, producers and consumers can develop and respond to the various human and natural dimensions in a given economic activity. The blockchain-based system that reveals the various sources of the seafood we eat, for instance, is a first step in overcoming the obfuscation within existing forms of consumption, while simultaneously serving to track and hence manage the tapped resources. The potential here is significant.

### Forecasting CP---1AR

#### No spillover---its inhibited by the very definition of ‘superforecasters.’

Dr. Ilias Katsagounos et al. 21, Head of Research Activities, PM2 Alliance; Dimitrios D. Thomakos, Professor, Applied Econometrics, National and Kapodistrian University of Athens; Konstantia Litsiou, Senior Lecturer, Forecasting, Manchester Metropolitan University; Konstantinos Nikolopoulos, Professor, Business Information Systems & Analytics, Durham University Business School, "Superforecasting Reality Check: Evidence From A Small Pool Of Experts and Expedited Identification," European Journal of Operational Research, Vol. 289, Issue 1, 02/16/2021, ScienceDirect.

The one main finding from Tetlock and Mellers’ research project is that although superforecasters do exist, they are a rarity. It takes a lot of time and a very big initial pool of experts in order to identify them - all and all a few hundred across the globe. That end result, however, jeopardizes the applicability of the proposition, as exciting as it may be for the academic word. If each and every company in this world needs to rely on the aforementioned superforecasters, then this will end up being a very expensive and constrained endeavor for most interested parties.