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### 1AC---Innovation ADV

#### Advantage 1 is Innovation:

#### Standards-Setting Organizations (SSO’s) are industry members who jointly establish standards for information tech defined by the adoption of standard-essential patents (SEP’s), which are licensed to companies who wish to implement the tech in their product, called implementers, on Fair, Reasonable, and Non-Discriminatory (FRAND) terms. Current standards promote price gouging, FRAND enforcement is critical.

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I. Standard Setting and the Competitive Process

The fundamental economics in the information technology sector, driven by network effects, implies that there is enormous value associated with establishing compatibility standards. Popular standards include the mobile broadband standards used in cell phones, which are established by the 3rd Generation Partnership Project (3GPP), and the Wi-Fi technology for wireless local area networks, which is enabled by the 802.11 standard established by the Institute of Electrical and Electronics Engineers (IEEE).4

There are many SSOs, and their rules and procedures differ considerably. In addition to IEEE, leading SSOs include the International Organization for Standardization (ISO), the International Telecommunication Union (ITU), the European Telecommunications Standards Institute (ETSI), the Internet Engineering Task Force (IETF), and the World Wide Web Consortium (W3C).5 SSOs generally establish standards by holding a series of committee meetings among industry participants. These meetings culminate in a vote on a technical specification that describes what features or attributes a product must have in order to comply with the standard. Most SSOs are open to all industry participants and seek to operate on a consensus basis, applying certain voting rules. SSOs do not normally engage in patent licensing, nor do they specify how patent royalties will be divided up among patent holders. They leave that to their members, which in some cases form patent pools to address these issues.6

SSOs adopt specific policies relating to intellectual property rights (IPRs).7 These IPR policies are generally intended to enable the SEP holders to obtain reasonable royalties for licensing their patents, while prohibiting them from charging excessive royalties after other industry participants have committed to the standard. At that point, firms committed to implementing the standard— which we call “implementers”—would find it very costly to avoid using the patented technology. For this purpose, most SSOs require SEP owners to license their SEPs on FRAND terms.8

FRAND policies are especially necessary because negotiations between SEP holders and implementers generally take place only after the implementers have used and infringed the technologies claimed by the SEPs. Standards involving information and communications technology can involve hundreds or even thousands of SEPs, many with uncertain boundaries for infringement. In addition, a time lag exists between patent application and patent issuance. For these and other reasons, it is impractical for implementers to enter into negotiations for patent licenses with all SEP owners prior to the establishment of a standard and to their implementation of it.9

The fact that patent negotiations generally do not take place until after implementers have used and infringed the technologies has several critical implications. First, at the time of negotiation, implementers are locked into the standard and the technologies claimed by the SEPs—that is, the cost to switch to an alternative technology or standard at that point—ex post—is much greater than it was ex ante, before the patented technology was first included in the standard. Ex post, the patent holder is no longer competing to have its technology included in the standard, nor is it competing to have implementers of the standard use its technology. Instead, because the patent holder owns an asset that is essential to the standard, implementers have no choice but to use the patented technology.

If the standard is commercially successful, implementers are willing to pay a much larger royalty for use of the patented technology than they would have paid ex ante, when the SEP holder faced competition from other technologies. In these circumstances, the SEP holder can be said to have obtained monopoly power in the market in which the patented technology is licensed for use in implementing the standard.10

Second, because of lock-in and the implementer’s ongoing infringement, the potential for litigation looms large in licensing negotiations. In effect, the parties are negotiating about how to settle an infringement suit, and that negotiation is heavily influenced by their predictions as to what the court will do if they cannot agree. This situation is not unique to SEPs; it arises frequently when firms are faced with patent infringement claims for products they have independently developed or technologies they have inadvertently infringed. Patent law addresses such instances by specifying that patent holders are entitled to “reasonable royalties,” defined as the royalties that the parties would have negotiated prior to the infringement and thus prior to lock-in.11 Those hypothetical ex ante royalties reflect the market value of the patent license. Notwithstanding the law’s embrace of this principle, however, as a practical matter, patent holders are generally able to recover more than the ex ante value of the patent when litigation occurs after the implementers are locked in. Further, negotiations in the shadow of litigation after lock-in tend to result in royalties in excess of the ex ante or market value of the patented technology.12

Third, the shadow of litigation is particularly problematic in the communications and technology sector, in which products typically include hundreds or thousands of patented technologies. A court-ordered injunction involving such products would deprive the implementer of not only the value of the technology covered by the patent-in-suit, but also the value of the entire product.13 Implementers that are forced to bear the risk of an injunction are thus induced to agree to royalties greater than those that would be appropriate if only the value of the patented technology were at stake. Those royalties systematically provide SEP holders with excessive compensation in comparison with the benchmark of ex ante royalties.

These implications of lock-in and ex post dealings are well-understood: they represent an example of the general concept of lock-in and opportunism developed by Oliver Williamson.14 The Federal Circuit has also recognized the market distortions caused by the inclusion of patented technologies in public standards and the resulting danger of patent holdup involving SEPs.15

For these and other reasons, the SEP holder has ex post monopoly power that, if left unchecked, would enable it to obtain royalties far in excess of the royalties that it could earn in a competitive market.16 To address this common problem and limit ex post opportunism by SEP holders, SSOs typically require participants that own SEPs to make certain FRAND commitments. In particular, by requiring a commitment to license on “fair and reasonable” terms, the FRAND requirement aims to prevent, or at least reduce, the extent of monopoly pricing by SEP holders. And by requiring a commitment to license on “nondiscriminatory” terms, the FRAND requirement can prevent SEP holders from extracting monopoly premiums by selective licensing or, more important, migrating their monopoly power from the FRAND-regulated market to unregulated standard-implementing product markets by licensing to only one or a few implementers or licensing to selected implementers on discriminatorily favorable terms.

#### Patent holdup is accentuated by the Ninth Circuit’s recent decision in *FTC v. Qualcomm* that permits ICT firms to engage in innovation-stifling conduct with antitrust impunity.

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Standards can enhance competition and consumer choice, but they also massively inflate the value of patents deemed essential to the standard, and give their owners the power to sue companies that implement the standard for money damages or injunctions to block them from using their SEPs. When standards cover critical features like wireless connectivity, SEP owners wield a huge amount of “hold-up” power because their patents allow them to effectively block access to the standard altogether. That lets them charge unduly large tolls to anyone who wants to implement the standard.

To minimize that risk, standard-setting organizations typically require companies that want their patented technology incorporated into a standard to promise in advance to license their SEPs to others on fair, reasonable, and non-discriminatory (FRAND) terms. But that promise strikes at a key tension between antitrust and patent law: patent owners have no obligation to let anyone use technology their patent covers, but to get those technologies incorporated into standards, patent owners usually have to promise that they will give permission to anyone who wants to implement the standard as long as they pay a reasonable license fee.

Qualcomm is one of the most important and dominant companies in the history of wireless communication standards. It is a multinational conglomerate that has owned patents on every major wireless communication standard since its first CDMA patent in 1985, and it participates in the standard-setting organizations that define those standards. Qualcomm is somewhat unique in that it not only licenses SEPs, but also supplies the modem chips used by a wide range of devices. These include chips that implement wireless communication standards, which lie at the heart of every mobile computing device.

Although Qualcomm promised to license its SEPs (including patents essential to CDMA, 3G, 4G, and 5G) on FRAND terms, its conduct has to many looked unfair, unreasonable, and highly discriminatory. In particular, Qualcomm has drawn scrutiny for bundling tens of thousands of patents together—including many that are not standard-essential—and offering portfolio-only licenses no matter what licensees actually want or need; refusing to sell modem chips to anyone without a SEP license and threatening to withhold chips from companies trying to negotiate different license terms; refusing to license anyone other than original-equipment manufacturers (OEMs); and insisting on royalties calculated as a percentage of the sale price of a handset sold to end users for hundreds of dollars, despite the minimal contribution of any particular patent to the retail value.

In 2017, the U.S. Federal Trade Commission [sued](https://www.ftc.gov/news-events/press-releases/2017/01/ftc-charges-qualcomm-monopolizing-key-semiconductor-device-used) Qualcomm for violating both sections of the Sherman Antitrust Act by engaging in a number of anticompetitive SEP licensing practices. In May 2019, the U.S. District Court for the Northern District of California agreed with the FTC, identifying numerous instances of Qualcomm’s unlawful, anticompetitive conduct in a comprehensive [233-page opinion](https://www.eff.org/document/ftc-v-qualcomm-district-court-opinion). We were pleased to see the FTC take action and the district court credit the overwhelming evidence that Qualcomm’s conduct is corrosive to market-based competition and threatens to cement Qualcomm’s dominance for years to come.

But this month, a panel of judges from the Court of Appeals for the Ninth Circuit unanimously [overturned](https://www.eff.org/document/ninth-circuit-opinion-ftc-v-qualcomm) the district court’s decision, reasoning that Qualcomm’s conduct was “hypercompetitive” but not “anticompetitive,” and therefore not a violation of antitrust law. To reach that result, the Ninth Circuit made the patent grant more powerful and antitrust law weaker than ever.

According to the Ninth Circuit, patent owners don’t have a duty to let anyone use what their patent covers, and therefore Qualcomm had no duty to license its SEPs to anyone. But that framing requires ignoring the promises Qualcomm made to license its SEPs on reasonable and non-discriminatory terms—promises that courts in this country and around the world have consistently enforced. It also means ignoring antitrust principles like the essential facilities doctrine, which limits the ability of a monopolist with hold-up power over an essential facility (like a port) to shut out rivals. Instead, the Ninth Circuit held rather simplistically that a duty to deal could arise only if the monopolist had provided access, and then reversed its policy.

But even when Qualcomm restricted its licensing policies in critical ways, the Ninth Circuit found reasons to approve those restrictions. For example, Qualcomm stopped licensing its patents to chip manufacturers and started licensing them only to OEMs. This had a major benefit: it let Qualcomm charge a much higher royalty rate based on the high retail price of the end user devices, like smartphones and tablets, that OEMs make and sell. If Qualcomm had continued to license to chip suppliers, its patents would be “exhausted” once the chips were sold to OEMs, extinguishing Qualcomm’s right to assert its patents and control how the chips were used.

Patent exhaustion is a century-old doctrine that protects the rights of consumers to use things they buy without getting the patent owner’s permission again and again. Patent exhaustion is important because it prevents price-gouging, but also because it protects space for innovation by letting people use things they buy freely, including to build innovations of their own. The doctrine thus helps patent law serve its underlying goal—promoting economic growth and innovation. In other words, the doctrine of exhaustion is baked into the patent grant; it is not optional. Nevertheless, the Ninth Circuit wholeheartedly approved of Qualcomm’s efforts to avoid exhaustion—even when that meant cutting off access to previous licensees (chip-makers) in ways that let Qualcomm charge far more in licensing fees than its SEPs could possibly have contributed to the retail value of the final product.

It makes no sense that Qualcomm could contract around a fundamental principle like patent exhaustion, but at the same time did not assume any antitrust duty to deal under these circumstances. Worse, it’s harmful for the economy, innovation, and consumers. Unfortunately, the kind of harm that antitrust law recognizes is limited to harm affecting “competition” or the “competitive process.” Antitrust law, at least as the Ninth Circuit interprets it, doesn’t do nearly enough to address the harm downstream consumers experience when they pay inflated prices for high-tech devices, and miss out on innovation that might have developed from fair, reasonable, and non-discriminatory licensing practices.

We hope the FTC sticks to its guns and asks the Ninth Circuit to go en banc and reconsider this decision. Otherwise, antitrust law will become an even weaker weapon against innovation-stifling conduct in technology markets.

#### Weakened antitrust enforcement emboldens firms to follow Qualcomm’s lead, which collapses FRAND integrity.

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While the FRAND process has been highly productive, it is also fragile. Firms are tempted to make commitments at the beginning when the incentive to join is large, but renege on them later when they can profit by doing so. At least in this particular case, private FRAND enforcement had not worked very well. Qualcomm had been able to violate FRAND commitments in order to exclude rivals and obtain higher royalties than FRAND would permit, largely with impunity. Other firms will very likely follow Qualcomm’s lead. If that happens the FRAND system will fall apart, doing irreparable injury to the modern wireless telecommunications network or, at the very least, diminishing the leadership role of the United States in preserving effective network competition.

While governments can be heavily involved in standard set-ting,9 the implementation of technical standards in information technologies is largely the work of private actors. Government involvement is limited mainly to enforcement of contract, intellectual property, or antitrust law. As private actors, those involved in standard setting or compliance are fully subject to the federal antitrust laws.

This Article addresses one question: when is an SSO participant’s violation of a FRAND commitment an antitrust violation, and if it is, of what kind and what are the implications for remedies? It warns against two extremes. One is thinking that any violation of a FRAND commitment is an antitrust violation as well. In the first instance FRAND obligations are contractual, and most breaches of contract do not violate any antitrust law. The other extreme is thinking that, because a FRAND violation is a breach of contract, it cannot also be an antitrust violation. The question of an antitrust violation does not de-pend on whether the conduct breached a particular agreement but rather on whether it caused competitive harm. This can happen because the conduct restrained trade under section 1 of the Sherman Act, was unreasonably exclusionary under section 2 of the Sherman Act, or amounted to an anticompetitive condition or understanding as defined by section 3 of the Clay-ton Act.10 The end goal is to identify practices that harm com-petition, thereby injuring consumers.

The Ninth Circuit’s Qualcomm decision will make antitrust violations in the context of FRAND licensing much more difficult to prove, even in cases where anticompetitive behavior and consumer harm seem clear.11 Indeed, in this case the court itself acknowledged the harm to consumers but appeared to think that they were not entitled to protection.12 If this decision stands, FRAND obligations will to a larger extent have to be settled through private litigation and the federal antitrust enforcement agencies will have a diminished role. Anticompetitive behavior by one firm that is not effectively disciplined will lead others to do the same thing.

#### A trusted and credible system for ICT innovation is critical to rapid tech diffusion and economic growth---absent FRAND, the system will collapse.

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It is easy to take a pessimistic view about whether the system will break. If the current trend continues, the system is likely to break at some point for the simple reason that companies will not trust it anymore. The series of legal disputes witnessed over the past years – sometimes referred to as the “smartphone patent wars” – has been fodder for a pessimistic reading of “the two tales of SEPs”. While it is common in the business world that disputes over patents and licenses are settled in courts, various SEP disputes have revealed problematic aspects of the SEP market that are different from those disputes that follow the normal stream of business and contracts. Often, the SEP disputes are less concerned about the rights and boundaries of patents, and more about antitrust limits to market behavior: they concern market abusive practices and restrictions to competition as much as they are about intellectual property.

If the SEP system actually does break at some point, the consequences would be felt throughout the economy. SEPs have been a critical part of the ICT revolution. SEPs have allowed for the fast rates of innovation diffusion that the world has witnessed over the past quarter of a century. All the computer and Internet related products and services that people are now dependent upon for their private and professional lives are intricate webs of intellectual property. As many as 250,000 patents can be used to claim ownership of some technical specification or design element in a single smartphone (NYT 2012). A laptop, suggests one calculation, implements more than 250 interoperability standards (Biddle et al. 2010), and the number of SEP holders for 3G and 4G standards grew from 2 in 1994 to 130 in 2013 while the number of SEPs rose from fewer than 150 in 1994 to more than 150,000 in 2013 (Galetovic and Gupta 2016). The standardization-body ETSI has registered more than 150,000 declarations of SEPs from companies, and ETSI is just one of many bodies in the world of ICT standardization. For the 3G standard, the same body has about 24,000 patents that have been declared essential. Now, with the economy yet again on the threshold of big technological change, a trusted and credible system for creators and users of technology to standardize proprietary technology would be a boon for innovation, interoperability and – ultimately – the consumers.

And there are reasons for optimism. Although many of the problems in the SEP regimes need to be addressed, the numbers above indicate that the SEP system is in fact attractive to patent holders and SEP implementers. It is easy to see why: neither holders nor implementers are presented with alternative options that on the face of it would be far more profitable for them. In other words, there simply would not be as many patents declared as essential if both creators and users of technology believed the SEP system worked to their disadvantage or was grossly unfair. While the reality for some companies may be that legal disputes and unpredictability prompt them to find other ways than SEPs to get access to key technologies for their products, it remains the case that most stakeholders have strong economic incentives to maintain a balanced SEP system that is trusted.

First, standard essential patents are an asset for creators of technology because, by becoming essential to a standard, their volumes of sales for technologies that users value rise significantly. As many holders want to raise more revenues for their SEPs and – ideally – have the freedom to contract with buyers on their terms, they can expand their customer base when they agree to sell patented technology in accordance with a set of rules that are designed to prevent SEP holders exploiting the weakness of a customer that has grown dependent on having access to their technology.

Second, SEPs are hugely beneficial also to those that buy the licenses – the implementers or users. Through the SEP system, they can access technologies that are interoperable and work with different products and functionalities – and they can do it under conditions that, if history is a guide, in most cases give them stable and predictable terms of contract. As a consequence, both creators and users can focus on their competitive advantages and profit on the economies of scale and specialization. Downstream firms do not need to develop their own upstream technology and upstream firms do not need to package their technologies in end-customer products in order to make their products valuable.

Third, standard-setting organisations (SSOs) also have a big stake in an SEP system that works well – and, like creators and users of technology, they would stand to lose significantly if the SEP system were to collapse.

Lastly, the biggest beneficiaries are individual consumers – those who buy the end products using FRAND-conditioned SEPs. The advent of SEPs and the rules represented by FRAND have enabled a development of fast technology creation and contributed to the rapid diffusion in ICT goods and ICT-based services. The SEP system has also allowed for new competition, both between existing technologies and brands, and from new ones that have stepped into the market with the ambition to disrupt it, again to the benefit of the consumer. It is difficult to imagine that the ICT and digital development would have been as fast as it has been if SEPs had not been a central feature of the market.

The changing fortunes of companies operating in the cellular and smartphone market would not have been possible if there had not been an SEP system that supported competition. Now that the world economy is on the doorstep of new innovations that are dependent on a great number of input technologies – e.g. the Internet-of-Things, transport connectivity and intelligent vehicles – it is crucially important for the consumer that a balanced and functioning SEP system is maintained and that actors in the system converge towards it – which would ultimately meet their economic interests.

#### ICT innovation is key to post-COVID economic recovery and long-term growth.

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Introduction

As the global economy has entered recession in 2020, triggered by the COVID-19 pandemic, the human casualties, and economic damage are perceived to be very large. Even as the health crisis will gradually become manageable, the impact on economic growth can be long-lasting and the recovery path can take several years. In particular, growth drivers such as the pace of job creation, income generation and investment may take several years to get back to pre-crisis trends. Initially the productivity of those growth drivers may be of less concern as the mantra of ‘we’ll do what it takes to avoid worse’ is predominant in this phase of the crisis.

However, once the recovery gets underway the productive use of resources is key to sustained growth. While we do not ignore the short-term challenges of the economic recovery, our primary focus in this paper is on the productivity puzzle from a long-term perspective. Productivity is driven by technological change and innovation which, in turn, depends on investment in human and physical capital as well as in other ‘missing capitals’ often referred to as intangible assets. Indeed, those investments create a positive feedback effect, as the productivity it generates also helps to make more efficient usage of scarce resources in the future. When properly measured and valued, productivity also provides a critical yardstick to realise a fairer distribution of the gains from economic growth to those who bring the resources to bear. It thereby creates the incentives for people to produce and business to invest helping to drive economic growth and raise living standards.

Unfortunately, in the aftermath of the global financial crisis of 2008/2009, many economies around the world, especially advanced economies, have failed to recharge the economy by powering productivity as the key source of growth in the long term. Indeed the latest update of The Conference Board Total Economy Database (July 2020) points at significant weakening in labor productivity growth in Europe up to 2019 (figure 1a–c). While the United States experienced somewhat faster productivity growth from 2017 to 2019 than the Euro Area and the United Kingdom, it still has not recovered to the rates of productivity growth from before the global financial crisis either.

The slowdown in productivity growth over the past 15 years has been well documented. There are multiple causes including an exhaustion of catch-up potential in emerging markets impacting economies along entire global value chains, and the drag from the global financial crisis because of low demand and weak investment, too low interest rates causing misallocations an overreliance on cheap labor, and failing fiscal policies (Bauer et al., 2020; Cette et al., 2016; Crafts, 2018; Dieppe, 2020; Fernald et al., 2017; Syverson, 2016).1 Technical measurement issues regarding inputs and outputs may have played a role as well.

In our earlier work we have stressed the importance of time lags in the adoption of new technologies, and in particular the complexity in generating productivity growth from the latest round of new digital technologies since the early 2010s, including the move toward mobile, ubiquitous access to broadband, the rise of cloud storage and advances in artificial intelligence (AI) and robotics (van Ark, 2016a, 2016b; van Ark and O’Mahony, 2016; van Ark et al., 2016).

While the first priority for economic recovery from the COVID-19 crisis is to restore jobs, it is important that any employment-intensive growth path does go together with a productivity revival. In this paper, we argue that it is possible to avoid another productivity slowdown. Underneath the aggregate figures, there is evidence pointing toward a possible tipping point at which many advanced economies may expect to see more widespread impacts from the adoption and absorption of digital technology on productivity and GDP growth.

In Section 2 we review the latest literature on the productivity impacts of general purpose technologies (GPTs), including the notion of time lapses through which digital technologies result in faster productivity growth. We also look at patterns by which innovation and productivity effects GPTs emerge across industries and disperse across the economy. We explain why the New Digital Economy (NDE) is especially characterised by long lag effects.

In Section 3 we provide an empirical analysis of productivity growth by industry data to observe whether we can detect a distinct pattern across groups of industries pointing to a structural improvement in recent years. We use a taxonomy on digital intensity by industry which was recently developed by the Organisation for Economic Co-operation and Development (OECD) (Calvino et al., 2018), showing that the most digital-intensive industries have experienced a relatively strong performance in terms of labor productivity growth since 2007 and especially since 2013.

In Section 4 of the paper, we discuss the connection between labor and skills in the digital economy, which we believe provides the key to a productivity revival. We developed a new metric on innovation competencies by occupation on the basis of data from the O\*Net database on occupation-specific descriptors in the United States (Hao et al., 2018). When applied to the United Kingdom, we find that innovation competencies point at stronger productivity effects by industry.

In Section 5 we focus on how productivity has been behaving in the short-term during the COVID-19 recession. In particular, we address the potential trade-offs between traditional pro-cyclical recovery effects and scarring effects the recession leaves, especially on the labor market. We argue that increased adoption and usage of digital technologies during the COVID-19 crisis may create a positive productivity effect. In the final section, Section 6, we will review our hypothesis that a productivity revival could be imminent in the light of the recovery from the COVID-19 crisis. In order not to miss this opportunity again, as happened a decade ago, we argue that a coordinated effort from business and policy is needed, and has to be delivered in such a way that the gains from productivity will be more widespread and such that those who provide the resources for growth are incentivised to deliver them in an efficient way.

2. The productivity paradox of the New Digital Economy

It is well known that General Purpose Technologies (GPTs), defined as new methods of producing and inventing new goods and services which are important enough to have a long-term aggregate impact on the economy, can take a significant amount of time to translate to faster productivity growth at the aggregate level of the economy. This is inherent to the three critical characteristics of a GPT as identified by Bresnahan and Trajtenberg (1995).2

1. Pervasiveness –The GPT should spread to most sectors.

2. Improvement –The GPT should get better over time and, hence, should keep lowering the costs of its users.

3. Innovation spawning –The GPT should make it easier to invent and produce new products or processes.

Historical analysis has focussed on productivity trends in previous technology phases (Bakker et al., 2019; Crafts, 2004). Recent literature has shown that the information and communication technology (ICT) revolution of the past 50 years can be characterised as a GPT and doesn’t pale with previous GPTs such as steam technology, electricity and the combustion engine. For example, Hempell (2005) concludes that ‘investment in information and communication technologies (ICT) are closely linked to complementary innovations and are most productive in firms with experience from earlier innovations’. In a more recent analysis of the evolution of the Internet, Simcoe (2015) argues that the modularity of the internet has prevented a fall in return to investments in innovation by ‘facilitating low-cost adaptation of a shared general-purpose technology to the demands of heterogeneous applications’. In a review of the data, Liao et al. (2016) conclude that:

‘...ICT investment does contribute to productivity but not in the usual manner –we find a positive (but lagged) ICT effect on technological progress. We argue that for a positive ICT role on growth to actually take place, a period of negative relationship between productivity and ICT investment together with ICT-using sectors’ capacity to learn from the embodied new technology was crucial. In addition, it took a learning period with appropriate complementary co-inventions for the new ICT-capital to become effective and its gains to be realised. Our findings provide solid, further empirical evidence to support ICT as a general purpose technology’.

#### Growth solves nuclear war.

Henricksen 17, \*Thomas H., emeritus senior fellow at the Hoover Institution; (March 23rd, 2017, “Post-American World Order,” Hoover Institution, <http://www.hoover.org/research/post-american-world-order>)

What Is To Be Done?

The first marching order is to dodge any kind of perpetual war of the sort that George Orwell outlined in  “1984,” which engulfed the three super states of Eastasia, Eurasia, and Oceania, and made possible the totalitarian Big Brother regime. A long-running Cold War-type confrontation would almost certainly take another form than the one that ran from 1945 until the downfall of the Soviet Union.

What prescriptions can be offered in the face of the escalating competition among the three global powers? First, by staying militarily and economically strong, the United States will have the resources to deter its peers’ hawkish behavior that might otherwise trigger a major conflict. Judging by the history of the Cold War, the coming strategic chess match with Russia and China will prove tense and demanding—since all the countries boast nuclear arms and long-range ballistic missiles. Next, the United States should widen and sustain willing coalitions of partners, something at which America excels, and at which China and Russia fail conspicuously.

There can be little room for error in fraught crises among nuclear-weaponized and hostile powers. Short- and long-term standoffs are likely, as they were during the Cold War. Thus, the playbook, in part, involves a waiting game in which each power looks to its rivals to suffer grievous internal problems which could entail a collapse, as happened to the Soviet Union.

Some Chinese and Russian experts predict grave domestic problems for each other. They also entertain similar thoughts about the United States, which they view as terminally decadent and catastrophically polarized over politics, ethnicity, and the future direction of the country. So, the brewing three-way struggle also involves a systemic contest, which will test the competitors’ economic and political institutions.

At this juncture, the world is entering a standoff among the three great and several not-so-great powers. Averting war, while defending our interests, will prove a challenge, calling for deft policy, political endurance, and economic growth, as well as sufficient military force to keep at bay aggressive states or prevail over them if ever a war breaks out.

#### Absence of domestic 5G competition cedes leadership in technical standards to China.

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There is little doubt today that American superiority in the next generation of mobile communications, commonly called 5G, is a matter of extraordinary national concern. There is also little doubt that China is a strong competitor, already having outspent the United States by [$24 billion](https://www2.deloitte.com/content/dam/Deloitte/us/Documents/technology-media-telecommunications/us-tmt-5g-deployment-imperative.pdf#page=3) and planning [$411 billion](https://www.scmp.com/tech/china-tech/article/2098948/china-plans-28-trillion-yuan-capital-expenditure-create-worlds) in 5G investment over the next decade. The Chinese government has also laid out multiple national plans for establishing the country as a leader in mobile technology, and the Chinese firm Huawei is poised to be the [top smartphone manufacturer](https://www.cnbc.com/2018/11/16/huawei-aims-to-overtake-samsung-as-no-1-smartphone-player-by-2020.html) by 2020.

And what are United States companies doing about this? Bickering over patents.

For years, the leading American supplier of advanced mobile communications chips has been the San Diego-based Qualcomm. The company has been an innovator of mobile technology, but it has also been a remarkable innovator of convoluted legal strategies. As an ongoing Federal Trade Commission [lawsuit alleges](https://www.ftc.gov/news-events/press-releases/2017/01/ftc-charges-qualcomm-monopolizing-key-semiconductor-device-used), Qualcomm has used its dominant position as a chip supplier and its extensive patent holdings to weave an intricate web of patent licensing across the mobile industry. The effect of that complex licensing scheme, the FTC claims, has been to force competitor chipmakers out of the market and to extract concessions and high patent royalties from smartphone and mobile-device makers.

Qualcomm today faces only one major U.S. competitor—Intel, whose chips Apple recently [started using](https://www.cultofmac.com/484250/intel-reaping-rewards-apples-scrap-qualcomm/) instead of Qualcomm’s. Not surprisingly, Qualcomm has leveraged its patents to force a retaliatory investigation against Apple, the effect of which could be, as an administrative judge [recently determined](http://www.fosspatents.com/2018/10/itc-judge-didnt-buy-testimony-for-which.html), to boot Intel out of the mobile-chip market and leave Qualcomm as a monopoly.

It is hard to imagine that this infighting among Apple, Intel and Qualcomm is getting the United States very far in 5G, and it is harder to imagine that Qualcomm’s desired outcome would do so, either. The best path, instead, is the obvious one: allowing competition and expanding the number of firms working on 5G.

Competition encourages companies to out-innovate each other in order to grab market share. Of particular importance to 5G, competition leads to [better cybersecurity](https://morningconsult.com/opinions/in-the-race-to-5g-monopoly-considered-harmful/) in products, making them less vulnerable to hacking or misuse.

Competition is especially crucial when it comes to the technical standards that define how 5G works. These standards are the work of 3GPP, an international consortium of technology companies in the field. Chinese players such as Huawei and ZTE are major participants in 3GPP. Ensuring that 3GPP’s standards reflect American values requires having as many American companies at the negotiating table as possible—which is harder to achieve when those companies are trying to sue each other out of business.

Certainly patents themselves, as rewards for new inventions, are a driver of innovation in areas such as 5G. The problem, though, is not the existence of a patent system but the ever-expanding power of the patent laws, which encourage companies to pour dollars into complex patent licensing and assertion schemes—as companies like Qualcomm have done—rather than to perform the hard work of building new technologies. When innovation in patent strategy is more profitable than actual innovation, we lose the race to 5G and other technologies.

But don’t take my word for it. [Multiple members of Congress](https://www.patentprogress.org/2019/01/11/congress-weighs-in-on-qualcomm-and-apple-at-the-itc/), from both sides of the aisle, have denounced the use of patents to kick companies like Intel out of 5G development, predicting that such actions would “dampen the quality, innovation, competitive pricing, and in this case the preservation of a strong U.S. presence in the development of 5G and thus the national security of the United States.”

Or look to what China itself is doing. The Chinese government is handing out rewards left and right to encourage technology research and development. Indeed, it grants subsidies and financial benefits (ranging from the [ordinary](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2818503) to the [imperfect](https://funginstitute.berkeley.edu/wp-content/uploads/2013/12/patent_subsidy_Zhen.pdf) to the [bizarre](https://www.scmp.com/news/china/article/1681850/how-get-out-jail-early-china-buy-inventors-idea-and-patent-it)) to encourage its citizens to file for patents. But while China specifically encourages filing for patents, it does little to encourage using them: Patent infringement awards in court are peanuts—often only [five figures](https://scholarship.law.berkeley.edu/btlj/vol33/iss2/2/)—and most Chinese patent owners drop their patents [within five years](https://www.bloomberg.com/news/articles/2018-09-26/china-claims-more-patents-than-any-country-most-are-worthless) of getting them. The message in China is clear: You will be rewarded for innovating, but not for quibbling over patents.

The United States should take the same tack if it wants to match China in 5G. Ever-stronger patent rights encourage counterproductive disputes that are a drag on industry, a drag on research and development, and ultimately a drag on domestic competitiveness on the global stage. If America wants to lead in 5G, then it must clear the path for strong competition among leading American technology companies.

#### Standards leadership allows China to export digital authoritarianism.

Drew et al. 21, \*Dr Alexi Drew, Research Associate, The Policy Institute, King’s College London; (May 7th, 2021, “The Critical Geopolitics of Standards Setting”, https://www.transatlantic-dialogue-on-china.rusi.org/article/the-critical-geopolitics-of-standards-setting)

However, this previously ‘western’ domain is challenged by a Chinese bloc of private industry actors with centrally directed, strategic motivations for their efforts who have managed to leverage the flaws of this system for political and economic advantage.  The market-driven self-regulation model of technical standards has proven itself unsustainable given the geopolitical power achievable through the control of these standards. The marketised approach is easily abusable by a technologically developed nation-state with geopolitical intentions firmly in mind.

Obscurity Through Complexity

Technical standards have the immediate appearance of being both apolitical and ethically neutral. This seems to set them apart from the debate over standards of state behaviour in [cyber space concerning espionage and actions below the threshold of armed conflict](https://www.cfr.org/blog/unexpectedly-all-un-countries-agreed-cybersecurity-report-so-what). Yet, technological standards are unequivocally connected to normative practices of international behaviour and ethics. The extremely complex nature of the standards under consideration in bodies such as the International Organization for Standardization, the International Electrotechnical Commission (IEC), the International Telecommunications Union (ITU), and the Third Generation Partnership Project (3GPP) obscures the very tangible real-world impact that the standards they set have. The 3GPP is responsible for standards setting for mobile telecommunications. It covers everything from 5G through to autonomous vehicles and the Internet of Things. These are the bodies defining how the modern world is constructed.

On the one hand they appear quite benign, responsible for such banalities as the use of Universal Serial Bus (USB) connectors versus proprietary standards. This hardly seems a matter of national security importance. But the same process is responsible for what ultimately shape the basic operating parameters of facial recognition technology in closed circuit television systems, the level of centralised state control at the technical foundations of the internet, and the protections of personally identifiable data. These generate profound implications for international policy and ethics.

Internal Competition vs Strategic Direction

Technical standards setting processes have, historically, been dominated by private sector actors who have had both the capacity to develop a particular technology to the point of holding a significant market share, and the ability to use that market share to advocate for the standardisation of the technology in line with their own production. The market led approach has continued to be the prevailing model by which American companies have globalised the technical standards behind US dominated technological innovation. This privatised form of self-regulation for technology companies is only partially influenced by the approach taken within the EU where [some licensing of standards are controlled by state or EU led institutions.](https://www.ui.se/globalassets/ui.se-eng/publications/ui-publications/2019/ui-brief-no.-2-2019.pdf)

In contrast to this approach the Chinese model has involved a high level of state-oriented direction, oversight, and direct engagement on the creation and signing off technical standards. Efforts to harmonise and centralise technical standards domestically have become increasingly internationalised as the CCP takes this centralised, strategic approach to technical standards setting bodies such as the ITU, 3GPP, and IEC. Technical standards have also become an increasingly central component of the Digital Silk Road with the openly expressed goal of increasing uptake of Chinese technical standards in partner countries.

The implications of this clash between a system of technical standardisation that is driven by the market versus one driven by an authoritarian government subsidised model are a direct challenge to the development of free, open, and ethical technology. Standardisation mechanisms have become political, or rather there has been a gradual realisation of the political power to be gained from the control of technical standards. While the PRC might have come to this awareness first, the US and Europe have since had a rude awakening about the missed opportunity. The privatised model of technical standards setting favoured by European and US markets relies upon the dynamics of financial competition to regulate behaviour. This is in stark contrast to the statist Chinese model.

#### Causes global backsliding.

Kendall-Taylor et. al 20 \*Andrea Kendall-Taylor, senior fellow and director of the Transatlantic Security Program at the Center for a New American Security, co-author of Democracies and Authoritarian Regimes; Erica Frantz is Assistant Professor of Political Science at Michigan State University; Joseph Wright is Professor of Political Science at Pennsylvania State University; (March/April 2020, “The Digital Dictators,” Foreign Affairs, <https://www.foreignaffairs.com/articles/china/2020-02-06/digital-dictators>)

The risk that technology will usher in a wave of authoritarianism is all the more concerning because our own empirical research has indicated that beyond buttressing autocracies, digital tools are associated with an increased risk of democratic backsliding in fragile democracies. New technologies are particularly dangerous for weak democracies because many of these digital tools are dual use: technology can enhance government efficiency and provide the capacity to address challenges such as crime and terrorism, but no matter the intentions with which governments initially acquire such technology, they can also use these tools to muzzle and restrict the activities of their opponents.

#### Democracy solves a litany of existential threats.

Diamond 19, Professor of Political Science and Sociology at Stanford University, Senior Fellow at the Hoover Institution, Senior Fellow at the Freeman Spogli Institute for International Studies, PhD in Sociology from Stanford University, (Dr. Larry, Ill Winds: Saving Democracy from Russian Rage, Chinese Ambition, and American Complacency, p. 199-202)

The most obvious response to the ill winds blowing from the world’s autocracies is to help the winds of freedom blowing in the other direction. The democracies of the West cannot save themselves if they do not stand with democrats around the world. This is truer now than ever, for several reasons. We live in a globalized world, one in which models, trends, and ideas cascade across borders. Any wind of change may gather quickly and blow with gale force. People everywhere form ideas about how to govern—or simply about which forms of government and sources of power may be irresistible—based on what they see happening elsewhere. We are now immersed in a fierce global contest of ideas, information, and norms. In the digital age, that contest is moving at lightning speed, shaping how people think about their political systems and the way the world runs. As doubts about and threats to democracy are mounting in the West, this is not a contest that the democracies can afford to lose. Globalization, with its flows of trade and information, raises the stakes for us in another way. Authoritarian and badly governed regimes increasingly pose a direct threat to popular sovereignty and the rule of law in our own democracies. Covert flows of money and influence are subverting and corrupting our democratic processes and institutions. They will not stop just because Americans and others pretend that we have no stake in the future of freedom in the world. If we want to defend the core principles of self-government, transparency, and accountability in our own democracies, we have no choice but to promote them globally. It is not enough to say that dictatorship is bad and that democracy, however flawed, is still better. Popular enthusiasm for a lesser evil cannot be sustained indefinitely. People need the inspiration of a positive vision. Democracy must demonstrate that it is a just and fair political system that advances humane values and the common good. To make our republics more perfect, established democracies must not only adopt reforms to more fully include and empower their own citizens. They must also support people, groups, and institutions struggling to achieve democratic values elsewhere. The best way to counter Russian rage and Chinese ambition is to show that Moscow and Beijing are on the wrong side of history; that people everywhere yearn to be free; and that they can make freedom work to achieve a more just, sustainable, and prosperous society. In our networked age, both idealism and the harder imperatives of global power and security argue for more democracy, not less. For one thing, if we do not worry about the quality of governance in lower-income countries, we will face more and more troubled and failing states. Famine and genocide are the curse of authoritarian states, not democratic ones. Outright state collapse is the ultimate, bitter fruit of tyranny. When countries like Syria, Libya, and Afghanistan descend into civil war; when poor states in Africa cannot generate jobs and improve their citizens’ lives due to rule by corrupt and callous strongmen; when Central American societies are held hostage by brutal gangs and kleptocratic rulers, people flee—and wash up on the shores of the democracies. Europe and the United States cannot withstand the rising pressures of immigration unless they work to support better, more stable and accountable government in troubled countries. The world has simply grown too small, too flat, and too fast to wall off rotten states and pretend they are on some other planet. Hard security interests are at stake. As even the Trump administration’s 2017 National Security Strategy makes clear, the main threats to U.S. national security all stem from authoritarianism, whether in the form of tyrannies from Russia and China to Iran and North Korea or in the guise of antidemocratic terrorist movements such as ISIS.1 By supporting the development of democracy around the world, we can deny these authoritarian adversaries the geopolitical running room they seek. Just as Russia, China, and Iran are trying to undermine democracies to bend other countries to their will, so too can we contain these autocrats’ ambitions by helping other countries build effective, resilient democracies that can withstand the dictators’ malevolence. Of course, democratically elected governments with open societies will not support the American line on every issue. But no free society wants to mortgage its future to another country. The American national interest would best be secured by a pluralistic world of free countries—one in which autocrats can no longer use corruption and coercion to gobble up resources, alliances, and territory. If you look back over our history to see who has posed a threat to the United States and our allies, it has always been authoritarian regimes and empires. As political scientists have long noted, no two democracies have ever gone to war with each other—ever. It is not the democracies of the world that are supporting international terrorism, proliferating weapons of mass destruction, or threatening the territory of their neighbors.

#### Emergence of smart cities depends on IoT applications of 5G interoperability standards---absent FRAND, excessive royalties will undermine sustainable development.

Schwartz 18, \*Matt Schwartz, Privacy Fellowship Coordinator at ACT, App Association; (March 2nd, 2018, “It’s Smart to be FRANDly: How the FRAND Commitment Will Determine the Future of Smart Cities”, https://actonline.org/2018/03/02/its-smart-to-be-frandly-how-the-frand-commitment-will-determine-the-future-of-smart-cities/)

In December, we [outlined](https://actonline.org/2017/12/18/smart-cities-connecting-your-community-through-technology/%5d) the emergence of Smart Cities – cities that harness technological innovations like internet of things (IoT) devices and data analytics to improve essential infrastructure in growing urban centers. The technological foundation of Smart Cities aims to improve public safety, better allocate resources, and meet the needs of citizens more quickly.

A central element to Smart Cities is the comprehensive network of sensors and devices implemented within buildings, roads, traffic signs, and parking meters that allows them to interact with public, and potentially private-owned, infrastructure. These sensors will “speak” to one another, communicating information about energy usage, traffic density, or other elements of city management that have traditionally either been analyzed separately or not tracked at all. The potential of Smart Cities allows data to flow from previously disconnected branches of the city and be processed in real-time, unlocking previously unknown insights.

The powerful interoperability of Smart Cities will rely heavily on standardized technologies developed in organizations like the IEEE, which is responsible for standardizing the wi-fi technology we use every day. Standardized technologies often include standard-essential patents (SEPs), which, like their name suggests, are patents declared essential to an industry standard by a standards-setting organization. In simple terms, one cannot implement the standardized technology without using the patent.

Like regular patents, the users of SEPs must pay royalties or licensing fees to the patent owner before they may use it. For example, if a manufacturing company wants to make an IoT device interoperable with a 5G network, the manufacturer must pay a licensing fee to the owner of the SEP that is essential to the 5G standard. SEPs play a vital role in the new innovations we enjoy and have come to expect, and because of the value of these patents, SEP holders have the ability to demand high license fees from those who wish to implement the standard. To offset this competition issue, many SEP holders voluntarily agree to license their SEPs to any willing licensee under fair, reasonable, and non-discriminatory (FRAND) terms.

While wi-fi and LTE are standards that will be vital to Smart City deployment, countless new standardized technologies are being developed that will be integral to any fully-operational Smart City. With reasonable access to SEPs, assured by the FRAND commitment, innovators can enjoy the legal and business certainty they need to compete. While the meaning of the FRAND commitment continues to be refined – as evidenced by the development of SEP best practices recently launched by the App Association in Europe – its foundations are well-established.

But what happens when SEP holders do not abide by the FRAND licensing commitment, or simply refuse to license at all? Sadly, small and medium-sized companies would be forced to accept untenable licensing terms, but more realistically, they would be priced out of using the standard altogether. As a result, it would impose a barrier to innovation that would result in fewer products offered to consumers or cities eager to implement IoT technologies. For example, many hope the rise of autonomous vehicles will be seamlessly integrated into the Smart City network. But how beneficial would it be if only some autonomous vehicle brands are able to license the technology needed to communicate with traffic lights, simply because of the market power of a chipmaker? The FRAND commitment is an important backstop to that unfortunate possibility.

It is vital for SEP holders to honor FRAND licensing terms, if not for small and medium-sized innovators, then for the sustainability of future Smart Cities. FRAND creates a platform for innovation, providing a floor on which companies can stand, innovate, and compete. If the foundation of the FRAND commitment is reneged, American innovators pay a steep price – not only do they lose a key component of product development and market entry, but they are also left with years of expensive negotiations and litigation if they choose to challenge the licensing practice. What’s more, the confidence developed in the open standards development system is shaken, and Smart Cities have fewer choices in IoT solutions for their future.

To achieve the promise of Smart Cities, a balanced standards ecosystem is essential. We must allow small and medium-sized developers to leverage industry standards for innovation and prevent cost-prohibitive royalty structures and negotiating practices that are detrimental to competition, while also ensuring that SEP owners can protect their intellectual property and be fairly compensated for its use. The FRAND commitment continues to be the best framework to achieve this balance, and adherence to its principles will determine the future and success of Smart Cities.

#### Climate change is anthropogenic and causes extinction---5G-enabled smart cities are critical for mitigation and adaptation.

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Currently, the entire planet is at risk due to continual climate change [1–3]. The recorded increase in average temperature across the world in the past hundred years, and the associated changes attributed to this, are known as global warming. Many scientists are convinced by the published evidence that this change is anthropogenic and resulted from the elevated emission levels of global greenhouse gases (GHGs) [4,5]. Gases such as water vapor, carbon dioxide, methane, nitrous oxide, and ozone are responsible for the absorption and emission of thermal radiation. These changes in the relative quantities of the GHGs induce a proportional change in the amount of preserved solar energy. Presently, the accepted indicator for global warming is the sustained rise in the mean temperature worldwide. This definition is designed to account for the fact that there may be some localized exceptions to this rise. For example, there may be cooling experienced in a region while the global temperature may increase altogether, hence the need for average temperature. A key concern with the GHGs trapping of more heat in the atmosphere is that it affects both climate and short scale weather patterns. Consequently, it results in greater numbers of adverse weather events such as storms, heat waves, cold snaps, droughts, and fires [6]. Climate-related risks to health, livelihoods, food security, water supply, human safety, and economic growth are projected to increase with global warming of 1.5 ◦C [7] and further increase further at 2 ◦C, as shown in Figure 1. In addition, the risks to global aggregated economic growth due to the climate change impacts are projected to be lower at 1.5 ◦C than at 2 ◦C by the end of this century.

Carbon dioxide has the most substantial effect on global warming [8]. Although it was once assumed to have an ~100 year lifespan in the atmosphere, careful studies revealed that the situation is far worse, with three-quarters of the gas expected to remain for a time in the region of up to ~1000 years, with the remainder lasting for an indefinite period of time [9]. It was indicated that the present impacts of humanity on the atmosphere can certainly cause a long term problem [10]. Carbon dioxide is released when oil, coal, and other fossil fuels are burnt for the energy we use to power our homes, cars, and smartphones. By lessening its usage, we can curb our own contribution to climate change while saving money. The first challenge is eliminating the burning of coal, oil, and, eventually, natural gas. Oil is the lubricant of the global economy as it is hidden inside such ubiquitous items as plastic and corn, fundamental to the transportation of both consumers and goods. Coal is the substrate, supplying roughly half of the electricity worldwide, a percentage that is likely to grow according to the International Energy Agency (IEA). In fact, buildings contribute up to 43% of all the greenhouse gas emissions worldwide [11], even though investing in thicker insulation and other cost-effective as well as temperature-regulating strategies can save money in the long run. Investment in new infrastructures, or radical upgradation of the existing highways and transmission lines, may help to reduce greenhouse gas emissions, yielding economic growth in the developing countries.

Nations across the globe have kept very high targets to reducing their GHG discharges [12,13]. In order to meet these goals, considerable reductions in city energy usage is required. At a global scale, urban communities represent over half (55%) of the population, which is predicted to reach 68% by the middle of this century [14]. Urban areas claim ownership of the highest levels of energy use, gas emission, and also the largest local economy. As such, it is crucial for urban areas to reduce their consumption and utilize renewable sources wherever available to reduce their gas discharge levels. Smart cities often utilize digital sensors to measure and transmit data about the levels of GHGs in the city at that moment, as a means of tackling them [15]. The efficacy of such a system is thus reliant on the network used to collate and analyze the data collected as an extant network. The mobile telecommunications networks offer a convenient solution to this desire, as their pre-existence has the clear benefit of reducing costs compared to the design and implementation of a novel system. It is recognized that smart cities will certainly act as the key players meeting these ambitious targets [16,17]. In this study, we focused primarily on the potential applications of 5G network technology to control climate change in Singapore. In addition, a clear overview of the sustainability benefits of introducing 5G technology compatible smart cities, buildings, and farms in all aspects of urbanization is provided. Herein, the main purpose is to tackle the negative outcomes associated with anthropogenic climate change, with a particular focus on the contributions that are best made by the telecoms network operators.

Climate change is one of the most challenging problems that humanity has ever faced. Presently, hundreds of millions of lives, innumerable species, entire ecosystems, health, economy, and the future habitability of this planet are at risk. Fortunately, climate change is solvable, we just need to wisely exploit the existing technologies and sciences. Climate change mitigation is a pressing international need in which many management actions are required. The development of 5G technology has been largely driven by smart mobile devices and advanced communication technologies. It may thus serve as a technical enabler for a whole new range of business opportunities, energy, and facilities management, together with industrial applications. Moreover, it may enable different devices to work together seamlessly. Definitely, the 5G cellular network technology is expected to revolutionize the global industries with profound effects on the savings of energy, waste generation and recycling, and water resources management, thus reducing the climate change impacts.

### 1AC---Cybersecurity ADV

#### Advantage 2 is Cybersecurity:

#### Aggressive patent strategies create structural flaws in 5G standardization that imperils domestic cybersecurity---market competition reduces the incidence of vulnerability and severity of attacks.

Duan 20, \*Charles Duan is a senior fellow and associate director of tech & innovation policy at the R Street Institute, where he focuses his research on intellectual property issues; (2020, “OF MONOPOLIES AND MONOCULTURES: THE INTERSECTION OF PATENTS AND NATIONAL SECURITY”, Santa Clara High Technology Law Journal, 36(4), 369-405. Retrieved from <https://www2.lib.ku.edu/login?url=https://www.proquest.com/scholarly-journals/monopolies-monocultures-intersection-patents/docview/2442966690/se-2?accountid=14556>)

III. COMPETITION AND CYBERSECURITY

In addition to the historical review done so far, another approach to understanding the relationship among patents, competition, and national security is to consider the role of cybersecurity. There is little doubt that computer system vulnerabilities that enable hacking and spread of computer exploits are a threat to the nation’s defenses, so better cybersecurity is a key part of national security strategy.155

Strong competition can thus complement national security by enhancing domestic cybersecurity, and patent assertion that unduly weakens competition detracts from cybersecurity.156 Competition promotes better cybersecurity in at least two ways. First, multiple studies show that competition encourages firms to improve their products on multiple vectors including cybersecurity. Second, competition avoids a situation that security experts call a “monoculture,” which increases vulnerability to severe cyberattacks. As former Secretary of Homeland Security Michael Chertoff wrote recently, “We need competition and multiple providers, not a potentially vulnerable technological monoculture,” to guarantee national security.157 Thus, cybersecurity provides a useful lens for understanding how unfettered patent assertion and licensing can detract from national security.

A. Cybersecurity as Competitive Value-Add

Competition enhances national security by reducing the incidence of technical vulnerabilities. That effect is especially important for security sensitive systems such as mobile telecommunications.

Intuitively, a causal chain from competition to cybersecurity makes logical sense. Computer security is a value-added benefit to consumers, so firms in competitive markets are likely to use security to gain an edge over their competitors.158 In monopolized markets, though, there may be less external impetus to test products for flaws, and the monopolist may choose to focus less on security and more on new product features or increased product quality.

Economic research confirms these hypotheses about competition leading to better cybersecurity. A 2009 empirical study of web browsers considered the impact of market concentration on the amount of time that vendors took to fix security vulnerabilities as they were discovered.159 The study found that the presence of more competitors correlated with faster cybersecurity response—a reduction of 8–10 days in response time per additional market rival.160 Similarly, business researchers in 2005 modeled incentives for firms to engage in sharing of cybersecurity information, and concluded that the “inclination to share information and invest in security technologies increases as the degree of competitiveness in an industry increases.”161 Another study found that, where two software firms are in competition, at least one will be willing to take on some degree of risk and responsibility for cybersecurity, whereas a monopoly software firm will consistently fail to accept such responsibility.162 To be sure, an unpublished study from 2017 found that some market concentration can make firms more responsive to cybersecurity issues, but only to a point: “being in a dominant position reduces the positive effect of having less competitors on the responsiveness of the vendor,” and indeed the “more dominant the firm is, the less rapid it is in releasing security patches.”163 This research confirms that competition is more conducive to cybersecurity.

It is not hard to see how this applies to emerging communication technologies markets. In the absence of competition, the above research suggests that device manufacturers, chip makers, and software developers will lack incentives to respond to vulnerabilities, to share information about cybersecurity practices and issues, and to take responsibility for security matters. Mobile phone chips have had their share of cybersecurity failures already.164 The best way to flush out ongoing and future cybersecurity issues is to maintain competitive pressure at all levels of the supply chain.

B. Vulnerabilities of “Monocultures”

A second reason why monopoly undermines cybersecurity is that monopoly leads to a “monoculture” of single-vendor products, opening the door to massive systemic failure in the case of a cyberattack. Computer researchers developed the theory of software monocultures in the early 2000s, in response to the regular phenomenon of computer viruses and other attacks spreading rapidly by exploiting flaws in the dominant operating system at the time, Microsoft Windows.165 Where a computer system such as Windows has a commanding share of users, a virus that exploits a flaw in that system can quickly spread to infect a whole interconnected ecosystem. An operating system monopoly thus enables fast and easy spread of cyberattacks, and better cybersecurity would be achieved through greater diversity in online systems.166 As one research group posited, “a network architecture that supports a collection of heterogeneous network elements for the same functional capability offers a greater possibility of surviving security attacks as compared to homogeneous networks.”167

There has been considerable study of the theory that computer monocultures are naturally more vulnerable to attacks.168 In one study, computer science researchers reviewed a catalog of 6,340 software vulnerabilities recorded in 2007, to compare whether comparable software would share the same flaws.169 Of the 2,627 vulnerabilities applicable to application software (as opposed to operating systems, web scripts, and other software components), only 29 (1.1%) applied to substitute products from different vendors but providing the same functionality.170 By contrast, different versions of a single software product were found to share vulnerabilities 84.7% of the time.171 Thus, software monocultures share exploitable flaws even when there is some variation in versions across the monoculture; by contrast, diversity in software is almost guaranteed to prevent a single flaw from affecting all users.

In the case of 5G and wireless mobile communications, a monoculture is an especially concerning possibility. To the extent that systems such as smart city sensors or communication networks are widely deployed in a monoculture fashion, a widespread attack could have devastating consequences, potentially blacking out a region and affecting essential services such as 911.172 A monoculture that is vulnerable to so-called “rootkits” or “backdoors”—maliciously installed software that enable bad actors to commandeer systems—could also enable mass surveillance or spying by private hackers or foreign governments.173 The presence of systems from multiple vendors would mitigate these possibilities.

#### Insecure technical standards cause inevitable systemic grid collapse---extinction.

DeNardis 21, \*Dr. Laura DeNardis, PhD in Science and Technology Studies from Virginia Tech, Dean of the School of Communication at American University, and Gordon M. Goldstein, Adjunct Senior Fellow at the Council on Foreign Relations, (March 1st, 2021, “The Real Lesson of the Texas Power Debacle”, Lawfare, 3/1/2021, https://www.lawfareblog.com/real-lesson-texas-power-debacle)

The infrastructure was essential, ubiquitous and providing basic functionality for everything in daily life from water to heat and transportation. And in an instant it was gone, plunging tens of thousands of residents into a life-threatening crisis. This is, of course, the narrative of the recent debacle in Texas, where a winter storm overwhelmed the state’s electrical grid and brought the state to a near-total blackout. But it should also be interpreted as a preemptive warning of what Americans will face from the next generation of the internet and the new realm of cybersecurity risk it will dramatically amplify.

Both forms of infrastructure—a state-run electrical grid and the 5G and “internet of things” future to which we are rapidly hurtling—share three attributes. First, their construction reflects a lack of imagination about the danger that can quickly coalesce when seemingly remote threat scenarios become real. Second, compounding a lack of analytic imagination is an absence of preparedness. Third, for both the Texas electrical grid and the emerging internet, public policy protections are either meager or completely absent.

In planning for the resilience of its electrical grid, public officials in Texas discounted the potentially devastating disruption that could occur from unpredictable events—whether related to climate change or just a once-a-century anomaly. They also eschewed precautions other states take seriously by allowing for the interconnection of electrical grid supply chains across their borders, ostensibly because of their ideological rejection of federal regulatory oversight governing such arrangements.

As the United States builds out a new national 5G cyber-physical communications network through private service providers, Americans similarly discount the risks—myriad in their diversity and severity—that are orders of magnitude more significant than what Texas confronted recently. More physical things than people are already connected. The super empowered internet of tomorrow, known among some in the field as the “internet of everything,” will exceed by tens of billions of devices the number of connections between individuals simply communicating via social media or digital screens.

This confronts policymakers with an imminent threat: A cyber outage is no longer about losing digital communications but about losing basic societal functioning and even human life. The failure of imagination is to think of the SolarWinds attack on U.S. federal agencies and tech companies as a worst-case scenario. The failure of imagination is to think of cybersecurity through a content-centric lens rather than as possible attacks on the material world. The emergence of internet-connected cardiac devices, digitally dependent cars, and internet-connected agriculture systems portend the stakes of a cyberattack to health care, economic and social functioning, and food security.

The United States should be prepared for, and certainly not be caught by surprise by, such cyberattacks. Yet, the internet of everything is notoriously insecure. Internet-connected physical objects are not necessarily upgradeable. Nor do they come with adequate default security and encryption. The 5G infrastructure that helps connect digital objects has been at the center of debates over Chinese espionage. Industrial cyber-physical systems are based on technical standards that have not been collaboratively vetted for security and interoperability. One of the most infamous cyberattacks—the so-called Mirai botnet that took down major media sites and corporations—hijacked these insecure objects in homes to carry out the assault. The United States is not yet prepared.

Finally, in the race to conceive and deploy effective public policy responses, the U.S. government as a whole is hardly more anticipatory or synthesized in its response to potential calamity than the state of Texas. The focus of U.S. cyber policy remains on information policy issues such as disinformation, manipulation and violent speech rather than securing the digital world that now powers our material day-to-day lives. The Biden administration confronts an enormous challenge in crafting a comprehensive strategy to the cybersecurity risks foreshadowed by the ruinous experience in Texas and its management of vital infrastructure. While the digital world has leapt from two-dimensional to three-dimensional space, cyber policy has not at all jumped from 2D to 3D.

This failure of imagination, preparedness and policy protection must not be America’s cyber future; the stakes are far too high and the costs are far too great. The Texas disaster is a potent illustration of what has always been true: Our digital society and economy are extremely vulnerable and grow more porous and subject to penetration day by day. As digital sensors and cyber control systems become further embedded in physical infrastructure like energy systems, agriculture and transportation, there is no longer a separation between security of the “real” world and security of the online world. They are entangled and increasingly enmeshed—and policy has yet to catch up to either envisioning or mitigating the looming threats the U.S. confronts.

If the energy grid cannot weather a winter storm, how can it be expected to withstand a major cyberattack? What other vital forms of national infrastructure—ranging from water, bridges, highways and roads, and ultimately our day-to-day financial system—are comparably at risk? As Texas dramatizes, it is neither hyperbolic nor exaggerated to assert that our survival could now depend on securing the inevitable cyber-physical future that is accelerating with stunning rapidity.

#### Actors have the means and motivations to strike critical infrastructure.

Wintch 21, \*Timothy M. Wintch, an active-duty Major in the United States Air Force. He is currently a graduate student at the Oettinger School of Science & Technology Intelligence, National Intelligence University, in Bethesda, Maryland. Mr. Wintch has over 11 years of experience in command-and-control operations as an Air Battle Manager. He holds a Bachelor of Arts in Politics from the University of California, Santa Cruz, and a Master of Arts in Military Studies from American Military University. (April 20th, 2021, “PERSPECTIVE: Cyber and Physical Threats to the U.S. Power Grid and Keeping the Lights on”, https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/)

Among critical infrastructure sectors in the U.S., energy is perhaps the most crucial of the 16 sectors defined by the Department of Homeland Security. This sector is so vital because it provides the energy necessary to run every other critical infrastructure sector. However, the U.S. power grid, the backbone of the energy sector, is built upon an aging skeleton that is becoming increasingly vulnerable every day. Whether from terrorists or nation-states like Russia and China, the power grid is susceptible to not just physical attacks, but also to cyber intrusion as well. However, much of this threat can be mitigated if the U.S. takes the appropriate steps to safeguard the power grid and avoid a potential catastrophe in the future.

Since Sept. 11, 2001, terrorism on U.S. soil has been at the forefront of American consciousness. Critical infrastructure provides an appealing target because of the disproportionally large impact even a small attack can have on the sectors. In particular, the power grid represents a particularly lucrative target, both in terms of the ease of access and the large impact it can make. The National Research Council stated that the U.S. power grid is “vulnerable to intelligent multi-site attacks by knowledgeable attackers intent on causing maximum physical damage to key components on a wide geographical scale.”[[1]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn1) Additionally, the physical security of transmission and distribution systems is difficult due to the dispersed nature of these key components, which in turn is advantageous to attackers as it reduces the likelihood of their capture.[[2]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn2) From 2002-2012, approximately 2,500 physical attacks occurred against transmission lines and towers worldwide and approximately 500 attacks against transformer substations.[[3]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn3) Terrorists have the motivation to attack the U.S. power grid but the very nature of the grid makes it highly vulnerable. The power grid is not only at risk from physical attacks, but also nation-state cyberattacks.

One nation that has shown both the capability and intent to use attacks against critical energy infrastructure is Russia, as demonstrated in their 2015 annexation of Crimea from Ukraine. A Russian cyber threat group known as Sandworm, which used its BlackEnergy malware, attacked Ukrainian computer systems that provide remote control of the Ukraine power grid.[[4]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn4) This attack, and another in 2016, each left the capital Kiev without power, prompting cyber experts to raise concern about the same malware already existing in NATO and the U.S. power grids.[[5]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn5) In any conflict between Russia and NATO, not only would similar cyberattacks pose a threat, but so would potential physical attacks severing fuel oil and natural gas lines to Western Europe. Russia has both the capability and intent to attack critical infrastructure, particularly power grids, during future conflicts in their “hybrid warfare” approach.

Another nation that has the capability to attack critical energy infrastructure is China, representing a threat to not just the U.S. energy infrastructure but also that of our allies whose support would be vital in a major conflict. A recent NATO report highlighted this threat from China’s Belt and Road Initiative, stating that “[China’s] foreign direct investment in strategic sectors [such as energy generation and distribution] …raises questions about whether access and control over such infrastructure can be maintained, particularly in crisis when it would be required to support the military.”[[6]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn6) Like Russia, China has been active with cyber intrusions in U.S. energy infrastructure. The Mission Support Center at Idaho National Laboratory characterized these as attacks as “multiple intrusions into US ICS/SCADA [Industrial Control Systems/Supervisory Control and Data Acquisition] and smart grid tools [that] may be aimed more at intellectual property theft and gathering intelligence to bolster their own infrastructure, but it is likely that they are also using these intrusions to develop capabilities to attack the [bulk electric system], as well.”[[7]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn7) China, therefore, has both the capability and intent to conduct cyber intrusions and attacks for myriad reasons.

Another arm of this threat is the reliance the U.S. energy industry has on imports from China, especially transformers. In early 2020, federal officials seized a transformer in the port of Houston that had been imported by the Jiangsu Huapeng Transformer Company before sending it to Sandia National Laboratory in Albuquerque. Sandia is contracted by the U.S. Department of Energy for mitigating national security threats.[[8]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn8) The Wall Street Journal reported that “Mike Howard, chief executive of the Electric Power Research Institute, a utility-funded technical organization, said that the diversion of a huge, expensive transformer is so unusual – in his experience, unprecedented – that it suggests officials had significant security concerns.”[[9]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/" \l "_ftn9) Previously destined for the Washington Area Power Administration’s Ault, Colo., substation, the transformer is believed to have been seized due to “backdoor” exploitable hardware emplaced by the Chinese prior to shipment.[[10]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/#_ftn10) Shortly after these events, President Trump issued Executive Order 13920, “[Securing the United States Bulk-Power System](https://trumpwhitehouse.archives.gov/presidential-actions/executive-order-securing-united-states-bulk-power-system/),” essentially limiting the import of Chinese-built critical energy infrastructure components due to concerns about cybersecurity.[[11]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/#_ftn11) Interestingly, Jiangsu Huapeng “boasted that it supported 10 percent of New York City’s electricity load.”[[12]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/#_ftn12)

Franklin Kramer, the former Assistant Secretary of Defense for International Security Affairs, testified before a U.S. House of Representatives Energy and Commerce subcommittee during an energy and power hearing in 2011 and said that a “highly-coordinated and structured cyber, physical, or blended attack on the bulk power system, however, could result in long-term (irreparable) damage to key system components in multiple simultaneous or near-simultaneous strikes.” He added that “an outage could result with the potential to affect a wide geographic area and cause large population centers to lose power for extended periods.”[[13]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/#_ftn13) Even the inclusion of features such as smart grids to the overall grid structure poses new vulnerabilities through their connectivity. Kramer stated that “such connectivity means that the distribution system could be a key vector for a national security attack on the grid.”[[14]](https://www.hstoday.us/subject-matter-areas/infrastructure-security/perspective-cyber-and-physical-threats-to-the-u-s-power-grid-and-keeping-the-lights-on/#_ftn14)

#### Those attacks cause accidental nuclear escalation.

Klare 19, \*Michael T. Klare is a professor emeritus of peace and world security studies at Hampshire College and senior visiting fellow at the Arms Control Association; (November 19th, “Cyber Battles, Nuclear Outcomes? Dangerous New Pathways to Escalation”, https://www.armscontrol.org/act/2019-11/features/cyber-battles-nuclear-outcomes-dangerous-new-pathways-escalation)

Yet another pathway to escalation could arise from a cascading series of cyberstrikes and counterstrikes against vital national infrastructure rather than on military targets. All major powers, along with Iran and North Korea, have developed and deployed cyberweapons designed to disrupt and destroy major elements of an adversary’s key economic systems, such as power grids, financial systems, and transportation networks. As noted, Russia has infiltrated the U.S. electrical grid, and it is widely believed that the United States has done the same in Russia.[12](https://www.armscontrol.org/act/2019-11/features/cyber-battles-nuclear-outcomes-dangerous-new-pathways-escalation#endnote12) The Pentagon has also devised a plan known as “Nitro Zeus,” intended to immobilize the entire Iranian economy and so force it to capitulate to U.S. demands or, if that approach failed, to pave the way for a crippling air and missile attack.[13](https://www.armscontrol.org/act/2019-11/features/cyber-battles-nuclear-outcomes-dangerous-new-pathways-escalation#endnote12)

The danger here is that economic attacks of this sort, if undertaken during a period of tension and crisis, could lead to an escalating series of tit-for-tat attacks against ever more vital elements of an adversary’s critical infrastructure, producing widespread chaos and harm and eventually leading one side to initiate kinetic attacks on critical military targets, risking the slippery slope to nuclear conflict. For example, a Russian cyberattack on the U.S. power grid could trigger U.S. attacks on Russian energy and financial systems, causing widespread disorder in both countries and generating an impulse for even more devastating attacks. At some point, such attacks “could lead to major conflict and possibly nuclear war.”[14](https://www.armscontrol.org/act/2019-11/features/cyber-battles-nuclear-outcomes-dangerous-new-pathways-escalation#endnote14)

These are by no means the only pathways to escalation resulting from the offensive use of cyberweapons. Others include efforts by third parties, such as proxy states or terrorist organizations, to provoke a global nuclear crisis by causing early-warning systems to generate false readings (“spoofing”) of missile launches. Yet, they do provide a clear indication of the severity of the threat. As states’ reliance on cyberspace grows and cyberweapons become more powerful, the dangers of unintended or accidental escalation can only grow more severe.

#### Cyber-compromised NC3 causes nuclear war.

Klare 19, \*Michael T. Klare is a professor emeritus of peace and world security studies at Hampshire College and senior visiting fellow at the Arms Control Association; (November 19th, “Cyber Battles, Nuclear Outcomes? Dangerous New Pathways to Escalation”, <https://www.armscontrol.org/act/2019-11/features/cyber-battles-nuclear-outcomes-dangerous-new-pathways-escalation>)

The Nuclear-Cyber Connection

These links exist because the NC3 systems of the United States and other nuclear-armed states are heavily dependent on computers and other digital processors for virtually every aspect of their operation and because those systems are highly vulnerable to cyberattack. Every nuclear force is composed, most basically, of weapons, early-warning radars, launch facilities, and the top officials, usually presidents or prime ministers, empowered to initiate a nuclear exchange. Connecting them all, however, is an extended network of communications and data-processing systems, all reliant on cyberspace. Warning systems, ground- and space-based, must constantly watch for and analyze possible enemy missile launches. Data on actual threats must rapidly be communicated to decision-makers, who must then weigh possible responses and communicate chosen outcomes to launch facilities, which in turn must provide attack vectors to delivery systems. All of this involves operations in cyberspace, and it is in this domain that great power rivals seek vulnerabilities to exploit in a constant struggle for advantage.

The use of cyberspace to gain an advantage over adversaries takes many forms and is not always aimed at nuclear systems. China has been accused of engaging in widespread cyberespionage to steal technical secrets from U.S. firms for economic and military advantages. Russia has been accused, most extensively in the Robert Mueller report, of exploiting cyberspace to interfere in the 2016 U.S. presidential election. Nonstate actors, including terrorist groups such as al Qaeda and the Islamic State group, have used the internet for recruiting combatants and spreading fear. Criminal groups, including some thought to be allied with state actors, such as North Korea, have used cyberspace to extort money from banks, municipalities, and individuals.[4](https://www.armscontrol.org/act/2019-11/features/cyber-battles-nuclear-outcomes-dangerous-new-pathways-escalation#endnote04) Attacks such as these occupy most of the time and attention of civilian and military cybersecurity organizations that attempt to thwart such attacks. Yet for those who worry about strategic stability and the risks of nuclear escalation, it is the threat of cyberattacks on NC3 systems that provokes the greatest concern.

This concern stems from the fact that, despite the immense effort devoted to protecting NC3 systems from cyberattack, no enterprise that relies so extensively on computers and cyberspace can be made 100 percent invulnerable to attack. This is so because such systems employ many devices and operating systems of various origins and vintages, most incorporating numerous software updates and “patches” over time, offering multiple vectors for attack. Electronic components can also be modified by hostile actors during production, transit, or insertion; and the whole system itself is dependent to a considerable degree on the electrical grid, which itself is vulnerable to cyberattack and is far less protected. Experienced “cyberwarriors” of every major power have been working for years to probe for weaknesses in these systems and in many cases have devised cyberweapons, typically, malicious software (malware) and computer viruses, to exploit those weaknesses for military advantage.[5](https://www.armscontrol.org/act/2019-11/features/cyber-battles-nuclear-outcomes-dangerous-new-pathways-escalation#endnote05)

Although activity in cyberspace is much more difficult to detect and track than conventional military operations, enough information has become public to indicate that the major nuclear powers, notably China, Russia, and the United States, along with such secondary powers as Iran and North Korea, have established extensive cyberwarfare capabilities and engage in offensive cyberoperations on a regular basis, often aimed at critical military infrastructure. “Cyberspace is a contested environment where we are in constant contact with adversaries,” General Paul M. Nakasone, commander of the U.S. Cyber Command (Cybercom), told the Senate Armed Services Committee in February 2019. “We see near-peer competitors [China and Russia] conducting sustained campaigns below the level of armed conflict to erode American strength and gain strategic advantage.”

Although eager to speak of adversary threats to U.S. interests, Nakasone was noticeably but not surprisingly reluctant to say much about U.S. offensive operations in cyberspace. He acknowledged, however, that Cybercom took such action to disrupt possible Russian interference in the 2018 midterm elections. “We created a persistent presence in cyberspace to monitor adversary actions and crafted tools and tactics to frustrate their efforts,” he testified in February. According to press accounts, this included a cyberattack aimed at paralyzing the Internet Research Agency, a “troll farm” in St. Petersburg said to have been deeply involved in generating disruptive propaganda during the 2016 presidential elections.[6](https://www.armscontrol.org/act/2019-11/features/cyber-battles-nuclear-outcomes-dangerous-new-pathways-escalation#endnote06)

Other press investigations have disclosed two other offensive operations undertaken by the United States. One called “Olympic Games” was intended to disrupt Iran’s drive to increase its uranium-enrichment capacity by sabotaging the centrifuges used in the process by infecting them with the so-called Stuxnet virus. Another left of launch effort was intended to cause malfunctions in North Korean missile tests.[7](https://www.armscontrol.org/act/2019-11/features/cyber-battles-nuclear-outcomes-dangerous-new-pathways-escalation#endnote07) Although not aimed at either of the U.S. principal nuclear adversaries, those two attacks demonstrated a willingness and capacity to conduct cyberattacks on the nuclear infrastructure of other states.

Efforts by strategic rivals of the United States to infiltrate and eventually degrade U.S. nuclear infrastructure are far less documented but thought to be no less prevalent. Russia, for example, is believed to have planted malware in the U.S. electrical utility grid, possibly with the intent of cutting off the flow of electricity to critical NC3 facilities in the event of a major crisis.[8](https://www.armscontrol.org/act/2019-11/features/cyber-battles-nuclear-outcomes-dangerous-new-pathways-escalation#endnote08) Indeed, every major power, including the United States, is believed to have crafted cyberweapons aimed at critical NC3 components and to have implanted malware in enemy systems for potential use in some future confrontation.

Pathways to Escalation

Knowing that the NC3 systems of the major powers are constantly being probed for weaknesses and probably infested with malware designed to be activated in a crisis, what does this say about the risks of escalation from a nonkinetic battle, that is, one fought without traditional weaponry, to a kinetic one, at first using conventional weapons and then, potentially, nuclear ones? None of this can be predicted in advance, but those analysts who have studied the subject worry about the emergence of dangerous new pathways for escalation. Indeed, several such scenarios have been identified.[9](https://www.armscontrol.org/act/2019-11/features/cyber-battles-nuclear-outcomes-dangerous-new-pathways-escalation#endnote09)

The first and possibly most dangerous path to escalation would arise from the early use of cyberweapons in a great power crisis to ~~paralyze~~ undermine the vital command, control, and communications capabilities of an adversary, many of which serve nuclear and conventional forces. In the “fog of war” that would naturally ensue from such an encounter, the recipient of such an attack might fear more punishing follow-up kinetic attacks, possibly including the use of nuclear weapons, and, fearing the loss of its own arsenal, launch its weapons immediately. This might occur, for example, in a confrontation between NATO and Russian forces in east and central Europe or between U.S. and Chinese forces in the Asia-Pacific region.

Speaking of a possible confrontation in Europe, for example, James N. Miller Jr. and Richard Fontaine wrote that “both sides would have overwhelming incentives to go early with offensive cyber and counter-space capabilities to negate the other side’s military capabilities or advantages.” If these early attacks succeeded, “it could result in huge military and coercive advantage for the attacker.” This might induce the recipient of such attacks to back down, affording its rival a major victory at very low cost. Alternatively, however, the recipient might view the attacks on its critical command, control, and communications infrastructure as the prelude to a full-scale attack aimed at neutralizing its nuclear capabilities and choose to strike first. “It is worth considering,” Miller and Fontaine concluded, “how even a very limited attack or incident could set both sides on a slippery slope to rapid escalation.”[10](https://www.armscontrol.org/act/2019-11/features/cyber-battles-nuclear-outcomes-dangerous-new-pathways-escalation#endnote10)

What makes the insertion of latent malware in an adversary’s NC3 systems so dangerous is that it may not even need to be activated to increase the risk of nuclear escalation. If a nuclear-armed state comes to believe that its critical systems are infested with enemy malware, its leaders might not trust the information provided by its early-warning systems in a crisis and might misconstrue the nature of an enemy attack, leading them to overreact and possibly launch their nuclear weapons out of fear they are at risk of a preemptive strike.

“The uncertainty caused by the unique character of a cyber threat could jeopardize the credibility of the nuclear deterrent and undermine strategic stability in ways that advances in nuclear and conventional weapons do not,” Page O. Stoutland and Samantha Pitts-Kiefer wrote in 2018 paper for the Nuclear Threat Initiative. “[T]he introduction of a flaw or malicious code into nuclear weapons through the supply chain that compromises the effectiveness of those weapons could lead to a lack of confidence in the nuclear deterrent,” undermining strategic stability.[11](https://www.armscontrol.org/act/2019-11/features/cyber-battles-nuclear-outcomes-dangerous-new-pathways-escalation#endnote11) Without confidence in the reliability of its nuclear weapons infrastructure, a nuclear-armed state may misinterpret confusing signals from its early-warning systems and, fearing the worst, launch its own nuclear weapons rather than lose them to an enemy’s first strike. This makes the scenario proffered in the 2018 NPR report, of a nuclear response to an enemy cyberattack, that much more alarming.

### 1AC---Solvency

#### Plan: The United States federal judiciary should substantially increase prohibitions on private sector conduct that is more restrictive of competition than reasonably necessary to enable creation of information technology standards.

#### The plan requires SSO’s to administer reasonable action to prohibit ex post opportunism---that strengthens FRAND effectiveness while enabling SEP holders to capture appropriate royalties---which is the best competition-innovation balance.

Melamed & Shapiro 18, \*A. Douglas Melamed is Professor of the Practice of Law at Stanford Law School; \*Carl Shapiro is the Transamerica Professor of Business Strategy at the Haas School of Business at the University of California at Berkeley; (May 2018, “How Antitrust Law Can Make FRAND Commitments More Effective”, https://www-cdn.law.stanford.edu/wp-content/uploads/2018/05/How-Antitrust-Law-Can-Make-FRAND-Commitments-More-Effective.pdf)

3. Application of the Basic Legal Principles

The antitrust principle is straightforward: industry-wide collaboration through SSOs to establish procompetitive standards is permitted only if it is no more restrictive of competition than reasonably necessary to enable creation of the standards. When standard setting predictably creates technology monopolies that, if unrestrained, will enable anticompetitive ex post opportunism that would otherwise not occur, an SSO that does not take effective measures to prevent or minimize such ex post opportunism engages in conduct that is more restrictive of competition than necessary. In that case, the SSO and, in appropriate cases, its members, may well violate Section 1 of the Sherman Act.

Under this principle, SSO procedures and FRAND rules should be evaluated based on whether they lead to reasonable SEP royalties, using the competitive ex ante licensing standard discussed above, which has been adopted by the courts in patent law. Put differently, FRAND rules should be evaluated based on their ability to prevent SEP holders from obtaining more than the ex ante value of their technology from implementers.

This limitation would not prevent a SEP holder from proﬁting, perhaps greatly, from participating in the SSO and having its patented technology included in the standard. The SEP holder continues to be rewarded for its technology because the inclusion of its technology in the standard can still greatly increase the volume of licensing opportunities available to the SEP holder.

Whether a particular set of FRAND rules are sufficiently effective in preventing ex post opportunism will depend on the particular circumstances. The procedural unfolding of the case will also depend upon the circumstances. As a general matter, the case would probably be structured as an ordinary Rule of Reason case.82

First, the plaintiff would have to demonstrate harm to competition as a result of the collaboration of the SSO’s members, many of which compete with one another. In this case, the harm to competition would stem from the ability of the SEP holder to exercise monopoly power by obtaining royalties in excess of the competitive, ex ante level. The decision to include patented technologies in the standard would be the allegedly unlawful agreement. Notably, the court need not determine what a FRAND royalty is; it would suffice to determine that market power has been created or exercised, and that existing SSO rules and policies were not adequate to prevent the competitive harm. The defendant, which could be the SSO or perhaps one or more SSO members, would win at this point if the plaintiff failed to show harm to competition. If might fail if the standard faces substantial competition and the court concludes that the SEP holder therefore does not have market power or if the SSO’s rules and policies are found to be effective in preventing ex post opportunism, even if the plaintiff or even the court thinks that other rules and policies would be preferable.

Second, if the plaintiff makes the requisite showing of harm to competition, the defendant(s) would then have to show some procompetitive justiﬁcation— in this case, the beneﬁts of the standard. These two initial steps should be straightforward.

Third, if as is likely the defendant is able to show a procompetitive justiﬁcation, the plaintiff would have to show that the SSO could have used available, reasonable alternatives to realize the efficiency beneﬁts with less or none of the competitive harms. The plaintiff might identify reasonable alternatives that would have led to a different standard, based on including unpatented technology in the standard or perhaps involving fewer SEPs or fewer owners of SEPs, which would be less subject to patent holdup. More likely, the plaintiff could suggest alternative SSO rules that would not change the standard, but would reduce the likelihood or extent of ex post opportunism. For example, the plaintiff might suggest more rigorous FRAND-type rules, such as rules that set forth more precise principles on which FRAND royalties are to be determined and the circumstances under which SEP holders might seek injunctions.

Fourth, the burden would then shift to the defendant(s) to show that the beneﬁts of the standard could not have been realized if the SSO had adopted any of the proffered alternatives or that those alternatives were unrealistic.83 The plaintiff would be entitled to judgment if the court concludes that those beneﬁts could have been realized with less competitive harm if the SSO had adopted the standard with different IPR rules or policies.

Our overall sense, based on experience and the empirical literature, is that the extant FRAND rules are generally useful, but tend to be inadequate because they are imprecise and leave unresolved such critical issues as (a) the meaning of a reasonable royalty, even conceptually; (b) the meaning of “non-discriminatory;” (c) to whom licenses must be offered; and (d) under what circumstances may a SEP holder obtain an injunction.84 These imprecise FRAND commitments are therefore not sufficient to adequately prevent ex post opportunism. The recent revisions to IEEE’s FRAND policy represent a signiﬁcant step in the right direction, but even this advance leaves important questions unanswered.85 If FRAND rules are inadequate in these ways, litigation involving extant FRAND rules would likely be resolved only at the ﬁnal, fourth step. The defendant would be able to demonstrate the beneﬁts created by the standard; the plaintiff would be able to demonstrate the creation of market power and that other reasonable and practical rules or policies would ameliorate the problem. The case would thus turn on whether the defendant is able to demonstrate that signiﬁcant beneﬁts associated with standardization could not have been realized if the SSO had adopted those other rules or policies.

The court would have available a variety of possible remedies if the plaintiff prevails. Implementers that paid supracompetitive royalties or were unlawfully excluded in whole or in part from product markets as a result of the inadequate FRAND policies would be entitled to damages and, in some cases, to treble damages.86 If the unlawful SSO conduct is regarded as the collective action of the SSO and its members, which is likely to be the case in most instances, SSO members would be jointly and severally liable for the damages. Forward-looking injunctive relief aimed at restoring competition would need to be fashioned to the requirements of the individual case. For example, a court could order the SSO to adopt a new rule or policy proposed by the plaintiff. If the court is reluctant to take on that governance role, it might give the SSO a period of time—maybe ninety days—to develop a rule, subject to the court’s ultimate approval, which would adequately ameliorate the competitive problem created by the SSO. Alternatively or in addition, the court might order the parties to attempt to negotiate a rule or policy on which they can agree. And, depending on the circumstances, the court might order SEP holders, including at least those that were defendants in the case, to comply with the new SSO rules and policies.

#### Threatening antitrust liability lures SSO’s into adopting best practices.

Lemley & Shapiro 13, \*Mark Lemley is the William H. Neukom Professor at Stanford Law School and a partner at Durie Tangri LLP; \*Carl Shapiro is the Transamerica Professor of Business Strategy at the Haas School of Business, University of California at Berkeley and a Senior Consultant at Charles River Associates; (2013, “A SIMPLE APPROACH TO SETTING REASONABLE ROYALTIES FOR STANDARD-ESSENTIAL PATENTS”, (https://faculty.haas.berkeley.edu/shapiro/frand.pdf)

Under our approach, many of these issues should become moot, since the patentee cannot obtain an injunction (or transfer the patent to someone who can) against a willing licensee, and since competitors are not involved in jointly setting the reasonable royalty rate. If SSOs set clear, reasonable rules following the best practices we recommend, and parties follow those rules, there should be little or no need for antitrust to intervene. Indeed, even the risk of non-disclosure of a patent is lessened, since the patentee has committed to license its essential patents whether or not it discloses them. For the most part, the rules we have described are self-executing, meaning that even if a party tries to break the rules set by the SSO there still may be no need for antitrust to intervene. Thus, we suggest that parties who abide by these procedures—patentees, implementers, and the SSOs themselves—should be immune from antitrust liability for activities that merely follow those rules.107 They have entered into an arrangement that is on balance good for competition, one that allows patentees to receive reasonable royalties but prevents holdup and reduces the risk of monopolization by trickery.

The fact that antitrust remains a last resort available when SSOs don’t follow best practices may have two practical benefits, however. First, under our approach the promise of avoiding the risk of antitrust liability will be a powerful incentive for both SSOs and patent owners to adopt the best practices we propose. Second, the risk of antitrust liability may be relevant when an individual patentee wants to adopt best practices but the SSO governing the standard has not yet done so. We propose that a patentee that unilaterally commits to the FRAND procedures we describe here should be immune from antitrust liability for following these procedures.108 A patentee’s unilateral binding commitment to arbitration could be enforced whether or not it was elicited by an SSO. Thus, just as the prospect of antitrust immunity might lure SSOs to adopt best practices, it might also lure patentees to implement those practices even if the SSO has not done so. Given the large number of standard-essential patents based on preexisting standards,109 and given that SSOs tend to update their IP rules rather slowly,110 this is not a small matter.

#### Only antitrust enforcement creates a consumer-action feature that counterbalances SSO’s conspiratorial incentives---private action fails.

Melamed & Shapiro 18, \*A. Douglas Melamed is Professor of the Practice of Law at Stanford Law School; \*Carl Shapiro is the Transamerica Professor of Business Strategy at the Haas School of Business at the University of California at Berkeley; (May 2018, “How Antitrust Law Can Make FRAND Commitments More Effective”, <https://www-cdn.law.stanford.edu/wp-content/uploads/2018/05/How-Antitrust-Law-Can-Make-FRAND-Commitments-More-Effective.pdf>)

2. Why Antitrust Enforcement Is Necessary

Some SSO members have an interest in ensuring that the SSO takes steps to minimize the potential harms from the SEP holders’ monopoly power, and this undoubtedly explains in part why most SSOs have adopted FRAND policies or similar requirements. But, as shown in the economic model in the Appendix,73 SSOs cannot in general be counted on to adopt effective FRAND policies. The bases for this conclusion, which is central to our argument for the applicability of Section 1 to SSO FRAND rules, can be summarized as follows.74

First, the SSO members collectively have an interest in permitting SEP holders to charge supracompetitive royalties that elevate the downstream price of compliant devices to the monopoly level. Doing so will enable the members in aggregate to collect increased revenues from consumers, and thus to generate increased profits that in theory could be shared by all the members. In other words, supracompetitive royalties can enrich industry participants as a group at the expense of final consumers. This fact alone should serve as a clear and strong signal regarding the dangers of counting on SSOs to implement effective FRAND policies: if the SSO members negotiate efficiently, the outcome will be just as bad for consumers as if the members agreed to fix downstream prices.75 The fundamental problem is that final consumers are not at the table when the SSO rules are negotiated.

Second, SSO members that own SEPs but earn little or no profits as implementers have a powerful self-interest in being able to exercise the ex post monopoly power associated with their SEPs. Because SSO policies are usually determined by a consensus process, these members will likely be able to block the adoption of fully effective FRAND policies. Moreover, these SSO members often have the greatest interest in SSO patent policies. Since much of their income may be attributable to patent licensing, they can be expected to devote substantial resources to block the adoption of FRAND policies that effectively prevent patent holdup.

Third, even SSO members that earn significant profits as implementers may have mixed incentives if they also own SEPs, which can also lead to weak or in-effective FRAND rules. In the Appendix, we show that, if the requisite share of votes in the SSO are cast by firms whose share of SEP royalties is at least as large as their share of downstream profits, and if these firms can coordinate their voting over the FRAND rules, then an SSO unconstrained by antitrust laws will establish FRAND rules leading to an outcome no better for consumers than would result from an integrated monopolist controlling all SEPs and all downstream sales.76

Fourth, even SSO members that are downstream implementers and own few, if any, SEPs may have only a modest interest in promoting effective policies to restrict ex post opportunism. Because all implementers will be subject to the opportunism, all of them will face increased licensing costs, and therefore will likely be able to pass on most or all of the increased costs to their customers.77 Furthermore, these implementers might not be especially active or effective in the standard-setting process for free-riding or public-good reasons, especially if SEP royalties constitute only a relatively small portion of the costs of their standard-implementing products. Public choice theory predicts that the highly motivated SEP holders are likely to have the greatest influence over patent policies.

Empirical evidence bears out these concerns. As a starting point, we find it striking that SSO FRAND rules are almost always quite vague.78 Notably, SSOs in which SEP holders are more prevalent tend to have weaker FRAND rules.79 Further, to our knowledge, SSOs have made almost no effort to enforce their FRAND rules and have, instead, left enforcement efforts to others.80 This evidence raises serious doubts about the effectiveness of the existing FRAND rules in preventing ex post opportunism.

# 2AC

## Advantage---Innovation

### 2AC---AT: Dedev---TL

#### The barrier to climate progress is political, not material---the transition would be so politically disastrous that it’d irreversibly set back political progress against climate change. Speed is key, so only existing dematerialization and renewables can solve in time.

Klein 8/31/21, Opinion Writer at the New York Times, former Founder of Vox, and author of “Why We’re Polarized” (Ezra, “Transcript: Ezra Klein Answers Listener Questions” from ‘The Ezra Klein Show’ podcast, *The New York Times*, <https://www.nytimes.com/2021/08/31/podcasts/transcript-ezra-klein-ask-me-anything.html>, Accessed 09-1-2021)

But now let me talk about degrowth more in the terms of it is a direct political project, which is as an answer to climate change. I would cut this into a few pieces. Is degrowth necessary for addressing climate change? Is it the fastest way to address climate change? And is it desirable? It has to be at least one of those things to be the strategy you’d want to take.

And I don’t think it is. Let’s start with necessary. Many countries in Europe, even the United States, are growing while reducing their carbon footprint. Now, you could say they’re not doing so fast enough depending on the country. But they could all do so much faster if there was enough political will to deploy more renewable technology, to tax carbon, to do a bunch of things that we have not been able to pass. So it is clearly true that we can decouple growth and energy usage.

Hickel, to be fair, will say that that may be true. But given the speed at which we need to act, we can’t just be deploying renewable energy technology. It would also help the situation if we stopped using as much through material consumption. That is, I think, conceptually true and politically false.

I mean, let’s just state that speed is, first and foremost, a political problem. There is a delta between where we are right now in terms of what we are doing on climate change and where we could be. That delta is big, and that delta gets bigger every year because it gets harder every year. And the time we have to act before we start getting some of the really truly catastrophic feedback loops in play is shortening. So you’re now talking here about the speed at which you can move politics.

So for something to be faster, it doesn’t just need to be faster if you implemented it. It needs to be something you can implement such it accelerates the politics of radical climate action. And that’s where I think degrowth completely falls apart. And I have tried to look for the answer people give on this, and I’ve never found one that is convincing.

So again, I’ll quote Hickel on this: “Degrowth has a discriminating approach to reducing economic activity. It seeks to scale down ecologically destructive and socially less necessary production, i.e., the production of S.U.V.s, arms, beef, private transportation, advertising and planned obsolescence” — by which he means there, the fact that expiration dates are built into a lot of our electronics — “while expanding socially important sectors like health care, education, care and conviviality.”

And I’d urge people to think about that for a minute. I mean, you can listen to that and you will assume correctly that I am sympathetic to the idea that a lot of those goods are not great. I’m a vegan. I don’t eat beef. I would like nobody else to eat beef.

I think that if the political demand of the climate movement becomes you don’t get to eat beef, you will set climate politics back so far, so fast, it would be disastrous. Same thing with S.U.V.s. I don’t like S.U.V.s. I don’t drive one. But if you are telling people in rich countries that the climate movement is for them not having the cars they want to have, you are just going to lose. You are going to lose fast.

We watched this happen for years before Elon Musk and some others began inventing cars that were both electrified and were actually cool cars. You weren’t going to get everybody in a Prius. You might, over time, get them into the post-Tesla generations of electronic vehicles.

This is where the politics of it for me fall apart. I’d at least like to see some empirical evidence for the claim that degrowthers are right, and that their appeal will speed the politics of doing hard things on climate change. Because I think it will do the opposite. And I don’t see politicians winning in the countries they would need to win on anything like this platform. Quite the contrary.

I watched the most effective attack against Joe Biden’s climate policies. It dominated the news for a day or two. It was Fox News just making up — just completely making up — a false claim that Biden was going to limit or restrict red meat.

ANNIE GALVIN: Right. [LAUGHS]

EZRA KLEIN: So my worry with degrowth is that it is trying to take the politics out of politics. It is attacking the flaws of the current strategy as not moving fast enough when the impediments are political, but then not accepting the impediments to its own political path forward.

I will say, because I think it’ll be weird to people if I don’t mention this, that there is the big problem, of course, that the rising generation of emissions is coming from China, from India. I think it’s something like ⅔ of emissions are now from middle income countries. That is only going up.

Hickel and other degrowthers will say that, yes, the point of this is that the rich countries, which have already used more than their fair share of the carbon budget, should cut their carbon usage so poor countries can grow. I cannot imagine how you are going to enforce this as a political and economic planning regime. How you will get rich countries to agree to do less so poor countries can have more. I mean, look at what has happened with vaccine hoarding.

I don’t want to say that this isn’t a good moral weight on the conversation or, in the long term, a good push for people to think about different ways of having growth, different ways of human flourishing. But the entirety — as the degrowth people will agree — the entire question of the climate change conversation is speed. And I just don’t see the argument for degrowth as being anything but an extraordinarily slower way of approaching the politics, probably counterproductive compared to what we’re doing, which is I think you can make tremendous strides on climate change by deploying renewable energy technologies and giving people the opportunity to have a more materially fulfilling life atop those technologies.

And by the way, when that happens in rich countries, as we have seen, it ends up subsidizing these renewable energy technological advances for poorer countries. So it is a fact that Germany and other countries did so much to subsidize solar for themselves, it has also made it possible for countries like China and India to have such a rapid advance in solar technology that it’s affordable for them to do a lot of their growth on that platform.

So I also think there are cross-subsidies in rich countries trying to maintain growth renewable energy deployment that end up helping poor countries change what they’re doing in a useful way, too. So that’s my take on degrowth. But I understand its appeal. I just don’t understand its politics.

#### A plethora of indicators demonstrate that catastrophic climate change can be averted. The momentum exists, but capitalizing on it is key.

Wallace-Wells 21, \*David Wallace-Wells is deputy editor of New York magazine, where he also writes frequently about climate change and the near future of science and technology; (January 18th, 2021, “After Alarmism”, https://nymag.com/intelligencer/article/climate-change-after-pandemic.html)

The change is much bigger than the turnover of American leadership. By the time the Biden presidency finds its footing in a vaccinated world, the bounds of climate possibility will have been remade. Just a half-decade ago, it was widely believed that a “business as usual” emissions path would bring the planet four or five degrees of warming — enough to make large parts of Earth effectively uninhabitable. Now, thanks to the rapid death of coal, the revolution in the price of renewable energy, and a global climate politics forged by a generational awakening, the [expectation](https://climateactiontracker.org/global/temperatures/) is for about three degrees. Recent pledges [could bring us closer to two](https://climateactiontracker.org/publications/global-update-paris-agreement-turning-point/). All of these projections sketch a hazardous and unequal future, and all are clouded with uncertainties — about the climate system, about technology, about the dexterity and intensity of human response, about how inequitably the most punishing impacts will be distributed. Yet if each half-degree of warming marks an entirely different level of suffering, we appear to have shaved a few of them off our likeliest end stage in not much time at all.

The next half-degrees will be harder to shave off, and the most crucial increment — getting from two degrees to 1.5 — perhaps impossible, dashing the dream of avoiding what was long described as “catastrophic” change. But for a climate alarmist like me, seeing clearly the state of the planet’s future now requires a conspicuous kind of double vision, in which a guarded optimism seems perhaps as reasonable as panic. Given how long we’ve waited to move, what counts now as a best-case outcome remains grim. It also appears, miraculously, within reach.

In December, a month after Biden was elected promising to return the U.S. to the Paris agreement, the U.N. celebrated five years since the signing of those accords. They were five of the six hottest on record. (The sixth was 2015, the year the agreement was signed.) They were also the years with the highest levels of carbon output in the history of humanity — with emissions equivalent to what was produced by all human and industrial activity from the speciation of Homo sapiens to the start of World War II.

They have also been the five years in which the nations of the world — and cities and regions, individuals and institutions, corporations and central banks — have made the most ambitious pledges of future climate action. Most of them were made in the past 12 months, in the face of the pandemic. Or, perhaps, to some degree, because of it — because the pandemic demanded a full-body jolt to the global political economy, provoking much more aggressive government spending, a much more accommodating perspective on debt, and a much greater openness to large-scale actions and investments of the kind that might plausibly reshape the world. And because decarbonization has come to seem, even to those economists and policy-makers blinded for decades to the moral and humanitarian cases for reform, a rational investment. “When I think about climate change,” Biden is fond of saying, “the word I think of is jobs.”

There are two ways of looking at these seemingly contradictory sets of facts. The first is that the distance between what is being done and what needs to be done is only growing. This is the finding of, among others, the U.N.’s comprehensive [“Emissions Gap” report](https://www.unenvironment.org/emissions-gap-report-2020), issued in December, which found that staying below two degrees of warming would require a tripling of stated ambitions. To bring the planet in reach of the 1.5-degree target — favored by activists, most scientists, and really anyone reading their work with open eyes — would require a quintupling. It is also the perspective of Greta Thunberg, who has spent the pandemic year castigating global leaders for paying mere lip service to far-off decarbonization targets and who called the E.U.’s new net-zero emissions law “surrender.”

The second is that all of the relevant curves are bending — too slowly but nevertheless in the right direction. The International Energy Agency, a notoriously conservative forecaster, recently [called](https://www.carbonbrief.org/solar-is-now-cheapest-electricity-in-history-confirms-iea#:~:text=Source%3A%20IEA%20World%20Energy%20Outlook%202020.&text=Together%2C%20low%2Dcarbon%20sources%20would,up%20from%2019%25%20in%202019.) solar power “the cheapest electricity in history” and projected that India will build 86 percent less new coal power capacity than it thought just one year ago. Today, business as usual no longer means a fivefold increase of coal use this century, as was once expected. It means pretty rapid decarbonization, at least by the standards of history, in which hardly any has ever taken place before.

Both of these perspectives are true. The gap is real, and the world risks tumbling into it, subjecting much of the global South to unconscionable punishments all the way down. But in the months since the pandemic wiped climate strikers off the streets, their concerns have seeped into not just public-opinion surveys but parliaments and presidencies, trade deals and the advertising business, finance and insurance — in short, all the citadels presiding over the ancien régime of fossil capital.

This is not exactly a climate revolution; the strikers and their allies didn’t win in the way they wanted to, at least not yet. But they did win something. Environmental anxieties haven’t toppled neoliberalism. Instead, to an unprecedented degree, they infiltrated it. (Or perhaps they were appropriated by it. It’s an open question.) Climate change isn’t an issue just for die-hards anymore — it’s for normies, sellouts, and anyone with their finger in the wind. It will take time, of course, for voters to see empty rhetoric for what it is, and for consumers to learn to distinguish, say, between the claims of guiltless airline tickets, or between carbon-free foods in the supermarket aisle. Harder still will be sorting through the differences between real corporate commitments like Microsoft’s and more evasive ones, like BP’s. Already, there is considerable consternation among climate activists that the public doesn’t understand the tricky math of “net-zero” on which so many of these commitments have been made—it is not a promise of ending emissions, but of offsetting some amount of them, in the future, with “negative emissions,” sometimes called “carbon dioxide removal,” though no approach of that kind is ready to go at anything like the necessary scale. And while some amount of skepticism about those commitments is surely warranted, it is also the case that, according to [a recent Bloomberg review](https://www.bloomberg.com/graphics/2020-company-emissions-pledges/), of 187 corporate climate pledges made for 2020 in 2015, 138 will be met. (Many of those promises were quite modest, but it is a much better performance than has been managed by the 189 parties to the Paris agreement, of which only two — Morocco and Gambia — are today [judged](https://climateactiontracker.org/countries/) fully “compatible” with the 1.5-degree goal, and only six more with the 2-degree target).

In the political sphere, the uneasy alliance between activists and those in power will be tested, producing new conflicts, or new equilibria, or both. Consider, though, that Varshini Prakash, whose [Sunrise Movement](https://www.sunrisemovement.org/) gave Biden’s primary candidacy an F, later helped write his climate plan along with Alexandria Ocasio-Cortez. Climate expertise has been distributed throughout the incoming administration, as was promised during a campaign that closed, remarkably, with a climate-focused advertising blitz. During the transition, Biden’s pick for director of the National Economic Council, Brian Deese, was targeted by the environmental left for his time with BlackRock, but even this purported stooge had been married by Bill McKibben, one of the godfathers of modern climate activism.

Elsewhere in the world, where 85 percent of global emissions are produced, the great infiltration of climate concerns represents what the British environmental [writer](https://www.businessgreen.com/blog-post/4025199/2020-crisis-crossroads-alternative-histories) James Murray has called “an alternative history to 2020” and what the scientist turned journalist Akshat Rathi [has declared](https://www.bloomberg.com/news/articles/2021-01-05/climate-action-is-embedding-into-how-the-world-works) “a strong sign that climate action is starting to be ‘institutionalized’ — that is, getting deeply embedded into how the world works.” This is not about coronavirus lockdowns producing emissions drops or “nature healing.” It is instead about long-standing trajectories passing obvious tipping points in coal use and political salience; promises and posturing by powerful if compromised institutions; and policy progress almost smuggled into place, all over the world, under cover of pandemic night. In the U.S., in the second coronavirus stimulus, [$35 billion in clean-energy spending](https://nymag.com/intelligencer/2020/12/what-is-in-covid-stimulus-omnibus-climate-pell-grants-medical-billing.html) passed in the Senate 92-6 — an effective down payment, energy researcher Varun Sivaram has estimated, on the innovation spending needed for a full electrification of the country. Did you even notice?

Biden’s climate plan now faces the challenge of a filibuster, a skeptical Supreme Court, and the mood of Senator Joe Manchin of West Virginia, which means American climate action over the next four years is probably more likely to be delivered piecemeal — through appropriations and stimulus, executive action, and regulation — than through a landmark Green New Deal–style piece of legislation. That does limit what can be achieved, but it also means avoiding a protracted battle over climate as a referendum on the identity of the nation. And at least nominally, having been pressured by activists to do so, Biden is promising to multiply the green spending in that recent stimulus by a factor of 60.

The numbers are numbingly large — reminders that in the midst of pandemic turmoil, the rules of state spending have been dramatically revised and perhaps even suspended. Is this global free-spending binge the beginning of a new era or merely a crisis interregnum to be followed by a new new austerity? “We don’t know what the recovery packages of COVID are going to be,” Christiana Figueres, one of the central architects of the Paris accords, told me this summer. “And honestly, the depth of decarbonization is going to largely depend on the characteristics of those recovery packages more than on anything else, because of their scale. We’re already at $12 trillion; we could go up to $20 trillion over the next 18 months. We have never seen — the world has never seen — $20 trillion go into the economy over such a short period of time. That is going to determine the logic, the structures, and certainly the carbon intensity of the global economy at least for a decade, if not more.”

For those dreaming of a climate recovery, the first round of spending was not so encouraging. The E.U. was the gold standard, promising that 30 percent of its stimulus would be earmarked for climate. The U.S. and China each pledged only a fraction of that (and in each case, there was fossil stimulus, too). But in October, a team of researchers including Joeri Rogelj of the Imperial College of London [calculated](https://www.reuters.com/article/climate-change-stimulus/tenth-of-pandemic-stimulus-spend-could-help-world-reach-climate-goals-study-idUSKBN271098) that just one-tenth of the COVID-19 stimulus spending already committed around the world, directed toward decarbonization during each of the next five years, would be sufficient to deliver the goals of the Paris agreement and stop global warming well below two degrees. That analysis may be a touch optimistic, but the level of spending seems, now, doable.

When Donald Trump was elected, trashing Paris, climate hawks were left hoping that the world would hang on for the length of his administration — insisting that, in the long term, the crisis couldn’t be solved without America at the helm. But the past four years of missing leadership have produced astonishing gains.

The price of solar energy has fallen ninefold over the past decade, as has the price of lithium batteries, critical to the growth of electric cars. The costs of utility-scale batteries, which could solve the “intermittency” (i.e., cloudy day) problem of renewables and help power whole cities in relatively short order, have fallen 70 percent since just 2015. Wind power is 40 percent cheaper than it was a decade ago, with offshore wind experiencing an even steeper decline. Overall, renewable energy is less expensive than dirty energy almost everywhere on the planet, and in many places it is simply cheaper to build new renewable capacity than to continue running the old fossil-fuel infrastructure. Oil demand and carbon emissions may both have peaked this year. Eighty percent of coal plants planned in Asia’s developing countries have been shelved.

This summer, I heard the Australian scientist and entrepreneur Saul Griffith talk about what it would take to get the U.S. within range of a 1.5 degree world. He said it would mean that beginning in 2021, this year, every single person buying a new car would have to be buying an electric one. That seems unrealistic, I thought, making a note of it as a useful benchmark illustrating just how far we have to go.

Then, in the fall, the U.K. pledged to ban nonelectrics by 2030—a once-unthinkable law coming both too slow and much more quickly than seemed possible not very long ago. Similar plans are now in place in 16 other countries, plus Massachusetts and California. Canada recently raised its tax on carbon sixfold. Italy cut its power-sector emissions 65 percent between 2012 and 2019, and Denmark is now aiming to reduce its overall emissions 70 percent by 2030. “We set ourselves challenges that on paper looked almost impossible,” the country’s minister for the environment, Dan Jørgensen, told me recently. “And I think experts in many countries said, when looking at Denmark, ‘This is going to be too expensive, this is going to lower their living standards, this is going to hurt their ability to compete.’ But actually I’m proud to say that the opposite has happened. Now, of course, we have set even higher standards.”

In the midst of the pandemic, new net-zero pledges, far more ambitious than those offered at Paris, were independently made by Japan, South Korea, the E.U., and, most significant, China, the world’s biggest emitter, which promised to reach an emissions peak by 2030 and get all the way to zero by 2060. China’s promise is so ambitious it has inspired one wave of debate among experts about whether it is even feasible — given that it would require, for instance, roughly twice as much renewable power to be installed every year for the next decade as Germany has operating nationwide today — and another debate about whether it has revived the possibility of that 1.5-degree target, with economic historian Adam Tooze writing, just after Xi Jinping’s surprise announcement in September, that it single-handedly “redefined the future prospects for humanity.” Together, the new net-zero pledges may have subtracted a full half-degree from ultimate warming. Add Biden’s campaign pledge of net zero by 2050, and you’ve got about two-thirds of global emissions at least nominally committed to firm, aggressive timelines to zero.

These are all just paper promises, of course, and the history of climate action is littered with the receipts of similar ones uncashed. Plot the growth of carbon concentration in the atmosphere against the sequence of climate-action conferences and a distressing pattern emerges: the World Meteorological Conference of 1979, the U.N. framework of 1992, the Kyoto protocol of 1997, the Copenhagen accord of 2009, and the 2015 Paris accords, all tracking an uninterrupted trajectory upward for carbon from a “safe” level under 350 parts per million, past 400, to 414 today, and pointing upward from there. Before the industrial revolution, humans had never known an atmosphere with even 300 parts per million. Inevitably now, within a few years, the concentration will reach levels not seen since 3.3 million years ago, when sea levels were 60 feet higher. For all their momentum, renewables still only make up 10 percent of global electricity production.

But alarmists have to take the good news where they find it. And while mood affiliation is not always the best guide to the state of the world, in 2020, for me, there were three main sources of hope.

The first is the fact that the age of climate denial is over thanks to extreme weather and the march of science and the historic labor of activists — climate strikers, Sunrise, Extinction Rebellion — whose success in raising alarm may have been so sudden that they brought an end to the age of climate Jeremiahs as well. Their voices now echo in some unlikely places. Exxon was booted from the S&P 500 within months of Tesla making Elon Musk the world’s richest man. The cultural cachet of oil companies is quickly approaching that of tobacco companies. Jair Bolsonaro of Brazil aside, practically every leader of every country and every major figure in every corporate and industrial sector now feels obligated — because of protest and social pressure, economic realities, and cultural expectation — to at least make a show of support for climate action. It would be nice not to have to count that as progress, but it is. The questions are: How much does it matter? And what will follow? Disinformation and human disregard are not the only instruments of delay, and the age of climate denial is likely to yield first not to an age of straightforward climate deliverance but to one characterized by climate hypocrisy, greenwashing, and gaslighting. But those things, ugly and maddening and even criminal as they are, have always been with us. It is the other thing that is new.

The second source of good news is the arrival on the global stage of climate self-interest. By this I don’t mean the profiteering logic of BlackRock, which opportunistically announced some half-hearted climate commitments last year, but rather the growing consensus in almost every part of the globe, and at almost every level of society and governance, that the world will be made better through decarbonization. A decade ago, many of the more ruthless capitalists to analyze that project deemed it too expensive to undertake. Today, it suddenly appears almost too good a deal to pass up. (A recent McKinsey [report](https://www.mckinsey.com/business-functions/sustainability/our-insights/how-the-european-union-could-achieve-net-zero-emissions-at-net-zero-cost): “Net-Zero Emissions at Net-Zero Cost.”)

The logic may be clearest in considering the effects of air pollution, which kills an estimated 9 million people per year. In India, where more than 8 percent of GDP is lost to pollution, poor air quality is also responsible for 350,000 miscarriages and stillbirths every year. Globally, coal kills one person for every thousand people it provides power to, and even in the U.S., with its enviably clean air, total decarbonization would be entirely paid for, Duke’s Drew Shindell [recently testified](https://www.vox.com/energy-and-environment/2020/8/12/21361498/climate-change-air-pollution-us-india-china-deaths) before Congress, just through the public-health benefits of cutting out fossil fuels. You don’t even have to calculate any of the other returns — more jobs, cheaper energy, new infrastructure. Of course, countries all around the world are incorporating those considerations too, turning the page on a generation of economic analysis that said decarbonization was too costly and its benefits too small to sell to the public as upside.

A decade ago, capitalists deemed decarbonization too expensive. Suddenly, it appears too good a deal to pass up.

What is perhaps most striking about all the new climate pledges is not just that they were made in the absence of American leadership but that they were made outside the boundaries of the Paris framework. They are not the result of geopolitical strong-arming or “Kumbaya” consensus. They are, instead, plans arrived at internally, in some cases secretly. This has been eye-opening for the many skeptics who worried for decades about climate’s collective-action problem — who warned that because the benefits of decarbonization were distributed globally while the costs were concentrated locally, nations would move only if all of their peers did too. But a [recent paper](https://www.mitpressjournals.org/doi/full/10.1162/glep_a_00578) by Matto Mildenberger and Michaël Alkin suggests this shouldn’t be a surprise. In their retrospective analysis, they found that, despite much consternation about designing climate policy to prevent countries from “cheating,” there was basically no evidence of any country ever pulling back from mitigation efforts to take a free ride on the good-faith efforts of others. There was, in other words, no collective-action problem on climate after all. For a generation, the argument for climate action was made on a moral basis. That case has only grown stronger. And now there are other powerful, more mercenary arguments to offer.

The third cause for optimism is that, while the timelines to tolerably disruptive climate outcomes have already evaporated, the timelines to the next set of benchmarks is much more forgiving. This is why Glen Peters, the research director at the Cicero Center for International Climate Research, often jokes that while keeping warming below two degrees is very hard, perhaps even impossible, keeping it below 2.5 degrees now looks like a walk in the park.

This isn’t to say we’re on a glide path to safety. At current emissions levels, the planet will entirely exhaust the carbon budget for 1.5 degrees in just seven years — stay merely level, in other words, and we’ll burn through the possibility of a relatively comfortable endgame within the decade. We could buy ourselves a little more time by starting to move quickly, but not that much more. To decarbonize fast enough to give the planet a decent chance of hitting that 1.5-degree target without any negative emissions would require getting all the way to net-zero emissions by around 2035. Simply running the cars and furnaces and fossil-fuel infrastructure that already exists to its expected retirement date would push the world past 1.5 degrees—without a single new gasoline SUV hitting the road, or a single new oil-heated home being built, or a single new coal plant opened.

A two-degree target, by contrast, yields a much longer timeline, requiring the world to achieve net-zero by 2070 or 2080 — without even the help of negative emissions. We’d have to cut carbon production in half in about three decades, rather than one. That pathway will almost certainly prove harder than it looks. The good news is that we seem to be beginning, at least, to try.

#### Technological innovation successfully dematerializes growth.

McAfee 19, \*Andrew Paul McAfee, a principal research scientist at MIT, is cofounder and codirector of the MIT Initiative on the Digital Economy at the MIT Sloan School of Management; (2019, “More from Less: The Surprising Story of How We Learned to Prosper Using Fewer Resources and What Happens Next”, https://b-ok.cc/book/5327561/8acdbe)

There is no shortage of examples of dematerialization. I chose the ones in this chapter because they illustrate a set of fundamental principles at the intersection of business, economics, innovation, and our impact on our planet. They are:

We do want more all the time, but not more resources. Alfred Marshall was right, but William Jevons was wrong. Our wants and desires keep growing, evidently without end, and therefore so do our economies. But our use of the earth’s resources does not. We do want more beverage options, but we don’t want to keep using more aluminum in drink cans. We want to communicate and compute and listen to music, but we don’t want an arsenal of gadgets; we’re happy with a single smartphone. As our population increases, we want more food, but we don’t have any desire to consume more fertilizer or use more land for crops.

Jevons was correct at the time he wrote that total British demand for coal was increasing even though steam engines were becoming much more efficient. He was right, in other words, that the price elasticity of demand for coal-supplied power was greater than one in the 1860s. But he was wrong to conclude that this would be permanent. Elasticities of demand can change over time for several reasons, the most fundamental of which is technological change. Coal provides a clear example of this. When fracking made natural gas much cheaper, total demand for coal in the United States went down even though its price decreased.

With the help of innovation and new technologies, economic growth in America and other rich countries—growth in all of the wants and needs that we spend money on—has become decoupled from resource consumption. This is a recent development and a profound one.

Materials cost money that companies locked in competition would rather not spend. The root of Jevons’s mistake is simple and boring: resources cost money. He realized this, of course. What he didn’t sufficiently realize was how strong the incentive is for a company in a contested market to reduce its spending on resources (or anything else) and so eke out a bit more profit. After all, a penny saved is a penny earned.

Monopolists can just pass costs on to their customers, but companies with a lot of competitors can’t. So American farmers who battle with each other (and increasingly with tough rivals in other countries) are eager to cut their spending on land, water, and fertilizer. Beer and soda companies want to minimize their aluminum purchases. Producers of magnets and high-tech gear run away from REE as soon as prices start to spike. In the United States, the 1980 Staggers Act removed government subsidies for freight-hauling railroads, forcing them into competition and cost cutting and making them all the more eager to not have expensive railcars sit idle. Again and again, we see that competition spurs dematerialization.

There are multiple paths to dematerialization. As profit-hungry companies seek to use fewer resources, they can go down four main paths. First, they can simply find ways to use less of a given material. This is what happened as beverage companies and the companies that supply them with cans teamed up to use less aluminum. It’s also the story with American farmers, who keep getting bigger harvests while using less land, water, and fertilizer. Magnet makers found ways to use fewer rare earth metals when it looked as if China might cut off their supply.

Second, it often becomes possible to substitute one resource for another. Total US coal consumption started to decrease after 2007 because fracking made natural gas more attractive to electricity generators. If nuclear power becomes more popular in the United States (a topic we’ll take up in chapter 15), we could use both less coal and less gas and generate our electricity from a small amount of material indeed. A kilogram of uranium-235 fuel contains approximately 2–3 million times as much energy as the same mass of coal or oil. According to one estimate, the total amount of energy that humans consume each year could be supplied by just seven thousand tons of uranium fuel.

Third, companies can use fewer molecules overall by making better use of the materials they already own. Improving CNW’s railcar utilization from 5 percent to 10 percent would mean that the company could cut its stock of these thirty-ton behemoths in half. Companies that own expensive physical assets tend to be fanatics about getting as much use as possible out of them, for clear and compelling financial reasons. For example, the world’s commercial airlines have improved their load factors—essentially the percentage of seats occupied on flights—from 56 percent in 1971 to more than 81 percent in 2018.

Finally, some materials get replaced by nothing at all. When a telephone, camcorder, and tape recorder are separate devices, three total microphones are needed. When they all collapse into a smartphone, only one microphone is necessary. That smartphone also uses no audiotapes, videotapes, compact discs, or camera film. The iPhone and its descendants are among the world champions of dematerialization. They use vastly less metal, plastic, glass, and silicon than did the devices they have replaced and don’t need media such as paper, discs, tape, or film.

If we use more renewable energy, we’ll be replacing coal, gas, oil, and uranium with photons from the sun (solar power) and the movement of air (wind power) and water (hydroelectric power) on the earth. All three of these types of power are also among dematerialization’s champions, since they use up essentially no resources once they’re up and running.

I call these four paths to dematerialization slim, swap, optimize, and evaporate. They’re not mutually exclusive. Companies can and do pursue all four at the same time, and all four are going on all the time in ways both obvious and subtle.

Innovation is hard to foresee. Neither the fracking revolution nor the world-changing impact of the iPhone’s introduction were well understood in advance. Both continued to be underestimated even after they occurred. The iPhone was introduced in June of 2007, with no shortage of fanfare from Apple and Steve Jobs. Yet several months later the cover of Forbes was still asking if anyone could catch Nokia.

Innovation is not steady and predictable like the orbit of the Moon or the accumulation of interest on a certificate of deposit. It’s instead inherently jumpy, uneven, and random. It’s also combinatorial, as Erik Brynjolfsson and I discussed in our book The Second Machine Age. Most new technologies and other innovations, we argued, are combinations or recombinations of preexisting elements.

The iPhone was “just” a cellular telephone plus a bunch of sensors plus a touch screen plus an operating system and population of programs, or apps. All these elements had been around for a while before 2007. It took the vision of Steve Jobs to see what they could become when combined. Fracking was the combination of multiple abilities: to “see” where hydrocarbons were to be found in rock formations deep underground; to pump down pressurized liquid to fracture the rock; to pump up the oil and gas once they were released by the fracturing; and so on. Again, none of these was new. Their effective combination was what changed the world’s energy situation.

Erik and I described the set of innovations and technologies available at any time as building blocks that ingenious people could combine and recombine into useful new configurations. These new configurations then serve as more blocks that later innovators can use. Combinatorial innovation is exciting because it’s unpredictable. It’s not easy to foresee when or where powerful new combinations are going to appear, or who’s going to come up with them. But as the number of both building blocks and innovators increases, we should have confidence that more breakthroughs such as fracking and smartphones are ahead. Innovation is highly decentralized and largely uncoordinated, occurring as the result of interactions among complex and interlocking social, technological, and economic systems. So it’s going to keep surprising us.

As the Second Machine Age progresses, dematerialization accelerates. Erik and I coined the phrase Second Machine Age to draw a contrast with the Industrial Era, which as we’ve seen transformed the planet by allowing us to overcome the limitations of muscle power. Our current time of great progress with all things related to computing is allowing us to overcome the limitations of our mental power and is transformative in a different way: it’s allowing us to reverse the Industrial Era’s bad habit of taking more and more from the earth every year.

Computer-aided design tools help engineers at packaging companies design generations of aluminum cans that keep getting lighter. Fracking took off in part because oil and gas exploration companies learned how to build accurate computer models of the rock formations that lay deep underground—models that predicted where hydrocarbons were to be found.

Smartphones took the place of many separate pieces of gear. Because they serve as GPS devices, they’ve also led us to print out many fewer maps and so contributed to our current trend of using less paper. It’s easy to look at generations of computer paper, from 1960s punch cards to the eleven-by-seventeen-inch fanfold paper of the 1980s, and conclude that the Second Machine Age has caused us to chop down ever more trees. The year of peak paper consumption in the United States, however, was 1990. As our devices have become more capable and interconnected, always on and always with us, we’ve sharply turned away from paper. Humanity as a whole probably hit peak paper in 2013.

As these examples indicate, computers and their kin help us with all four paths to dematerialization. Hardware, software, and networks let us slim, swap, optimize, and evaporate. I contend that they’re the best tools we’ve ever invented for letting us tread more lightly on our planet.

All of these principles are about the combination of technological progress and capitalism, which are the first of the two pairs of forces causing dematerialization.

## AT: T---Prohibit

### 2AC---AT: T---Prohibit

#### Prohibit can mean ‘severely hinder’---doesn’t necessitate a ban.

Washington Court of Appeals 19 (KORSMO-judge. Opinion in State v. Kimball, No. 35441-5-III (Wash. Ct. App. Apr. 2, 2019). Google scholar caselaw. Date accessed 7/13/21).

His argument runs counter to the meaning of the word "prohibit." It means "1. To forbid by law. 2. To prevent, preclude, or severely hinder." BLACK'S LAW DICTIONARY 1405 (10th ed. 2014). As "severely hinder" suggests, a "prohibition" need not be an all or nothing proposition.

Our court reached that same conclusion, rejecting a similar argument, in Dejarlais. There the court stated, "nothing in the statute prevents drafting a protection order which allows some contact, for instance, by telephone or through a third party. There is no requirement that all contact be prohibited." State v. Dejarlais, 136 Wn.2d 939, 945, 969 P.2d 90 (1998).

RCW 26.50.110 does not apply only to orders that prohibit all contact. Accordingly, the statute was properly applied to Mr. Kimball's behavior.

#### Counter-interpretation---rule of reason is a prohibition.

Light 19, Sarah E. Light Assistant Professor of Legal Studies and Business Ethics, The Wharton School, University of Pennsylvania., The Law of the Corporation as Environmental Law, 71 Stan. L. Rev. 137, 2019, Lexis/Nexis

While antitrust law can serve as an environmental mandate by prohibiting collusive behavior that keeps environmentally preferable goods from the market, there is also conflict between antitrust law's goals of promoting competition and environmental law's goals of promoting [\*177] conservation. 192 Because antitrust law's per se rule and rule of reason operate on a somewhat fluid continuum, 193 this Subpart discusses the two doctrines together. The per se rule operates as a prohibition, whereas the rule of reason operates as both a prohibition and a disincentive. As noted above, antitrust law generally prohibits certain types of market activity - price fixing, horizontal boycotts, and output limitations - as illegal per se, and harm to competition is presumed. 194 For example, if an industry association declines to award a seal of approval necessary for a product's sale without any good faith attempt to test the product's performance, but rather simply because that product is manufactured by a competitor, such an action would be illegal per se. 195 Under this Article's framework, a per se violation is thus a prohibition. The more fact-intensive inquiry under the rule of reason tests "whether the restraint imposed is such as merely regulates and perhaps thereby promotes competition or whether it is such as may suppress or even destroy competition." 196 While this extremely broad statement might suggest that any fact is relevant to the inquiry, the salient facts under the rule of reason are "those that tend to establish whether a restraint increases or decreases output, or decreases or increases prices." 197 If an anticompetitive effect is found, then the action is illegal and the rule of reason operates, like the per se rule, as a prohibition. 198 The rule of reason can also operate as a disincentive, even if no [\*178] court finds an anticompetitive effect, as uncertainty and litigation risk may discourage firms from undertaking legally permissible, environmentally positive industry collaborations. 199 Associations of firms have adopted numerous mechanisms of private environmental governance to address the management of common pool resources like fisheries, forests, and the global climate. 200 Examples include the Sustainable Apparel Coalition's Higg Index 201 and the American Chemistry Council's Responsible Care program. 202 But private industry standards raise special antitrust concerns. An agreement among competitors with respect to product or process specifications may exclude competitors who fail to meet such standards, raising the specter that such industry collaborations really constitute output limitations or efforts to limit competition. 203 While the U.S. Supreme Court has scrutinized private standard-setting associations carefully, 204 it has noted that if associations "promulgate … standards based on the merits of objective expert judgments and through procedures that prevent the standard-setting process from being biased by members with economic interests in stifling product competition … , those private standards can have significant procompetitive advantages." 205 In the absence of price fixing or a boycott, a rule of reason analysis generally applies to product standard setting by private associations. 206 The uncertain outcome [\*179] inherent in the application of antitrust law in this context could therefore serve as a potential disincentive to the adoption of private industry standards. 207 The challenge of course is that some form of explicit sanctions on noncompliant industry members may be necessary for private industry standards to be effective. In the context of private reputational mechanisms like the New York Diamond Dealers Club, 208 Barak Richman has pointed out that the Club's use of reputational sanctions and voluntary refusals to deal with actors who flout industry norms, while welfare enhancing, could nonetheless amount to violations of antitrust law. 209 This echoes the concern raised by Andrew King and Michael Lenox in their extensive empirical analysis of the Responsible Care program created by the Chemical Manufacturers Association (now the American Chemistry Council). 210 King and Lenox concluded that the absence of explicit sanctions on members who failed to meet the standards set by the program left the program vulnerable to "opportunism." 211 While they suggested that industry associations could look to third parties to enforce the rules, 212 an alternative way to facilitate the long-term environmental benefits of stronger sanctions would be to interpret antitrust law in conformity with the environmental priority principle presented below. 213 [\*180] In some instances, the conflict between the values of promoting competition and conserving environmental resources can be stark. 214 Jonathan Adler, for example, has identified this conflict in the context of fisheries - a tragedy of the commons situation in which some form of collective action is required to avoid overfishing. 215 He cites as an example Manaka v. Monterey Sardine Industries, Inc., in which a fisherman was excluded from a local fishing cooperative. 216 The fisherman sued the cooperative under the Sherman Act, and the court found an antitrust violation in his exclusion. 217 While the fishing cooperative's policies were no doubt exclusionary, Adler contends that they also promoted conservation by restricting catch. 218 The fishery collapsed by the 1950s, a collapse Adler hypothesizes might have been "inevitable" but that perhaps might not have occurred in the absence of the antitrust suit. 219 While a court performing a rule of reason analysis must consider whether a restraint on trade suppresses or destroys competition, Adler points out that courts may also "consider offsetting efficiencies from otherwise anticompetitive arrangements." 220 It is not clear, however, that the courts have consistently taken these factors into account. 221 Among other potential remedies, Adler argues that to resolve this tension between antitrust law, on the one hand, and private collective action to conserve environmental resources, on the other, courts should more actively consider the "ancillary conservation benefits of otherwise anticompetitive conduct." 222 Recognizing the long-term health of a fishery would be consistent with antitrust law's purpose of ensuring viable markets exist in the future, and consistent with the environmental priority principle introduced below. 223

#### The ‘per se’ distinction is meaningless---rules always devolve into standards.

Crane 7 Daniel A. Crane is Assistant Professor, Benjamin N. Cardozo School of Law, Yeshiva University, Rules Versus Standards in Antitrust Adjudication, 64 Wash. & Lee L. Rev. 49 (2007), https://scholarlycommons.law.wlu.edu/wlulr/vol64/iss1/3

Before proceeding much further, it is worth pausing to consider the possibility that a world of antitrust rules would be illusory because, in practice, rules always fade into standards. Take H.L.A. Hart's observation that "[n]atural languages like English are... irreducibly open-textured" when specifying "general classifying terms,' ' 0 0 or Wittgenstein's point that the problem with rules is that they do not tell you when they should be applied.' 0 ' Because language is irreducibly open-textured and indeterminate and because rules lack internal mechanisms to specify when they should be applied, even when the law is formally framed as a rule, it requires penumbral rules, canons of interpretation, and other secondary decisional criteria which end up swallowing the apparent simplicity of the rule. 10 2 Specifying the governing law as a simple, bright-line rule may merely conceal the fact that important balancing of social interests, weighing of probabilities, and choosing between competing ends and means lurk in the shadow of the rule. Declaring a legal rule thus appears misleading or even dishonest because it hides the social preferences that animate the decision-maker's conclusion. Under one interpretation, antitrust law provides the perfect illustration for Hart and Wittgenstein's point. In this view, there never have been such things as case-determinative antitrust rules-only standards clad in rule-bound rhetoric. The current march toward standards, then, is not so much a change in liability determinants as a dissipation of the mystery surrounding antitrust's concealed methodology. In a moment, I will dispute this possibility and argue that the specification of antitrust law as rule or standard has very important practical consequences. But first, it is worth acknowledging the extent to which Hart and Wittgenstein's observation rings true in antitrust. A case in point is antitrust law's long-standing per se prohibition against "price fixing." As any antitrust practitioner will recognize, price fixing appears in quotation marks because application of the per se rule depends not on the fact that competitors have literally fixed prices but that the challenged conduct falls within the antitrust category known as "price fixing." The judicial decision often thought to have established the per se rule against price-fixing did not involve price fixing either literally or figuratively but rather a gentleman's agreement by dominant oil producers to buy up distressed oil from small refineries and thereby stabilize the wholesale market. 1 03 The defendants never came close to agreeing on price. Nonetheless, the Supreme Court held that any "combination formed for the purpose and with the effect of raising, depressing, fixing, pegging, or stabilizing the price of a commodity in interstate or foreign commerce" amounts to "price fixing" in the relevant legal sense, whether or not the defendants have actually done the act that a lay person might suppose "price fixing" to be-fixing a price. 1 On the other hand, the Supreme Court has described an act of apparent price fixing by competitors-an agreement on prices for blanket licensing of musical repertoires-as something other than "price fixing" and hence subject to the rule of reason. 0 5 In BMI v. CBS, the Supreme Court rejected textual "literalism" and held that application of the per se rule against price fixing is not as "simplistic" as "determining whether two or more potential competitors have literally 'fixed' a 'price.'" 06 Rather, "[a] s generally used in the antitrust field, 'price fixing' is a shorthand way of describing certain categories of business behavior to which the per se rule has been held applicable."' 0 7 Application of the per se rule turns not on whether the conduct amounts literally to price fixing but on whether the "particular practice is one of those types or that it is 'plainly anticompetitive' and very likely without 'redeeming virtue."" 8 This flexibility in the per se rule invites endless pages of briefing on whether the conduct at issue should be properly characterized as "price fixing" because it unjustifiably tampers with the market mechanism for determining prices or as something else because it can be justified by efficiencies, a standard-favoring way of doing law.'0 9 Hence, Hart explains that rules inevitably dissolve into standards and Wittgentsein explains that rules do not tell us when to apply them.

#### 2---they don’t solve limits---antitrust prohibitions can include exemptions.

Frederick 89 (Donald A. Frederick-Attorney-Adviser. “MANAGING COOPERATIVE ANTITRUST RISK” , United States Department of Agriculture, Agricultural Cooperative Service, Cooperative Information Report 38, <https://www.rd.usda.gov/files/cir38.pdf>, 1989, date accessed 9/5/21)

This exposes farmers to considerable antitrust risk unless their joint marketing activity is conducted in a manner exempt from antitrust prohibitions. As one judge phrased it:

“It is clear that if individual agriculturalists, through the medium of a cooperative, jointly fixed prices, reasonably or otherwise, without statutory authorization, they would be subject to prosecution.” (emphasis added) 14/

## AT: States CP

### 2AC---Preemption

#### The Ninth Circuit imposed court-order limitations on antitrust law to preserve its balance with patent law.

Martino et al. 20, \*[Matthew M. Martino](https://www.skadden.com/professionals/m/martino-matthew-m) [Tara L. Reinhart](https://www.skadden.com/professionals/r/reinhart-tara-l) [Steven C. Sunshine](https://www.skadden.com/professionals/s/sunshine-steven-c) [Julia K. York](https://www.skadden.com/professionals/y/york-julia-k), works with clients at Skadden, Arps, Slate, Meagher & Flom LLP; (August 14th, 2020, “Ninth Circuit Strikes Down Sweeping Injunction Against Qualcomm and Reins In Expansive Interpretation of Sherman Act”, https://www.skadden.com/insights/publications/2020/08/ninth-circuit-strikes-down-sweeping-injunction)

In its highly anticipated decision, the Ninth Circuit panel unanimously rejected the lower court’s reasoning, vacating the judgment and reversing the worldwide injunction against Qualcomm. The panel concluded that the district court had erroneously imposed the antitrust duty to deal on Qualcomm, had impermissibly looked outside the relevant antitrust market in order to infer an anticompetitive act and had relied on outdated evidence of agreements that were terminated before the suit was filed to justify a broad, forward-looking global injunction. The Ninth Circuit further rejected the argument that a SEP holder’s violation of FRAND commitments could independently create antitrust liability, instead pointing to patent and contract law as sources for potential remedies. The decision reflects a considered effort to rei

n in the district court’s expansive interpretation of general antitrust principles and their specific application to SEP holders, as well as recognition that the antitrust laws aim to preserve companies’ incentives to innovate and compete. Recognizing that while “[a]nticompetitive behavior is illegal under federal antitrust law[,]” the panel was adamant that “[h]ypercompetitive behavior is not.”[7](https://www.skadden.com/insights/publications/2020/08/ninth-circuit-strikes-down-sweeping-injunction" \l "ftn7)

Rejection of District Court’s Expansive Interpretation of Antitrust Laws

The Ninth Circuit decision contains several notable conclusions regarding the scope of Section 2 of the Sherman Act and what constitutes cognizable antitrust harm.

#### State efforts to impose greater antitrust liability than established by federal courts will be preempted to protect that balance.

Samp 14, \*Richard A. Samp is the chief counsel for Washington Legal Foundation (WLF), a non-profit, public interest law firm in Washington, D.C. WLF filed an amicus brief in support of Love Terminal Partners. (2014, “The Role of State Antitrust Law in the Aftermath of Actavis”, https://scholarship.law.umn.edu/cgi/viewcontent.cgi?article=1062&context=mjlst)

V. ACTAVIS’S PREEMPTIVE EFFECT

Application of state antitrust law to reverse payment settlements is not merely a hypothetical possibility. There are a fair number of pending lawsuits that challenge reverse payment settlements on state-law grounds. The California Supreme Court has agreed to review one such suit.74 In seeking affirmance of the appeals court’s dismissal of the suit, the defendants argue inter alia that the suit is preempted by federal law.75

As noted above, there is precedent for a finding that state antitrust law is preempted to the extent that it conflicts with the policy underlying a federal statute.76 Moreover, in the context of patent law, federal courts have not hesitated to preempt state laws that the courts deem to stand as an obstacle to accomplishing Congress’s objectives (i.e., encouraging efforts to develop new and useful products).77 To the extent that any portions of Actavis’s holding can be deemed to reflect the Court’s perception of Congress’s new-product-development objectives, a state law is preempted if it is inconsistent with that holding and seeks to impose a greater degree of antitrust liability on the parties to a reverse payment settlement.

Actavis’s treatment of settlements involving a compromise entry date appears to meet that description. Actavis held that federal antitrust liability could not arise from a settlement in which the generic manufacturer agrees not compete for a number of years and in return is rewarded with an exclusive license to market its product several years in advance of the patent’s expiration date.78 Accordingly, states are not permitted to impose antitrust liability under similar circumstances because doing so would upset the balance that, according to Actavis, Congress sought to achieve between antitrust and patent law.

Other issues left open by Actavis are likely to be answered in the years ahead. For example, the Supreme Court did not specify whether noncash benefits received by a generic manufacturer in connection with a patent settlement can ever serve as the basis for federal antitrust liability. If the Supreme Court eventually answers that question by stating: “No, federal antitrust law will not examine settlement benefits other than cash that flow to the infringing party,” then it is likely that state antitrust law would be required to conform to that rule. The potential grounds for such a ruling (a desire both to promote settlement of patent disputes and to uphold reliance interests in existing patents) are based largely on values embedded in federal patent law.

There is little reason to believe, however, that the Court would prevent application of state antitrust law to patent settlement agreements where state law is fully consistent with federal antitrust law. Even in areas subject to extensive federal regulation, the Supreme Court has upheld the authority of states to engage in parallel regulation that is not inconsistent with the federal regulation.79 Unless the Court were to determine, as in Connell,80 that states could not be trusted to properly accommodate the objectives of the federal statute at issue (here, federal patent law), there is no reason to conclude that Congress would not have wanted states to be permitted to police the same sorts of anticompetitive conduct that is policed by federal antitrust law. Moreover, states are likely free to impose greater penalties on the proscribed conduct than is available under federal law. As the Court explained in California v. ARC America Corp., state antitrust law is not required to adhere to the same set of sanctions imposed by federal antitrust law.81

It seems reasonably clear, however, that Actavis prohibits states from adopting the procedural devices rejected by the U.S. Supreme Court—either a per se condemnation of reverse payment settlements or a presumption of illegality accompanied by “quick look” review. The Supreme Court rejected those approaches because it determined that in many cases there might well be pro-competitive economic justifications for reverse payment settlements and that presuming their illegality could result in the suppression of economically useful conduct.82 State antitrust laws that adopted the FTC’s proposed presumption of illegality would be subject to similar criticism, and thus would likely be impliedly preempted as inconsistent with the careful balance between antitrust and patent law established by Actavis.

CONCLUSION

Because Actavis left so many questions unanswered regarding the application of federal antitrust law to patent settlement agreements, the extent to which federal law preempts the application of state antitrust law to such agreements remains similarly unsettled. One can be reasonably confident that if private plaintiffs become dissatisfied with the results of pending litigation under federal antitrust law, they will turn with increasing frequency to state antitrust law as an alternative remedy. Even if state law ends up doing no more than “parallel” federal antitrust law, defendants are likely to incur substantial litigation costs fending off such state claims in the years to come.

#### Precedent evinces that state antitrust cause of action will be preempted if alleged tortious conduct is even governed by patent law.

Paul Gugliuzza 15. Associate Professor, Boston University School of Law. 2015. “Patent Trolls and Preemption.” https://scholarship.law.bu.edu/cgi/viewcontent.cgi?article=1087&context=faculty\_scholarship

The Federal Circuit first rejected the defendants’ field preemption argument, noting that “state unfair competition law regulates conduct in a different field from federal patent law” and that, in any case, “conflict preemption is a more precise means of determining which state law causes of action are preempted than the blunt tool of field preemption.”272 Turning to conflict preemption, the Federal Circuit wrote, consistent with the Supreme Court’s Supremacy Clause-based preemption decisions, that the key question was “whether the state law actions frustrate[d] ‘the accomplishment and execution of the full purposes and objectives of Congress.’”273 But rather than considering the purposes of federal patent law, such as those identified in Kewanee and Bonito Boats (as well as by the Federal Circuit itself in Dow), the court stated that to determine preemption, “we assess a defendant’s allegedly tortious conduct.”274 The court elaborated: “If a plaintiff bases its tort action on conduct that is protected or governed by federal patent law, then the plaintiff may not invoke the state law remedy, which must be preempted for conflict with federal patent law.”275 Then, citing Mallinckrodt, the court noted: “[F]ederal patent law bars the imposition of liability for publicizing a patent in the marketplace unless the plaintiff can show that the patent holder acted in bad faith.”276 Ultimately, the court remanded the case for the district court to analyze preemption under the bad faith standard.277

#### Preemption means they don’t solve inter-state unity---the federal government will override the net benefit.

#### Net benefit is silly---inequality non-quantifiable, can’t solve globalization, skewed trade, etc.

## AT: Filibuster DA

### 2AC---NL---Courts

#### Court action flies under the radar.

Lohier 16 - judge on the United States Court of Appeals for the Second Circuit and formerly an Assistant United States Attorney for the Southern District of New York (Raymond, “THE COURT OF APPEALS AS THE MIDDLE CHILD,” *Fordham Law Review*, Lexis)

In the meantime, almost all of the work of our circuit courts is off the congressional radar. Circuit opinions, with or without the intercession of the Supreme Court, so rarely prompt a ripple in Congress that it becomes memorable when they do. The few ripples more often arise in cases involving issues of national security. A recent example was our decision in ACLU v. Clapper,25 which stirred a vigorous debate in Congress in 2015 when we held that the text of section 215 of the USA PATRIOT Act did not plainly authorize the systematic bulk collection of domestic phone records by the National Security Agency.26 Even more recently, Senator Orrin Hatch of Utah cited our court’s decision in Microsoft Corp. v. United States,27 in which we held that the Electronic Communications Privacy Act (ECPA) did not authorize the government to obtain electronic communications stored outside the United States.28 Senator Hatch and other members of Congress pointed to both the majority opinion and a concurring opinion in that case to ask the Department of Justice to work with Congress on fixing the ECPA.29 On extremely rare occasions, specific congressional involvement arises in the context of a discrete case, as when individual Senators or Representatives seek to influence how we decide important legal issues, such as the indefinite detention provisions of the National Defense Authorization Act for Fiscal Year 2012, by submitting amicus briefs pressing their points of view.30 There also are continuing efforts to get Congress’s attention on broader issues of statutory language. Fairly recently, for example, the Judicial Conference of the United States sought to revitalize and readvertise an excellent project to promote communications between federal courts of appeals and Congress.31 Under the project, “courts of appeals identify opinions that point out possible technical problems in statutes [such as ambiguities and gaps] and send those opinions to Congress for its information and whatever action it wishes to take.”32 Yet, for whatever reason, only three opinions were submitted to Congress under this project in 2015 and only fifty-two altogether have been submitted since 2007.33 Of course, other ways to solicit legislative attention exist short of using this formal mechanism. An opinion that cries for congressional action or decries congressional inaction is one example. But, as I explain later, that opinion is apt to be ignored by Congress if it comes from a circuit court, rather than even a lone dissenter on the Supreme Court.

### 2AC---Antitrust Thumper---Generic

#### Antitrust fervor is at an all-time high---thumps.

Zanfagna 9/7/21, \* [Gary Zanfagna](https://www.paulhastings.com/professionals/garyzanfagna) is an antitrust and competition partner at Paul Hastings LLP; (September 7th, 2021, “Antitrust isn't headed to an inflection point; it's already there”, https://thehill.com/opinion/judiciary/571087-antitrust-isnt-headed-to-an-inflection-point-its-already-there)

The truth is most companies have not had to think too much about antitrust regulations. The basic rules are pretty well known. But that is potentially changing quickly as antitrust concerns focus on not only high-tech companies, but businesses across the economy, from startups to global conglomerates.

It means antitrust is at an important inflection point. Changes are occurring at multiple levels — from [rule reform](https://www.klobuchar.senate.gov/public/_cache/files/e/1/e171ac94-edaf-42bc-95ba-85c985a89200/375AF2AEA4F2AF97FB96DBC6A2A839F9.sil21191.pdf) to [new applications](https://www.hawley.senate.gov/senator-hawley-introduces-trust-busting-twenty-first-century-act-plan-bust-anti-competitive-big) of existing rules to [increased enforcement](https://www.klobuchar.senate.gov/public/index.cfm/news-releases?ID=A4EF296B-9072-4244-90AF-54FE43BB0876). Some of these changes are a reflection of the economic upheaval ushered in by the digital economy, which has prompted businesses and governments to look to antitrust rules to solve their problems. Witness [President Biden](https://thehill.com/people/joe-biden)’s [July 9 executive order](https://www.whitehouse.gov/briefing-room/presidential-actions/2021/07/09/executive-order-on-promoting-competition-in-the-american-economy/) whose 72 provisions include requests ranging from asking the FCC to reinstate net neutrality rules to directing the FDA to issue rules to allow more competition in the hearing aid market.

It’s a reflection of a general zeitgeist whose goal is to slow the onslaught of consolidation in technology across industries, from news media to healthcare to agriculture. And it’s gathering momentum as new rules are being proposed from both sides of the aisle.

Many look to the 449-page [“Investigation of Competition in Digital Markets”](https://www.nytimes.com/interactive/2020/10/06/technology/house-antitrust-report-big-tech.html?action=click&module=RelatedLinks&pgtype=Article) report from the judiciary committee on antitrust as the opening salvo. The report took aim at Amazon, Apple, Facebook, and Google, outlining how those once scrappy startups now leverage their market position in ways not seen since “the era of oil barons and railroad tycoons.” The judiciary report’s conclusion: prevent big tech from acquiring smaller tech with tougher policing — and reform antitrust laws.

Both Democrats and Republicans have since voiced their support for such ideas.

Aimed at the seemingly intractable challenges of the digital era, Sen. [Amy Klobuchar](https://thehill.com/people/amy-klobuchar)’s (D-Minn.) “[Antitrust Law Enforcement Reform Act”](https://www.congress.gov/bill/117th-congress/senate-bill/225/text) would create barriers to prevent consolidation across industries, not just in tech, but in any business that might be connected to “dominant digital platforms.” The legislation would have a prescriptive force, creating a presumption against certain mergers, whether they be in biotech or burgers.

Meanwhile, on the Republican side, Sen. [Josh Hawley](https://thehill.com/people/joshua-josh-hawley) (R-Mo.) has rolled out a bill that looks even more severe, blocking some mergers and acquisitions outright. The [“Trust-Busting for the Twenty-First Century Act”](https://www.hawley.senate.gov/senator-hawley-introduces-trust-busting-twenty-first-century-act-plan-bust-anti-competitive-big) would ban any acquisitions by companies with a market cap of more than $100 billion. The act would also make it easier for the FTC to classify a company’s behavior as anti-competitive, and then extract penalties (including profits) based on that behavior.

And it’s not just the Federal government. Several states have proposed their own legislation to prevent and punish what they see as anti-competitive behavior. Arizona narrowly passed initial legislation that would prevent app store operators, specifically Apple and Google, from forcing developers to use their payment systems.

Meanwhile in New York State, the [Twenty-First Century Anti-Trust Act (S933)](https://www.nysenate.gov/legislation/bills/2019/s8700/amendment/a) includes a first-of-its-kind state merger notification of any deal in which the buyer would end up with more than $8 million in assets of the target. It would also create an “abuse of dominance” offense and give the N.Y. attorney general rulemaking authority — whether or not the company was based in New York.

These proposals have a long way to go before becoming law, but they demonstrate potentially significant antitrust adjustments coming.

Expanding antitrust view

The ripple effects will be profound, affecting transportation, communications, banking and healthcare companies. Incumbents looking to diversify their business are vulnerable, as are startups looking for profitable partners. Unhappy competitors who feel stymied may look to antitrust rules for remediation. And private equity moves to consolidate fledgling, fragmented industries will face tougher questions about overlap and industry concentration.

So, we are going to see antitrust being used in industries and in ways that haven’t been considered in many years, with views about market concentration expanding to encompass what used to be considered diverse or vertical markets. In fact, both Sen. Klobuchar’s and Sen. Hawley’s proposals specifically target consolidation across industries. Sen. Hawley’s $100 billion ban explicitly targets vertical acquisitions. It would certainly prevent deals like Facebook’s acquisition of WhatsApp or Google’s purchase of Fitbit.

### 2AC---Antitrust Thumper---Apple

#### Apple case thumps---court case.

Albertgotti 9/10/21, \*[Reed Albergotti](https://www.washingtonpost.com/people/reed-albergotti/), Washington Post; (September 10th, 2021, “Judge’s ruling may take a bite out of Apple’s App Store, but falls short of calling the iPhone maker a monopolist”, https://www.washingtonpost.com/technology/2021/09/10/apple-epic-decision-judge-market-monopoly/)

A federal judge fundamentally altered Apple’s App Store business model on Friday in a landmark ruling that accused the iPhone maker of illegal anticompetitive behavior and is likely to have ripple effects across the U.S. antitrust landscape.

In a decision on an antitrust lawsuit brought by Fortnite maker Epic Games, U.S. District Judge Yvonne Gonzalez Rogers ruled that Apple must allow app developers to “steer” customers to alternatives to the tech giant’s payment processing service, which collects a 30 percent fee on most digital transactions. That was previously not allowed by the company, and marks a major victory for developers which have long complained of the tight grip the tech giant holds over its App Store on the roughly one billion iPhones currently in use.

[The blockbuster trial between Apple and the maker of ‘Fortnite’ goes out with a ‘hot tub’ session](https://www.washingtonpost.com/technology/2021/05/24/apple-epic-trial-hot-tubbing/?itid=lk_interstitial_manual_5)

Gonzalez Rogers also found that Apple was in violation of California state competition laws because of the way it forces developers into using Apple’s payment processing service without allowing them to tell customers there are alternatives, which are often cheaper.

She stopped short of ruling in favor of Epic‘s claims that Apple is a monopolist, although she left the door open by suggesting more evidence could have changed her decision.

“The court does not find that it is impossible; only that Epic Games failed in its burden to demonstrate Apple is an illegal monopolist,” she wrote.

Epic spokeswoman Elka Looks said the company plans to appeal the ruling. Tim Sweeney, chief executive of Epic, said in a tweet that, “Today’s ruling isn’t a win for developers or for consumers.”

Apple did not respond to requests for comment.

The ruling, one of the first major legal actions taken against a tech giant in a new era of antitrust scrutiny, is sure to echo loudly both in Washington, where a legislative effort to rein in the power of Big Tech is underway, and in the courts, which are facing the biggest test of existing antitrust laws in decades. Tech giants have come under the microscope in recent years as it became clear that current antitrust law does not effectively address their power, and regulators and lawmakers have been pushing to change that.

### 2AC---Antitrust Thumper---Biden

#### Biden executive order outweighs.

Posner 21, professor at the University of Chicago Law School (Eric, 7-21-2021, "The Antitrust War’s Opening Salvo", Project Syndicate, <https://www.project-syndicate.org/commentary/biden-antitrust-executive-order-what-it-does-by-eric-posner-2021-07>)

CHICAGO – US President Joe Biden’s new executive order on “Promoting Competition in the American Economy” is more significant for what it says than for what it does. In fact, the order doesn’t actually order anything. Rather, it “encourages” federal agencies with authority over market competition to use their existing legal powers to do something about the growing problem of monopoly and cartelization in the United States. In some cases, the relevant agencies are asked merely to “consider” ramping up enforcement; in others, they are directed to issue regulations, but the content of those regulations remains largely up to them.

Nonetheless, it would be a mistake to dismiss the order’s tentative language as mere rhetoric. Antitrust is the main body of law governing market competition in the US, and it has been the object of sustained attack by business interests and conservative intellectuals for more than 50 years. Biden is the first president since Harry Truman to take a strong public [anti-monopoly stand](https://www.project-syndicate.org/commentary/new-brandeisians-antitrust-for-big-tech-by-eric-posner-2021-06), and he has backed it up by [appointing](https://www.politico.com/news/2021/07/20/biden-picks-doj-antitrust-chief-500310) ardent anti-monopoly advocates to his government.

The executive order is ambitious in its scope and style. In strongly worded passages, it accuses businesses of monopolistic and unfair practices in major industries, including technology, agriculture, health care, and telecommunications. It laments the decline of government antitrust enforcement, and identifies numerous harms that have resulted – including economic stagnation and rising inequality.

The order also establishes a new bureaucratic organization in the White House to lead the anti-monopoly effort. Demanding a “whole-of-government” approach, it calls on the vast resources of numerous agencies, and not just the two that traditionally oversee antitrust (the Department of Justice and the Federal Trade Commission).

### 2AC---Antitrust Thumper---SEP’s

#### The DOJ is already prepared to engage in more antitrust litigation over SEP’s.

Love 21, \*Bruce Love, writer at the National Law Journal; (June 15th, 2021, “As DOJ Confirms a Change in Antitrust Patent   
Policy, Lawyers Prepare for Shifting Demand”, https://www.mckoolsmith.com/assets/htmldocuments/2021%2006%2016%20As%20DOJ%20Confirms%20a%20Change%20in%20Anittrust%20Patent%20Policyk%20Lawyers%20Prepare%20for%20Shifting%20Demand%20-%20The%20National%20Law%20Journal.pdf)

The Justice Department has confirmed it is looking to develop new policies surrounding how standard-essential patents might be used as tools for anticompetitive practices. The change in policy will mean big business for law firms that can combine highly technical IP advice with their antitrust and litigation practices, with one lawyer likening the demanding skill set to “three-dimensional chess.” Standard-essential patents, or SEPs, are a fundamental piece of intellectual property for business and innovation because they are used under license so frequently by manufacturing companies other than the patent owners. The policy change was hinted at during an online event in late May, when Richard Powers, the acting attorney general of DOJ’s antitrust division, gave an indication that the government might be walking back the relaxed approach implemented by the DOJ under the Trump administration. A DOJ spokesperson confirmed in an email Tuesday to Law.com that it will change its policy on SEPs and antitrust behavior, with the agency still working out the details. The new administration, said the DOJ spokesperson, is rethinking what policies at the intersection of IP and anti- trust will best serve competition and consumers. “New Department leadership is working with career staff on developing a more balanced approach,” said the DOJ spokesperson. “The department wants to develop neutral and balanced policies in this area that recognize the importance of both antitrust enforcement and JUNE 15, 2021 As DOJ Confirms a Change in Antitrust Patent Policy, Lawyers Prepare for Shifting Demand BY BRUCE LOVE U.S. law has often shied away from enforcing essential patent obligations. That’s set to change. The result could be “a significant change in the volume and nature of business for IP trial lawyers and their clients,” one lawyer said. Office of the Attorney General at the U.S. Department of Justice in Washington, D.C. June 6, 2020. THE NATIONAL LAW JOURNAL JUNE 15, 2021 intellectual property protection to our economy and that do not favor one set of interests over others.” Such policy changes could result in a swell of business for law firms with deep, technical IP benches and strong experience representing the industry in enforcement actions, lawyers said. Trump’s DOJ had “taken its foot off the gas” when it came to SEPs as the focus of anti-competitive behavior, said one Washington-based lawyer, speaking on the condition of anonym- ity because he currently has active cases that involve both SEP enforcement and defense. “It didn’t mean we weren’t busy as litigators. There was a lot of work enforcing SEPs against infringers and defending against infringement allegations,” he said. “But we weren’t busy in the antitrust arena. A greater focus on SEPs—not just by the DOJ but also other agencies—might mean more litigation, but it will also mean a more transparent field of play. It doesn’t do companies any good for there to be unfettered SEP enforcement.”

### 1NC---!D---Civil War

#### No civil war---wealth and military power erase challenges

Hanania 20, research fellow at Defense Priorities, and a postdoctoral research fellow at the Saltzman Institute of War and Peace Studies at Columbia University. (Richard, 10-29-2020, "Americans hate each other. But we aren’t headed for civil war.", *Washington Post*, https://www.washingtonpost.com/outlook/civil-war-united-states-unlikely-violence/2020/10/29/3a143936-0f0f-11eb-8074-0e943a91bf08\_story.html)

But scholars now prefer the opportunity model, thanks to large-scale studies that examine political violence worldwide with cutting-edge statistical methods. Grievances and societal cleavages exist everywhere, waiting to be exploited. What distinguishes the countries that descend into civil war from those that do not is the lack of state capacity to put down rebellion — for reasons rooted in politics, economics or geography.

You might expect, for instance, states that lack democracy, that have diverse populations or that discriminate against minorities would be at the highest risk of internal conflict, because such conditions foment bitter grievances. But in fact, those qualities are at most loosely correlated with civil war, as scholars like the Stanford University political scientists James Fearon and David Laitin and the University of California at San Diego’s Barbara F. Walter have shown.

Rather, civil wars happen where the state is weak. Lower levels of wealth predict civil war, because poor countries lack the law enforcement and military capability to put down armed rebellions. That helps to explain recent conflicts in such varied countries as Yemen and Congo. Power vacuums, as occurred during and after decolonization, after American regime-change wars and after the collapse of the Soviet Union, create uncertainty about who is in charge and can inspire those who seek power to take up arms. There are other factors, too: States that are rich in oil see more civil war because the potential payoffs of a successful rebellion are higher — but this applies only up to a certain level of income, after which point the government is often able to buy off or destroy any potential challengers.

The Balkans offer a ready example of how grievance based on ethnic tension must be intertwined with the collapse of order for groups to take up arms against one another. While various ethnolinguistic communities there long eyed each other with suspicion, going back to the days of the Ottoman and Austro-Hungarian empires, those tensions did not lead to violence for most of the region’s history, including during the nearly half-century of communist rule. But when the Soviet empire fell and communist governments were discredited, parts of Yugoslavia began to declare independence. Serbs, Bosnians, Croats and Albanians, incited by political opportunists and demagogues, fought wars against one another for a decade, drawing in the international community, until sovereign states emerged with new, widely accepted borders.

In one influential 2006 study representative of the new school of thought — one that examined 172 countries from 1945 to 2000 — the political scientists Havard Hegre, of the Center for the Study of Civil War, and Nicholas Sambanis, of Yale University, used advanced statistical tools to determine which of 88 factors most consistently predicted civil war. Grievance-based measures like authoritarian government and ethnolinguistic diversity ranked low or had no discernible effect (although the latter did predict internal conflict when the analysis included the lowest level of conflict measured, defined as 25 or more deaths in a year). In contrast, Hegre and Sambanis found that measures of opportunity like a small military establishment and rough terrain — which offers a base from which rebels can strike — had a much stronger and more consistent effect.

Geography is a surprisingly potent variable in predicting civil war — and can confound even moderately strong states. During such conflicts, governments usually control the cities, and rebels form bases in relatively inaccessible regions like mountains, forests and swamps. Countries that have had problems with mountain-based minorities include Russia, which has confronted rebels in Chechnya, and Turkey, which is still fighting Kurds in the southeast of the country. (Until the 1990s, the Turkish government even referred to Kurds as “Mountain Turks,” denying their identity while acknowledging the geographical nature of the problem.)

Even with the most difficult geographic conditions, however, wealth and government power tend to erase opportunities for rebellion. Consider that in 1948 and 1949, South Korea faced a communist-led uprising on Jeju Island — which lies in the Korea Strait, about 60 miles from the mainland — in a conflict that cost as many as 30,000 lives, mostly civilian. A poor, newly independent South Korea had difficulty bringing that island under control and relied on brutal tactics to do so, including summary executions. But now that South Korea has joined the club of modern, industrialized states with advanced militaries, the idea of a region like Jeju rebelling has become unthinkable.

Wealth and military power explain why, in the United States, civil war is likely to remain a metaphor. Its per capita gross domestic product is about $62,000 a year, among the highest in the world, and its military is clearly capable of wiping out any challenges to state power. (The U.S. Civil War occurred when the nation had a per capita GDP comparable to that of a developing nation today, and when military technology was limited to rifles and cannon.) The Pentagon has 1.3 million active-duty personnel, can find terrorists on the other side of the world and wipe them out with the push of a button, and boasts a command-and-control structure with no recent history of factionalization. There is no swamp or mountain peak that is beyond the easy reach of the U.S. military.

A recent survey by Nationscape revealed that 36 percent of Republicans and 33 percent of Democrats thought that violence was at least somewhat justified to accomplish political goals. The opportunity model suggests that while a survey result like this reveals disturbing things about our political culture, it does not presage civil war.

To be sure, riots and general discord can happen as long as leaders lack the political will to respond (or if, as today, leaders disagree about the line dividing peaceful protest from lawlessness). But as soon as the authorities perceive a serious enough problem, they can move quickly and decisively, a lesson learned by the anarchists who recently took over part of Seattle, declaring it the Capitol Hill Autonomous Zone. They were tolerated for just over three weeks until they were cleared out by local police in partnership with the FBI. Law enforcement at the local and national levels, from police to the military, remains united and under civilian control, willing and able to put down potential threats to our governing system or territorial integrity.

The wide availability of guns does make the American situation unique among developed countries — and leads to more horrific low-level violence, such as the 2019 El Paso shooting, in which a White racist angry about immigration is accused of targeting innocent Hispanics, killing 23 people. (He had apparently sought, but failed, to provoke a larger conflict.) But that is not civil war — and using such hyperbolic language may actually lead to more violence, as radicals come to believe that true civil war is possible and undertake copycat attacks.

In fact, the situation in Michigan suggests how intoxicating the idea of civil war can be. Had the recently arrested anti-government extremists not been under close federal surveillance — itself a reassuring sign of state capacity — they might have committed hideous political violence. Yet their goal of inciting civil war would have remained out of reach.

Those predicting civil war have correctly identified serious problems in American society: Ever-widening divisions based on factors including race, geography and partisanship make it difficult to respond to such varied threats as pandemics, economic crises and climate change.

But our problem remains bitter polarization and distrust, not the literal disintegration of the country. The United States faces monumental challenges in the coming months and years, from a rancorous election (and its aftershocks) to difficult racial issues to continuing environmental calamity. Extreme partisanship and political discord will absolutely make everything harder. But the sooner we realize that civil war is highly unlikely, the sooner we can focus on real problems.

# 1AR

## Advantage---Innovation

### 2AC---Cap Good---War

#### Growth increases stability and disincentivizes conflict and expansionism---decline causes war.

Szayna et al 17, Research department director of the Defense and Political Sciences Department and a senior political scientist at the RAND Corporation. He has over 30 years of experience in national security policy and defense analysis. From 1997 to 2011 he served as associate director of the Strategy, Doctrine, and Resources Program in RAND's Army Research Division. His research has focused on aspects of strategic planning for the U.S. armed forces, post-conflict stability and reconstruction operations, and coalition interoperability. He gave testimony for the U.S. House of Representatives and has been a keynote speaker at a number of defense conferences. Szayna received a B.A. in history and philosophy from Villanova University and an M.A. in international relations from Claremont Graduate School. Also Angela O’Mahony, Jennifer Kavanagh, Stephen Watts, Bryan Frederick, Tova C. Norlen, Phoenix Voorhies. (“Conflict Trends and Conflict Drivers: An Empirical Assessment of Historical Conflict Patterns and Future Conflict Projections”. 2017. https://www.rand.org/pubs/research\_reports/RR1063.html)

There are a number of factors that could lead to discontinuous changes in this metric. For example, a global economic downturn could lead to sharp reductions in development aid that could threaten any improvements in governance that had been made with the benefit of that assistance. Alternatively, a major jump in global energy costs could induce widespread fiscal crises similar to those of the 1970s and 1980s, ultimately leading to reduced state capacity. The branch scenario in red projects essentially no improvements in state capacity over the period in question, so larger changes would entail the rapid erosion of the capacity of states that are already relatively capable. Such changes are certainly possible, but they would constitute an example of nonlinear disruptive change. On balance, our projection is that state capacity is likely to continue to improve, which will tend to exert a downward pressure on the likelihood of intrastate conflict. Prevalence of Consolidated Democracies Consolidated democracies are less likely to fight one another and to be involved in internal conflict. While this correlation is clear, the mechanism by which democracies reduce conflict is more contested. The literature on interstate conflict has focused on the greater transparency and consistency of democratic regimes that allow them to credibly commit to peaceful solutions to disputes and the possibility that domestic norms and greater political accountability may make democratic states less likely to pursue violent conflicts.8 There are fewer arguments that the greater ability of consolidated democracies to resolve grievances within the political system leads to less intrastate conflict.9 We note, however, that partial democracies or the process of democratization itself may not be particularly peaceful and may even be associated with an increase in conflict.10 Given the importance of consolidated democracy in the literature on conflict, there is already a great deal of work in the academic literature on measurement of democracy. Several aggregate measures of democracy have been developed that include the competitiveness of elections; the state’s respect for civil, political, and minority rights; and freedoms of the press and religion. The most widely used measure of consolidated democracy, and the one we employ, comes from the Polity project. By coding a wide range of regime characteristics, such as political 8 Arend Lijphart, Democracies: Patterns of Majoritarian and Consensus Government in Twenty-One Countries, New Haven, Conn., and London: Yale University Press, 1984; Peter Liberman, Does Conquest Pay? The Exploitation of Occupied Industrial Societies, Princeton, N.J.: Princeton University Press, 1996; Charles Lipson, Reliable Partners: How Democracies Have Made a Separate Peace, Princeton, N.J.: Princeton University Press, 2003. 9 Håvard Hegre, Tanja Ellingsen, Scott Gates, and Nils Petter Gleditsch, “Toward a Democratic Civil Peace? Democracy, Political Change, and Civil War, 1816–1992,” American Political Science Review, Vol. 95, No. 1, March 2001, pp. 33–48; Christian Davenport, State Repression and the Domestic Democratic Peace, New York, N.Y.: Cambridge University Press, 2007. 10 Hegre et al., 2001; Lars-Erik Cederman, Kristian Skrede Gleditsch, and Simon Hug, “Elections and Ethnic Civil War,” Comparative Political Studies, Vol. 46, No. 3, 2012, pp. 387–417. 49 competition and constraints on the executive, an aggregate “Polity score” is produced, ranging from –10 to 10. Values of 6 or higher are typically used to identify the presence of a democracy, with a more conservative measurement of 8 or higher often used to identify consolidated democracies. We use this metric to calculate the percentage of all states that are consolidated democracies, with the historical values denoted by the black line in Figure 3.2. Figure 3.2. Prevalence of Consolidated Democracies SOURCE: Historical data: Monty G. Marshall and Keith Jaggers, Polity IV Data Set [Computer file; version p4v2012], College Park, Md.: Center for International Development and Conflict Management, University of Maryland, 2002; projections calculated by authors. We projected the baseline scenario by fitting a trend line to the historical data and calculating the future values.11 This projection is represented in the figure by the gray line. We calculated the two branch scenarios as one standard deviation above and below the baseline projection; they are shown in the figure by the blue and red lines, respectively. Discontinuous growth in the prevalence of democracies could result from various tippingpoint effects. If a high percentage of the world’s population were governed through democracy, other forms of government may come to be seen as illegitimate, and greater international pressure may be brought to bear to remove them. Within the time frame of our study, a dramatic reversal in the prevalence of consolidated democracies appears to be less likely. The reversion of 11 The trend line was fit using a generalized linear model linked to a binomial logit function. The resulting projections are therefore bounded between 0 and 1 (in this case, 0 and 100 percent). The model used in Figure 3.2 has a Pearson statistic (1/df) of .0037, suggesting a high degree of fit with the data. 50 consolidated democracies to autocracies historically has been extremely rare and is unlikely in the absence of extreme economic decline, the conquest of democracies by more powerful autocracies, or both. Either of these potential paths is likely to lead directly to increases in future conflict levels as well. Degree of Ethnic and Sectarian Polarization The academic literature generally agrees that a high level of ethnic and sectarian polarization is not sufficient by itself to cause conflict either within or between states. However, there is also agreement that in the intrastate context, where group mobilization occurs along ethnic lines, identity can become a significant contributing factor for violence, especially when strengthened by socioeconomic and sociopolitical grievances. Consequently, we identified the degree of ethnic and sectarian polarization as one of the primary factors likely to affect the level of intrastate conflict in the future. Evidence also shows that while ethnicity may not lead to conflict by itself, it may work to prolong conflicts and increase the intensity of violence in those conflicts that are already occurring.12 Such effects will most likely be strengthened if ethnic groups are deliberately disadvantaged by the state or if they are territorially based and have secessionist or separatist demands.13 Scholars tend to agree that ethnic and sectarian polarization, while a strong predictor for increased levels of intrastate conflict, is not a strong driver for conflicts between states. However, if regional and international actors become involved in intrastate conflicts, or if conflicts spread across borders, such polarization could also affect levels of interstate conflict. Such a scenario is especially likely where ethnic kin-groups in neighboring states become involved with secessionist movements.14 Quantifying ethnic and sectarian polarization is inherently difficult. While various measures have been tried, such as linguistic differences (e.g., ethno-linguistic fractionalization) or religious preferences, they are often criticized for not capturing the cleavage that gives rise to political mobilization. For example, different ethnic groups may share the same religion, and one ethnic group may speak multiple languages. It can also be difficult to determine when certain identities in a society are increasing in salience, and when they are becoming less relevant. One prominent 12 Rajat Ganguly and Raymond Taras, Understanding Ethnic Conflict: The International Dimension, Longman Publishers, 2002; Fearon and Laitin, 2003; and Daniel Bar-Tal, “Sociopsychological Foundations of Intractable Conflicts,” American Behavioral Scientist, Vol. 50, No. 11, 2007. 13 Gurr, 1970; Stephen M. Saideman, and William R. Ayres, “Determining the Causes of Irredentism: Logit Analyses of Minorities at Risk Data from the 1980s and 1990s,” Journal of Politics, Vol. 62, No. 4, November 2000, pp. 1126–1144; Monica Duffy Toft, The Geography of Ethnic Violence: Identity, Interests, and the Indivisibility of Territory, Princeton, N.J.: Princeton University Press, 2003. 14 John A. Vasquez, and Brendan Valeriano, “Territory as a Source of Conflict and a Road to Peace,” in Jacob Bercovitch, Viktor Kremenyuk, and I. William Zartman, eds., The Sage Handbook of Conflict Resolution, Los Angeles, Calif.: SAGE, 2009, pp. 193–209. 51 attempt to quantify relevant ethnic identities is the Minorities at Risk data set at the University of Maryland, which identifies minority groups by their “at risk” status—that is, by the extent to which they are disadvantaged in their relationships with other groups in the state in which they reside. However, the Minorities at Risk data identify such “at risk” groups somewhat subjectively, and the project does not claim to be comprehensive. An alternative, objective measure is to look for the degree of formal discrimination against ethnic, religious, or linguistic groups. The creation or removal of official laws providing for formal discrimination can help to identify states where identity-based grievances may become more or less salient. For capturing the degree of ethnic and sectarian polarization, therefore, we looked at the percentage of states with formal discrimination against minorities, where such minority groups make up at least 5 percent of the state’s population. We used the Ethnic Power Relations data set (EPR), which tracks the extent of access to state power for all politically relevant ethnic groups in every country of the world from 1946 to 2013. It includes annual data on more than 733 groups and codes the degree to which their representatives held executive-level state power—from total control of the government to being formally barred from holding political office. While the disadvantage of such a proxy may be that it potentially fails to capture some of the unofficial social discrimination that can lead to group mobilization, the advantage is that it allows for a more objective measure of sectarian tension. The overall levels of ethnic or sectarian polarization in the figure below may therefore be understated, but we can have more confidence in the general trend line than we could with more subjective data sources. We projected the baseline scenario by fitting an exponential trend line to the available historical data and calculating the future values.15 The projection is shown by a gray line in Figure 3.3. We calculated the two branch scenarios as one standard deviation above and below the baseline projection; they are shown by a red and blue line, respectively. 15 The exponential trend line fit to the data has the equation: y = 0.3098e-0.012x. The trend line has a high degree of fit with the data, with an R² of 0.85. 52 Figure 3.3. Percentage of States with Discriminated Minorities SOURCE: Historical data: Andreas Wimmer, Lars-Erik Cederman, and Brian Min, “Ethnic Politics and Armed Conflict: A Configurational Analysis of a New Global Data set,” American Sociological Review, Vol. 74, No. 2, 2009, pp. 316–337; projections calculated by authors. Discontinuous change in this variable may occur as a result of several factors. Historically, ethnic and sectarian factors often have increased in relevance after the breakup of larger states and empires, including the breakup of the Soviet Union in the early 1990s, or the end of colonialism in the 1960s. The breakup of other large, multiethnic states in the future could result in a similar outcome. Extremely high levels of resource stress because of population pressures also could prompt increased ethnically based conflict within states. Ethnic and sectarian polarization and grievances are latent in many societies, and may become politically important in order to mobilize groups to violence under conditions of severe resource or economic privation. Rate of Economic Growth Economic growth affects the prevalence of conflict in several ways. While territorial expansion traditionally has been a major cause of interstate war, states with higher levels of economic development may be less motivated to pursue such expansion because of the lower relative value of land inputs in an industrialized economy. Moreover, their reliance on international capital markets may increase the potential costs of disruptions from serious 53 international crises.16 At the intrastate level, economic growth (if broadly shared) reduces grievances, bolsters the capacity of the state to handle security challenges, and increases the population’s opportunities for licit employment, thus raising the opportunity costs of participating in rebellions or insurgencies.17 Growth benefits that accrue along ethnic or sectarian lines, however, might increase the potential for intrastate conflict, as discussed in the previous section, and sharp declines in the rate of economic growth could be associated with an increased risk of internal conflict as well.18 Therefore, there are at least two different concepts that any operationalization of this factor should attempt to capture: the overall level of economic development and changes in the rate of economic growth. Over the short term, wealthy countries tend to remain wealthy and poor countries tend to remain poor, and their degree of wealth may have a strong effect on their overall likelihood of being involved in conflict. In addition, sharp declines in the rate of growth for a range of states may increase their likelihood of intrastate conflict in particular.

### 1AR---AT: Land Use

#### Agricultural inputs are decreasing, and outputs are increasing.

McAfee 19, \*Andrew Paul McAfee, a principal research scientist at MIT, is cofounder and codirector of the MIT Initiative on the Digital Economy at the MIT Sloan School of Management; (2019, “More from Less: The Surprising Story of How We Learned to Prosper Using Fewer Resources and What Happens Next”, https://b-ok.cc/book/5327561/8acdbe)

Agriculture. As we saw in chapter 5, leading farms have demonstrated an ability to increase their tonnage of output year after year while decreasing their use of inputs such as land, water, and fertilizer. This trend toward optimization will continue thanks to a set of innovations under the label precision agriculture. The precision comes from many sources, including better sensors of plant and animal health, soil quality and moisture, and so on; the ability to deliver fertilizer, pesticides, and water just where they’re needed; and machinery that adapts itself to each plant or animal. All these varieties of precision will combine to allow traditional farms to generate more from less.

So will changes to the genomes of plants and animals. DNA modifications will increase disease and drought tolerance, expand where crops can be grown, and allow us to get more of what we want from each crop or herd. As we saw in chapter 9, they’ll also allow us to take better care of vulnerable populations such as infants in poor countries by creating golden rice and other nutrition enhancers. We’ll also be able to make much more precise and targeted genetic modifications thanks to a new crop of gene-editing tools that are large improvements over their more scattershot predecessors. Opposition to genetically modified organisms is fierce in some quarters, but isn’t based on reason or science. This opposition will, one hopes, fade.

Throughout human history, just about all farming has been done in fields. For some crops, this is now changing. Agriculture has moved indoors, where parameters such as light, humidity, fertilizer, and even the composition of the atmosphere can be precisely monitored and controlled. In everything from urban buildings to shipping containers, crops are now being grown with progressively less labor and fewer material inputs. These completely contained farms will spread and help reduce the planetary footprint of our agriculture.

### 2AC---AT: Unsustainable---Financialization

#### COVID-19 proves capitalism is financially sustainable---no structural collapse.

Carlsson-Szlezak 20, \*[Philipp Carlsson-Szlezak](https://hbr.org/search?term=philipp%20carlsson-szlezak&search_type=search-all) is a partner and managing director in BCG’s New York office and global chief economist of BCG; \*[Martin Reeves](https://hbr.org/search?term=martin%20reeves&search_type=search-all) is the chairman of Boston Consulting Group’s BCG Henderson Institute in San Francisco and a coauthor of [The Imagination Machine](https://www.amazon.com/Imagination-Machine-Create-Companys-Future/dp/1647820863/ref=sr_1_1?keywords=Martin+Reeves%2C+The+Imagination+Machine&qid=1596553141&s=books&sr=1-1) (Harvard Business Review Press, 2021); \*[Paul Swartz](https://hbr.org/search?term=paul%20swartz&search_type=search-all) is a director and senior economist in the BCG Henderson Institute, based in BCG’s New York office; (“The U.S. Is Not Headed Toward a New Great Depression”, https://hbr.org/2020/05/the-u-s-is-not-headed-toward-a-new-great-depression)

Why the U.S. Is Unlikely to be Headed Towards a Structural Regime Break

Though the path from the crisis we’re in now to either depression or debt crisis is not impossible, it’s not easy or natural, if we examine each of the four paths in regards to the current situation:

Policy Error — The policy challenge of coronavirus is enormous, but what is on display is the opposite of the inaction of the Great Depression. On the monetary side, the first signs of stress in the banking system — in the repo and commercial paper markets — were met with timely and sizable monetary policy action. On the fiscal side, it didn’t take long — certainly by Washington standards — to pass the $2 trillion CARES Act to provide funds to counteract the wave of liquidity and capital problems for the real economy (households and firms). Beyond any specific policy action, we are seeing a mindset in which policy makers will keep throwing policy innovations at the problem until something sticks — quite the opposite of the 1930s.

Political Willingness — It certainly is possible that political calculus gets in the way of averting a structural breakdown, but not very plausible because the political costs are high. To be sure there are two risks involved: 1) The unwillingness to craft a piece of legislation, perhaps because of differences in analysis, beliefs, or dogma; and 2) the failure to pass legislation because one side sees greater political gain in obstruction. While the TARP fiasco reminds us that both risks are real and shouldn’t be dismissed, crises tend to lubricate deal making, and the costs of political obstruction are particularly high, even in a hyper-partisan election year.

Policy Dependence — This path is not applicable in the U.S. because of monetary sovereignty. The Federal Reserve will always facilitate fiscal policy in a time of low and stable inflation and a healthy currency.

Policy Rejection — A debt crisis seems improbable for the U.S.: Inflation expectations are very well anchored (and, if anything, too low). The rate-risk correlation is very solid, where in risk-off periods (moment when investors are less tolerant of risk and prices of risk assets like stocks fall) bond prices rally (yields fall). The USD reserve currency status is deeply entrenched as the rest of the world needs to hold U.S. safe assets (and don’t wish to see their currencies appreciate). And nominal interest rates are generally lower than nominal growth (r – g < 0). All of these factors make for favorable financing conditions. Can coronavirus damage all that and deliver a crisis where markets refuse to purchase U.S. debt? It’s possible, but very implausible, and it would be a long and painful process. A break in the inflation regime plays out over several years.

### 1AR---Tech Solves Warming

#### Growth solves warming – global trends in price and diffusion guarantee a confluence of emission reducing technologies that will stave off catastrophic climate change.

Azevedo et al. 20, Associate Professor of Energy Resources Engineering @ Stanford (Inês, Michael R. Davidson, Jesse D. Jenkins, Valerie J. Karplus, and David G. Victor, May/June Issue, “The Paths to Net Zero: How Technology Can Save the Planet,” *Foreign Affairs*, https://www.foreignaffairs.com/articles/2020-04-13/paths-net-zero)

For 30 years, diplomats and policymakers have called for decisive action on climate change—and for 30 years, the climate crisis has grown worse. There are a multitude of reasons for this failure. The benefits of climate action lie mostly in the future, they are diffuse and hard to pin down, and they will accrue above all to poor populations that do not have much of a voice in politics, whether in those countries that emit most of the world’s warming pollution or at the global level. The costs of climate action, on the other hand, are evident here and now, and they fall on well-organized interest groups with real political power. In a multipolar world without a responsible hegemon, any collective effort is difficult to organize. And the profound uncertainty about what lies ahead makes it hard to move decisively.

These political hurdles are formidable. The good news is that technological progress can make it much easier to clear them by driving down the costs of action. In the decades to come, innovation could make severe cuts in emissions, also known as “deep decarbonization,” achievable at reasonable costs. That will mean reshaping about ten sectors in the global economy—including electric power, transportation, and parts of agriculture—by reinforcing positive change where it is already happening and investing heavily wherever it isn’t.

In a few sectors, especially electric power, a major transformation is already underway, and low-emission technologies are quickly becoming more widespread, at least in China, India, and most Western countries. The right policy interventions in wind, solar, and nuclear power, among other technologies, could soon make countries’ power grids far less dependent on conventional fossil fuels and radically reduce emissions in the process.

Technological progress in clean electricity has already set off a virtuous circle, with each new innovation creating more political will to do even more. Replicating this symbiosis of technology and politics in other sectors is essential. In most other high-emission industries, however, deep decarbonization has been much slower to arrive. In sectors such as transportation, steel, cement, and plastics, companies will continue to resist profound change unless they are convinced that decarbonization represents not only costs and risks for investors but also an opportunity to increase value and revenue. Only a handful have grasped the need for action and begun to test zero-emission technologies at the appropriate scale. Unless governments and businesses come together now to change that—not simply with bold-sounding international agreements and marginal tweaks such as mild carbon taxes but also with a comprehensive industrial policy—there will be little hope of reaching net-zero emissions before it’s too late.

THE FUTURE IS ELECTRIC

From today’s vantage point, no single domain offers greater opportunities for deep decarbonization than electric power. The use of electricity does not increase or reduce emissions in itself; electricity delivers energy that may or may not be clean depending on how it was generated. An electric car, for instance, doesn’t do much good against global warming if all the electricity comes from conventional coal plants. Still, electrifying the economy—in other words, designing more processes to run on electricity rather than the direct combustion of fuels—is essential. This is because, compared with trying to reduce emissions in millions of places where they might occur, it is far easier and more efficient to reduce emissions at a modest number of power plants before distributing the clean electricity by wire. Today, Western economies convert about 30 percent of their energy into electric power. If they want to get serious about decarbonization, that fraction will need to double or more.

Getting there will require progress on two fronts. The first is the electrification of tasks that use vast amounts of energy but still rely on fossil fuels, such as transportation and heating. Overall, transportation accounts for 27 percent of global energy use, and nearly all of it relies on oil. The car industry has had some success in changing this: the latest electric vehicles rival high-end conventional cars in performance and cost, and electric cars now make up around eight percent of new sales in California (although only 1.3 percent nationwide) and nearly 56 percent in Norway, where the government offers massive subsidies to buyers. With improved batteries, heavier-duty vehicles, including buses and trucks, could soon follow. In fact, China already fields a fleet of over 420,000 electric buses. By contrast, aviation—which makes up only two percent of global emissions but is growing rapidly and creates condensation trails in the sky that double its warming effect—presents a tougher challenge. A modern battery can store only two percent of the energy contained in a comparable weight of jet fuel, meaning that any electric airplane would need to carry an extremely heavy load in batteries to travel any reasonable distance. Even in the best-case scenario, commercial electric aviation at significant scale is likely decades away, at least for long-haul flights. Long-distance shipping also faces challenges so daunting that electrification is unlikely to be the best route. And in each of these areas, electrification is all the more difficult because it requires not only changing the conveyances but also building new charging infrastructures.

Besides transportation, the most important electrification frontier is heating—not just in buildings but as part of industrial production, too. All told, heating consumes about half the raw energy that people and firms around the world use. Of that fraction, some 50 percent goes into industrial processes that require very high temperatures, such as the production of cement and steel and the refining of oil (including for plastics). These sectors will continue to rely on on-site fossil fuel combustion for the foreseeable future, since electricity cannot match the temperature and flexibility of direct fuel combustion. Yet in other areas, such as lower-temperature industrial processes and space heating for buildings, electrification is more practical. Heat pumps are a case in point: whereas conventional heaters work by heating up indoor air, heat pumps act like reversible air conditioners, moving heat (or, if necessary, cold) indoors or outdoors—a far more efficient approach.

Electrification, of course, will not on its own reduce emissions by much unless the power grid that generates and distributes the electricity gets cleaner, too. Ironically, some countries have made modest progress on this front even as they have doubled down on fossil fuels. China, for instance, has swapped out aging coal plants with newer, more efficient ones, cutting emission rates in the process. (The country’s most efficient coal plants now emit less carbon dioxide per unit of electricity than comparable U.S. plants.) The United States, for its part, has cut down on its emissions thanks to innovations in horizontal drilling and fracking that have made it economically viable to extract shale gas. In 2005, when this technology first became commercially relevant, coal accounted for half of all the electricity produced in the United States; today, coal’s share is down to one-quarter, with much cleaner and inexpensive natural gas and renewables making up the difference.

In theory, fossil fuels could still become much cleaner, even nearly emission free. This could be possible with the help of so-called carbon capture and storage (CCS) technologies, which capture the carbon dioxide emissions created by industrial processes and pump it safely underground. In practice, investors have remained wary of this approach, but in both the United States and some European countries, recently introduced subsidies are expected to unleash a wave of new CCS projects in the years ahead. One CCS scheme, currently being tested by a group of engineering and energy firms, completely rethinks the design of power plants, efficiently generating electricity from natural gas while capturing nearly all the carbon dioxide produced in the process at little extra cost. In regions where natural gas is cheap and abundant, this technology could be a game changer.

For now, improved fossil fuel technology has amounted to shallow decarbonization: it has reduced emissions enough to slow the rate of climate change—in the United States, emissions from the power sector have dropped by 29 percent since 2005 thanks mainly to the shale gas revolution and growth of renewables—but not enough to stop it. To prevent the world from warming further will require much more focus on technologies that have essentially zero emissions, such as wind, solar, hydroelectric, and nuclear power, in addition to CCS, if it proves commercially scalable. According to the United Nations’ Intergovernmental Panel on Climate Change, these low-carbon technologies would need to generate 80 percent of the world’s electricity by 2050 (up from about one-third today) in order to limit warming to two degrees Celsius above preindustrial levels.

Renewables, in particular, will play a central role. Thanks to decreases in the cost of wind and solar power equipment—and thanks to a mature hydroelectric power industry—renewable energy already accounts for over one-quarter of global electricity production. (Nuclear provides another ten percent.) In the United States, the cost of electricity from large solar farms has tumbled by 90 percent since 2009, and wind energy prices have fallen by nearly 70 percent—and both continue to drop.

Given those plunging costs, the main challenge is no longer to make renewables cheap; it is to integrate them into the power grid without disruptions. To avoid blackouts, a power grid must align supply and demand at all times. Energy output from wind and solar plants, however, varies with the weather, the season, and the daily rise of the sun. The more a power grid relies on renewables, then, the more often the supply will not match the demand. In the extreme, extra power must be dumped—meaning that valuable capital and land were used inefficiently. To be less vulnerable to such shocks, utility companies will need to expand the size of their power grids, so that each can draw on a larger and more diverse array of energy sources. In order to deal with excess supply from renewables—a condition that will become much more frequent as the share of renewables rises—they must also create incentives for users to vary their demand for power more actively and find ways to store surplus electricity on a much larger scale. Today, nearly all bulk storage capacity takes the form of hydroelectric pumps, which store electricity by moving water uphill and recovering about 80 percent of the power when it flows back down. In the years ahead, soaring demand for electric vehicles will drive down the cost of lithium-ion batteries; those batteries could become an affordable way to store energy at the grid level, too. And as the need for storage increases, even cheaper methods may come on the market.

To better integrate renewables, policymakers can also rely on the strategic use of another zero-emission technology: nuclear energy. Although most efficient when running flat out 24 hours a day, nuclear power plants can also operate flexibly to cover the supply gaps from wind and solar power. Some of France’s nuclear reactors, for instance, already cycle from about one-quarter to full power and back again, sometimes twice a day, to compensate for fluctuations in the supply and demand of renewables.

Independent of renewables, nuclear power already contributes massively to cleaner grids. Every year, some 440 operational nuclear reactors account for lower global carbon dioxide emissions of an estimated 1.2 billion metric tons. In the United States, research suggests that keeping most existing nuclear plants open would be far less expensive than many other policy options. In fact, most countries would do well to expand their nuclear power even further to cut back on their emissions. In the West, however, major expansions are not on the horizon: public opposition is strong, and the cost of building new reactors is high, in part because countries have built too few reactors to benefit from the savings that come with repetition and standardization. Yet in other parts of the world—especially China and South Korea, which have more active nuclear power programs—the costs are much lower and public opposition is less pronounced. Moreover, whereas countries once designed and built their own reactors, today many simply import them. That model can create new risks—the sector’s leading exporter today is Russia, a country not renowned for its diligence regarding reactor safety or the security of nuclear materials—but it also has the potential to make commercial nuclear technology available to many countries that could not develop and deploy it safely on their own. Abu Dhabi’s purchase of four gigantic South Korean–built reactors, the first of which is set to start operating next year, shows the promise of this model. The same approach could work for other countries that currently satisfy their large energy needs with fossil fuels, such as Saudi Arabia.

When it comes to the precise technological makeup of a future decarbonized economy, expert opinions diverge. Engineers and economists, for the most part, imagine solutions that bundle several approaches, with both CCS and nuclear power acting as important complements to renewables. Political scientists, on the other hand, tend to see a bigger role for renewables—one of the few areas in energy policy that usually garners support from across the ideological spectrum, including in the United States. Yet even this rather popular solution can prove divisive. Fierce debates rage over where to locate generators such as wind turbines, including among putative environmentalists who support the technology only if they don’t have to look at it. Public opposition to new wind turbines in Norway—even in already industrialized areas—and to offshore wind parks in the eastern United States are harbingers of tough siting fights to come. The same issue arises when it comes to power lines: making the most of renewables requires longer, more numerous power lines that can move renewable power wherever it will be needed, but public opposition can make such grid expansions a bureaucratic nightmare. In California, for example, the most recent big power line designed to move renewable power where it will be useful—in that case, from the sunny desert to San Diego—took a decade to build, even though the technical engineering and construction portion of the project should have consumed no more than two years. China, by contrast, has blown past the efforts of the United States and Europe, with dozens of ultrahigh-voltage lines, most of them built in the last decade, crisscrossing the country.

THE GREAT UNKNOWNS

Political obstacles notwithstanding, expanding the electrification of transportation and heat and the production of low-carbon electricity offers the surest path to a clean economy to date. The latest analysis by the Intergovernmental Panel on Climate Change, for instance, suggests that more pervasive use of clean electricity in the global economy would cover more than half the cuts needed for deep decarbonization. Yet just how big a role electrification will ultimately play is hard to predict—in part because its impact will depend on the future trajectory of rival solutions that are only just beginning to emerge and whose potential is impossible to assess precisely.

Hydrogen, in particular, could serve much the same function as electricity does now in carrying energy from producers to users—and it offers crucial advantages. It is easier to store, making it ideal for power systems dependent on ever-fluctuatingsupplies of renewable energy. And it can be burned—without producing any new emissions—to generate the high levels of heat needed in heavy industry, meaning that it could replace on-site fossil fuel combustion in sectors that are hard to electrify. Hydrogen (either in its pure form or mixed with other chemicals) could also serve as liquid fuel to power cars, trucks, ships, and airplanes. A zero-emission economy could integrate the two carriers—electricity and hydrogen—using each depending on its suitability for different sectors.

The technology needed to turn hydrogen into an energy carrier already exists in principle. One option is to break up (or electrolyze) water into its constituent elements, hydrogen and oxygen. The hydrogen could then be stored or transported through the natural gas pipeline networks that already string across all advanced economies. Once it reached its user, it would be burned for heat or used as an input for a variety of chemical processes. So far, this approach is too expensive to be viable on a large scale, but growing investment, especially in Europe, is poised to drive down the cost rapidly. Initial tests, including planned networks of hydrogen pipelines outside Stockholm (for making steel), Port Arthur in Texas (for industrial chemistry), the British city of Leeds (for residential heat), and the Teesside area (for several applications, including power generation) and numerous other ventures, will soon yield more insights into how a real-world hydrogen economy would fare.

CCS is somewhat of a wildcard, too. Some industrial processes produce prodigious and highly concentrated streams of carbon dioxide emissions that should be relatively easy to isolate and capture. The production of cement, which accounts for a whopping four percent of global carbon dioxide emissions, is a good example. But firms operating in global commodity markets, where missteps can be economically disastrous, are hesitant to invest in fledgling systems such as CCS. To change that, state-supported real-world testing is overdue. A nascent Norwegian project to collect carbon dioxide from various industrial sources in several northern European countries and inject it underground may provide some answers.

Another promising area for reducing emissions is agriculture, a field in which advances on the horizon could yield large cuts. More precise control over the diets of animals raised for food—which will probably require more industrial farming and less free grazing—could lead cows, sheep, and other livestock to emit less methane, a warming gas that, pound for pound, is 34 to 86 times as bad as carbon dioxide. (It would also help if people ate less meat.) Meanwhile, a host of changes in crop cultivation—such as altering when rice fields are flooded to strategically determining which engineered crops should be used—could also lower emissions.

Agriculture’s biggest potential contribution, however, lies belowground. Plants that engage in photosynthesis use carbon dioxide from the air to grow. The mass cultivation of crops that are specially bred to grow larger roots—a concept being tested on a small scale right now—along with farming methods that avoid tilling the soil, could store huge amounts of carbon dioxide as underground biomass for several decades or longer.

As the hard reality of climate change has set in, some have begun to dream of technologies that could reverse past emissions, such as “direct air capture” machines, which would pull carbon dioxide from the atmosphere and store it underground. Pilot projects suggest that these options are very costly—in part because it is thermodynamically difficult to take a dilute gas from the atmosphere and compress it into the high concentrations needed for underground storage. But cost reductions are likely, and the more dire the climate crisis becomes, the more such emergency options must be taken seriously.

## AT: States CP

### 1AR---Preemption

#### Precedent evinces that state antitrust cause of action will be preempted if alleged tortious conduct is even governed by patent law.

Paul Gugliuzza 15. Associate Professor, Boston University School of Law. 2015. “Patent Trolls and Preemption.” https://scholarship.law.bu.edu/cgi/viewcontent.cgi?article=1087&context=faculty\_scholarship

The Federal Circuit first rejected the defendants’ field preemption argument, noting that “state unfair competition law regulates conduct in a different field from federal patent law” and that, in any case, “conflict preemption is a more precise means of determining which state law causes of action are preempted than the blunt tool of field preemption.”272 Turning to conflict preemption, the Federal Circuit wrote, consistent with the Supreme Court’s Supremacy Clause-based preemption decisions, that the key question was “whether the state law actions frustrate[d] ‘the accomplishment and execution of the full purposes and objectives of Congress.’”273 But rather than considering the purposes of federal patent law, such as those identified in Kewanee and Bonito Boats (as well as by the Federal Circuit itself in Dow), the court stated that to determine preemption, “we assess a defendant’s allegedly tortious conduct.”274 The court elaborated: “If a plaintiff bases its tort action on conduct that is protected or governed by federal patent law, then the plaintiff may not invoke the state law remedy, which must be preempted for conflict with federal patent law.”275 Then, citing Mallinckrodt, the court noted: “[F]ederal patent law bars the imposition of liability for publicizing a patent in the marketplace unless the plaintiff can show that the patent holder acted in bad faith.”276 Ultimately, the court remanded the case for the district court to analyze preemption under the bad faith standard.277