# 1AC – Kentucky

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#### Advantage One is Innovation

#### The Ninth Circuit’s Decision in Qualcomm has barred antitrust from cases involving Standard Essential Patents (SEPs). That gives patent holders undue bargaining leverage against implementers.

Sullivan 20 [Sullivan & Cromwell LLP, Leading Firm in Business Law “Ninth Circuit Holds That Qualcomm’s Patent Licensing Program Does Not Violate U.S. Antitrust Law”. 8/12/20. https://www.sullcrom.com/files/upload/sc-publication-ninth-circuit-holds-qualcomm-patent-licensing-program-does-not-violate-us-antitrust-law.pdf]

The Ninth Circuit’s decision, unless modified by the Supreme Court, affirms Qualcomm’s SEP licensing model for OEMs (and its refusal to license rival chipmakers), at least with respect to any challenge under U.S. antitrust laws. Because Qualcomm’s model has driven the cellular modem licensing and sale landscape for chip suppliers and handset makers alike, the court’s decision will likely quiet concerns on the part of some that the district court’s decision would upend that market, although it perhaps makes it less likely that the market will see increased competition or that chip prices will drop as may have been the case if Judge Koh’s injunction had been upheld.

Although the court confirmed that an SEP holder has no antitrust duty to deal with rivals outside the limited Aspen Skiing exception, the Ninth Circuit left open the possibility that an SEP holder’s FRAND commitments may obligate it to deal with its rivals.39 Importantly, however, the Ninth Circuit clarified that a company’s breach of its FRAND commitments does not amount to anticompetitive conduct in violation of the Sherman Act. Instead, the remedy for such conduct lies in contract law. Moreover, the court’s decision to vacate as moot the district court’s summary judgment decision—which found that Qualcomm was required by its FRAND commitments to license rival chipmakers—removes what some had considered to be persuasive judicial authority in the U.S. supporting a claim that FRAND requires licensing at all levels of a product distribution chain which implement a standard. This is noteworthy for SEP holders because it returns U.S. jurisprudence to the status quo, and at least one court in the Eastern District of Texas interpreted a comparable FRAND commitment as not requiring a SEP holder to license all comers at any level of the supply chain. This issue continues to be litigated in the U.S., notwithstanding the Department of Justice Antitrust Division general view that the market, not FRAND, should determine license structures.

The court’s refusal to force licensing at the chip level (rather than the OEM level) also may ease concerns that patent-exhaustion considerations could be used to limit SEP licensors’ ability to maximize profits if licenses were required at the chip level. The Ninth Circuit confirmed that royalty rates are not required to be set strictly using the SSPPU and recognized that “OEM-level licensing is now the industry norm.”40 The Ninth Circuit also recognized that “[t]here are good reasons for SEP owners to structure their licensing programs to license end-user products.”41 The court’s findings appear consistent with current flexibility in structuring FRAND licensing programs.

The Ninth Circuit’s decision also recognizes that royalty rate determinations, and particularly the determination of a FRAND rate, are an issue that sounds in patent law, not antitrust law. The court “decline[d] to adopt a theory of antitrust liability that would presume anticompetitive conduct any time a company could not prove that the ‘fair value’ of its SEP portfolios corresponds to” what the market is willing to pay for those SEPs in royalty rates.42 Arguably, the Ninth Circuit’s decision will impact negotiation power between patent owners and technology implementers by clarifying the circumstances under which patent licensing conduct will give rise to antitrust liability.

Finally, the Ninth Circuit’s decision is noteworthy beyond its application to SEP licensing because it recognizes and demonstrates that courts should be reluctant to ascribe antitrust liability based on conduct occurring in a dynamic, rapidly evolving market—a characterization that will apply to many existing and emerging technology markets.

#### Three internal links

#### 1 – SEP holders refuse to license their patents on fair, reasonable, and non-discriminatory (FRAND) terms– that kills innovation and locks SMEs out of emerging tech markets

* Note – Refusal to license and rate hikes are encompassed in the concept of patent hold-up

FTC 18 [Federal Trade Commission, Signed by ACT, Auto Alliance, CCIA, HTIA, NRF, SIIA Organizations. “Standards, Licensing, and Innovation: A Response to DOJ AAG’s Comments on Antitrust Law and Standard-Setting”. 08/2018. https://www.ftc.gov/system/files/documents/public\_comments/2018/08/ftc-2018-0055-d-0031-155033.pdf]

2. Standardization Gives Rise to Patent Hold-Up

As the Antitrust Division, other federal agencies, and U.S. courts have long recognized, patent hold-up creates risks to competition.17 Characterizing hold-up as a “unilateral” problem that antitrust law should not be concerned about ignores that the power to hold up arises from concerted multilateral action by participants, often competitors, in a standard-setting organization agreeing on specific technologies to use in the industry. Standardization forecloses alternatives that would otherwise compete in the marketplace, and the FRAND commitment is intended to be a constraint on market power that standardization can create. Efforts by patentees to evade promises they made to license on FRAND terms comprise the abuse of monopoly power that the FRAND commitment is intended to limit. 18 Such unearned monopoly power derives not necessarily from the patentee’s “superior skill, foresight, and industry,” 19 but may derive instead from the fact that it is impossible to design around SEPs while maintaining compliance with the standard, creating a “lock-in” effect.20

Before the adoption of a standard, alternative technological solutions generally exist to provide a particular functionality for which the standard-setting process seeks a uniform, market-wide solution.21 Companies with patents that may cover these alternative solutions compete vigorously for inclusion of their preferred technologies into each standard. Once a standard is set, ex ante competition ceases. Patents that cover the chosen technology become essential because they must be used to comply with the standard. And once a standard achieves commercial acceptance, compliance with the standard becomes a matter of commercial necessity, as failing to comply with the standard would render a product incompatible with other companies’ products. This creates a “lock-in” effect, whereby companies that make or use standard compliant products must use the SEPs that are incorporated into the standards that they implement.22 The degree of lock-in reflects what may be the prohibitive costs of switching away from the standardized technology.

Incorporation of a patent into a standard therefore changes the balance of power between patent holders and prospective licensees dramatically, as the Ninth Circuit explained in Microsoft Corp. v. Motorola, Inc.:

[O]nce a standard becomes widely adopted, SEP holders obtain substantial leverage over new product developers, who have little choice but to incorporate SEP technologies into their products. Using that standard-development leverage, the SEP holders are in a position to demand more for a license than the patented technology, had it not been adopted by the SSO, would be worth. The tactic of withholding a license unless and until a manufacturer agrees to pay an unduly high royalty rate for an SEP is referred to as “hold-up.”23

The SEP holder’s strengthened bargaining position after adoption of a standard is directly attributable to the elimination of alternatives to the SEP resulting from the adoption of a standard. Because license negotiations typically do not take place until after a standard has been adopted, when the SEP holder is no longer competing to have its technology included in the standard, the prospective licensee is “at the patentee’s mercy.”24 Prospective licensees therefore may be willing to pay a much higher royalty for use of the patented technology than they would have been willing to pay ex ante, when the SEP holder faced competition from other technologies. Further, while large corporations familiar with SEP licensing may be able to absorb the cost of an unreasonable license or seek redress in court at significant cost to their own innovative efforts, the same opportunities may not be available to small and medium enterprises. These innovators may be forced to abandon business plans in standard-dependent markets entirely.

As a result, the Antitrust Division has recognized that, unless constrained, a SEP holder can exploit its unearned market power to obtain unfair licensing terms, including access to a licensee’s patents at unreasonable prices or supra-competitive royalties that are significantly higher than the SEP holder could have obtained before its patent was incorporated into the standard.

#### SMEs are the lynchpin of emerging tech innovation

Corl 19 [Eric, Business News Expert, Entreprenuer, Founder and CEO of IdeaBuyer. “How Startups Drive the Economy”. 3/14/19. https://medium.com/@ericcorl/how-startups-drive-the-economy-69b73cfbae1]

According to a 2016 report from the Kauffman Foundation, transformation startups have been launched at a faster rate in recent years but still has a way to go.

These “high” growth firms make up just 15% of all companies. But they contribute an estimate of 50% of total jobs created. These young companies comparably invest more in research and development (R&D) than older ones.

The focus of this article is on Transformational startups.

The Big Small Impacts

Startups may be small. But they create ripples in the economy that change people’s way of living.

Here are the ways startups disrupt the economy and forces it to evolve, taking technology one -or several steps- higher.

1. Advance Technology

Older companies or incumbents are more likely to invest in R&D on existing technologies and incremental innovation. While startups are more focused on new technologies and cutting-edge innovation.

Free from a multilayered corporate bureaucracy, startups are more agile and able to build an idea into a product and improve it upon consumer demand with faster decision-making communications. Its high stakes deeply motivate its employees to do whatever it takes to succeed.

Giant companies like Google and Microsoft often acquire startups and use their size and distribution channels to improve the innovation and boost its sales.

However, a member of Harvard’s Labor and Worklife Program, Vivek Wadhwa argues that “when technology’s top guns join these companies, they seem to make a smaller impact than those that don’t get hired.” He then advised that startups must be armed with seed financing in order for the economy get more technological innovation.

2. Open New Markets

Startups create new markets or completely transform old markets by introducing products that change the world. Giants today like Apple, Facebook and Google were once small but ambitious startups.

New technologies often create new opportunities that startups take advantage of. Startups then create a massive value over mature businesses, inspiring competition and disrupting the economy to evolve.

However, not all startups succeed. According to James Surowiecki of MIT Technology Review, the reason behind this is the increased power of established incumbents. Though incumbents have been toppled before, the American industry has grown more concentrated over the last 30 years.

3. Boost Production of Goods and Services

According to Bryan Ritchie and Nick Swisher of IDEA Center, startups disproportionately have higher technology. This drives up production of goods and services.

In a 2017 report by the Center for Economic Studies at the US Census Bureau, they have found that firms that have a high growth output are disproportionately young and “makes disproportionate contributions to output and productivity growth.”

In another paper published on 2011 by Small Business Administration, startups were discovered to generate more revenue with the same number of capital inputs than older companies.

4. Increase Employment

Startups create jobs. These “high-growth” firms are companies that add jobs at a rate of 25 plus percent.

Wadhwa states, “Without startups, there would be no net job growth in the US economy. From 1977 to 2005, existing companies were net job destroyers, losing 1 million net jobs per year. New businesses in their first year added an average of 3 million jobs annually.”

In a 2017 report by the Progressive Policy Institute, the private sector job growth is significantly higher where the startup activity is high. In contrast, regions with few startup activity experience less than half the job growth.

5. Direct Local Impacts

Startups also have a direct change on the cities where they are located such as how Microsoft has transformed Redmond and Google has changed Mountain View California. They bring in wealth and a large inflow of graduates and experienced professionals from other locations who are looking for job opportunities.

Startups are a Driving Economic Force

Startups are engines of growth. To avoid economic stagnation, methods must be sought to foster competition and assist transformational entrepreneurs.

While it is important to get support in a federal level, the effort must be focused in a local level. Cities need to foster programs that encourage entrepreneurship. It is absolutely critical for growth at a local and national level and legislative and political motives can no longer take entrepreneurs into account as an after-thought.

Removing barriers. Facilitating connections. Empowering startups. These are just the few ways for civic leaders to give a better edge to entrepreneurs.

Over the years, I’ve gotten more and more involved in advocating for other entrepreneurs and I’ve been introduced to some great organizations. For one, the SBE Council (http://www.SBECouncil.org) is doing a wonderful job on the federal level advocating for entrepreneurs and small businesses to make sure our voices are heard. Please follow them and support them online.

The Small Business Administration is also doing great work with their main street leaders program to connect local businesses to Washington, DC. If you have a business, they want to hear your voice.

Remember, startups are the driving force behind our economy — we must advocate for the entrepreneurs behind them and continue to foster innovation.

#### 2 – Excessive sham litigation plagues standard patent disputes – only the federal legal clarity of the plan solves

Hovenkamp 19 [Herbert, James B. Dinan University Professor, University of Pennsylvania Law School and The Wharton School. “FRAND and Antitrust”. 9/2019. https://awards.concurrences.com/IMG/pdf/2.\_frand\_and\_antitrust.pdf?55742/742050234fc2871a2db38c61d1e7936e388e6cc9]

Abuses of the Judicial Process

Should the owner of FRAND encumbered patents be accountable under the antitrust laws for the way it employs judicial processes? For example, suppose that the owner of a FRAND patent seeks an injunction against a manufacturer of a good that employs the patent and participates in the standard. Patentees have a statutory right to obtain an injunction against proven infringers.193 As a result, seeking injunctive relief from a court should not ordinarily be an antitrust violation.

Nevertheless, there are important qualifications. If someone files a suit that no reasonable litigant would have brought with the expectation of success, then antitrust liability can attach. In such cases the litigation plaintiff’s expectation of success comes not from winning the lawsuit, but rather from depleting the defendant’s assets, delaying its market entry, or otherwise injuring it in ways unrelated to the outcome of the litigation.

The grandparent of these cases is Walker Process Equip., Inc. v. Food Mach. & Chem. Corp.194 The patentee had a patent that it knew to be unenforceable under the statutory on sale bar,195 but it attempted to exclude a competitor from the market anyway via a patent infringement suit. The Walker Process case applied the so called “sham” litigation exception that holds that the filing of a law suit loses its First Amendment protected status if the lawsuit is a “sham,” which means that it was filed without a realistic prospect of success from the litigation itself, but rather to intimidate, harass, or deplete the resources of the litigation defendant.196

One important precondition to the sham litigation exception is that existing law be sufficiently “settled” that a lawsuit filed in conflict with it should be regarded as “objectively meritless.”197 That is, a reasonable person in the plaintiff’s position should have known that the lawsuit would not succeed. For example, if there is a conflict in the Federal Circuit Courts of Appeal respecting a particular issue, a plaintiff should be entitled to convince the appellate courts to apply one interpretation rather than the other one.198 Issues of first impression or those that could reasonably come out either way can of course be the subject of litigation.

There is no obvious reason that the sham litigation rule should not apply in the FRAND context, and under these same constraints. Once it has become a matter of settled law that a SEP owner is not entitled to an injunction under a given set of circumstances – that is, that a knowledgeable person would realize that there was no genuine prospect of relief -- then further lawsuits under those circumstances may give rise to antitrust liability.199 If the lawsuit is plainly in violation of an enforceable contract obligation, Walker Process liability should be appropriate. On the other hand, if the issue remains open to legal doubt, then filing a lawsuit is appropriate, even if the suit is ultimately unsuccessful.

Sham litigation establishes the conduct element of an antitrust offense. In order to establish an antitrust violation, the challenger would still have to make out the other elements of an antitrust cause of action – namely, power and unreasonable exclusion for §2 cases, or a restraint of trade for §1 cases. 200

For example, once the FRAND obligation for a patent or set of patents has been established to require licensing to all implementers operating on the standard, a firm that files infringement lawsuits seeking injunctions against firms simply because they are product market competitors should generate the conduct basis for antitrust liability. While this road to antitrust liability might seem narrow, it becomes broader as litigation clarifies issues so that they can be regarded as settled.

#### Just the threat of sham injunctions stifles innovation by hiking licensing rates and legal costs

Wood 13 [Chris Wood and Joseph Kattan, partners in the Antitrust and Trade Regulation practice of Gibson, Dunn & Crutcher LLP. “Standard-Essential Patents and the Problem of Hold-Up”. 12/13/13. http://awa2014.concurrences.com/IMG/pdf/standard\_essential\_patent\_kattan-wood.pdf]

The threat of an injunction is an extraordinarily powerful weapon when asserted by a SEP holder, as the potential licensee faces the prospect of its product being excluded from the market. As one federal court framed the issue, “[i]t would seem clear that a negotiation where one party … must either come to an agreement or cease its sales … fundamentally places that party at a disadvantage.”51 Similarly, the European Commission has noted that “the threat of injunction, the seeking of an injunction or indeed the actual enforcement of an injunction granted against a good faith potential licensee, may significantly impede effective competition by, for example, forcing the potential licensee into agreeing to potentially onerous licensing terms which it would otherwise not have agreed to.”52 As a result, a rational implementer faced with an injunction threat may well conclude that paying an unreasonable royalty is less risky than fending off infringement litigation.53

The use of injunctive relief against willing licensees, or the threat of seeking such relief, is fundamentally incompatible with the FRAND promise. Injunctive relief is an extraordinary remedy that is available only where a patent holder would be “irreparabl[y]” harmed due to a lack of available monetary relief.”54 By contrast, a SEP holder that makes a FRAND commitment agrees to license its SEPs to any standard implementer willing to pay a FRAND compliant royalty, thereby acknowledging that monetary compensation constitutes adequate remuneration for its SEPs.55 As Judge Posner has observed, “[b]y committing to license its patents on FRAND terms, [the SEP holder] committed to license … to anyone willing to pay a FRAND royalty and thus implicitly acknowledged that a royalty is adequate compensation for a license to use that patent.”

Some authors have argued that the language of FRAND commitments “cannot be read to suggest abdication of injunctive relief.”57 But the plain meaning of the FRAND language used by leading SSOs requires that SEP holders grant a license to every willing licensee. For example, the bylaws of the U.S.-based IEEE, which is responsible for the development of the Wi-Fi standard for wireless networking, state that a FRAND commitment must provide “that a license for a compliant implementation of the standard will be made available to an unrestricted number of applicants on a worldwide basis …. under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination.”58 In analyzing the virtually identical FRAND commitment of the International Telecommunications Union (“ITU”), the U.S. Court of Appeals for the Ninth Circuit determined that “[t]his language admits of no limitations as to who or how many applicants could receive a license.” 59 Similarly, the Intellectual Property Rights (IPR) Policy of ETSI, which is responsible for the development of the 3G and 4G telecommunications standards, while framed in different language, also requires that FRAND commitments guarantee a license to every willing licensee. It requires “an irrevocable undertaking in writing” to grant irrevocable licenses on FRAND terms to “manufacture, including the right to make or have made customized components and sub-systems to the licensee’s own design,” “sell, lease, or otherwise dispose of equipment so manufactured,” “repair, use, or operate equipment,” and “use methods.”60 By mandating a license for every potential application of a patent— from manufacture to sale to lease to use or repair—this policy contemplates that the FRAND commitment exclude no potential licensee that is ready to take a license on FRAND terms.

Given that injunctions are designed to provide a remedy where monetary compensation cannot, injunctions should be reserved for the limited circumstances in which monetary damages are an insufficient remedy for patent infringement.61 If a standard implementer is either unwilling or unable to pay a judicially-determined FRAND royalty, or is outside the court’s jurisdiction so that monetary relief could not be enforced, monetary compensation may not be an adequate remedy, in which case an injunction should be available. Whenever the SEP holder is able to secure monetary compensation, however, the threat of injunctive relief serves no purpose other than to give the SEP holders leverage to extract royalties above the FRAND levels that they contractually agreed to accept.

#### 3 – Agency flip-flopping triggers mass investment uncertainty and confirms fears that enforcement will switch on the president’s whim

Syrett 19 [Timothy, partner at WilmerHale, is an intellectual property and antitrust litigator. “The FTC’s Qualcomm Case Reveals Concerning Divide with DOJ on Patent Hold-Up”. 6/28/19. https://www.ipwatchdog.com/2019/06/28/ftcs-qualcomm-case-reveals-concerning-divide-doj-patent-hold/id=110764/]

The DOJ’s turn away from its long-held position on the risks of patent hold-up is a cause for serious concern.

First, it is bad policy. In explaining the DOJ’s about-face, Delrahim has referred to a “so-called ‘hold-up’ problem in the context of SSOs” and contended that concerns with hold-up “rely on models devoid of economic or empirical evidence that hold-up is a real phenomenon.” But the DOJ’s prior recognition of the risks of patent hold-up was well supported.

U.S. courts have long recognized that SEPs pose a hold-up threat. In 2007, for example, the Third Circuit observed that “[t]o guard against anticompetitive patent hold-up, most [standards development organizations] require firms supplying essential technologies for inclusion in a prospective standard to commit to licensing their technologies on FRAND terms.” Broadcom Corp. v. Qualcomm Inc., 501 F.3d 297, 313 (3d Cir. 2007). More recently, the Ninth Circuit explained that “[t]he development of standards . . . creates an opportunity for companies to engage in anti-competitive behavior” and that “[u]sing that standard-development leverage, the SEP holders are in a position to demand more for a license than the patented technology, had it not been adopted by the SSO, would be worth.” Microsoft Corp. v. Motorola, Inc., 795 F.3d 1024, 1031 (9th Cir. 2015); see also, e.g., Ericsson, Inc. v. D-Link Sys., Inc., 773 F.3d 1201, 1209 (Fed. Cir. 2014) (“SEPs pose two potential problems that could inhibit widespread adoption of the standard: patent hold-up and royalty stacking”).

As to the economics of patent hold-up, the DOJ observed in a 2015 business review letter that the “economic bargaining model underlying claims of hold-up has been studied extensively and applied to the standard-setting context,” citing scholarship dating back decades. That conclusion echoed the views of the DOJ and FTC in their 2007 report that patent hold-up is simply a “variant of the classic ‘hold-up problem’.” The DOJ also noted in its 2015 letter that “litigated cases demonstrate the potential for hold up when owners of RAND-encumbered standards-essential patents make royalty demands significantly above the adjudicated RAND rate” and provided examples where licensors’ demands were on the order of about 170 to 230 times what courts determined were RAND rates.

Recognition of the dangers of hold-up is thus well supported as a matter of law and economics. To be sure, if competitors collude in an SSO to fix the terms on which they will license technology, antitrust enforcement would be appropriate. But simply because one can envision the possibility of an alternative form of anticompetitive conduct relating to standard setting does not mean that the DOJ should simply ignore the well-documented existence of another form of harm.

Second, the DOJ’s abrupt shift away from over a decade of guidance on hold-up creates uncertainty for the many industries that rely on standards. While the shift in policy has been cast as being motivated by a concern for fostering innovation, it threatens to have the opposite effect. Companies planning investments in standardized products now face greater uncertainty about whether they can count on established rules, particularly as articulated in the DOJ’s business review letters, to safeguard their ability to license SEPs on FRAND terms.

Third, that a change in administration has led the DOJ to turn away from a long-held, bipartisan approach plays into the perception that antitrust enforcement is increasingly a political tool. While there may be higher profile examples of the politicization of antitrust enforcement, any step that suggests that a change in administration, not law and economics, will lead to wholesale departure from existing antitrust policy is troubling.

#### Tech investment certainty is the maker or breaker of broader innovation– only the plan stabilizes patent and antitrust certainty

Michel 17 [Hon. Paul R. Michel, Former Chief Judge, U.S. Court of Appeals for the Federal Circuit; Matthew J. Dowd, founder Dowd PLLC, "THE NEED FOR “INNOVATION CERTAINTY” AT THE CROSSROADS OF PATENT AND ANTITRUST LAW", April 2017, [https://www.competitionpolicyinternational.com/wp-content/uploads/2017/04/CPI-Michel-Dowd.pdf](https://www.google.com/url?q=https://www.competitionpolicyinternational.com/wp-content/uploads/2017/04/CPI-Michel-Dowd.pdf&sa=D&source=hangouts&ust=1631479189098000&usg=AOvVaw15b1X_q2CCXmXzm69Ur4_h)]

Innovation has long been the driving force of the U.S. economy.2 From the early days of our nation, inventors played a pivotal role in creating wealth for a growing nation, and this innovation continues today. Quantum computing research being funded by Google, IBM, Intel, and Microsoft; Genetic engineering, such as CRISPR; Autonomous vehicles, such as Otto’s self-driving trucks: The nation’s continued success in innovation is critical for maintaining the United States as an economic leader.

Successful innovation requires the proper environment. Innovators need intellectual capital, an educated workforce, and access to financial capital. These resources enable innovators to conduct the research and development and to optimize products for the commercial marketplace.

Equally important is a sufficient degree of what we call “innovation certainty.” Innovation certainty considers those legal, regulatory, and political factors that affect the degree of risk. The lower the degree of innovation certainty, the less hospitable the system is for innovators and investors. The less stable the legal and political rules, the more inimical the jurisdiction is to the investors who ultimately finance the innovative work.

During the past ten years, innovation certainty in the United States has decreased dramatically, and the decrease is directly attributable to two general trends: The destabilization of patent law, and the increased uncertainty in antitrust law. Both patent law and antitrust law, when properly implemented, contribute to an optimal level of innovation certainty. Patent law incentivizes innovation by awarding exclusive rights, thereby encouraging investment in and public disclosure of inventions.3 Antitrust law incentivizes innovation by maximizing competition in a free marketplace and allowing startup innovators to disrupt markets and avoid monopolies created by market power. Working within these legal regimes, private firms innovate and commercialize. They also create efficient transaction mechanisms, such as standard setting organizations (“SSOs”) and FRAND (“fair, reasonable, and non-discriminatory”) licensing agreements for standard essential patents (“SEPs”), so that innovators and their investors can efficiently obtain a return on their capital.

#### Winning the commercial tech innovation race solidifies military overmatch BUT the lead is razor-thin now

Molling 18 [Christian, research director of DGAP, German Council on Foreign Relations. “Defense Innovation and the Future of Transatlantic Strategic Superiority: A German Perspective”. 3/23/18. https://www.gmfus.org/news/defense-innovation-and-future-transatlantic-strategic-superiority-german-perspective]

Technological superiority is key for the West’s military power. But the reality of how to maintain this superiority is changing. Instead of innovation in defense technology coming predominately from national programs linked to the military, innovation is now increasingly generated by the private sector and takes place around the globe. The competition of commercial companies for their consumers has also led to shorter innovation cycles, especially in the area of information technology, and to a geographical diversification of centers of innovation — with new hubs especially in Asia. The ability of non-Western actors to increasingly incorporate civilian innovation into defense applications has led, among other things, to the perception of a growing erosion of conventional deterrence and defense capabilities in relation to rising powers and new actors of international security.

#### Loss of leadership on emerging tech causes nuclear transition wars in Taiwan and Eastern Europe.

Kroenig & Gopalaswamy 18, \*Associate Professor of Government and Foreign Service at Georgetown University and Deputy Director for Strategy in the Scowcroft Center for Strategy and Security at the Atlantic Council. \*\*Director of the South Asia Center at the Atlantic Council. He holds a PhD in mechanical engineering with a specialization in numerical acoustics from Trinity College, Dublin. (Matthew & Bharath, 11-12-2018, "Will disruptive technology cause nuclear war?", *Bulletin of the Atomic Scientists*, https://thebulletin.org/2018/11/will-disruptive-technology-cause-nuclear-war/)

Rather, we should think more broadly about how new technology might affect global politics, and, for this, it is helpful to turn to scholarly international relations theory. The dominant theory of the causes of war in the academy is the “bargaining model of war.” This theory identifies rapid shifts in the balance of power as a primary cause of conflict.

International politics often presents states with conflicts that they can settle through peaceful bargaining, but when bargaining breaks down, war results. Shifts in the balance of power are problematic because they undermine effective bargaining. After all, why agree to a deal today if your bargaining position will be stronger tomorrow? And, a clear understanding of the military balance of power can contribute to peace. (Why start a war you are likely to lose?) But shifts in the balance of power muddy understandings of which states have the advantage.

You may see where this is going. New technologies threaten to create potentially destabilizing shifts in the balance of power.

For decades, stability in Europe and Asia has been supported by US military power. In recent years, however, the balance of power in Asia has begun to shift, as China has increased its military capabilities. Already, Beijing has become more assertive in the region, claiming contested territory in the South China Sea. And the results of Russia’s military modernization have been on full display in its ongoing intervention in Ukraine.

Moreover, China may have the lead over the United States in emerging technologies that could be decisive for the future of military acquisitions and warfare, including 3D printing, hypersonic missiles, quantum computing, 5G wireless connectivity, and artificial intelligence (AI). And Russian President Vladimir Putin is building new unmanned vehicles while ominously declaring, “Whoever leads in AI will rule the world.”

If China or Russia are able to incorporate new technologies into their militaries before the United States, then this could lead to the kind of rapid shift in the balance of power that often causes war.

If Beijing believes emerging technologies provide it with a newfound, local military advantage over the United States, for example, it may be more willing than previously to initiate conflict over Taiwan. And if Putin thinks new tech has strengthened his hand, he may be more tempted to launch a Ukraine-style invasion of a NATO member.

Either scenario could bring these nuclear powers into direct conflict with the United States, and once nuclear armed states are at war, there is an inherent risk of nuclear conflict through limited nuclear war strategies, nuclear brinkmanship, or simple accident or inadvertent escalation.

This framing of the problem leads to a different set of policy implications. The concern is not simply technologies that threaten to undermine nuclear second-strike capabilities directly, but, rather, any technologies that can result in a meaningful shift in the broader balance of power. And the solution is not to preserve second-strike capabilities, but to preserve prevailing power balances more broadly.

#### Licensing hikes and lack of legal clarity decimate AI innovation and threaten broader adoption

Ghafele 21 [Roya, visiting Professor in IP Law with the School of Law of Brunel University, Director of Oxfirst. “The Role of Standards and Patents in Artificial Intelligence”. 3/24/21. https://www.linkedin.com/pulse/role-standards-patents-artificial-intelligence-roya-ghafele?trk=public\_profile\_article\_view]

AI systems label a specific model of innovation that benefits from a wide range of contributors; be they inside or outside the firm. The role of patent law as an organizational principle of this type of ‘networked innovation’ remains yet to be adequately governed. In AI business thrives because of the interconnected framework in which it is embedded in.

The technological transformations enabled have triggered drastic modifications of the nature of economic exchange; making novel ways of doing business possible; not necessarily by owning devices protected by patents, but by owning access to a multitude of devices and facilitating easy interacting and exchange between them. Hence, the classical value proposition, whereby a single invention is protected through patent law and by consequence its owner has the right to exclude third parties from accessing it may risk to harm the nurturing eco system emerging from the standardization process.[1] In that regard, public policy formulation will need to play a major role, so to provide a governance structure that allows all players, be they large or small, to succeed. In particular it will require to study at greater length the role that patents that read on standards will and can play in this promising ecosystem.

This new economic context asks for a differentiated governance structure that assures in particular the functioning interplay between patents and standards. Against this background, this proposal suggests that the role of the FRAND (fair, reasonable and non-discriminatory) commitment should be further studied. Within a UK context in particular, it should be discussed to what extent it would not be appropriate to run another ‘Heargraves Review’ that addresses in greater detail the role of standard essential patents in the novel business environment provided by AI.

The Novel Economic Framework Provided by Artificial Intelligence

AI is still at its early stage and the opportunities it can offer have not even been seized yet to its full extent. At present, we do not even know the many different creative ways in which entrepreneurs will take AI forward. Entrepreneurs are experimenting with leveraging the AI in areas as vast as fashion or primary healthcare. Which businesses will ultimately prove viable remains still to be seen. AI is also big business. Investors expect growth rates as high as 20%.

In AI it is not the single device that creates value, but the ability to connect a sheer infinite number of devices with each other. The worth relies in the continuous expansion of the connection. It is the interconnectivity that creates value, not just the simple ownership of a single device.

At present most connected devices or telecom networks are controlled by humans. However, a key feature of the AI is that devices will be controlled by other devices (the controllers). These again can be classified in various ways, so to reflect the specific features of the controller. In the networked architecture of the AI various devices are at the same time receivers and suppliers of information; making it increasingly difficult to untangle the net of who provides and who receives proprietary technology and who adds value to the technology.

As such, Artificial Intelligence is a prototypical technology space, where Small and Medium Sized Enterprises (SMEs), universities and their spin-outs as well as big corporations alike could constitute a fruitful innovation ecosystem. All these players could thrive in the spirit of collaborative exchange, so to collectively re-invent the future of society, provided that adequate foundations are set for the role of patents within the context of AI.

The Need for Standards

Standard setting will be instrumental for the success of AI. It is only through a common language, the adoption of an interoperable and connected system that the wide spread use of AI can succeed. The process of standardisation will enhance innovation efficiency because it enhances compatibility and increases the credibility of technological solution. This standardisation process will likely be highly beneficial to the widespread dissemination of AI.

The success of a standard is based on its wide dissemination; its value derives from its vast usage. This stands in sharp contrast to patents, which are negative rights built around exclusivity. Contrary to a standard, the value of a patent derives from its strength to exclude to the best extent possible third parties from using it; unless obviously a third party is willing to pay for its usage.

This is why the inherent dilemma between patents and standards is hard to overcome. It is a tension between ‘free access and tight control.[2]’ This tensions is well pronounced in the standard essential patents debate. A patent declared essential to a standard is a strange hybrid that combines patent laws’ negative right’s aspect with a standard’s capability to disseminate a technology as wide as possible. As this formula bears the potential to accrue exceptional market power in the hands of patent owners, while at the same time rendering access to proprietary technology potentially very expensive, the (F)RAND (fair, reasonable and non- discriminatory) promise was introduced.

The (F)RAND rationale at its the core seeks to counter anti-competitive aspects of the licensing of standard essential patents. The (F)RAND commitment obligates SEPs owners to make their patents available on fair, reasonable and non-discriminatory terms. The reason why it does this, is because in the absence of doing so, there is a strong concern that opportunist behaviour can arise and by consequence competition in technology markets can be distorted.

Due to technical standard setting, there often arise only a handful of patent holders in a particular standard. This may be due to first mover advantages or because some firms have the necessary innovation capabilities to capture the patent landscape. It is alleged that these patent holders – having claimed an important position in the patent landscape – can charge abnormally high licensing rates to standard essential patent implementers; a phenomenon known as hold up.

Alongside those undesired consequences, royalty stacking can be another means to prevent downstream innovation. Royalty stacking can be defined as ‘situations in which a single product potentially infringes on many patents, and thus may bear multiple royalty burdens. The term 'royalty stacking' reflects the fact that, from the perspective of the firm making the product in question, all of the different claims for royalties must be added or 'stacked' together to determine the total royalty burden borne by the product if the firm is to sell that product free of patent litigation.’[3]

Research Questions

Nonetheless the (F)RAND commitment translates into an insufficiently complete contract between licensors and licensees. This is because of a built-in ambiguity over what “fair, reasonable and non-discriminatory” means; an ambiguity that is not addressed by means of the policies themselves but is expected to be resolved by “others”. This has led commentators such as Swanson & Baumol to argue that the (F)RAND commitment is of limited value in the absence of objective benchmarks that make clear the concrete terms or range of terms that are deemed to be reasonable and non- discriminatory.[4] This vagueness can lead to abuse and antitrust issues.[5] The situation is furthermore complicated by clandestine licensing markets and the absence of publicly available royalty rates that could be used as benchmarks to determine the value of a royalty rate of a SEPs.

Further issues pertain to a lack of clarity on ownership and distribution of patents that read on standards. Equally, there is lack of consistency as it pertains to the valuation of standard essential patents. Lack of clarity can also lead to a host of other unresolved challenges, such as negotiations taking potentially place in the shadow of the law and potential asymmetrical bargaining power between SEPs owners and downstream innovators.

#### AI innovation solves next gen cyberattacks

Dixon 19 [William, Head of Future Networks and Technology, World Economic Forum, Nicole Eagan, Chief Executive Officer, Darktrace. “3 ways AI will change the nature of cyber attacks”. 6/19/19. https://www.weforum.org/agenda/2019/06/ai-is-powering-a-new-generation-of-cyberattack-its-also-our-best-defence/]

Cyberattacks are becoming ubiquitous and have been recognized as one of the most strategically significant risks facing the world today. In recent years, we have witnessed digital assaults against governments and the owners of critical infrastructure, large private corporations and smaller ones, educational institutions and non-profit organizations. Not only is no sector immune from cyberattacks, the level of sophistication of the threats they face is continually increasing.

The future of cybersecurity will be driven by a new class of subtle and stealthy attackers that has recently emerged. Their aim is not to steal data, but rather to manipulate or change it. There is little doubt that artificial intelligence (AI) will be used by attackers to drive the next major upgrade in cyber weaponry and will ultimately pioneer the malicious use of AI. AI’s fundamental ability to learn and adapt will usher in a new era in which highly-customised and human-mimicking attacks are scalable. ’Offensive AI’ – highly sophisticated and malicious attack code – will be able to mutate itself as it learns about its environment, and to expertly compromise systems with minimal chance of detection.

Prototype-AI attacks: a glimpse into the future

AI-powered cyberattacks are not a hypothetical future concept. All the required building blocks for the use of offensive AI already exist: highly sophisticated malware, financially motivated – and ruthless – criminals willing to use any means possible to increase their return on investment, and open-source AI research projects which make highly valuable information available in the public domain.

One of the most notorious pieces of contemporary malware – the Emotet trojan – is a prime example of a prototype-AI attack. Emotet’s main distribution mechanism is spam-phishing, usually via invoice scams that trick users into clicking on malicious email attachments. The Emotet authors have recently added another module to their trojan, which steals email data from infected victims. The intention behind this email exfiltration capability was previously unclear, but Emotet has recently been observed sending out contextualized phishing emails at scale. This means it can automatically insert itself into pre-existing email threads, advising the victim to click on a malicious attachment, which then appears in the final, malicious email. This insertion of the malware into pre-existing emails gives the phishing email more context, thereby making it appear more legitimate.

Yet the criminals behind the creation of Emotet could easily leverage AI to supercharge this attack. Currently, the message on the final phishing email is usually highly generic - “Please see attached”, for instance - and this may sometimes arouse suspicion. However, by leveraging an AI’s ability to learn and replicate natural language by analysing the context of the email thread, these phishing emails could become highly tailored to individuals. This would mean that an AI-powered Emotet trojan could create and insert entirely customized, more believable phishing emails. Crucially, it would be able to send these out at scale, which would allow criminals to increase the yield of their operations enormously.

The consequences of these developing attack methods could be highly destructive, and even life-threatening. By undermining data integrity, these stealthy attacks cause trust in organizations to falter, and may even cause systemic failures to occur. Imagine an oil rig using faulty geo-prospection data to drill for oil in the wrong place, or a physician making a diagnosis using compromised medical records. As the AI arms race continues, we can only expect this circle of innovation to escalate.

Offensive AI: a paradigm shift in cyberattacks

In 2017, the WannaCry ransomware attack hit organizations in over 150 countries around the world, marking the beginning of a new era in cyberattack sophistication. Its success lay in its ability to move laterally through an organization in a matter of seconds while paralysing hard drives, and the incident went on to inspire multiple copycat attacks. This cycle of “innovation” will continue, and attackers have already moved on to cryptocurrency mining malware, which secretly steals processing power to mine for digital currencies such as bitcoin, and banking trojans, a type of malware that steals financial data while masquerading as a genuine application.

The use of adversarial artificial intelligence will impact the security landscape in three key ways:

1 - Impersonation of trusted users

AI attacks will be highly tailored yet operate at scale. These malwares will be able to learn the nuances of an individual’s behaviour and language by analysing email and social media communications. They will be able to use this knowledge to replicate a user’s writing style, crafting messages that appear highly credible. Messages written by AI malware will therefore be almost impossible to distinguish from genuine communications. As the majority of attacks get into our systems through our inboxes, even the most cyber-aware computer user will be vulnerable.

2 - Blending into the background

Sophisticated threat actors can often maintain a long-term presence in their target environments for months at a time, without being detected. They move slowly and with caution, to evade traditional security controls and are often targeted to specific individuals and organizations. AI will also be able to learn the dominant communication channels and the best ports and protocols to use to move around a system, discretely blending in with routine activity. This ability to disguise itself amid the noise will mean that it is able to expertly spread within a digital environment, and stealthily compromise more devices than ever before. AI malware will also be able to analyse vast volumes of data at machine speed, rapidly identifying which data sets are valuable and which are not. This will save the (human) attacker a great deal of time and effort.

3 - Faster attacks with more effective consequences

Today’s most sophisticated attacks require skilled technicians to conduct research on their target and identify individuals of interest, understand their social network and observe over time how they interact with digital platforms. In tomorrow’s world, an offensive AI will be able to achieve the same level of sophistication in a fraction of the time, and at many times the scale.

Not only will AI-driven attacks be much more tailored and consequently more effective, their ability to understand context means they will be even harder to detect. Traditional security controls will be impotent against this new threat, as they can only spot predictable, pre-modelled activity. AI is constantly evolving and will become ever-more resistant to the categorization of threats that remains fundamental to the modus operandi of legacy security approaches.

Incorporating AI in the digital ecosystem

As we increasingly rely on connected systems and devices, we are quickly developing a highly advanced and heavily connected digital ecosystem. We will require partnerships and capabilities that prioritize winning the strategic battles that count – and safeguard not only economically valuable data held by the public and private sectors, but the confidence in digital systems that underpins social cohesion and democratic institutions.

Investment in new technology will play a critical role in this emerging reality and evolving ecosystem. According to Forrester’s Using AI for Evil report, “mainstream AI-powered hacking is just a matter of time”. Indeed, as we begin to see AI become part of the cyber attacker’s toolkit, the only way that we will be able to combat this malicious use of AI is with AI itself. Therefore, incorporating the technology into this ecosystem is crucial.

Counterattack: Fighting machine with machine

The cybersecurity community is already heavily investing in this new future, and is using AI solutions to rapidly detect and contain any emerging cyberthreats that have the potential to disrupt or compromise key data. Defensive AI is not merely a technological advantage in fighting cyberattacks, but a vital ally on this new battlefield. Rather than rely on security personnel to respond to incidents manually, organizations will instead use AI to fight back against a developing problem in the short term, while human teams will oversee the AI’s decision-making and perform remedial work that improves overall resilience in the long term.

AI-powered attacks will outpace human response teams and outwit current legacy-based defenses; therefore, the mutually-dependent partnership of human and AI will be the bedrock of defense strategies in the future. The battleground of the future is digital, and AI is the undisputed weapon of choice. There is no silver bullet to the generational challenge of cybersecurity, but one thing is clear: only AI can play AI at its own game. The technology is available, and the time to prepare is now.

#### Cyber war goes nuclear

Erik Gartzke &Jon R. Lindsay 17. Gartzke is at the Department of Political Science, University of California, San Diego; Lindsay is at the Munk School of Global Affairs, University of Toronto. 03/01/2017. “Thermonuclear Cyberwar.” Journal of Cybersecurity, vol. 3, no. 1, pp. 37–48.

Cyber warfare is routinely overhyped as a new weapon of mass destruction, but when used in conjunction with actual weapons of mass destruction, severe, and underappreciated, dangers emerge. One side of a stylized debate about cybersecurity in international relations argues that offensive advantages in cyberspace empower weaker nations, terrorist cells, or even lone rogue operators to paralyze vital infrastructure [4–8]. The other side argues that operational difficulties and effective deterrence restrains the severity of cyber attack, while governments and cybersecurity firms have a pecuniary interest in exaggerating the threat [9–13]. Although we have contributed to the skeptical side of this debate [14–16], \*\*\*BEGIN FOOTNOTE\*\*\* 14. Gartzke E. The myth of cyberwar: bringing war in cyberspace back down to earth. Int Security 2013;38:41–73. Google ScholarCrossRef 15 Lindsay JR. Stuxnet and the limits of cyber warfare. Security Stud 2013;22:365–404. Google ScholarCrossRef 16 Lindsay JR. The impact of China on cybersecurity: fiction and friction. Int Security 2014;39:7–47. Google ScholarCrossRef \*\*\*END FOOTNOTE\*\*\* the same strategic logic that leads us to view cyberwar as a limited political instrument in most situations also leads us to view it as incredibly destabilizing in rare situations. In a recent Israeli wargame of a regional scenario involving the United States and Russia, one participant remarked on “how quickly localized cyber events can turn dangerously kinetic when leaders are ill-prepared to deal in the cyber domain” [17]. Importantly, this sort of catalytic instability arises not from the cyber domain itself but through its interaction with forces and characteristics in other domains (land, sea, air, etc.). Further, it arises only in situations where actors possess, and are willing to use, robust traditional military forces to defend their interests. Classical deterrence theory developed to explain nuclear deterrence with nuclear weapons, but different types of weapons or combinations of operations in different domains can have differential effects on deterrence and defense [18, 19]. Nuclear weapons and cyber operations are particularly complementary (i.e. nearly complete opposites) with respect to their strategic characteristics. Theorists and practitioners have stressed the unprecedented destructiveness of nuclear weapons in explaining how nuclear deterrence works, but it is equally, if not more, important for deterrence that capabilities and intentions are clearly communicated. As quickly became apparent, public displays of their nuclear arsenals improved deterrence.x At the same time, disclosing details of a nation’s nuclear capabilities did not much degrade the ability to strike or retaliate, given that defense against nuclear attack remains extremely difficult. Knowledge of nuclear capabilities is necessary to achieve a deterrent effect [20]. Cyber operations, in contrast, rely on undisclosed vulnerabilities, social engineering, and creative guile to generate indirect effects in the information systems that coordinate military, economic, and social behavior. Revelation enables crippling countermeasures, while the imperative to conceal capabilities constrains both the scope of cyber operations and their utility for coercive signaling [21, 22]. The diversity of cyber operations and confusion about their effects also contrast with the obvious destructiveness of nuclear weapons. The problem is that transparency and deception do not mix well. An attacker who hacks an adversary’s nuclear command and control apparatus, or the weapons themselves, will gain an advantage in warfighting that the attacker cannot reveal, while the adversary will continue to believe it wields a deterrent that may no longer exist. Most analyses of inadvertent escalation from cyber or conventional to nuclear war focus on “use it or lose it” pressures and fog of war created by attacks that become visible to the target [23, 24]. In a US–China conflict scenario, for example, conventional military strikes in conjunction with cyber attacks that blind sensors and confuse decision making could generate incentives for both sides to rush to preempt or escalate [25–27]. These are plausible concerns, but the revelation of information about a newly unfavorable balance of power might also cause hesitation and lead to compromise. Cyber blinding could potentially make traditional offensive operations more difficult, shifting the advantage to defenders and making conflict less likely. Clandestine attacks that remain invisible to the target potentially present a more insidious threat to crisis stability. There are empirical and theoretical reasons for taking seriously the effects of offensive cyber operations on nuclear deterrence, and we should expect the dangers to vary with the relative cyber capabilities of the actors in a crisis interaction. Nuclear command and control vulnerability General Robert Kehler, commander of US Strategic Command (STRATCOM) in 2013, stated in testimony before the Senate Armed Services Committee, “we are very concerned with the potential of a cyber-related attack on our nuclear command and control and on the weapons systems themselves” [28]. Nuclear command, control, and communications (NC3) form the nervous system of the nuclear enterprise spanning intelligence and early warning sensors located in orbit and on Earth, fixed and mobile command and control centers through which national leadership can order a launch, operational nuclear forces including strategic bombers, land-based intercontinental missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and the communication and transportation networks that tie the whole apparatus together [29, 30]. NC3 should ideally ensure that nuclear forces will always be available if authorized by the National Command Authority (to enhance deterrence) and never used without authorization (to enhance safety and reassurance). Friendly errors or enemy interference in NC3 can undermine the “always-never” criterion**,** weakening deterrence [31, 32]. NC3 has long been recognized as the weakest link in the US nuclear enterprise. According to a declassified official history, a Strategic Air Command (SAC) task group in 1979 “reported that tactical warning and communications systems … were ‘fragile’ and susceptible to electronic countermeasures, electromagnetic pulse, and sabotage, which could deny necessary warning and assessment to the National Command Authorities” [33]. Two years later, the Principal Deputy Under Secretary of Defense for Research and Engineering released a broad-based, multiservice report that doubled down on SAC’s findings: “the United States could not assure survivability, endurability, or connectivity of the national command authority function” due to: major command, control, and communications deficiencies: in tactical warning and attack assessment where existing systems were vulnerable to disruption and destruction from electromagnetic pulse, other high altitude nuclear effects, electronic warfare, sabotage, or physical attack; in decision making where there was inability to assure national command authority survival and connection with the nuclear forces, especially under surprise conditions; and in communications systems, which were susceptible to the same threats above and which could not guarantee availability of even minimum-essential capability during a protracted war. [33] The nuclear weapons safety literature likewise provides a number of troubling examples of NC3 glitches that illustrate some of the vulnerabilities attackers could, in principle, exploit [34–36]. The SAC history noted that NORAD has received numerous false launch indications from faulty computer components, loose circuits, and even a nuclear war training tape loaded by mistake into a live system that produced erroneous Soviet launch indications [33]. In a 1991 briefing to the STRATCOM commander, a Defense Intelligence Agency targeteer confessed, “Sir, I apologize, but we have found a problem with this target. There is a mistake in the computer code … . Sir, the error has been there for at least the life of this eighteen-month planning cycle. The nature of the error is such that the target would not have been struck” [37]. It would be a difficult operation to intentionally plant undetected errors like this, but the presence of bugs does reveal that such a hack is possible. Following many near-misses and self-audits during and after the Cold War, American NC3 improved with the addition of new safeguards and redundancies. As General Kehler pointed out in 2013, “the nuclear deterrent force was designed to operate through the most extreme circumstances we could possibly imagine” [28]. Yet vulnerabilities remain. In 2010, the US Air Force lost contact with 50 Minuteman III ICBMs for an hour because of a faulty hardware circuit at a launch control center [38]. If the accident had occurred during a crisis, or the component had been sabotaged, the USAF would have been unable to launch and unable to detect and cancel unauthorized launch attempts. As Bruce Blair, a former Minuteman missileer, points out, during a control center blackout the antennas at unmanned silos and the cables between them provide potential surreptitious access vectors [39]. The unclassified summary of a 2015 audit of US NC3 stated that “known capability gaps or deficiencies remain” [40]. Perhaps more worrisome are the unknown deficiencies. A 2013 Defense Science Board report on military cyber vulnerabilities found that while the: nuclear deterrent is regularly evaluated for reliability and readiness … , most of the systems have not been assessed (end-to-end) against a [sophisticated state] cyber attack to understand possible weak spots. A 2007 Air Force study addressed portions of this issue for the ICBM leg of the U.S. triad but was still not a complete assessment against a high-tier threat. [41] If NC3 vulnerabilities are unknown, it is also unknown whether an advanced cyber actor would be able to exploit them. As Kehler notes, “We don’t know what we don’t know” [28]. Even if NC3 of nuclear forces narrowly conceived is a hard target, cyber attacks on other critical infrastructure in preparation to or during a nuclear crisis could complicate or confuse government decision making. General Keith Alexander, Director of the NSA in the same Senate hearing with General Kehler, testified that: our infrastructure that we ride on, the power and the communications grid, are one of the things that is a source of concern … we can go to backup generators and we can have independent routes, but … our ability to communicate would be significantly reduced and it would complicate our governance … . I think what General Kehler has would be intact … [but] the cascading effect … in that kind of environment … concerns us. [28] Kehler further emphasized that “there’s a continuing need to make sure that we are protected against electromagnetic pulse and any kind of electromagnetic interference” [28]. Many NC3 components are antiquated and hard to upgrade, which is a mixed blessing. Kehler points out, “Much of the nuclear command and control system today is the legacy system that we’ve had. In some ways that helps us in terms of the cyber threat. In some cases it’s point to point, hard-wired, which makes it very difficult for an external cyber threat to emerge” [28]. The Government Accountability Office notes that the “Department of Defense uses 8-inch floppy disks in a legacy system that coordinates the operational functions of the nation’s nuclear forces” [42]. While this may limit some forms of remote access, it is also indicative of reliance on an earlier generation of software when security engineering standards were less mature. Upgrades to the digital Strategic Automated Command and Control System planned for 2017 have the potential to correct some problems, but these changes may also introduce new access vectors and vulnerabilities [43]. Admiral Cecil Haney, Kehler’s successor at STRATCOM, highlighted the challenges of NC3 modernization in 2015: Assured and reliable NC3 is fundamental to the credibility of our nuclear deterrent. The aging NC3 systems continue to meet their intended purpose, but risk to mission success is increasing as key elements of the system age. The unpredictable challenges posed by today’s complex security environment make it increasingly important to optimize our NC3 architecture while leveraging new technologies so that NC3 systems operate together as a core set of survivable and endurable capabilities that underpin a broader, national command and control system. [44] In no small irony, the internet itself owes its intellectual origin, in part, to the threat to NC3 from large-scale physical attack. A 1962 RAND report by Paul Baran considered “the problem of building digital communication networks using links with less than perfect reliability” to enable “stations surviving a physical attack and remaining in electrical connection … to operate together as a coherent entity after attack” [45]. Baran advocated as a solution decentralized packet switching protocols, not unlike those realized in the ARPANET program. The emergence of the internet was the result of many other factors that had nothing to do with managing nuclear operations, notably the meritocratic ideals of 1960s counterculture that contributed to the neglect of security in the internet’s founding architecture [46, 47]. Fears of NC3 vulnerability helped to create the internet, which then helped to create the present-day cybersecurity epidemic, which has come full circle to create new fears about NC3 vulnerability. NC3 vulnerability is not unique to the United States. The NC3 of other nuclear powers may even be easier to compromise, especially in the case of new entrants to the nuclear club like North Korea. Moreover, the United States has already demonstrated both the ability and willingness to infiltrate sensitive foreign nuclear infrastructure through operations such as Olympic Games (Stuxnet), albeit targeting Iran’s nuclear fuel cycle rather than NC3. It would be surprising to learn that the United States has failed to upgrade its Cold War NC3 attack plans to include offensive cyber operations against a wide variety of national targets. Hacking the deterrent The United States included NC3 attacks in its Cold War counterforce and damage limitation war plans, even as contemporary critics perceived these options to be destabilizing for deterrence [48]. The best known example of these activities and capabilities is a Special Access Program named Canopy Wing. East German intelligence obtained the highly classified plans from a US Army spy in Berlin, and the details began to emerge publicly after the Cold War. An East German intelligence officer, Markus Wolf, writes in his memoir that Canopy Wing “listed the types of electronic warfare that would be used to neutralize the Soviet Union and Warsaw Pact’s command centers in case of all-out war. It detailed the precise method of depriving the Soviet High Command of its high-frequency communications used to give orders to its armed forces” [49]. It is easy to see why NC3 is such an attractive target in the unlikely event of a nuclear war. If for whatever reason deterrence fails and the enemy decides to push the nuclear button, it would obviously be better to disable or destroy missiles before they launch than to rely on possibly futile efforts to shoot them down, or to accept the loss of millions of lives. American plans to disable Soviet NC3 with electronic warfare, furthermore, would have been intended to complement plans for decapitating strikes against Soviet nuclear forces. Temporary disabling of information networks in isolation would have failed to achieve any important strategic objective. A blinded adversary would eventually see again and would scramble to reconstitute its ability to launch its weapons, expecting that preemption was inevitable in any case. Reconstitution, moreover, would invalidate much of the intelligence and some of the tradecraft on which the blinding attack relied. Capabilities fielded through Canopy Wing were presumably intended to facilitate a preemptive military strike on Soviet NC3 to disable the ability to retaliate and limit the damage of any retaliatory force that survived, given credible indications that war was imminent. Canopy Wing included [50]: “Measures for short-circuiting … communications and weapons systems using, among other things, microscopic carbon-fiber particles and chemical weapons.” “Electronic blocking of communications immediately prior to an attack, thereby rendering a counterattack impossible.” “Deployment of various weapons systems for instantaneous destruction of command centers, including pin-point targeting with precision-guided weapons to destroy ‘hardened bunkers’.” “Use of deception measures, including the use of computer-simulated voices to override and substitute false commands from ground-control stations to aircraft and from regional command centers to the Soviet submarine fleet.” “Us[e of] the technical installations of ‘Radio Free Europe/Radio Liberty’ and ‘Voice of America,’ as well as the radio communications installations of the U.S. Armed Forces for creating interference and other electronic effects.” Wolf also ran a spy in the US Air Force who disclosed that the Americans had managed to penetrate the [Soviet air base at Eberswalde]’s ground-air communications and were working on a method of blocking orders before they reached the Russian pilots and substituting their own from West Berlin. Had this succeeded, the MiG pilots would have received commands from their American enemy. It sounded like science fiction, but, our experts concluded, it was in no way impossible that they could have pulled off such a trick, given the enormous spending and technical power of U.S. military air research. [49] One East German source claimed that Canopy Wing had a $14.5 billion budget for research and operational costs and a staff of 1570 people, while another claimed that it would take over 4 years and $65 million to develop “a prototype of a sophisticated electronic system for paralyzing Soviet radio traffic in the high-frequency range” [50]. Canopy Wing was not cheap, and even so, it was only a research and prototyping program. Operationalization of its capabilities and integration into NATO war plans would have been even more expensive. This is suggestive of the level of effort required to craft effective offensive cyber operations against NC3. Preparation comes to naught when a sensitive program is compromised. Canopy Wing was caught in what we describe below as the cyber commitment problem, the inability to disclose a warfighting capability for the sake of deterrence without losing it in the process. According to New York Times reporting on the counterintelligence investigation of the East German spy in the Army, Warrant Officer James Hall, “officials said that one program rendered useless cost hundreds of millions of dollars and was designed to exploit a Soviet communications vulnerability uncovered in the late 1970's” [51]. This program was probably Canopy Wing. Wolf writes, “Once we passed [Hall’s documents about Canopy Wing] on to the Soviets, they were able to install scrambling devices and other countermeasures” [49]. It is tempting to speculate that the Soviet deployment of a new NC3 system known as Signal-A to replace Signal-M (which was most likely the one targeted by Canopy Wing) was motivated in part by Hall’s betrayal [50]. Canopy Wing underscores the potential and limitations of NC3 subversion. Modern cyber methods can potentially perform many of the missions Canopy Wing addressed with electronic warfare and other means, but with even greater stealth and precision. Cyber operations might, in principle, compromise any part of the NC3 system (early warning, command centers, data transport, operational forces, etc.) by blinding sensors, injecting bogus commands or suppressing legitimate ones, monitoring or corrupting data transmissions, or interfering with the reliable launch and guidance of missiles. In practice, the operational feasibility of cyber attack against NC3 or any other target depends on the software and hardware configuration and organizational processes of the target, the intelligence and planning capacity of the attacker, and the ability and willingness to take advantage of the effects created by cyber attack [52, 53]. Cyber compromise of NC3 is technically plausible though operationally difficult, a point to which we return in a later section. To understand which threats are not only technically possible but also probable under some circumstance, we further need a political logic of cost and benefit [14]. In particular, how is it possible for a crisis to escalate to levels of destruction more costly than any conceivable political reward? Canopy Wing highlights some of the strategic dangers of NC3 exploitation. Warsaw Pact observers appear to have been deeply concerned that the program reflected an American willingness to undertake a surprise decapitation attack: they said that it “sent ice-cold shivers down our spines” [50]. The Soviets designed a system called Perimeter that, not unlike the Doomsday Device in Dr. Strangelove, was designed to detect a nuclear attack and retaliate automatically, even if cut off from Soviet high command, through an elaborate system of sensors, underground computers, and command missiles to transmit launch codes [54]. Both Canopy Wing and Perimeter show that the United States and the Soviet Union took nuclear warfighting seriously and were willing to develop secret advantages for such an event. By the same token, they were not able to reveal such capabilities to improve deterrence to avoid having to fight a nuclear war in the first place. Nuclear deterrence and credible communication Nuclear weapons have some salient political properties. They are singularly and obviously destructive. They kill in more, and more ghastly, ways than conventional munitions through electromagnetic radiation, blast, firestorms, radioactive fallout, and health effects that linger for years. Bombers, ICBMs, and SLBMs can project warheads globally without significantly mitigating their lethality, steeply attenuating the conventional loss-of-strength gradient [55]. Defense against nuclear attack is very difficult, even with modern ballistic missile defenses, given the speed of incoming warheads and use of decoys; multiple warheads and missile volleys further reduce the probability of perfect interception. If one cannot preemptively destroy all of an enemy’s missiles, then there is a nontrivial chance of getting hit by some of them. When one missed missile can incinerate millions of people, the notion of winning a nuclear war starts to seem meaningless for many politicians. As defense seemed increasingly impractical, early Cold War strategists championed the threat of assured retaliation as the chief mechanism for avoiding war [56–59]. Political actors have issued threats for millennia, but the advent of nuclear weapons brought deterrence as a strategy to center stage. The Cold War was an intense learning experience for both practitioners and students of international security, rewriting well-worn realities more than once [60–62]. A key conundrum was the practice of brinkmanship. Adversaries who could not compete by “winning” a nuclear war could still compete by manipulating the “risk” of nuclear annihilation, gambling that an opponent would have the good judgment to back down at some point short of the nuclear brink. Brinkmanship crises—conceptualized as games of Chicken where one cannot heighten tensions without increasing the hazard of the mutually undesired outcome—require that decision makers behave irrationally, or possibly that they act randomly, which is difficult to conceptualize in practical terms [63]. The chief concern in historical episodes of chicken, such as the Berlin Crisis and Cuban Missile Crisis, was not whether a certain level of harm was possible, but whether an adversary was resolved enough, possibly, to risk nuclear suicide. The logical inconsistency of the need for illogic to win led almost from the beginning of the nuclear era to elaborate deductive contortions [64–66]. Both mutually assured destruction (MAD) and successful brinksmanship depend on a less appreciated, but no less fundamental, feature of nuclear weapons: political transparency. Most elements of military power are weakened by disclosure [67]. Military plans are considerably less effective if shared with an enemy. Conventional weapons become less lethal as adversaries learn what different systems can and cannot do, where they are located, how they are operated, and how to devise countermeasures and array defenses to blunt or disarm an attack. In contrast, relatively little reduction in destruction follows from enemy knowledge of nuclear capabilities. For most of the nuclear era, no effective defense existed against a nuclear attack. Even today, with evolving ABM systems, one ICBM still might get through and annihilate the capital city. Nuclear forces are more robust to revelation than other weapons, enabling nuclear nations better to advertise the harm they can inflict. The need for transparency to achieve an effective deterrent is driven home by the satirical Cold War film, Dr. Strangelove: “the whole point of a Doomsday Machine is lost, if you keep it a secret! Why didn’t you tell the world, eh?” During the real Cold War, fortunately, Soviet leaders paraded their nuclear weapons through Red Square for the benefit of foreign military attaches and the international press corps. Satellites photographed missile, bomber, and submarine bases. While other aspects of military affairs on both sides of the Iron Curtain remained closely guarded secrets, the United States and the Soviet Union permitted observers to evaluate their nuclear capabilities. This is especially remarkable given the secrecy that pervaded Soviet society. The relative transparency of nuclear arsenals ensured that the superpowers could calculate risks and consequences within a first-order approximation, which led to a reduction in severe conflict and instability even as political competition in other arenas was fierce [61, 68]. Recent insights about the causes of war suggest that divergent expectations about the costs and consequences of war are necessary for contests to occur [69–73]. These insights are associated with rationalist theories, such as deterrence theory itself. Empirical studies and psychological critiques of the rationality assumption have helped to refine models and bring some circumspection into their application, but the formulation of sound strategy (if not the execution) still requires the articulation of some rational linkage between cause and effect [19, 62, 74]. Many supposedly nonrational factors, moreover, simply manifest as uncertainty in strategic interaction. Our focus here is on the effect of uncertainty and ignorance on the ability of states and other actors to bargain in lieu of fighting. Many wars are a product of what adversaries do not know or what they misperceive, whether as a result of bluffing, secrecy, or intrinsic uncertainty [75, 76]. If knowledge of capabilities or resolve is a prerequisite for deterrence, then one reason for deterrence failure is the inability or unwillingness to credibly communicate details of the genuine balance of power, threat, or interests. Fighting, conversely, can be understood as a costly process of discovery that informs adversaries of their actual relative strength and resolve. From this perspective, successful deterrence involves instilling in an adversary perceptions like those that result from fighting, but before fighting actually begins. Agreement about the balance of power can enable states to bargain (tacit or overt) effectively without needing to fight, forging compromises that each prefers to military confrontation or even to the bulk of possible risky brinkmanship crises. Despite other deficits, nuclear weapons have long been considered to be stabilizing with respect to rational incentives for war(the risk of nuclear accidents is another matter) [77]. If each side has a secure second strike—or even a minimal deterrent with some nonzero chance of launching a few missiles—then each side can expect to gain little and lose much by fighting a nuclear war. Whereas the costs of conventional war can be more mysterious because each side might decide to hold something back and meter out its punishment due to some internal constraint or a theory of graduated escalation, even a modest initial nuclear exchange is recognized to be extremely costly. As long as both sides understand this and understand (or believe) that the adversary understands this as well, then the relationship is stable. Countries engage nuclear powers with considerable deference, especially over issues of fundamental national or international importance. At the same time, nuclear weapons appear to be of limited value in prosecuting aggressive action, especially over issues of secondary or tertiary importance, or in response to aggression from others at lower levels of dispute intensity. Nuclear weapons are best used for signaling a willingness to run serious risks to protect or extort some issue that is considered of vital national interest. As mentioned previously, both superpowers in the Cold War considered the warfighting advantages of nuclear weapons quite apart from any deterrent effect, and the United States and Russia still do. High-altitude bursts for air defense, electromagnetic pulse for frying electronics, underwater detonations for anti-submarine warfare, hardened target penetration, area denial, and so on, have some battlefield utility. Transparency per se is less important than weapon effects for warfighting uses, and can even be deleterious for tactics that depend on stealth and mobility. Even a single tactical nuke, however, would inevitably be a political event. Survivability of the second strike deterrent can also militate against transparency, as in the case of the Soviet Perimeter system, as mobility, concealment, and deception can make it harder for an observer to track and count respective forces from space. Counterforce strategies, platform diversity and mobility, ballistic missile defense systems, and force employment doctrine can all make it more difficult for one or both sides in a crisis to know whether an attack is likely to succeed or fail. The resulting uncertainty affects not only estimates of relative capabilities but also the degree of confidence in retaliation. At the same time, there is reason to believe that platform diversity lowers the risk of nuclear or conventional contests, because increasing the number of types of delivery platforms heightens second strike survivability without increasing the lethality of an initial strike [78]. While transparency is not itself a requirement for nuclear use, stable deterrence benefits to the degree to which retaliation can be anticipated, as well as the likelihood that the consequences of a first strike are more costly than any benefit. Cyber operations, in contrast, are neither robust to revelation nor as obviously destructive. The cyber commitment problem Deterrence (and compellence) uses force or threats of force to “warn” an adversary about consequences if it takes or fails to take an action. In contrast, defense (and conquest) uses force to “win” a contest of strength and change the material distribution of power. Sometimes militaries can change the distribution of information and power at the same time. Military mobilization in a crisis signifies resolve and displays a credible warning, but it also makes it easier to attack or defend if the warning fails. Persistence in a battle of attrition not only bleeds an adversary but also reveals a willingness to pay a higher price for victory. More often, however, the informational requirements of winning and warning are in tension. Combat performance often hinges on well-kept secrets, feints, and diversions. Many military plans and capabilities degrade when revealed. National security involves trade-offs between the goals of preventing war, by advertising capabilities or interests, and improving fighting power should war break out, by concealing capabilities and surprising the enemy. The need to conceal details of the true balance of power to preserve battlefield effectiveness gives rise to the military commitment problem [79, 80]. Japan could not coerce the United States by revealing its plan to attack Pearl Harbor because the United States could not credibly promise to refrain from reorienting defenses and dispersing the Pacific Fleet. War resulted not just because of what opponents did not know but because of what they could not tell each other without paying a severe price in military advantage. The military benefits of surprise (winning) trumped the diplomatic benefits of coercion (warning). Cyber operations, whether for disruption and intelligence, are extremely constrained by the military commitment problem. Revelation of a cyber threat in advance that is specific enough to convince a target of the validity of the threat also provides enough information potentially to neutralize it. Stuxnet took years and hundreds of millions of dollars to develop but was patched within weeks of its discovery. The Snowden leaks negated a whole swath of tradecraft that the NSA took years to develop. States may use other forms of covert action, such as publicly disavowed lethal aid or aerial bombing (e.g. Nixon’s Cambodia campaign), to discretely signal their interests, but such cases can only work to the extent that revelation of operational details fails to disarm rebels or prevent airstrikes [81]. Cyber operations, especially against NC3, must be conducted in extreme secrecy as a condition of the efficacy of the attack. Cyber tradecraft relies on stealth, stratagem, and deception [21]. Operations tailored to compromise complex remote targets require extensive intelligence, planning and preparation, and testing to be effective. Actions that alert a target of an exploit allow the target to patch, reconfigure, or adopt countermeasures that invalidate the plan. As the Defense Science Board points out, competent network defenders: can also be expected to employ highly-trained system and network administrators, and this operational staff will be equipped with continuously improving network defensive tools and techniques (the same tools we advocate to improve our defenses). Should an adversary discover an implant, it is usually relatively simple to remove or disable. For this reason, offensive cyber will always be a fragile capability. [41] The world’s most advanced cyber powers, the United States, Russia, Israel, China, France, and the United Kingdom, are also nuclear states, while India, Pakistan, and North Korea also have cyber warfare programs. NC3 is likely to be an especially well defended part of their cyber infrastructures. NC3 is a hard target for offensive operations, which thus requires careful planning, detailed intelligence, and long lead-times to avoid compromise. Cyberspace is further ill-suited for signaling because cyber operations are complex, esoteric, and hard for commanders and policymakers to understand. Most targeted cyber operations have to be tailored for each unique target (a complex organization not simply a machine), quite unlike a general purpose munition tested on a range. Malware can fail in many ways and produce unintended side effects, as when the Stuxnet code was accidentally released to the public. The category of “cyber” includes tremendous diversity: irritant scams, hacktivist and propaganda operations, intelligence collection, critical infrastructure disruption, etc. Few intrusions create consequences that rise to the level of attacks such as Stuxnet or BlackEnergy, and even they pale beside the harm imposed by a small war. Vague threats are less credible because they are indistinguishable from casual bluffing. Ambiguity can be useful for concealing a lack of capability or resolve, allowing an actor to pool with more capable or resolved states and acquiring some deterrence success by association. But this works by discounting the costliness of the threat. Nuclear threats, for example, are usually somewhat veiled because one cannot credibly threaten nuclear suicide. The consistently ambiguous phrasing of US cyber declaratory policy (e.g. “we will respond to cyber-attacks in a manner and at a time and place of our choosing using appropriate instruments of U.S. power” [82]) seeks to operate across domains to mobilize credibility in one area to compensate for a lack of credibility elsewhere, specifically by leveraging the greater robustness to revelation of military capabilities other than cyber. This does not mean that cyberspace is categorically useless for signaling, just as nuclear weapons are not categorically useless for warfighting. Ransomware attacks work when the money extorted to unlock the compromised host is priced below the cost of an investigation or replacing the system. The United States probably gained some benefits in general deterrence (i.e. discouraging the emergence of challenges as opposed to immediate deterrence in response to a challenge) through the disclosure of Stuxnet and the Snowden leaks. Both revelations compromised tradecraft, but they also advertised that the NSA probably had more exploits and tradecraft where they came from. Some cyber operations may actually be hard to mitigate within tactically meaningful timelines (e.g. hardware implants installed in hard-to-reach locations). Such operations might be revealed to coerce concessions within the tactical window created by a given operation, if the attacker can coordinate the window with the application of coercion in other domains. As a general rule, however, the cyber domain on its own is better suited for winning than warning [83]. Cyber and nuclear weapons fall on extreme opposite sides of this spectrum. Dangerous complements Nuclear weapons have been used in anger twice—against the Japanese cities Hiroshima and Nagasaki—but cyberspace is abused daily. Considered separately, the nuclear domain is stable and the cyber domain is unstable. In combination, the results are ambiguous. The nuclear domain can bound the intensity of destruction that a cyber attacker is willing to inflict on an adversary. US declaratory policy states that unacceptable cyber attacks may prompt a military response; while nuclear weapons are not explicitly threatened, neither are they withheld. Nuclear threats have no credibility at the low end, where the bulk of cyber attacks occur. This produces a cross-domain version of the stability–instability paradox, where deterrence works at the high end but is not credible, and thus encourages provocation, at low intensities. Nuclear weapons, and military power generally, create an upper bound on cyber aggression to the degree that retaliation is anticipated and feared [22, 83, 84]. In the other direction, the unstable cyber domain can undermine the stability of nuclear deterrence. Most analysts who argue that the cyber–nuclear combination is a recipe for danger focus on the fog of crisis decision making [85–87]. Stephen Cimbala points out that today’s relatively smaller nuclear arsenals may perversely magnify the attractiveness of NC3 exploitation in a crisis: “Ironically, the downsizing of U.S. and post-Soviet Russian strategic nuclear arsenals since the end of the Cold War, while a positive development from the perspectives of nuclear arms control and nonproliferation, makes the concurrence of cyber and nuclear attack capabilities more alarming” [88]. Cimbala focuses mainly on the risks of misperception and miscalculation that emerge when a cyber attack muddies the transparent communication required for opponents to understand one another’s interests, redlines, and willingness to use force, and to ensure reliable control over subordinate commanders. Thus a nuclear actor “faced with a sudden burst of holes in its vital warning and response systems might, for example, press the preemption button instead of waiting to ride out the attack and then retaliate” [85]. The outcome of fog of decision scenarios such as these depend on how humans react to risk and uncertainty, which in turn depends on bounded rationality and organizational frameworks that might confuse rational decision making [89, 90]. These factors exacerbate a hard problem. Yet within a rationalist framework, cyber attacks that have already created their effects need not trigger an escalatory spiral. While being handed a fait accompli may trigger an aggressive reaction, it is also plausible that the target’s awareness that its NC3 has been compromised in some way would help to convey new information that the balance of power is not as favorable as previously thought. This in turn could encourage the target to accommodate, rather than escalate. While defects in rational decision making are a serious concern in any cyber–nuclear scenario, the situation becomes even more hazardous when there are rational incentives to escalate. Although “known unknowns” can create confusion, to paraphrase Donald Rumsfeld, the “unknown unknowns” are perhaps more dangerous. A successful clandestine penetration of NC3 can defeat the informational symmetry that stabilizes nuclear relationships. Nuclear weapons are useful for deterrence because they impose a degree of consensus about the distribution of power; each side knows the other can inflict prohibitive levels of damage, even if they may disagree about the precise extent of this damage. Cyber operations are attractive precisely because they can secretly revise the distribution of power. NC3 neutralization may be an expensive and rarified capability in the reach of only a few states with mature signals intelligence agencies, but it is much cheaper than nuclear attack. Yet the very usefulness of cyber operations for nuclear warfighting ensure that deterrence failure during brinksmanship crises is more likely. Nuclear states may initiate crises of risk and resolve to see who will back down first, which is not always clear in advance. Chicken appears viable, ironically, because each player understands that a nuclear war would be a disaster for all, and thus all can agree that someone can be expected swerve. Nuclear deterrence should ultimately make dealing with an adversary diplomatically more attractive than fighting, provided that fighting is costly—as would seem evident for the prospect of nuclear war—and assuming that bargains are available to states willing to accept compromise rather than annihilation. If, however, one side knows, but the other does not, that the attacker has disabled the target’s ability to perceive an impending military attack, or to react to one when it is underway, then they will not have a shared understanding of the probable outcome of war, even in broad terms. Consider a brinksmanship crisis between two nuclear states where only one has realized a successful penetration of the rival’s NC3. The cyber attacker knows that it has a military advantage, but it cannot reveal the advantage to the target, lest the advantage be lost. The target does not know that it is at a disadvantage, and it cannot be told by the attacker for the same reason. The attacker perceives an imbalance of power while the target perceives a balance. A dangerous competition in risk taking ensues. The first side knows that it does not need to back down. The second side feels confident that it can stand fast and raise the stakes far beyond what it would be willing to if it understood the true balance of power. Each side is willing to escalate to create more risk for the other side, making it more likely that one or the other will conclude that deterrence has failed and move into warfighting mode to attempt to limit the damage the other can inflict. The targeted nature and uncertain effects of offensive cyber operations put additional pressure on decision makers. An intrusion will probably disable only part of the enemy’s NC3 architecture, not all of it (which is not only operationally formidable to achieve but also more likely to be noticed by the target). Thus the target may retain control over some nuclear forces, or conventional forces. The target may be tempted to use some of them piecemeal to signal a willingness to escalate further, even though it cannot actually escalate because of the cyber operation. The cyber attacker knows that it has escalation dominance, but when even a minor demonstration by the target can cause great damage, it is tempting to preempt this move or others like it. This situation would be especially unstable if only second strike but not primary strike NC3 was incapacitated. Uncertainty in the efficacy of the clandestine penetration would discount the attacker’s confidence in its escalation dominance, with a range of possible outcomes. Enough uncertainty would discount the cyber attack to nothing, which would have a stabilizing effect by returning the crisis to the pure nuclear domain. A little bit of uncertainty about cyber effectiveness would heighten risk acceptance while also raising the incentives to preempt as an insurance measure. Adding allies into the mix introduces additional instability. An ally emboldened by its nuclear umbrella might run provocative risks that it would be much more reluctant to embrace if it was aware that the umbrella was actually full of holes. Conversely, if the clandestine advantage is held by the state extending the umbrella, allies could become unnerved by the willingness of their defender to run what appear to be outsize risks, oblivious of the reasons for the defender’s confidence, creating discord in the alliance and incentives for self-protective action, leading to greater uncertainty about alliance solidarity. The direction of influence between the cyber and nuclear realms depends to large degree on which domain is the main arena of action. Planning and conducting cyber operations will be bounded by the ability of aggressors to convince themselves that attacks will remain secret, and by the confidence of nuclear nations in their invulnerability. Fears of cross-domain escalation will tend to keep instability in cyberspace bounded. However, if a crisis has risen to the point where nuclear threats are being seriously considered or made, then NC3 exploitation will be destabilizing. Brinksmanship crises seem to have receded in frequency since the Cuban Missile Crisis but may be more likely than is generally believed. President Vladimir Putin of Russia has insinuated more than once in recent years that his government is willing to use tactical nuclear weapons if necessary to support his policies. Cyber power and nuclear stability Not all crises are the same. Indeed, their very idiosyncrasies create the uncertainties that make bargaining failure more likely [75]. So far our analysis would be at home in the Cold War, with the technological novelty of cyber operations. Yet not every state has the same cyber capabilities or vulnerabilities. Variation in cyber power relations across dyads should be expected to affect the strategic stability of nuclear states. The so-called second nuclear age differs from superpower rivalry in important ways [91]. There are fewer absolute numbers of warheads in the world, down from a peak of over 70 000 in the 1980s to about 15 000 today (less than 5000 deployed), but they are distributed very unevenly [92]. The United States and Russia have comparably sized arsenals, each with a fully diversified triad of delivery platforms, while North Korea only has a dozen or so bombs and no meaningful delivery system (for now). China, India, Pakistan, Britain, France, and Israel have modest arsenals in the range of several dozen to a couple hundred weapons, but they have very different doctrines, conventional force complements, domestic political institutions, and alliance relationships. The recent nuclear powers lack the hard-won experience and shared norms of the Cold War to guide them through crises, and even the United States and Russia have much to relearn. Cyber warfare capacity also varies considerably across contemporary nuclear nations. The United States, Russia, Israel, and Britain are in the top tier, able to run sophisticated, persistent, clandestine penetrations. China is a uniquely active cyber power with ambitious cyber warfare doctrine, but its operational focus is on economic espionage and political censorship, resulting in less refined tradecraft and more porous defenses for military purposes [16]. France, India, and Pakistan also have active cyber warfare programs, while North Korea is the least developed cyber nation, depending on China for its expertise [93]. It is beyond the scope of this article to assess crisis dyads in detail, and data on nuclear and cyber power for these countries are shrouded in secrecy. Here, as a way of summing up the arguments above, we offer a few conjectures about how stylized aspects of cyber power affect crisis stability through incentives and key aspects of decision making. We do not stress relative nuclear weapon capabilities on the admittedly strong (and contestable) assumption that nuclear transparency in the absence of cyber operations would render nuclear asymmetry irrelevant for crisis bargaining because both sides would agree about the terrible consequences of conflict [94]. We also omit domestic or psychological variables that affect relative power assessments, although these are obviously important. Even if neither India nor Pakistan have viable cyber–nuclear capabilities, brinksmanship between them is dangerous for many other reasons, notably compressed decision timelines, Pakistan’s willingness to shoot first, and domestic regime instability. Our focus is on the impact of offensive and defensive cyber power on nuclear deterrence above and beyond the other factors that certainly play a role in real-world outcomes. First, does the cyber attacker have the organizational capacity, technical expertise, and intelligence support to “compromise” the target’s NC3? Can hackers access critical networks, exploit technical vulnerabilities, and confidently execute a payload to disrupt or exploit strategic sensing, command, forces, or transport capacity? The result would be some tangible advantage for warfighting, such as tactical warning or control paralysis, but one that cannot be exercised in bargaining. Second, is the target able to “detect” the compromise of its NC3? The more complicated and sensitive the target, the more likely cyber attackers are to make a mistake that undermines the intrusion. Attribution is not likely to be difficult given the constricted pool of potential attackers, but at the same time the consequences of misattributing “false flag” operations could be severe [95]. At a minimum, detection is assumed to provide information to the target that the balance of power is perhaps not as favorable as imagined previously. We assume that detection without an actual compromise is possible because of false positives or deceptive information operations designed to create pessimism or paranoia. Third, is the target able to “mitigate” the compromise it detects? Revelation can prompt patching or network reconfiguration to block an attack, but this assumption is not always realistic. The attacker may have multiple pathways open or may have implanted malware that is difficult to remove in tactically meaningful timelines. In such cases the cyber commitment problem is not absolute, since the discovery of the power to hurt does not automatically disarm it. Successful mitigation here is assumed to restore mutual assessments of the balance of power to what they would be absent the cyber attack. Table 1 shows how these factors combine to produce different deterrence outcomes in a brinksmanship (chicken) crisis. If there is no cyber compromise and the target detects nothing (no false positives) then we have the optimistic ideal case where nuclear transparency affords stable “deterrence.” Transparency about the nuclear balance, including the viability of secure second strike forces, provides strategic stability. We also expect this box to describe situations where the target has excellent network defense capabilities and thus the prospect of defense, denial or deception successfully deters any attempts to penetrate NC3. This may resemble the Cold War situation (with electronic warfare in lieu of cyber), or even the present day US–Russia dyad, where the odds of either side pulling off a successful compromise against a highly capable defender are not favorable. Alternately the attack may be deemed risky enough to encourage serious circumspection. However, the existence of Canopy Wing does not encourage optimism in this regard. [[TABLE 1 OMITTED]] Conversely, if there is a compromise that goes undetected, then there is a heightened risk of “war” because of the cyber commitment problem. This box may be particularly relevant for asymmetric dyads such as the United States and North Korea, where one side has real cyber power but the other side is willing to go to the brink where it believes, falsely, that it has the capability to compel its counterpart to back down. Cyber disruption of NC3 is attractive for damage limitation should deterrence fail, given that the weaker state’s diminutive arsenal makes damage limitation by the stronger state more likely to succeed. The dilemma for the stronger state is that the clandestine counterforce hedge, which makes warfighting success more likely, is precisely what makes deterrence more likely to fail. The United States would face similar counterforce dilemmas with other dyads like China or even Russia, although even a strong cyber power should be more circumspect when confronted with an adversary with a larger/more capable nuclear and conventional arsenal. More complex and cyber savvy targets, moreover, are more likely to detect a breach in NC3, leading to more ambiguous outcomes depending on how actors cope with risk and uncertainty. Paradoxically, confidence in cyber security may be a major contributor to failure; believing one is safe from attack increases the chance that an attack is successful. If the successful compromise is detected but not mitigated, then the target learns that the balance of power is not as favorable as thought. This possibility suggests fleeting opportunities for “coercion” by revealing the cyber coup to the target in the midst of a crisis while the cyber attacker maintains or develops a favorable military advantage before the target has the opportunity to reverse or compensate the NC3 disruption. Recognizing the newly transparent costs of war, a risk neutral or risk averse target should prefer compromise. The coercive advantages (deterrence or compellence) of a detected but unmitigated NC3 compromise will likely be fleeting. This suggests a logical possibility for creating a window of opportunity for using particular cyber operations that are more robust to revelation as a credible signal of superior capability in the midst of a crisis. It would be important to exploit this fleeting advantage via other credible military threats (e.g. forces mobilized on visible alert or deployed into the crisis area) before the window closes. One side may be able gain an unearned advantage, an opportunity for coercion via a “bluff,” by the same window-of-opportunity logic. A target concerned about NC3 compromise will probably have some network monitoring system and other protections in place. Defensive systems can produce false positives as a result of internal errors or a deception operation by the attacker to encourage paranoia. It is logically possible that some false positives would appear to the target to be difficult to mitigate. In this situation, the target could believe it is at a disadvantage, even though this is not in fact the case. This gambit would be operationally very difficult to pull off with any reliability in a real nuclear crisis. Cyber–nuclear coercion and bluffing strategies are fraught with danger. Detection without mitigation might put a risk-acceptant or loss-averse target into a “use-lose” situation, creating pressures to preempt or escalate. The muddling of decision-making heightens the risk of accidents or irrational choices in a crisis scenario. Worry about preemption or accident then heightens the likelihood that the initiator will exercise counterforce options while they remain available. These pressures can be expected to be particularly intense if the target’s detection is only partial or has not revealed the true extent of damage to its NC3 (i.e. the target does not realize it has already lost some or all of what it hopes to use). These types of scenarios are most usually invoked in analyses of inadvertent escalation [23–27]. The essential distinction between “use-lose” risks and “war” in this typology is the target’s knowledge of some degree of NC3 compromise. Use-lose and other cognitive pressures can certainly result in nuclear war, since the breakdown of deterrence leads to the release of nuclear weapons, but we distinguish these outcomes to highlight the different decision making processes or rational incentives at work. A “spiral” of mistrust may emerge if one side attempts a compromise but the defender detects and mitigates it. Both sides again have common mutual estimates of the relative balance of power, which superficially resembles the “deterrence” case because the NC3 compromise is negated. Unfortunately, the detection of the compromise will provide the target with information about the hostile intentions of the cyber attacker. This in turn is likely to exacerbate other political or psychological factors in the crisis itself or in the crisis-proneness of the broader relationship. The strange logical case where there is no compromise but one is detected and mitigated could result from a false positive misperception (including a third-party false flag operation) that could conflict spiraling [96, 97]. The bluff and coercion outcomes are also likely to encourage spiraling behavior once the fleeting bargaining advantage dissipates or is dispelled (provided anyone survives the interaction). The risk of crisis instability is not the same for all dyads. It is harder to compromise the NC3 of strong states because of the redundancy and active defenses in their arsenal. Likewise, strong states are better able to compromise the NC3 of any states but especially of weaker states, because of strong states’ greater organizational capacity and expertise in cyber operations. Stable deterrence or MAD is most likely to hold in mutually strong dyads (e.g. the United States and the Soviet Union in the Cold War or Russia today to a lesser extent). Deterrence is slightly less likely in other equally matched dyads (India–Pakistan) where defensive vulnerabilities create temptations but offensive capabilities may not be sufficient to exploit them. Most states can be expected to refrain from targeting American NC3 given a US reputation for cyber power (a general deterrence benefit enhanced by Stuxnet and Snowden). The situation is less stable if the United States is the attacker. The most dangerous dyad is a stronger and a weaker state (United States and North Korea or Israel and Iran). Dyads involving strong and middle powers are also dangerous (United States and China**).** The stronger side is tempted to disrupt NC3 as a warfighting hedge in case deterrence breaks down, while the weaker but still formidable side has a reasonable chance at detection. The marginally weaker may also be tempted to subvert NC3, particularly for reconnaissance; the stronger side is more likely to detect and correct the intrusion but will be alarmed by the ambiguity in distinguishing intelligence collection from attack planning [98]. In a brinksmanship crisis between them, windows for coercion may be available yet fleeting, with real risks of spiral and war**.**

#### IoT innovation will be gutted by patent holdup – antitrust solves

Morton 16 [Fiona Scott Morton, Theodore Nierenberg Professor at Yale School of Management. Carl Shapiro, Former Director of the Institute of Business and Economic Research at UC Berkeley, Professor of the Graduate School at the Haas School of Business and the Department of Economics at the University of California at Berkeley. “Patent Assertions: Are We Any Closer to Aligning Reward to Contribution?”. 2016. https://www.journals.uchicago.edu/doi/full/10.1086/684987#\_i22]

However, our overall conclusions regarding SEPs are more mixed. Policy and legal changes that have reduced the ability of SEP owners to engage in patent holdup appear to have stalled out, especially as regards reform of the IPR rules at SSOs other than the IEEE. If so, this could have important effects on innovation and efficiency. For example, the “Internet of Things” is a new and growing area where royalty stacking and patent holdup appear to be very real dangers. Devices of all sorts, from thermostats to railroad cars to refrigerators, are being given connectivity using standards developed by SSOs. The price of those chips, and whether the IP contained in them costs $5 or $0.50 or $0.005, will determine the nature of new applications and the rate of adoption.

Failure to prevent patent holdup relating to tomorrow’s information technology and communications standards is likely to cause significant social welfare loss in the years ahead. If new and more effective private solutions relating to standard setting do not emerge to promote innovation and protect consumers, antitrust enforcement is one of the only remaining remedies that seems feasible.

V. Conclusions

Over the past five years, the rewards provided to patent owners in the United States have become more closely matched with the value of the technology they contribute. When rewards and contributions are aligned, economic efficiency is promoted because investments into developing new technologies are commensurate with benefits. These changes have come from legislation, the federal courts, and policy statements and enforcement actions by regulators of various types. However, at this juncture, we see a substantial gap persisting between the ability of some patent owners to monetize their patents and the contributions provided by the technology underlying those patents. With the “Internet of Things” poised to create economic growth, this is a problem worthy of further research and policy attention.

#### Solves extinction through resource efficiency

Maheswaran 20 [Mohan, Forbes Council Member on Forbes Technology Council. “Why The IoT Will Save Our Natural Resources”. https://www.forbes.com/sites/forbestechcouncil/2020/02/21/why-the-iot-will-save-our-natural-resources/?sh=49a24ad51be5]

Since the 18th century, industrialization and overconsumption have contributed to the rapid depletion of nature's raw materials. Smart connectivity carves a path for us to be more efficient in our use of these materials, effectively reducing the rate at which we are consuming and wasting natural resources.

According to the United Nations' Global Resources Outlook 2019 report, the worldwide use of natural resources has more than tripled in almost 50 years, with nonmetallic minerals witnessing a fivefold increase and fossil fuel use increasing over 45% over the same time frame.

To ensure that future generations have access to these resources and for the long-term survival of our planet, we must focus our efforts on managing the use of resources like water, gas and coal.

The emerging role of the IoT.

There are many IoT options for preserving natural resources, from tracking the bee population to reducing global carbon remissions, but implementing solutions into existing infrastructure can require a high investment in terms of resources like time and money.

IoT solutions with key capabilities such as long range and low power are more reliable and effective in enabling smart cities, smart enterprises and smart homes to manage resources more efficiently. Their emergence is enabling villages, cities and countries to rapidly and cost-effectively plan and transform themselves into smart communities that prepare a long-term vision for their people and their associated resources.

Long-range, low-power devices also remove the obstacle of capturing incorrect data and/or inaccurate analytics, as these devices provide data in real time that can assist with decision-making processes that help to conserve both exhaustible and inexhaustible resources. Such decisions might include the shutting down of pipelines due to leaks, the monitoring of excess resource use or simply the alert of a potential loss of valuable resources due to imperfect environmental conditions.

For example, according to a survey conducted by the Energy Information Administration, a large commercial building in the U.S. uses an average of at least 20,000 gallons of water per day, while statistics published by the Environmental Protection Agency show that each American uses approximately 88 gallons of water per day. The concern of water shortage is rising so much that in 2014, the Government Accountability Office noted that 40 out of 50 U.S. states expected water shortages over the next 10 years.

Smart water management systems can provide commercial buildings with status updates on how much water is used by the minute and can help predict where water issues could occur while providing valuable, timely information. For corporations with multiple locations, this approach to managing water can help save millions of gallons of water annually, as well as millions of dollars in overhead operation costs.

Embedding the IoT into the land, sea and sky.

Companies like Costco as well as cities across the world are deploying LoRa-enabled sensors to help preserve raw materials and natural resources. High water usage is a common concern among farmers. To maximize the growth of crop yields and to reduce water usage, some farmers are installing LoRa-based sensors to monitor water in real time.

Sensoterra, a technology company offering low-cost wireless solutions for real-time soil moisture measurement for commercial farms, partnered with my company to integrate LoRa-based sensors in its agriculture systems to reduce up to 30% of water usage in commercial farms, including potato and almond orchards. Reducing water usage on commercial farms helps conserve limited water supplies while allowing the farmers to focus more on their businesses.

Additionally, city and park authorities use movement sensors on bridges, roads and buildings to get real-time alerts in case of an impending natural disaster such as an earthquake. Another of our customers, handheld device company Beartooth, uses IoT sensors and enables users to talk, text and locate friends in a cellular network outage without the need for Wi-Fi, and the LoRa-based device has low power consumption.

Air pollution also poses a major risk to our environment and health. According to the World Health Organization, exposure to outdoor air pollution causes 4.2 million deaths per year. IoT sensors are able to collect air quality data to determine the areas causing dangerous air pollution in cities and facilitate the analytical management of suitable air quality control programs. Consumers and businesses have already realized the significance of collecting data and synthesizing it into meaningful patterns of information.

I believe the transition to intelligent information systems will be crucial as global environmental challenges accelerate. Deploying IoT solutions with LoRa-based sensors, together with edge network analytics, makes it possible to install intelligent sensor systems without requiring labor-intensive sensor battery replacements.

In general, deploying an IoT solution is usually complex. Currently, there are limited end-to-end solutions that are available as "out-of-the-box" solutions. Systems integrators are the proper companies to turn to for providing such end-to-end solutions and making sure the relevant back-end IT systems are integrated such that existing processes will benefit from the new IoT data captured from sensors.

One challenge for companies who would like to implement LoRaWAN is that not all countries have public LoRaWAN network providers with nationwide coverage. Some companies prefer to deploy applications that can connect to a broad public, nationwide coverage. However, users are also able to use a private LoRaWAN network, and some customers actually prefer to use a private network. Customers are able to manage the private network by themselves or have third parties like systems integrators manage the network. Such private networks even have benefits compared to public networks when it comes to flexibly deploying LoRa gateways wherever coverage is needed, whether it's indoors or outdoors.

The proliferation of long-range, ultra-low-power IoT sensors and networks is potentially the most important technology innovation in generations that will play a huge role in the buildout of smart cities that will help preserve our future natural resources.

#### Resource wars are the most likely cause of global conflict – scarcity is a conflict multiplier

Lehane 17 [Sinéad Lehane is research manager for Future Directions International’s Global Food and Water Crises Research program. Her current research projects include Australia’s food system and water security in the Tibetan Plateau region. Shaping Conflict in the 21st Century—The Future of Food and Water Security. February 2, 2017. www.hidropolitikakademi.org/shaping-conflict-in-the-21st-century-the-future-of-food-and-water-security.html]

In his book, The Coming Famine, Julian Cribb writes that the wars of the 21st century will involve failed states, rebellions, civil conflict, insurgencies and terrorism. All of these elements will be triggered by competition over dwindling resources, rather than global conflicts with clearly defined sides. More than 40 countries experienced civil unrest following the food price crisis in 2008. The rapid increase in grain prices and prevailing food insecurity in many states is linked to the outbreak of protests, food riots and the breakdown of governance. Widespread food insecurity is a driving factor in creating a disaffected population ripe for rebellion. Given the interconnectivity of food security and political stability, it is likely food will continue to act as a political stressor on regimes in the Middle East and elsewhere. Addressing Insecurity Improving food and water security and encouraging resource sharing is critical to creating a stable and secure global environment. While food and water shortages contribute to a rising cycle of violence, improving food and water security outcomes can trigger the opposite and reduce the potential for conflict. With the global population expected to reach 9 billion by 2040, the likelihood of conflict exacerbated by scarcity over the next century is growing. Conflict is likely to be driven by a number of factors and difficult to address through diplomacy or military force. Population pressures, changing weather, urbanization, migration, a loss of arable land and freshwater resources are just some of the multi-layered stressors present in many states. Future inter-state conflict will move further away from the traditional, clear lines of military conflict and more towards economic control and influence.

### 2

#### The United States federal government should substantially increase antitrust prohibitions on standard essential patent holders that engage in anticompetitive licensing practices.

#### Applying antitrust to FRAND violations including refusals to deal solves collapsed innovation and market competition

Greene 19 [Kyle, J.D. Candidate Columbia Law. Columbia Business Law Review Writer and Honors intern @SEC. “Standard Essential Patents and Antitrust Law”. November 2019. https://journals.library.columbia.edu/index.php/CBLR/article/view/5120/2370]

III.ANTITRUST LIABILITY: WHEN SEP HOLDERS REFUSE TO DEAL

A.Reasons for a Presumption of Antitrust Liability

The affirmative case for a presumption of antitrust liability when a SEP holder refuses to deal with a prospective standard implementer in violation of its FRAND commitments proceeds, from the above discussion, as follows: (1) the standard setting process is of vital importance for many industries and technologies, but confers incredible and abusable power to SEP holders,141(2) despite Trinko, the Supreme Court has not ruled out either the essential facilities doctrine or an intent-based inquiry for a Sherman Act Section 2 refusal to deal case,142and (3) the leading circuit court decisions that consider refusals to deal by patent holders in general do not offer policy or legal objections which support an argument against presuming antitrust liability when the patent holder owns a standard essential patent.143As a result, a refusal to deal by an SEP holder is dangerously anticompetitive conduct that is—on its face—exactly the sort of conduct which has been, and should be, condemned by the antitrust laws.

Standards are crucial to the modern economy. But the factors that make standards valuable, even necessary, in so many industries are the same factors that lead to SEP holders occupying a dangerous position from the perspective of the antitrust laws: standards help coordinate disparate technologies and products from many firms into a consolidated, cohesive set. This enables interoperability, access, and the accumulation of massive network effects.144Given those valuable network effects, SEP holders who engage with the process of standards development and make FRAND commitments become ex post gatekeepers—regardless of their ex ante position in the market—to the implementation of standards and thereby control access to the entire market. If an SEP holder then violates its FRAND commitments by refusing to deal, the SEP holder has exhibited all of the markers of a Section 2 case that results in liability.

First, the SEP holder has acquired control over access to an essential facility (the relevant standard) and then denied competitors access to that facility (by refusing to license a patent necessary to fulfill the standard).145Although the same refusal to license its patent might have been acceptable if the SEP holder was not part of the SSO and the patent was not part of the standard, the market power and bargaining position of the patent holder is fundamentally altered when a patent becomes standard essential. This is reminiscent of Associated Press, except here the coordinating organization attempted to prevent the abuse of the SEP holder’s position by securing FRAND commitments from them.146It is therefore the deviant behavior of the SEP holder, not the SSO itself, that is to blame for the anticompetitive harm.

Second, the salient facts of a refusal to deal by an SEP holder are closely analogous to those of Aspen Skiing. The defendant monopolist was found liable in Aspen Skiing for two primary reasons: it had terminated a prior course of voluntary dealing and it had sacrificed short-run profits in order to harm a competitor.148Although an SEP holder may not have previously dealt with any given prospective standard implementer, the SEP holder’s participation in the SSO and its FRAND commitments constitute a prior course of dealing with allfellow participants and implementers of the standard. The subsequent violation of contractual FRAND commitments is a clear termination of that course of dealing. Additionally, licensing an SEP at a reasonable rate is, in isolation,obviously profitable for an SEP holder in the short-run (compared to an alternative world where the SEP holder earns no licensing revenue). The failure to profitably license at a reasonable rate raises, as it did in Aspen Skiing, a strong inference that the goal of the refusal to deal is anticompetitive.149Even if the conduct in Aspen Skiingis at the outer edge of Section 2 liability, it still falls within the boundaries of Section 2 liability. A FRAND-violating refusal to deal by an SEP holder, resembling the important features of Aspen Skiingas closely as it does, must also fall within that boundary.150

Finally, the burden of an inquiry into the intent of the SEP holder should be exactly reversed from what it was when the circuit courts considered refusals to license intellectual property more broadly. In those circuit court cases, the business justifications of the rights holders were treated as presumptively valid and defensible in light of the point of the intellectual property laws. Rather than appearing to be anticompetitive on its face, a refusal to deal seemed well within the ambit of reasonable, legislatively-permitted behavior by a firm holding valuable patents or copyrights. But the inclusion of a patent in a standard is transformative for a firm, and the firm becomes something much more than just another intellectual property rights holder. At that point, the subsequent violation of FRAND commitments is actually anticompetitive on its face: it loudly proclaims that the SEP holder has recognized its power in the market and decided to turn that power toward damaging the competitive process that it had previously contracted to protect and promote. PATENTS1119The presumption of antitrust liability for a SEP holder suggests that it should be presumed to not have a valid business justification when refusing to deal. The SEP holder would have the burden of rebutting this presumption before the court and substantiating a legitimate, procompetitive business justification for the refusal to deal.

B.Contrary Considerations

The strongest counterargument against presumptive antitrust liability for SEP holders who violate their FRAND commitments with a refusal to deal—and against any version of the essential facilities doctrine—is based in the fear that this approach to competition policy would lead to reduced investment and innovation.152The general form of the argument is that forcing firms to deal with competitors might increase competition in the short-run, but in the long-run it will reduce the incentive to innovate153because innovative firms will know that they will not be able to fully capitalize on a successful investment.154This concern is particularly strong in the realm of intellectual property. After all, these rights were specifically developed to give innovators and creators the ability to exclude others from copying and devaluing their work.155This increases the value of intellectual property to the owner and, in turn, encourages the creation of more intellectual property. Without the power to exclude competitors, a patent holder would have very little reason to take the risks and make the investments needed in order to develop a new idea or technology.

However, arguments of this form are often true at the extreme but not necessarily correct at the margin.156The complete lack of protection for intellectual property rights would be devastating for creators and inventors and would drastically reduce the incentives to innovate. But this does not mean that reducing the protections for intellectual property will always reduce the incentives for innovation to a greater degree than it will have positive, structural effects on the market.157To the contrary, this Note argues that antitrust liability will have positive, structural effects on the market which benefit competition and innovation more than the reduced incentives will harm competition and innovation. Still, this debate is fertile ground for further discussion, inquiry, and empirical research. Another possible objection to antitrust liability—this time on statutory rather than policy grounds—is that the Patent Act158created immunity for unilateral refusals to license patents.159The Federal Circuit adopted a version of this approach in CSU v. Xerox. The court based its decision, in part, on an inference that, “[t]he patentee’s right to exclude is further supported by [S]ection 271(d) of the Patent Act.”160But this view is not widely held by academics,161other courts,162or the DOJ or FTC.163A full examination of the Patent Act is outside the scope of this Note, but the idea that § 271(d) created broad antitrust immunity for intellectual property owners is a relatively fringe view.

Finally, it could be argued that the Supreme Court has recently expressed a reluctance to endorse either the essential facilities doctrine or the logic of Aspen Skiing. So, a new presumption of antitrust liability grounded in their fruitful combination is extremely unlikely in the near term. This argument is probably correct. But the question of what the law affords and what should be done with that affordance is separate from the question of what a particular court is likely to do. Presumptive antitrust liability for SEP holders may be wise today, unlikely tomorrow, and a reality the day after.

IV.CONCLUSION

This Note does not argue that an SEP holder should be prevented from benefiting when its patents lend value to a standard; this Note argues that an SEP holder should be prevented from benefiting when it attempts to abuse its position as a gatekeeper to a vital, collaborative standard. A presumption of antitrust liability for an SEP holder who refuses to deal in violation of its FRAND commitments accomplishes this balance. In some dynamic markets, the returns to innovation and the cycle of creative destruction are enough to ensure competition and progress.164But in standards-driven markets that derive their value from the coordinated creation of networks, the antitrust laws are an important bulwark of continued competition and growth.165They should be used accordingly. 164See Katz & Shelanski, supra note 156,at 5 (“Creative destruction means that a firm’s acquisition of possession of market power may be fleeting and that firms must protect such power through ongoing innovation efforts. Under constant pressure from actual and potential innovators, the incumbent firm itself produces better products on better terms for consumers....”). 165See Lao, supra note 22,at 562 (“Combined with a closed network system, network effects can, therefore, effectively create or reinforce existing entry barriers, insulate the monopolist from competition, and lock consumers into the existing technology.”).

### 3

#### Advantage Two is China

#### Influence in standard setting organizations (SSOs) determines future competitiveness, national security, and global tech norms. China understands their importance and is establish themselves as a standards power.

Hormats 21 [Robert D. Hormats, Former undersecretary of State for economic growth, energy and the environment, 2009-13, managing director of Tiedemann Advisors, a New York-headquartered financial firm “Who will set standards for 21st century technologies — the US or China?” 6/3/21. https://thehill.com/opinion/technology/556047-who-will-set-standards-for-21st-century-technologies-the-us-or-china]

The standards that are set will, in some cases, have a major impact in determining which nation’s products will enjoy growing opportunities in international markets. In others, they will regulate how well various countries’ products and services work or interact with those of other countries. In a number they will determine whether certain American products or services have an advantage or disadvantage in the global markets. And they have the potential to set broadly accepted international ethical and normative codes and conventions for growing industries, rather than letting these standards evolve in a nationalistic and fragmented way.

Such standards can affect the ways in which new technologies affect our societies, our security, our economies and our lives for decades to come. They can determine whether these technologies are used in constructive or destructive ways by countries and non-state actors.

Many of the global standards currently in place were set over the years by international “standards-setting” bodies. Many currently existing fora likely will seek to take on the task of determining standards for future technologies, although for certain rapidly emerging and dramatically new technologies no agreed standard-setting institutions yet exist. Where there are groups constituted or charged to take on these tasks, countries that are most effective at negotiating within them or developing coalitions of other members that support their objectives will have an outsized impact on the final rules or norms.

The Chinese understand this very well. They have proven to be effective negotiators in such meetings over the years, and are adept at mobilizing support from many parts of the world; the Belt and Road Initiative and China’s close political and commercial ties in large numbers of countries in the developing world have helped support its objectives. Beijing also has put together a long-term standardization reform plan and a five-year plan for standardization. As the draft Endless Frontier Act points out, China wants to establish itself as a “standards power” and dramatically strengthen its participation in international standards-setting organizations. The U.S. needs to have bold, long-term objectives as well — and a portion of this act is aimed at that. We need also to be a “standards power” in order to serve our global economic and trade interests and ensure that new technologies are ethically and safely utilized.

The legislation emphasizes how critical it is for the U.S. and its allies to participate vigorously in the development of standards that underpin fair international competition and constructive use of advanced technologies. U.S. leadership in standards development is particularly crucial for emerging technologies where there currently are no, or few, agreed international rules and little consensus on what constitutes ethical or safe practices or norms. A strong U.S. role in standards-setting will improve prospects for American competitiveness, the constructive use of certain advanced technologies that could be mobilized for a multitude of purposes, and national security.

#### US ability to influence SSOs is rapidly declining because of FRAND collapse

Hovenkamp 20 [Herbert, James B. Dinan University Professor, University of Pennsylvania Law School and The Wharton School. ‘’FRAND and Antitrust’’. <https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=3095&context=faculty_scholarship>]

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.

#### Only reversing royalty hikes maintains US SSO leadership

Sokol 16 [Daniel, full-time law professor at the USC Gould School of Law with a secondary appointment at the USC Marshall School of Business, who serves part-time as Senior Advisor at White & Case, top 10 most cited antitrust law professor in the world. Wentong Zheng, University of Florida Research Foundation Professor & University Term Professor. “FRAND (And Industrial Policy) in China”. 5/5/16. https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=2776235]

FRAND related issues are challenging in practice because there have been few cases around the globe that interpret and apply FRAND. Though some cases in dicta may identify patent hold up, no fully litigated case on the merits in the United States or Europe has yet found such hold up to exist in the case of licensing between two operating companies. We further note that the overwhelming majority of license agreements are determined through bilateral contractual negotiations between the parties without the need for any dispute resolution process. Issues of institutional design also contribute to the challenge. Different institutional choices on issues such as injunctions, patent scope, and the determination of fair and reasonable royalties across multiple jurisdictions (sometimes with different outcomes) complicate the FRAND 3 analyses. On the academic side, there is much theorizing about FRAND (Layne-Farrar 2016; Lim 2016) but very little empirical work (Galetovic, Haber and Levine 2015). Much of the academic work to date has been sponsored research or research that is based on consulting from one or more companies in the FRAND debate.

FRAND is an issue that has received an extraordinary amount of attention worldwide, including from antitrust authorities. FRAND issues in both mergers and conduct cases have been explored in: the United States, European Union, China, Korea, Taiwan, and India among others (Blair and Sokol 2016). Different proposals for defining or implementing FRAND (some of them divorced from the facts and circumstances of a particular transaction) abound.

It is in this context of complexity in both the substantive law and the institutional design on FRAND that a relatively new antitrust regime, the Anti-Monopoly Law (AML) of China, 1 has now come on the scene (Sokol 2013; Zheng 2010). Because of the size of China’s economy, developments on FRAND in China potentially have global impact on FRAND rates and even the business models of innovative firms. The operation of market forces will result in globalization of the lowest rate set by a court or agency for a particular patent or patent portfolio in a major jurisdiction. China is such a jurisdiction. Consequently, if China is more influential, it will be because China will be inclined to set rates lower than other jurisdictions. In essence, what happens in China on FRAND now impacts decision-making in the boardrooms of Silicon Valley.

#### US standards leadership prevents extinction from automation, strategic stability, genetic engineering

Jain 19 [Ash Jain is a senior fellow with the Scowcroft Center for Strategy and Security, where he oversees the Atlantic Council’s Democratic Order Initiative and D-10 Strategy Forum, Matthew Kroenig, "Present at the Re-Creation: A Global Strategy for Revitalizing, Adapting, and Defending a Rules-Based International System", 2019, https://www.atlanticcouncil.org/wp-content/uploads/2019/10/Present-at-the-Recreation.pdf]

The system must also be adapted to deal with new issues that were not envisioned when the existing order was designed. Foremost among these issues is emerging and disruptive technology, including AI, additive manufacturing (or 3D printing), quantum computing, genetic engineering, robotics, directed energy, the Internet of things (IOT), 5G, space, cyber, and many others. Like other disruptive technologies before them, these innovations promise great benefits, but also carry serious downside risks. For example, AI is already resulting in massive efficiencies and cost savings in the private sector. Routine tasks and other more complicated jobs, such as radiology, are already being automated. In the future, autonomous weapons systems may go to war against each other as human soldiers remain out of harm’s way.

Yet, AI is also transforming economies and societies, and generating new security challenges. Automation will lead to widespread unemployment. The final realization of driverless cars, for example, will put out of work millions of taxi, Uber, and long-haul truck drivers. Populist movements in the West have been driven by those disaffected by globalization and technology, and mass unemployment caused by automation will further grow those ranks and provide new fuel to grievance politics. Moreover, some fear that autonomous weapons systems will become “killer robots” that select and engage targets without human input, and could eventually turn on their creators, resulting in human extinction. The other technologies on this lisgt similarly balance great potential upside with great downside risk. 3D printing, for example, can be used to “make anything anywhere,” reducing costs for a wide range of manufactured goods and encouraging a return of local manufacturing industries.61 At the same time, advanced 3D printers can also be used by revisionist and rogue states to print component parts for advanced weapons systems or even WMD programs, spurring arms races and weapons proliferation.62 Genetic engineering can wipe out entire classes of disease through improved medicine, or wipe out entire classes of people through genetically engineered superbugs. Directed-energy missile defenses may defend against incoming missile attacks, while also undermining global strategic stability.

Perhaps the greatest risk to global strategic stability from new technology, however, comes from the risk that revisionist autocracies may win the new tech arms race. Throughout history, states that have dominated the commanding heights of technological progress have also dominated international relations. The United States has been the world’s innovation leader from Edison’s light bulb to nuclear weapons and the Internet. Accordingly, stability has been maintained in Europe and Asia for decades because the United States and its democratic allies possessed a favorable economic and military balance of power in those key regions. Many believe, however, that China may now have the lead in the new technologies of the twenty-first century, including AI, quantum, 5G, hypersonic missiles, and others. If China succeeds in mastering the technologies of the future before the democratic core, then this could lead to a drastic and rapid shift in the balance of power, upsetting global strategic stability, and the call for a democratic- led, rules-based system outlined in these pages.63

#### Authoritarian tech lead is an S-Risk of irreversible, constant suffering. That outweighs extinction

Minardi 20 [Di Minardi, "The grim fate that could be ‘worse than extinction’", 10/15/20, https://www.bbc.com/future/article/20201014-totalitarian-world-in-chains-artificial-intelligence]

What would totalitarian governments of the past have looked like if they were never defeated? The Nazis operated with 20th Century technology and it still took a world war to stop them. How much more powerful – and permanent – could the Nazis have been if they had beat the US to the atomic bomb? Controlling the most advanced technology of the time could have solidified Nazi power and changed the course of history.

When we think of existential risks, events like nuclear war or asteroid impacts often come to mind. Yet there’s one future threat that is less well known – and while it doesn’t involve the extinction of our species, it could be just as bad.

It’s called the “world in chains” scenario, where, like the preceding thought experiment, a global totalitarian government uses a novel technology to lock a majority of the world into perpetual suffering. If it sounds grim, you’d be right. But is it likely? Researchers and philosophers are beginning to ponder how it might come about – and, more importantly, what we can do to avoid it.

Existential risks (x-risks) are disastrous because they lock humanity into a single fate, like the permanent collapse of civilisation or the extinction of our species. These catastrophes can have natural causes, like an asteroid impact or a supervolcano, or be human-made from sources like nuclear war or climate change. Allowing one to happen would be “an abject end to the human story" and would let down the hundreds of generations that came before us, says Haydn Belfield, academic project manager at the Centre for the Study of Existential Risk at the University of Cambridge.

Toby Ord, a senior research fellow at the Future of Humanity Institute (FHI) at Oxford University, believes that the odds of an existential catastrophe happening this century from natural causes are less than one in 2,000, because humans have survived for 2,000 centuries without one. However, when he adds the probability of human-made disasters, Ord believes the chances increase to a startling one in six. He refers to this century as “the precipice” because the risk of losing our future has never been so high.

Researchers at the Center on Long-Term Risk, a non-profit research institute in London, have expanded upon x-risks with the even-more-chilling prospect of suffering risks. These “s-risks” are defined as “suffering on an astronomical scale, vastly exceeding all suffering that has existed on Earth so far.” In these scenarios, life continues for billions of people, but the quality is so low and the outlook so bleak that dying out would be preferable. In short: a future with negative value is worse than one with no value at all.

This is where the “world in chains” scenario comes in. If a malevolent group or government suddenly gained world-dominating power through technology, and there was nothing to stand in its way, it could lead to an extended period of abject suffering and subjugation. A 2017 report on existential risks from the Global Priorities Project, in conjunction with FHI and the Ministry for Foreign Affairs of Finland, warned that “a long future under a particularly brutal global totalitarian state could arguably be worse than complete extinction”.

Singleton hypothesis

Though global totalitarianism is still a niche topic of study, researchers in the field of existential risk are increasingly turning their attention to its most likely cause: artificial intelligence.

In his “singleton hypothesis”, Nick Bostrom, director at Oxford’s FHI, has explained how a global government could form with AI or other powerful technologies – and why it might be impossible to overthrow. He writes that a world with “a single decision-making agency at the highest level” could occur if that agency “obtains a decisive lead through a technological breakthrough in artificial intelligence or molecular nanotechnology”. Once in charge, it would control advances in technology that prevent internal challenges, like surveillance or autonomous weapons, and, with this monopoly, remain perpetually stable.

If the singleton is totalitarian, life would be bleak. Even in the countries with the strictest regimes, news leaks in and out from other countries and people can escape. A global totalitarian rule would eliminate even these small seeds of hope. To be worse than extinction, “that would mean we feel absolutely no freedom, no privacy, no hope of escaping, no agency to control our lives at all", says Tucker Davey, a writer at the Future of Life Institute in Massachusetts, which focuses on existential risk research.

“In totalitarian regimes of the past, [there was] so much paranoia and psychological suffering because you just have no idea if you're going to get killed for saying the wrong thing,” he continues. “And now imagine that there's not even a question, every single thing you say is being reported and being analysed.”

“We may not yet have the technologies to do this,” Ord said in a recent interview, “but it looks like the kinds of technologies we’re developing make that easier and easier. And it seems plausible that this may become possible at some time in the next 100 years.”

AI and authoritarianism

Though life under a global totalitarian government is still an unlikely and far-future scenario, AI is already enabling authoritarianism in some countries and strengthening infrastructure that could be seized by an opportunistic despot in others.

“We've seen sort of a reckoning with the shift from very utopian visions of what technology might bring to much more sobering realities that are, in some respects, already quite dystopian,” says Elsa Kania, an adjunct senior fellow at the Center for New American Security, a bipartisan non-profit that develops national security and defence policies.

In the past, surveillance required hundreds of thousands of people – one in every 100 citizens in East Germany was an informant – but now it can be done by technology. In the United States, the National Security Agency (NSA) collected hundreds of millions of American call and text records before they stopped domestic surveillance in 2019, and there are an estimated four to six million CCTV cameras across the United Kingdom. Eighteen of the 20 most surveilled cities in the world are in China, but London is the third. The difference between them lies less in the tech that the countries employ and more in how they use it.

What if the definition of what is illegal in the US and the UK expanded to include criticising the government or practising certain religions? The infrastructure is already in place to enforce it, and AI – which the NSA has already begun experimenting with – would enable agencies to search through our data faster than ever before.

In addition to enhancing surveillance, AI also underpins the growth of online misinformation, which is another tool of the authoritarian. AI-powered deep fakes, which can spread fabricated political messages, and algorithmic micro-targeting on social media are making propaganda more persuasive. This undermines our epistemic security – the ability to determine what is true and act on it – that democracies depend on.

“Over the last few years, we've seen the rise of filter bubbles and people getting shunted by various algorithms into believing various conspiracy theories, or even if they’re not conspiracy theories, into believing only parts of the truth,” says Belfield. “You can imagine things getting much worse, especially with deep fakes and things like that, until it's increasingly harder for us to, as a society, decide these are the facts of the matter, this is what we have to do about it, and then take collective action.”

Preemptive measures

The Malicious Use of Artificial Intelligence report, written by Belfield and 25 authors from 14 institutions, forecasts that trends like these will expand existing threats to our political security and introduce new ones in the coming years. Still, Belfield says his work makes him hopeful and that positive trends, like more democratic discussions around AI and actions by policy-makers (for example, the EU considering pausing facial recognition in public places), keep him optimistic that we can avoid catastrophic fates.

We need to decide now what are acceptable and unacceptable uses of AI

Davey agrees. “We need to decide now what are acceptable and unacceptable uses of AI,” he says. “And we need to be careful about letting it control so much of our infrastructure. If we're arming police with facial recognition and the federal government is collecting all of our data, that's a bad start.”

If you remain sceptical that AI could offer such power, consider the world before nuclear weapons. Three years before the first nuclear chain reaction, even scientists trying to achieve it believed it was unlikely. Humanity, too, was unprepared for the nuclear breakthrough and teetered on the brink of “mutually assured destruction” before treaties and agreements guided the global proliferation of the deadly weapons without an existential catastrophe.

We can do the same with AI, but only if we combine the lessons of history with the foresight to prepare for this powerful technology. The world may not be able to stop totalitarian regimes like the Nazis rising again in the future – but we can avoid handing them the tools to extend their power indefinitely.

#### 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

## A1

#### Courts have experience determining rates and the risk of bad determinations is low empirically

Cary 11 [George Cary, Mark Nelson, Steven Kaiser, Alex Sistla. Cary and Sistla are members of the California and District of Columbia Bars. Mr. Nelson is a member of the New York and District of Columbia Bars. Mr. Kaiser is a member of the New Jersey and District of Columbia Bars. “THE CASE FOR ANTITRUST LAW TO POLICE THE PATENT HOLDUP PROBLEM IN STANDARD SETTING”. Antitrust Law Journal No 3. (2011). https://www.clearygottlieb.com/~/media/organize-archive/cgsh/files/publication-pdfs/the-case-for-antitrust-law-to-police-the-patent-holdup-problem-in-the-standard-setting.pdf]

While we recognize that, when a court is asked to determine a FRAND royalty, one form of “false positive” is that the court could require a patent owner to license its technology at less than a FRAND rate (if it incorrectly finds that the patent owner failed to offer a license on FRAND terms), we believe this risk is limited. Courts are routinely asked to calculate royalty rates in a variety of disputes. They are also routinely asked to calculate the “but for” world competitive price in assessing damages in most antitrust litigation. There is no reason to believe that evaluating such rates in the context of a FRAND commitment would be any more difficult.84 We also note that patent owners can (and do) mitigate their risk in this regard if, prior to the adoption of a standard, they provide transparency into the rates that they consider FRAND. With such ex ante disclosures, patent owners can reduce the risk of being accused of deception, which is generally at the core of antitrust claims arising out of abuses of the standard-setting process.

## A2

## T

### 2AC

#### Expand the scope of antitrust law requires that it can be enforced in new, anticompetitive situations – prefer our interp

Rogers 79 [C. Paul, Assistant Professor of Law, Loyola University of Chicago. Member of the Pennsylvania Bar. “Decision to Prosecute: Organization and Public Policy in the Antitrust Division”. October 1979. https://scholarship.law.vanderbilt.edu/cgi/viewcontent.cgi?article=3036&context=vlr]

Similarly, the division's prosecutorial self-concept may limit the reach of policy and its exercise of discretion. The staff views itself as professional, not political, and strives to maintain its image as the "cream" of the profession." As prosecutors, the staff believes they should take their cases as given, based upon the evidence of illegality at hand.1 They do not want to bring cases which might embarrass them in court and harm their reputations. The eagerness to prosecute is thus tempered by the reality of litigation. The institution of policy or "theory" cases faces the same constraints since the criteria upon which the decision to prosecute rests remains legalistic.

According to Professor Weaver, however, these limitations do not intimate that the division is unprogressive. The prosecutors indeed attempt to expand the scope of antitrust law to new situations which are deemed anticompetitive, but such expansion is undertaken in practice only if the chain of command is convinced that the legal argument is sound and is supported by sufficient evidence for ultimate success.

#### Expand’ extends.

Murphy ’47 [Loren E; September 18; Chief Justice on the Supreme Court of Illinois; Westlaw, “Fed. Elec. Co. v. Zoning Bd. of Appeals of Vill. of Mt. Prospect,” 398 Ill. 142]

The question is squarely presented as to whether the placing of the neon signs on the towers expanded the use to which the property had been previously devoted. The restrictive part of the ordinance which prohibits expansion refers to the nonconforming \*\*362 use of the property. Literally, it provides that the use may be continued but it cannot be \*146 expanded. Webster's International Unabridged Dictionary defines the word ‘expand,’ to extend, to enlarge. The application of such definition to the word ‘expanded’ as contained in section 10 would mean that the use that was being conducted on the premises at the time of the adoption of the ordinance could not be extended or enlarged. The placing of the neon signs on the towers did not expand or enlarge the use to which the property was devoted. It may have been installed for advertising purposes, hoping that it would result in a gain of its business, but there is nothing in the record which indicates that such advertising would be followed by any expansion or enlargement of the laboratory experiments that were being conducted on the property. Zenith had the right to continue its nonconforming use and the right to advertise that use and the products it was handling, so long as it did not expand the use to which the property was devoted when the ordinance was adopted.

#### ‘Scope’ means the law’s breadth.

Parsons ’14 [Honorable Donald F Jr; February 18; Vice Chancellor of the Court of Chancery of Delaware; Westlaw, “Vichi v. Koninklijke Philips Electronics, N.V.,” 85 A.3d 725]

As an initial matter, I reject the proposition that the determination of who can invoke a choice of law provision must precede the analysis of the provision's validity and scope. The “scope” of a choice of law provision refers to how broadly or narrowly that provision applies and includes the question of whether the provision created enforceable rights in third parties.310 The only case Philips N.V. cites in support of its assertion that Delaware law should govern whether it can invoke the choice of law clause merely stands for the proposition that a Delaware court will apply its own conflict of laws rules to determine which jurisdiction's substantive law will govern the claims before it.311 As noted previously, under Delaware conflict of laws rules, the scope of a valid choice of law provision is determined by the law of the selected jurisdiction—in this case, England.

## States

### 2AC – States CP

#### Standard setting is global and SSOs are outside of US jurisdiction

Kasdan 19 [Abraham and Michael. Partners in IP Law @ Wiggins and Dana LLP. “Recent Developments In The Licensing Of Standards Essential Patents”. 8/30/19. https://www.natlawreview.com/article/recent-developments-licensing-standards-essential-patents-0]

Technologies that operate across many different devices and geographical regions are all around us. As one example, today's mobile telephones can connect to 3G/4G/LTE and WiFi networks and communicate with other devices virtually anywhere in the world. This is made possible because all of these devices comply with highly specific technical standards that are promulgated by national and/or international standards setting organizations (SSOs), made up of companies involved in developing and building these global technologies.

When aspects of technical standards are protected by patents, the patent owners are generally obligated by the pertinent SSO to offer licenses to their patented technology under "fair, reasonable and non-discriminatory" (FRAND) terms, as the quid pro quo for having their patented technology included in the standard. The purpose behind the FRAND requirement is to prevent patent owners from gaining an unfair advantage over companies who must make devices that practice the standard in order to participate in the market; and are therefore necessarily “locked in” to standard-compliant designs.

Over the past several years, the licensing and litigation landscape involving standard essential patents (SEPs) and FRAND has become a matter of intense focus. Numerous technology industries, as well as courts around the world have begun to grapple with key issues such as “How do you determine what a FRAND licensing rate should be?” and whether a licensor’s offer is FRAND or not. This article summarizes several recent developments in the transnational licensing of SEP portfolios.

The Overall Landscape

Not surprisingly, most of the recent licensing disputes over SEPs involve the worldwide telecommunications industry. A host of multinational companies have been involved in developing the 2G, 3G, 4G and soon-to-be-commercialized 5G standards (aspects of which are also described by a bewildering array of acronyms, such as "LTE" and "LTE Advanced" ) These standards specify the technical features included in mobile phones and their networks.

The European Telecommunications Standards Institute (ETSI) is an SSO charged with developing worldwide standards for these technologies. Early on, SSOs recognized that the incorporation of patented technology into a standard could give the patent holder significant leverage when negotiating licenses. SSOs therefore required the patent holder to agree to make its SEPs available on FRAND licensing terms. However, ETSI, like other SSOs, does not provide guidance on how to structure licensing terms that meet the FRAND requirement. Indeed, doing so or setting price or royalty rates among entities in a given industry may raise antitrust issues. This leaves it to others to work out the specifics of how SEP owners can comply with the FRAND requirement.

#### State international regulation gets preempted, kills foreign investment and triggers massive economic uncertainty

O’Rourke 10 [Ken, Senior Partner @ O'Melveny & Myers LLP. “United States: The FTAIA In State Court: A Defense Perspective”. 3/3/10. https://www.mondaq.com/unitedstates/trade-regulation-practices/95030/the-ftaia-in-state-court-a-defense-perspective]

A threshold question is whether these limitations similarly restrict the extraterritorial application of state antitrust laws. Defendants will argue that the state antitrust laws cannot permissibly extend to reach conduct or give rise to damages that Congress has placed beyond the reach of federal antitrust law under the FTAIA.

The defendants' argument goes like this. First, under the Supremacy Clause of the U.S. Constitution,4 federal law preempts state law even in the absence of an express preemption provision when, "under the circumstances of [a] particular case, [the challenged state law] stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress."5

Second, the FTAIA's legislative history establishes that Congress had multiple objectives when enacting the statute. One objective was to ensure that the risk of Sherman Act liability did not prevent American exporters and other firms doing business abroad from entering into advantageous "business arrangements (such as joint selling arrangements), however anticompetitive, as long as those arrangements adversely affect only foreign markets."6

Another objective was to eliminate "ambiguity in the precise legal standard to be employed in determining whether American antitrust law is to be applied to a particular transaction."7

Congress sought to adopt a "clear benchmark ... for businessmen, attorneys and judges as well as [U.S.] trading partners"8 with the "ultimate purpose" of "promot[ing] certainty in assessing the applicability of American antitrust law to international business transactions and proposed transactions."9

A third objective was to promote international comity by acknowledging and respecting the prerogatives of other nations to establish and apply their own standards for regulating and remediating alleged restraints of trade in their own markets.10

Congress believed that respecting such foreign sovereign regulatory prerogatives would ultimately best serve U.S. interests by "encourage[ing] our trading partners to take more effective steps to protect competition in their markets."11

Applying state antitrust laws to regulate foreign trade or commerce excluded from federal antitrust jurisdiction by the FTAIA arguably would frustrate every one of these objectives.

American exporters and other businesses engaged in foreign trade or commerce could have no confidence that restraints exempted from federal antitrust attack would not be subject to alternative antitrust attack under the laws of one or more U.S. states. Businesses, therefore, would be deterred from entering into arrangements that Congress intended to enable.

Likewise, ambiguity in the "standard to be employed" for assessing the extraterritorial application of "American antitrust law" would not only persist, but would be multiplied fifty times.

And the imposition of as many as 50 states' antitrust laws on foreign trade or commerce clearly would negate the federal objectives of international comity and respect for foreign regulation of foreign markets.

At every level then, the application of state antitrust laws to foreign trade or commerce exempted by the FTAIA from federal antitrust regulation would "stand[] as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress" in enacting the FTAIA.12

Plaintiffs likely will counter these preemption arguments by pointing out that there is a presumption against preemption and that Congress did not expressly overrule any state antitrust law when enacting the FTAIA.

True, Congress did not address the reach of state antitrust laws, one way or the other, when it enacted the FTAIA. However, the Sherman Act has always extended to "commerce with foreign nations,"13 and was subject to a large body of pre-FTAIA case law addressing the limitations on its extraterritorial reach.14

By contrast, state antitrust laws such as California's Cartwright Act do not expressly reference foreign commerce and have no comparable history of being applied to it.

Congress, therefore, had no cause to be concerned that states would attempt to apply state antitrust laws to foreign trade or commerce exempted from federal regulation by the FTAIA.

Even if there had been such a concern, Congress would have been amply justified in anticipating that the doctrine of implied obstacle preemption — well established when the FTAIA was enacted in 198215 — would resolve any conflict.16

Take California as a specific example. There is a "strong presumption" against preemption, particularly in fields that have been the subject of California's "historic police powers."17 Antitrust plaintiffs would argue that California's "historic police powers" include the authority to regulate competition in California.

On the other hand, the U.S. Supreme Court has consistently held that the power of states to regulate commercial activity outside their borders is necessarily circumscribed.18 That principle applies a fortiori when states attempt to regulate foreign trade or commerce.19

Even in cases involving traditional regulation of conduct within state borders, the California Supreme Court has declined to apply a presumption against preemption where the regulation in question also implicates foreign affairs.20

When the area of regulation encompasses not only foreign trade and commerce but also international relations — that is to say, areas in which federal rather than state interests traditionally predominate — the case for preemption is even stronger.21

Extending the foreign extraterritorial reach of state antitrust laws beyond the limits of the Sherman Act would infringe not only the Supremacy Clause but several additional constitutional provisions establishing federal primacy in the areas of foreign trade, foreign commerce and international relations.22

This allocation of power is intended to ensure that only one entity — the federal government — represents American interests in foreign trade and commerce and foreign affairs.23

In recognition of these principles, courts have repeatedly invalidated state laws that undermine, or threaten to undermine, federal policies and prerogatives in the areas of foreign trade and commerce or foreign affairs.24

These decisions support a conclusion that states cannot constitutionally apply state antitrust laws such as the Cartwright Act to remediate alleged harm from restraints of trade in foreign markets having no direct, substantial and foreseeable anti-competitive effects on trade or commerce in the United States (as would be required for federal antitrust jurisdiction under the FTAIA).

There are policy reasons for this result as well. Claims arising from international cartel conduct or overseas monopolistic behavior arguably seek to apply state antitrust law to decide the legality of foreign conduct (e.g., communications between English and Japanese manufacturers about industry standards, or discussions between Chinese and Korean buyers, or joint ventures in Singapore investing in South America) regardless of whether such conduct was legal when and where it occurred.

Such claims threaten much more than an "incidental or indirect effect" on foreign trade and the internal affairs of foreign countries exercising their sovereign rights to regulate their own markets.25

To assert a state's antitrust law as an all-encompassing international antitrust statute available to police alleged restraints of trade in every country would contravene the federal policy, reflected in the FTAIA, of promoting international comity in this area.26

And allowing one state to apply its antitrust laws to foreign transactions paves the way for every other state to apply its antitrust statutes beyond the limits of the FTAIA.27

Exposure to a thicket of state antitrust regimes would drive foreign companies to avoid doing business that even tangentially affects U.S. commerce.

Finally, such an outcome would conflict with the reported decisions considering this specific issue. One federal court, in In re Intel Corp. Microprocessor Antitrust Litig. ("Intel II"),28 held that California Cartwright Act claims are "limited by the reach of their applicable federal counterparts."29

Intel II analyzed the question as follows:

"Plaintiffs have ... not demonstrated that their state law claims should be applied beyond the boundaries set by the FTAIA ... As the Supreme Court has recognized, '[f]oreign commerce is pre-eminently a matter of national concern,' and therefore, it is important for the Federal Government to speak with a single, unified voice.

"Here, Congress has spoken under the FTAIA with the 'direct, substantial and reasonably foreseeable effects' test, and the Court is persuaded that Congress' intent would be subverted if state antitrust laws were interpreted to reach conduct which the federal law could not."30

The only published California appellate decision on the issue, Amarel v. Connell, similarly holds that the Cartwright Act should not be construed to allow prosecution of extraterritorial antitrust claims that the FTAIA would not.31

The Amarel court observed that "[t]he legislative history of [the FTAIA] discloses it was intended to establish a uniform standard, in the face of conflicting judicial formulations, of the domestic effects necessary to trigger the jurisdiction of American antitrust laws,"32 and that "the proper approach to a preemption analysis is to reconcile 'the operation of both statutory schemes with one another rather than holding one completely ousted.'"33

The court concluded that the plaintiffs' state law antitrust claims were "not preempted" because, as pleaded, the claims did not seek to apply state antitrust laws in a manner inconsistent with the FTAIA.

Rather, they sought damages for anti-competitive practices "alleged to have had an adverse effect on the relevant markets in this state ..."34

According to the court:

"So long as the anticompetitive conduct in question has a direct, substantial and reasonably foreseeable effect within the state, prosecution of the conduct under state law is not precluded."35

In sum, there are strong reasons for a state court evaluating a state law antitrust claim involving foreign trade or commerce to limit the reach of that state law co-extensively with the reach of the Sherman Act as defined by the FTAIA.

To do otherwise contravenes constitutional clauses, rules of statutory construction and federal policies.

## Multilat

### 2AC – Multilat Fails

#### Multilateral convergence fails – distributional conflicts, domestic politics, and data challenges

Bradford 12 [Anu Bradford, Henry L. Moses Distinguished Professor of Law and International Organization at the Columbia Law School, expert in international trade law, the author of The Brussels Effect: How the European Union Rules the World. “Antitrust Law in Global Markets.” 2012. <https://scholarship.law.columbia.edu/cgi/viewcontent.cgi?article=2977&context=faculty_scholarship>]

B Why Attempts to Negotiate International Antitrust Rules Have Failed

1 Disagreement on optimal rules

Section IIB explored the possibility that the risk of defection inherent in the prisoner’s dilemma would impede states from pursuing international antitrust cooperation. However, some scholars have questioned this premise. They argue that the greatest impediment for international cooperation does not stem from the possibility of defection but from the difficulty of reaching the right set of rules in the first place. States prefer convergence to nonconvergence; they just cannot agree on optimal rules to converge on. Bradford, for instance, has argued against the widespread existence of PD-incentives,193 asserting instead that the collective action problem underlying international antitrust cooperation resembles a ‘coordination game’ where the distributional consequences of various forms of coordination impede states’ ability to settle on any given set of international rules.194 This theory assumes that different antitrust rules are optimal for different states. The costs and the benefits of a harmonized antitrust regime would therefore be unevenly distributed among states, creating a distributional conflict. This distributional conflict impedes states’ ability to agree on the focal point of coordination.

The most prominent distributional conflict exists between the United States and the EU. Despite the increasing alignment of the US and EU antitrust laws over the last decade, some key differences persist, as discussed above in section IC.196 These enduring differences explain why the United States and the EU have competed against each other to direct international convergence towards their respective antitrust laws.197 Even if both entities recognize that increased international coordination would lead to greater efficiency, each would prefer to internationalize their respective domestic antitrust regimes.

This type of strategic situation is known as a coordination game with distributional consequences (CGDC) or a ‘battle of the sexes’.199 In a CGDC, both states prefer a coordinated outcome to a noncoordinated outcome, even though both also favor coordinating at their respective preferred equilibrium. For instance, the United States and the EU might both prefer coordination to noncoordination given that their antitrust laws today are increasingly similar; neither the United States nor the EU would incur significant adjustment costs if they were to coordinate to each other’s preferred equilibrium. Still, it is reasonable to assume that, given the choice, both players would favor their own respective regimes as the focal point of convergence. The challenge is to choose between the focal point the United States prefers (US antitrust law) and the focal point the EU prefers (EU antitrust law).

Similar distributional conflict exists between developed countries and developing countries.200 Developed countries want any international antitrust regime to reduce multinational corporations’ (MNCs’) transaction costs of operating on global markets. They also seek to ‘level the playing field’ by enhancing MNCs’ access to the developing country markets.201 In contrast, developing countries resist the idea of a level playing field, asserting that their small domestic corporations require protection to be able to compete against MNCs.202 Developing countries struggling with capacity constraints also fear that an international antitrust agreement would impose unduly burdensome obligations on them. Both developed countries and developing countries would benefit from coordination, but they disagree on whether to coordinate around the focal point preferred by the former or the latter.

Even the proponents of an international antitrust agreement concede that the unequal distributional consequences of any international agreement would present a challenge for cooperation.203 This has led them to propose ways to overcome the distributional conflict. Eleanor Fox, for instance, invokes the spirit of cosmopolitanism as a solution to the existing disagreements among antitrust jurisdictions on optimal law and policy.204 Fox calls on countries to bar government actions ‘where the harm [the action] causes to world welfare perceptibly outweighs the benefit to the nation’s citizens’.205 However, critics have pointed out that this approach raises practical and moral concerns. On the practical level, data measuring ‘world’ and ‘domestic’ welfare would be hard to obtain and, once obtained, would remain controversial; it would also be difficult for countries in the WTO to agree when ‘perceptible’ net losses to world welfare have occurred. On an even more fundamental level, Fox’s approach raises concern on whether ‘world welfare’ is the appropriate standard to use in the first place. As Marsden argues, the national government’s obligations should lie with its national constituency.

Andrew Guzman similarly recognizes that net-exporters and net-importers disagree on the optimal content of an international antitrust regime, the former seeking lax rules and the latter strict rules.207 To overcome the distributional conflict between net-importers and net-exporters, Guzman proposes that states resort to transfer payments via the WTO.208 This way, winners can compensate losers and thereby overcome their resistance to the agreement. Others have questioned the feasibility of transfer payments in the case of WTO antitrust negotiations. Bradford, for instance, argues that the costs and the benefits arising from an international antitrust agreement are likely to be diffuse, case- specific, and difficult to forecast. As long as states remain unable ex ante to identify the winners and losers under an agreement, they do not know who should compensate whom and by how much. As a result, transfer payments would be difficult to negotiate.209 Moreover, Trebilcock and Iacobucci have noted that, even if such transfer payments were feasible, they might be normatively objectionable because some countries would have to adopt antitrust laws that would decrease their domestic welfare.2

Absent linkages, states are likely to be forced to negotiate compromises that lead to shallow international obligations.211 The United States has resisted the WTO antitrust agreement precisely because of the fear that a binding international agreement would weaken antitrust laws throughout the world. Conflicting regulatory priorities would inevitably lead to a watered-down compromise, weakening antitrust laws worldwide.212 At worst, the WTO antitrust agreement would merely codify the lowest common denominator among its broad and diverse membership.213 Diane Wood similarly predicts that efforts to reach a compromise in the midst of vast disagreement would merely lead to international rules riddled with exceptions.214 Proponents of the WTO antitrust agreement may respond that initially weak antitrust commitments could deepen with time as a result of voluntary convergence and gradual alignment of states’ preferences.215 However, the WTO does not generally lend itself well to the idea of ‘gradualism’. Frequent revision of WTO obligations would call for new negotiations among over 150 states. These negotiations would inevitably be slow and costly, producing, at best, an uncertain outcome.

## Reg CP

### 2AC – Reg CP

#### The FTC was created to expand the scope of the Sherman Act – disproves competition

Hovenkamp 10 [Herbert, Ben V. & Dorothy Willie Professor of Law, University of Iowa. “The Federal Trade Commission and the Sherman Act”. https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=2815&context=faculty\_scholarship]

Today, the jurisdiction of the FTC over anticompetitive practices is well established.14 Not only does the Commission have explicit power to enforce the Clayton Act directly, but also the Supreme Court has held that the FTC’s power to condemn “unfair methods of competition” covers everything that the Sherman Act covers and goes even further to reach a “penumbra” of practices that are not covered by the Sherman Act. The view that the FTC can condemn practices because they are anticompetitive, even though they do not fall within the literal coverage of the Clayton or Sherman Acts, is historically justified.15 Indeed, the mindset of the Congress that passed both the Clayton and FTC Acts in 1914 was that the Supreme Court had been much too restrictive in its interpretation of the Sherman Act16 and that some expansion was in order.

## BizCon

### 2AC

#### Delta variant undermined confidence

AP 9/29 [Associated Press, "Small and Midsize Business Confidence Falls Amid Rising COVID-19 Cases", 9/29/21, https://apnews.com/press-release/pr-newswire/coronavirus-pandemic-business-health-business-confidence-5057bbef8ca984868c78075871d7baf2]

Confidence among small and midsize business (SMB) CEOs fell in the third quarter of 2021, erasing all gains recorded in the first half of the year, according to the latest CEO Confidence Index from Vistage, a CEO coaching and peer advisory organization. The Confidence Index, which measures sentiment on various economic and business topics among SMB leaders, was 97.1, down from 108.8 in Q2, with 40% of CEOs of small and midsize businesses reporting the increase in cases related to the Delta variant has impacted their businesses. In addition, 41% have made changes to their masking policies as a result, but 56% say they will never mandate vaccines for employees.

“The Delta variant, combined with the economic headwinds of inflation, supply chain challenges and talent scarcity has not fully reversed the economic surge that occurred as restrictions lessened; however, it has slowed growth expectations. Small business owners are still trying to navigate how to keep their businesses running while keeping their employees safe,” said Joe Galvin, Vistage’s chief research officer. “Economic growth will continue through the second half of the year, just not at the unsustainable pace of the first half.”

For now, the pandemic continues to impact employment with 67% of leaders saying they are struggling to operate at full capacity given staffing challenges, and 66% reporting they are planning on hiring in the next year. To combat these challenges, businesses are using a variety of incentives: boosting wages (69%), expanding benefits (28%), offering hiring bonuses (27%) and allowing remote working (41%). Current employees are also being offered skill development programs (56%) and increased overtime (26%).

#### Monopoly pricing and selective licensing undermines 5G innovation---FRAND enforcement is key.

Actonline 20, the App Association represents more than 5,000 app companies and information technology firms across the mobile economy; (August 26th, 2020, “Save Our Standards: The Ninth Circuit Court of Appeals Reverses Decision in FTC v. Qualcomm”, <https://actonline.org/2020/08/26/save-our-standards-the-ninth-circuit-court-of-appeals-reverses-decision-in-ftc-v-qualcomm/>), ability edited

Moreover, the FRAND agreement is a critical tool used by standard setting organizations to ensure the process enhances competition and does not run afoul of antitrust laws. Generally, a collaboration between competitors to choose market winners or set prices raises significant questions for competition regulators. Royalty free and FRAND licensing requirements were created by standards bodies to avoid potential antitrust scrutiny by limiting the market power and the potential for abuse by those involved in developing a standard. This is why the American National Standards Institute (ANSI) will not accredit any standards developing organization (SDO) that does not require standard-essential patent holders to provide licensing terms at least as favorable as FRAND.

The most important beneficiary of open interoperability standards and FRAND licensing requirements are the entrepreneurs and small businesses that have long fueled America’s innovation engine. They don’t have giant patent portfolios, market power, or the resources to hire legions of lawyers and spend years battling SEP abusers in civil court. Without some level of certainty about their ability to obtain licenses—let alone what they may cost—entrepreneurs will have trouble justifying the pursuit of any innovation that uses a standard and will certainly struggle to raise money from investors for such innovation. And Qualcomm’s vague and toothless promise simply “not to sue” smaller companies and component makers is no substitute for a license.

The adoption of 5G technology is expected to open unprecedented opportunities for innovation and economic growth as we move toward a world where everything from cars to tractors to buildings will connect to wireless networks. At every stage of the information technology revolution, America has been the undisputed leader because of the unparalleled entrepreneurial innovation ecosystem that we have built. If 5G SEP holders are able to arbitrarily refuse licenses to smaller firms, it would ~~cripple~~ undermine America’s innovation ecosystem at the start of the next big wave of innovation. As economic tensions continue to rise with China, Chinese-based companies could use their 5G SEPs as international economic weapons to thwart U.S. competitors.

The 5G standard is supposed to be a platform for competition, innovation, and entrepreneurship, but if the Ninth Circuit decision is allowed to stand, it will become a chokepoint for snuffing out competitors and demanding monopoly rents. Open standards and FRAND licensing commitments are fundamental to competition in the modern economy, and the idea that they aren’t a subject for antitrust enforcement is patently absurd.

#### COVID induced restructuring that prevents catastrophic future fallouts

Sneader & Singhal 20 [Kevin, degree in law with first-class honors from his hometown University of Glasgow. He went on to graduate from Harvard Business School, where he received a master of business administration degree with highest distinction, and Shubham, leads McKinsey’s healthcare, public sector and social sector work globally. He serves leading healthcare and social institutions and governments on all top-management agenda issues. “Beyond Coronavirus: The Path to the Next Normal” https://www.mckinsey.com/~/media/McKinsey/Industries/Healthcare%20Systems%20and%20Services/Our%20Insights/Beyond%20coronavirus%20The%20path%20to%20the%20next%20normal/Beyond-coronavirus-The-path-to-the-next-normal.ashx]

Reimagination A shock of this scale will create a discontinuous shift in the preferences and expectations of individuals as citizens, as employees, and as consumers. These shifts and their impact on how we live, how we work, and how we use technology will emerge more clearly over the coming weeks and months. Institutions that reinvent themselves to make the most of better insight and foresight, as preferences evolve, will disproportionally succeed. Clearly, the online world of contactless commerce could be bolstered in ways that reshape consumer behavior forever. But other effects could prove even more significant as the pursuit of efficiency gives way to the requirement of resilience—the end of supply-chain globalization, for example, if production and sourcing move closer to the end user. The crisis will reveal not just vulnerabilities but opportunities to improve the performance of businesses. Leaders will need to reconsider which costs are truly fixed versus variable, as the shutting down of huge swaths of production sheds light on what is ultimately required versus nice to have. Decisions about how far to flex operations without loss of efficiency will likewise be informed by the experience of closing down much of global production. Opportunities to push the envelope of technology adoption will be accelerated by rapid learning about what it takes to drive productivity when labor is unavailable. The result: a stronger sense of what makes business more resilient to shocks, more productive, and better able to deliver to customers. Reform The world now has a much sharper definition of what constitutes a black-swan event. This shock will likely give way to a desire to restrict some factors that helped make the coronavirus a global challenge, rather than a local issue to be managed. Governments are likely to feel emboldened and supported by their citizens to take a more active role in shaping economic activity. Business leaders need to anticipate popularly supported changes to policies and regulations as society seeks to avoid, mitigate, and preempt a future health crisis of the kind we are experiencing today. In most economies, a healthcare system little changed since its creation post–World War II will need to determine how to meet such a rapid surge in patient volume, managing seamlessly across in-person and virtual care. Public health approaches, in an interconnected and highly mobile world, must rethink the speed and global coordination with which they need to react. Policies on critical healthcare infrastructure, strategic reserves of key supplies, and contingency production facilities for critical medical equipment will all need to be addressed. Managers of the financial system and the economy, having learned from the economically induced failures of the last global financial crisis, must now contend with strengthening the system to withstand acute and global exogenous shocks, such as this pandemic’s impact. Educational institutions will need to consider modernizing to integrate classroom and distance learning. The list goes on. The aftermath of the pandemic will also provide an opportunity to learn from a plethora of social innovations and experiments, ranging from working from home to large-scale surveillance. With this will come an understanding of which innovations, if adopted permanently, might provide substantial uplift to economic and social welfare— and which would ultimately inhibit the broader betterment of society, even if helpful in halting or limiting the spread of the virus.

## FTC

### 2AC – Top

#### FTC overload now.

Burke ’21 [Henry and Andrea; May 28; B.A. in Political Science and Labor Studies from the University of California at Los Angeles; Research Assistant, B.A. in Economics from the University of Maryland; Revolving Door Project, “Hobbled FTC Lacks Budget to Combat Corporate Buying Spree,” <https://therevolvingdoorproject.org/hobbled-ftc-lacks-budget-to-combat-corporate-buying-spree/>]

Even if the will to stop it exists, the FTC doesn’t have the funding to stop this boom. In fact, it hasn’t had the funding to keep up with a steady uptick in mergers in years. Aside from the recent spike, the total number of premerger filings [increased](https://www.ftc.gov/system/files/documents/reports/federal-trade-commission-bureau-competition-department-justice-antitrust-division-hart-scott-rodino/p110014hsrannualreportfy2019_0.pdf) by 80 percent over the last 10 years. In 2010, corporations filed 1166 premerger notifications. By 2019, yearly filings almost doubled to 2089.

While the number of transactions the FTC is charged with regulating has increased steadily, the number of enforcement actions — challenges to anticompetitive mergers or conduct — has stagnated.  A 2020 paper from Equitable Growth showed that while the number of [enforcement actions](https://equitablegrowth.org/wp-content/uploads/2020/11/111920-antitrust-report.pdf) from both the FTC and DOJ hovered at about 40 challenges per year from 2010 to 2019, even as the number of corporations seeking merger approval grew. The FTC’s enforcement actions over the past ten years show the agency hasn’t kept up with increased HSR filings: while FY 2010 saw 22 enforcement actions for 1166 reported mergers, a ratio of approximately one enforcement action for every 53 mergers, FY 2019 saw a mere 21 enforcement actions for 2089 mergers, meaning there was only one FTC enforcement action for every 99 mergers.

Overall funding and staffing levels at the FTC have similarly stagnated. Then-FTC commissioner Rebecca Slaughter said in 2020 that it is an “[indisputable](https://www.ftc.gov/system/files/documents/public_statements/1583714/slaughter_remarks_at_gcr_interactive_women_in_antitrust.pdf)” fact that FTC funding has not kept up with market demands; according to Slaughter, the FTC budget has only increased by 13% since 2010 and the employee headcount decreased. This budget increase has not come from increased discretionary appropriations from Congress however, but from a massive increase in merger filings and their accompanying fees. Startlingly, Slaughter notes that “the FTC had roughly 50% more full-time employees at the beginning of the Reagan Administration than it does today.” The situation has become so dire that increased budgets for the enforcement agencies has become a rare [bipartisan](https://www.law360.com/articles/1368496/klobuchar-says-congress-has-rare-shot-at-antitrust-overhaul) issue in the Senate.

#### Turn—the aff resolves FTC-DOJ turf wars over SEPs—the aff harmonizes enforcement. The aff’s certain enforcement encourages more resources down the line and frees wasted resources.

McGinnis and Sun, 21 – John O. McGinnis, Professor at Northwestern University and Linda Sun, Associate at Wilmer Pickering Hale & Dorr LLP and J.D. 2020 at Northwestern Pritzker School of Law, Winter, “Unifying Antitrust Enforcement for the Digital Age,” *78 Wash. & Lee L. Rev. 305*, p. Nexis

1. Standard-Essential Patents: A Case Study in Incoherence

Turf battles aside, the FTC and the DOJ have promoted directly opposing policies regarding the application of antitrust law to technology.138 The contentious disagreement on the important issue of standard-essential patents shows the divergent treatment and uncertainty already generated by dual enforcement. The FTC believes violation of a SEP licensing agreement is potentially an antitrust violation.139 Standard-setting organizations often require patent holders to license SEPs for free or on fair, reasonable, and non-discriminatory (FRAND) terms.140 The FTC argues that a violation of these licensing terms can violate antitrust laws by enabling a patent holder to “parlay the standardization of its technology into a monopoly in standard-compliant products.”141 The DOJ disagrees, because it believes “it is not the duty or the proper role of antitrust law to referee what unilateral behavior is reasonable for patent holders in this context.”142 The DOJ argues that patent holders enjoy a government-granted monopoly over the item under patent.143 Thus, a violation of a SEP licensing agreement may raise an issue of contract law or other common law right, but not antitrust.144

SEPs are vital to technological innovation and economic growth, with billions of dollars at stake.145 To understand the importance of SEPs to technology, one must first understand the importance of a standard. A standard is a uniform practice around which a technology develops.146 For example, a standard could describe a specific design of a charging port. Once the standard is set, multiple devices, from cell phones to speakers, can be designed to work with that standard charging port. Standards enable uniformity and operability across manufacturers, devices, or platforms.147 We interact with and depend on countless technology standards such as USB, Bluetooth, HTML, and 3G in our everyday life. Their importance cannot be overstated: they provide the foundation for the development and implementation of technology.148

Despite their benefits, standards also present a dilemma: they are most beneficial when there is widespread adoption.149 But most entities, from companies to countries, want to have their own individual designs become standard so as to gain a competitive advantage.150 Thus, there must be some process that encourages collaboration and consensus even among competitors.151

Such collaboration is facilitated by a standards development organization (SDO) or standard setting organization (SSO), which creates, revises, and coordinates technical standards.152 Standards development organizations have rules and criteria to prevent a single interest from dominating the definition of a standard.153 Their rules govern how they approach patented technologies.154 For example, an SDO may require that only unpatented technologies can be adopted as standard. Thus, in deciding what charging port will be the industry standard, the SDO would reject any charging ports that were patented. While this is, in a sense, a procompetitive solution—no entity would have a monopoly over the standard technology that was decided upon—it is largely unrealistic in today’s world where most useful and current inventions are patented. Adopting an unpatented technology that is outdated as standard defeats the purpose of a standard, which is to facilitate the development and adoption of innovative technology.155

As a result, SDOs must contend with standard-essential patents (SEPs), patents that are necessary for the implementation of a standardized technology.156 SDOs typically require that if a proposed standard is encumbered by patents, those patents must be licensed on “fair, reasonable, and non-discriminatory” (FRAND) terms to those seeking to utilize the technology.157 This requirement is thought to facilitate the adoption of the standard in the industry while providing fair terms to all parties involved.158 Because standards are critical to almost everything that touches technology, standard-essential patents are as well. When a patent is essential to a standard, there is no way to comply with the standard without infringing or licensing the patent.159 A dispute over a single SEP can prevent a company from making its product compatible with the internet, computers, or mobile devices.160 For example, a typical cellphone charging port has SEPs that cover every part of its design, from the electronic circuitry to communication protocols. Methods that enable a mobile phone to stay connected to a 4G/LTE network are covered by a multitude of SEPs that are essential to the 4G/LTE standard.161 Qualcomm owns SEPs essential to widely adopted cellular communication standards such as CDMA and LTE.162

A competition problem arises when, despite any agreement made at the time a standard was chosen, SEPs are later not licensed at fair, reasonable, and non-discriminatory terms. When the owner of a SEP bars a competitor from utilizing a SEP and therefore a standard technology, this decision deals a huge blow to the competitor. The FTC believes that when a SEP-owner violates an agreement to license the SEP on fair, reasonable, and non-discriminatory terms, this is an anticompetitive action in violation of antitrust laws.163 In FTC v. Qualcomm,164 the FTC pursued action against Qualcomm under Section 5 of the FTC Act for refusing to license its SEPs to competitors.165

In contrast, the DOJ has taken the stance that SEP owners refusing to license on FRAND terms is not an anticompetitive antitrust violation.166 It is simply a patent owner exercising his or her earned right to exclude competitors. As dictated under patent law doctrine, a patent owner has the right to prevent anyone from utilizing his or her patented technology.167 Going forward, it is uncertain whether the government will pursue antitrust enforcement actions related to the licensing of SEPs.168

This disagreement between the DOJ and the FTC rippled out to cause concern in the legislative branch. Because of the DOJ’s disagreement with the FTC, Senators wrote to the DOJ urging the agency to clarify its policy and provide guidance to stakeholders.169 The uncertainty created by this bifurcated approach creates dissatisfaction in Congress and so undermines support for these agencies among those who control their funding.170

The disagreement between the DOJ and FTC has international implications as well. Divergence in treatment of FRAND agreements among countries already causes difficulties for companies operating under different national standards in the global economy.171 These international challenges are further exacerbated by the different policies of the two domestic antitrust enforcement agencies of the United States, still the most important commercial nation in the world.172 Companies are subject to potentially conflicting standards depending not only on the national identity of the enforcement agency but also on the identity of the agency with the United States. International harmonization becomes more difficult if the United States has internal disagreements. Therefore, the case of SEPs shows how dual enforcement has created uncertainty in the industry, in Congress, and internationally.

B. Dual Enforcement Causes Inefficiencies and Inconsistent Outcomes

Technology did not create, but only exacerbates long-standing problems of dual antitrust enforcement. In this subpart we briefly offer more general arguments against joint enforcement by the FTC and Antitrust Division. It wastes resources, and even in non-technological areas, it creates uncertainty. 173 Both waste and uncertainty are compounded by turf wars, as exemplified by conflicts over mergers. 174

Moreover, Congress never intended for a system of full dual enforcement. 175 Thus, eliminating it would not undermine a fully deliberated scheme. Single enforcement would additionally bring the United States in conformity with industrialized nations worldwide, which generally have a single antitrust enforcer. 176 Finally, we respond to the argument that single agency enforcement would not improve matters much because private actors can enforce antitrust. 177 Private enforcers are subject to heavy restrictions and do not have the same ability to direct antitrust policy as the agencies do.

#### FTC focus on healthcare and big tech thumps.

Levine 8-25-2021, master’s degree from the Columbia University Graduate School of Journalism and a bachelor of arts in English from the University of Pennsylvania. She is also an alumna of the Fellowships at Auschwitz for the Study of Professional Ethics, a program in Germany and Poland that explores the ethics of reporting on politics, war and genocide (Alexandra, “How Biden's tech trustbuster could change health care,” *Politico*, <https://www.politico.com/newsletters/future-pulse/2021/08/25/how-bidens-tech-trustbuster-could-change-health-care-797333>)

Lina Khan’s Federal Trade Commission has its eyes on health care. The agency known for efforts to rein in Big Tech companies like Facebook and Amazon is also enmeshed in high-stakes health care and health tech battles that extend well beyond Silicon Valley. Case in point: The FTC trial that kicked off yesterday examining monopoly concerns in the market for cancer screening technology. (More on that below.) That closely watched antitrust case — involving the giant Illumina and startup Grail — predates Khan’s confirmation as FTC chair. But it underscores how health issues are looming over the agenda, particularly heading into the pandemic's second year. The way health care companies and consumer health apps handle sensitive data “is an area that I'm sure [Khan’s] very, very interested in,” said Jessica Rich, former director of the FTC’s consumer protection bureau, adding that the Biden administration's FTC will also be closely scrutinizing hospital mergers. “I expect her and the commission to take a very bold approach to what constitutes harm for both,” Rich said. “I expect her to pay close attention to algorithms and potential discrimination in health care, both denials and pricing issues which the FTC's laws can address.” The FTC’s jurisdiction touches nearly the entire health economy. While its competition bureau looks at health care mergers like the Illumina-Grail deal, its consumer protection side is focused on health privacy and data security issues, as well as fighting bogus medical claims on everything from weight loss to Covid cures. When Congress passed the Covid-19 Consumer Protection Act last year, the agency was granted new authority to police Covid scams. Although Khan hasn't spoken publicly about her health care agenda, she's likely to take issue with health apps and companies whose business models maximize, incentivize and monetize data collection. Of particular concern is how firms disclose what they’re doing with consumers’ data — and whether it may still be deceptive or unfair.

## Trade DA

### 2AC

#### Protectionism inevitable--US is about to restart the trade war with China

Constantino 10/1 [Annika Kim Constantino, "Biden’s top trade advisor will say China isn’t complying with phase 1 deal reached under Trump, according to sources", 10/1/21, https://www.cnbc.com/2021/10/01/china-is-not-complying-with-phase-1-deal-biden-trade-official-will-say-sources.html]

U.S. Trade Representative Katherine Tai will announce Monday that China is not complying with the so-called phase one trade deal reached under former President Donald Trump’s administration, sources familiar with the matter told CNBC’s Kayla Tausche.

Under the agreement, China was supposed to purchase an additional $200 billion in U.S. goods over a two-year period, but the nation has not lived up to that pledge, sources said.

The announcement will represent some of the the Biden administration’s most forceful pushback against China. Tai will deliver remarks Monday on her review of China trade policy in Washington.

It is unclear how the USTR will respond. Sources told CNBC that the USTR is evaluating potential actions against China for its non-compliance, including possible additional tariffs.

Tai’s speech on Monday will mark the last three months of the deal, which was signed by Trump in 2019. It called for China to expand purchases of certain U.S. goods and services from Jan. 1, 2020, through Dec. 31, 2021.

China’s purchases of U.S. exports through August are estimated to be running at about 62% of the trade deal’s targets, Chad Bown, a senior fellow at the Peterson Institute for International Economics in Washington, told Reuters.

#### Apple case thumps---it’s politicized, and has ripple effects across antitrust.

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.

#### =No protectionist anti-trust – it backfires on domestic industries and it’s too cumbersome to enforce

Bradford 12 [Anu H. Bradford is a Finnish-American author, law professor, and expert in international trade law. In 2014, she was named the Henry L. Moses Distinguished Professor of Law and International Organization at the Columbia Law School. She is the author of The Brussels Effect: How the European Union Rules the World. "Antitrust Law in Global Markets." https://scholarship.law.columbia.edu/cgi/viewcontent.cgi?article=2977&context=faculty\_scholarship]

Other authors have questioned that trade fl ows could lead to biased antitrust enforcement. Einer Elhauge and Damien Gerardin note that the effects doctrine compromises states’ ability to engage in systematic underenforcement or overenforcement.135 If a net- exporting country were to enact overly lax antitrust laws, its producers would still be subject to the antitrust laws of the importing jurisdiction, assuming their activities have an eff ect on that market.136 The prospect of a concurrent jurisdiction by importing jurisdictions renders net- exporting countries’ underenforcement irrelevant, steering them towards optimal regulation.137 Elhauge and Geradin point out that the importing jurisdiction also has optimal incentives to regulate as long as it embraces the consumer welfare standard.138

Michael Trebilcock and Edward Iacobucci question whether trade defi cits or surpluses would ever determine countries’ preferred level of antitrust regulation, given that trade imbalances usually constitute only a small percentage of any nation’s GDP.139 John McGinnis notes that tr ade fl ows have a tendency to fl uctuate, and doubts that countries amend their antitrust laws in response to their changing trade balances.140 McGinnis further argues that trade- flow bias would be infeasible to apply in practice, considering that it is often difficult to categorize a multinational corporation as ‘domestic’ or ‘foreign’. Hence, exercising bias against a ‘foreign’ corporation may have the unintended eff ect of harming the corporation’s many domestic shareholders and employees.141 Anu Bradford points out that biased policies may have similar unintended consequences on domestic industries that rely on intermediate goods, since such goods comprise approximately 50% of the total imports in developed countries.142 Thus, if a country is a net- importer, predisposed to adopt overly strict antitrust laws, those strict antitrust laws would not only target the foreign producers attempting to penetrate the market but also domestic firms that depend on imported goods as inputs or raw materials.143 This criticism, if accepted, suggests that trade flows have, at best, only a marginal effect on countries’ level of antitrust regulation.

#### Trade is a tiny factor in overall calculations of war

Zachary Keck 13, Associate Editor of The Diplomat, monthly columnist for The National Interest, 7/12/13, “Why China and the US (Probably) Won’t Go to War,” <http://thediplomat.com/2013/07/why-china-and-the-us-probably-wont-go-to-war/>

Xinhua was the latest to weigh in on this question ahead of the Strategic and Economic Dialogue this week, in an article titled, “China, U.S. Can Avoid ‘Thucydides Trap.’” Like many others, Xinhua’s argument that a U.S.-China war can be avoided is based largely on their strong economic relationship.

This logic is deeply flawed both historically and logically. Strong economic partners have gone to war in the past, most notably in WWI, when Britain and Germany fought on opposite sides despite being each other’s largest trading partners.

More generally, the notion of a “capitalist peace” is problematic at best. Close trading ties can raise the cost of war for each side, but any great power conflict is so costly already that the addition of a temporarily loss of trade with one’s leading partner is a small consideration at best.

And while trade can create powerful stakeholders in each society who oppose war, just as often trading ties can be an important source of friction. Indeed, the fact that Japan relied on the U.S. and British colonies for its oil supplies was actually the reason it opted for war against them. Even today, China’s allegedly unfair trade policies have created resentment among large political constituencies in the United States.

# 1AR

# Card doc for mike

## CP

#### Their ev says CP isn’t sufficeitn to overcome negative incentives – we insert yellow

Dr. Daniel Francis 21, Climenko Fellow and Lecturer on Law at Harvard Law School, Doctorate of Laws Degree from the NYU School of Law, Master of Laws Degree from Harvard University, JD from Trinity College at Cambridge University, Former Deputy Director of the Federal Trade Commission, “Choices and Consequences: Internationalizing Competition Policy after TPP”, in Megaregulation Contested: The Global Economic Order After TPP, Ed. Kingsbury, Revised 8/26/2021, p. 40-48

B. Between Contracts and Networks: Frameworks

Another dichotomy that dominates the integration of competition policy pertains to the forms of internationalization, which in the competition policy space have generally been dominated by contract-style treaties on the one hand and by open networks on the other.166 Between these two models lies what seems to be an under-utilized alternative, which I call a “framework for contingent cooperation.”

[FOOTNOTE] 166 This binary view dominates the literature. See, e.g., Edward M. Graham, “Internationalizing” Competition Policy: An Assessment of the Two Main Alternatives, 48 Antitrust Bull. 947, 949 (2003) (“[M]echanisms [for antitrust internationalization] range from bilateral treaties creating arrangements for cooperation between or among national competition law enforcement agencies to informal working arrangements among agencies.”); Eleanor M. Fox, International Antitrust and the Doha Dome, 43 Va. J. Int’l L. 911, 912 (2003) (contrasting “horizontalism” with “globalism”); Anu Piilola, Assessing Theories of Global Governance: A Case Study of International Antitrust Regulation, 39 Stan. J. Int'l L. 207, 247 (2003) (“Rather than drafting overarching multilateral agreements on antitrust laws, cooperation efforts in the immediate future are more likely to succeed in managing existing diversity and promoting voluntary convergence based on approximation of domestically applied standards. Networks of antitrust authorities are well-suited to facilitate this process of cooperation and voluntary convergence.”). [END FOOTNOTE]

A “framework” in the sense that I am using that term is a facilitative arrangement that does not constitute a treaty under international law,167 and which does not carry the charge of international legal obligation, but which involves an exchange of specific and reciprocally contingent commitments by participant jurisdictions to engage in mutually beneficial conduct. Specifically, each party states that it will extend certain benefits to each other party so long as each other does likewise; the parties may also create supplementary mechanisms to monitor and/or adjudicate compliance with these commitments.168

A framework of this kind is not a treaty: it is what Kal Raustiala calls a “pledge,”169 and what Charles Lipson calls an “informal” agreement,170 involving no legal obligation, and it involves no commitment of the parties’ reputation for law-abiding behavior.171 On the other hand, it differs from an open, information-sharing network because it precisely specifies behavioral commitments, and because each of the parties shares an understanding that concrete consequences will promptly follow—exclusion from the benefits provided by others—if its behavior materially deviates from the terms of the commitment.172 A framework is therefore essentially a specific declaration of intention to engage in conduct that benefits others, contingent upon parallel behavior by other participating states, without obligatory status under international law.

This is, in some sense, the direct opposite of the approach typically taken in competition policy chapters in trade agreements. The provisions of competition policy chapters partake of the substance of treaty law, but are generally framed in broad terms rather than specifics, and generally do not reflect a shared understanding that specific consequences will attend breach. By contrast, frameworks do not bind in international law, are framed in specific terms than aspirational generalities, and reflect an understanding that the benefits of cooperation will be withdrawn in the event of violation.

Contingent cooperation thus depends for its effectiveness primarily upon three important dynamics. The first and most important of these is the rationality of strategic cooperation. A familiar mainstream view holds that to a significant extent states behave in international society in ways that rationally serve their interests.173 And when cooperation over a series of interactions is overall in the interests of each member of a group, but when each member faces a rational incentive to defect from the terms of cooperation in individual cases, familiar economic theory teaches that a strategic cooperative equilibrium can be maintained among the parties.174 In contingent cooperation, each party understands that if it defects materially from the terms of the framework, the other participants will withdraw the excludable benefits of cooperation, and this provides the incentive to comply.175

Contingent cooperation can be made more stable by the introduction of certain structures designed to monitor compliance (just as with a cartel among private companies).176 This might among other things involve the creation of a central “facilitator” that is responsible, in a general sense, for obtaining, collecting, and processing information necessary to sustain a cooperative equilibrium.177 Depending on the purpose and scope of the cooperation project, this could include (for example): reviewing the text of laws, regulations, and policy documents for consistency with the terms of the framework; conducting peer-review-style evaluations and certifications; hosting voluntary dispute resolution processes, including mediation and/or arbitration, to determine whether and when the framework has been violated; or even receiving and handling complaints of violations ombudsman-fashion (i.e., receiving the complaint, giving the subject of the complaint an opportunity to respond, and publishing findings and conclusions). A central facilitator could also go beyond a policing function and offer a common forum for certain forms of cooperation and information sharing. The nature of such broader functions, and the extent to which they would be useful or desirable, would depend on the nature and purpose of the cooperation.

The second dynamic that powers contingent cooperation is the normative appeal of the project itself. The point here is not unlike what Gráinne de Búrca calls “mission legitimacy”: the normative force of the underlying purpose of a cooperative project, and specifically the power of that normativity to secure the acceptance and cooperation of those who participate.178 Parties joining projects of contingent cooperation can be expected to be in some sense self-selecting: they join such endeavors because, in part, they are genuinely committed to promoting and achieving the ends that the project represents, and they embrace the project of cooperation as worthwhile.179 It may sound a little naïve to suggest that a project of cooperation may be more likely to “stick” if it has some normative appeal to the participating polities, but legal scholarship has long recognized that states do what they undertake to do more often than strictly rational analysis would predict.180 And I think the proposition that genuine commitment to a goal can contribute to compliance is in truth somewhat less naïve than the converse idea that compliance is just as likely without it.

The third source of a framework’s effectiveness is to be found in the acculturative and socializing effects of interaction in an environment in which values and practices are shared and reinforced as normative, and in which attention is paid to the existence and nature of violations. There is a rich and complex literature on the ways in which states, state actors, and the individuals within them may be “socialized” or “acculturated” by repeated engagement with others through common institutions and shared environments of normativity, eventually contributing to the emergence of obligations with genuine normative force.181 Jutta Brunnée and Stephen Toope have pointed out ways in which the force of legal obligation itself arises from shared communities of practice grounded in social reality and shared understandings, not formal commitments.182 As they put it, “[s]tability may be aided by explicit articulation of a norm in a text, but it is ultimately dependent upon [an] underlying shared understanding and a continuous practice of legality.”183

Participation in an endeavor of contingent cooperation may help to engender the development of such understandings and practices, and these may contribute to the effectiveness of the framework. In the longer term, this may even result in the creation of a legal instrument. But this progression is not necessary for acculturation to exert a reinforcing effect: for, as Anu Bradford accurately notes, there is no reason to think that “the pathway from nonbinding to binding rules” is an inevitable or even a natural one.184

The distinctive value of a framework is that it provides a low-cost way for jurisdictions to explore and participate in possible arrangements of mutual benefit that depend upon shared concrete understandings regarding future behavior, but without bearing the burden of an obligation under international law, without running the reputational risk of having to break a treaty, and without facing the domestic hurdles (or political scrutiny) that a treaty would necessitate.185 Use of such a framework may help to reduce the concerns grounded in political morality that might otherwise attend inter-jurisdictional action in sensitive areas:186 to use a term I have coined elsewhere, as contingent practices from which states could withdraw at any time, frameworks would benefit from considerable resources of “exit legitimacy.”187

Frameworks are not suited to every application. They seem particularly apt for types of international cooperation that generate excludable benefits for other participants and can be reasonably well monitored: in the sphere of competition policy, for example, this would include commitments to provide nondiscriminatory access to procurement markets as well as many forms of antitrust cooperation (including cooperation with one another’s investigations, coordination of enforcement activity, the operation of joint filing systems for merger review and cartel leniency programs, and so on). Certain guarantees of nondiscriminatory treatment by SOEs could also be extended on a selective basis. On the other hand, contingent cooperation is much less suitable for projects that require strong and highly credible guarantees of commitment from the participants (in which case a traditional treaty-contract would seem more appropriate188) or groups of parties still lacking the prerequisite agreement on the terms and ambit of desirable cooperation. Nor is it suitable in the absence of sufficient confidence in the ability or incentive of other parties to deliver on their commitments: in these cases, open dialogue and information exchange through a network would seem preferable. Nor, obviously, is it a good fit for projects in which the benefits of cooperation are non-excludable.189 To pick an obvious example, contingent cooperation would not recommend itself as a natural choice for an international project to introduce SOE discipline: the benefits are non-excludable (there is no obvious way to withdraw them selectively in the event of defection) and compliance is very difficult to monitor, so the use of a framework is unlikely to make much of a contribution.190

## Trade

### 1AR – No Link = 2AR C/A from CP

#### Normal means – cooperation is inevitable and perceived

Michael Ristaniemi 20, PhD Candidate in Commercial Law at the University of Turku, Vice President for Sustainability at the Metsä Group, Participant in the Visiting Scholar Programme at the University of California, Berkeley, “International Antitrust: Toward Upgrading Coordination and Enforcement”, Doctoral Dissertation, October 2020, https://core.ac.uk/download/pdf/347180879.pdf

Despite the above, the major powers do have an interest in cooperating internationally in competition issues. The EU and the US appear to desire further convergence of practices and substantive thinking. Officially, China does not appear to have a strong stance on convergence, but recent practice shows that it too has engaged in an increasing amount of dialogue on competition matters. Indeed, there is an increasing amount of cooperation in relation to investigating international cartels, referring to cartels that operate in several nations concurrently and which seek to cartelize them.208

Further, the competition authorities of major powers have an incentive to ensure that merger control procedures affecting mergers benefiting their respective regions are as internationally streamlined and coordinated as possible given the number of multinationals that originate from each of their respective territories. Nonetheless, there are a few hurdles for streamlining international merger control. First is the dichotomous leadership of the US and the EU systems, with no single leading standard to become the global standard. Second, there are clear differences in nations’ scope of merger review that may arise from partially differing sets of goals should they attempt to address public interest or other non-competition related concerns concurrently with competition concerns.209 In any case, the aggregate cost of a fragmented system of international merger control is arguably higher than it would need to be. Improved, more structured coordination could help, as discussed further in Chapters 5 and 6 below.

#### Normal means means no perception of protectionism

Michael Ristaniemi 18, PhD Candidate in Commercial Law at the University of Turku, Vice President for Sustainability at the Metsä Group, Participant in the Visiting Scholar Programme at the University of California, Berkeley, “Convergence, Divergence or Disturbance – How Major Economic Powers Approach International Antitrust”, Concurrences, Number 3, September 2018

2. Means to reach goals

16. The US aims at securing its companies’ interests abroad in a number of ways. At its most aggressive, it has several times applied its antitrust laws extraterritorially when its markets have been impacted by foreign conduct—acts which risk sparking trade friction.21 A more amiable way of ensuring favourable conditions abroad is contractually agreeing with foreign governments and enforcers to, respectively, enact or maintain certain standards with relation to antitrust in their domestic legislation and enforcement thereof as well as cooperate in investigations and otherwise share relevant information, whether as a part of broader trade agreements or in agreements dedicated to antitrust enforcement cooperation.

17. Cooperation in enforcement is nowadays not uncommon for the DOJ or the FTC, the US enforcers, particularly with more mature competition law regimes.22 This is especially the case concerning mergers, but cooperation also occurs in relation to international cartels as well as unilateral conduct, on occasion.23 The relationship between the US and Canada serves as an example of cooperation. The two nations have concluded agreements about cooperation in competition issues: one covering general aspects of enforcement cooperation, supplemented by provisions on positive comity, as well as desired “best” practices in merger cooperation.24 Recent cases including cooperation include the FTC cooperating with its Canadian counterparts in reviewing the Novartis/ GSK25 and Staples/Office Depot mergers,26 as well as the DOJ cooperating with the Canadian Competition Bureau in finding Nishikawa Rubber guilty of bid rigging in the car manufacturing industry in ways that affected both the US and Canada.27

18. There are several recent developments in the US. First, the DOJ has recently stated its intention to increasingly cooperate more, particularly in cartel cases, in order to maintain a level of efficiency, given that the number of enforcers and leniency regimes worldwide has significantly increased in the past decades.28 Another indication of the same is the new chapter on cooperation with foreign enforcers, added to the FTC and DOJ joint guidelines for international aspects of antitrust in early 2017.29 The FTC stated that “[t]he agencies’ enforcement of the US antitrust laws now frequently involves activity outside the United States, increasingly requiring collaboration with international counterparts,” as a reason for why the update was needed to the guidelines.30

19. Second, at the executive level, an expert-driven report published in March 2017 (“Report”) listed recommendations to the White House on how to better use competition policy to protect US interests abroad. Action recommendations included creating a government-wide strategy and action to combat alleged antitrust abuses abroad, and taking steps together with other nations either directly or via international organizations to help ensure that competition investigations and procedures are conducted in a transparent and non-discriminatory manner worldwide.31 The Report embraces two very different types of approaches: one promoting dialogue and cooperation to facilitate further mutual understanding and convergence of competition policy internationally, and the other setting forth the “weapons of trade” that the US could use to seek revenge for harm that other nations cause to its companies. It remains to be seen which approach the US will follow, but the latter option does present risks of its own for the US.32

### 1AR – UQ Overwhelms Link

#### The internal link is IMPOSSIBLE – Biden says decoupling is IMPOSSIBLE

Jianli **Yang 10/1**, Founder and President of Citizen Power Initiatives for China, “Biden Calls For International Cooperation, But How To Cooperate With China?”, The Hill, 10/1/2021, <https://thehill.com/opinion/international/574380-biden-calls-for-international-cooperation-but-how-to-cooperate-with>

Responding to the China threat, some in Washington have been advocating for a total decoupling with China — namely, to shut down all “areas of cooperation” altogether. However, this is **unrealistic**. Even during the past two years of heightened tensions between the U.S. and China, the trade volume between the two hostile nations has remained **relatively stable**, and has even shown signs of **growth**. Moreover, it would be detrimental to global welfare if the world’s two major powers — which are also the two largest economies — were unable to collaborate on issues of global concern, such as climate change and the coronavirus pandemic. Even during the peak of the Cold War, the U.S. and the Soviet Union were able to negotiate and work out deals on arms control, most notably the Anti-Ballistic Missile Treaty. Responding to the question of whether the Trump administration was seeking to “decouple” from China, then Vice President Mike Pence stated bluntly in his Oct. 24, 2019, address at the Woodrow Wilson International Center for Scholars, “The answer is a resounding ‘no.’”

The **Biden** administration and the preceding Trump administration both agree that decoupling from China is neither possible nor desirable — and both can be considered the most hawkish U.S. administrations toward China over the past 40 years. Kerry announced on the day following Biden’s U.N. address that he would go to China again, in his effort to **seek collaboration** with China.

#### COVID vaccines means global trade is inevitable

Laura **Wood 9/16**, Senior Press Manager at Research and Markets, “Global Terminal Tractor Market (2021 to 2026) - Advancements in Terminal Tractors Presents Opportunities”, Research and Markets, 9/16/2021, <https://www.globenewswire.com/en/news-release/2021/09/16/2298189/28124/en/Global-Terminal-Tractor-Market-2021-to-2026-Advancements-in-Terminal-Tractors-Presents-Opportunities.html>

However, a **strong rebound** in global trade with the recovery of major industries across the globe since the middle of last year has helped soften the impact of the pandemic for trade. The global economic recovery is also expected to be **fueled** by the higher production of **vaccines** and vaccination rates, allowing businesses to reopen **more quickly**. According to World Trade Organization (WTO), the volume of world merchandise trade is expected to **increase** by **8.0%** in 2021 after having fallen 5.3% in 2020, continuing its **rebound** from the pandemic-induced collapse that bottomed out in the second quarter of 2020.