# 1NC---R1 vs Kansas

### 1NC

#### T Per Se

#### ‘Business practices’ are ongoing conduct defined by the behaviors of many market participants

Kerry Lynn Macintosh 97, Associate Professor of Law, Santa Clara University School of Law. B.A. 1978, Pomona College; J.D. 1982, Stanford University, “Liberty, Trade, and the Uniform Commercial Code: When Should Default Rules Be Based On Business Practices?,” 38 Wm. & Mary L. Rev. 1465, Lexis

These new and revised articles reflect a strong trend toward choosing default rules 4 that codify existing business practices. 5 [FOOTNOTE 5 BEGINS] In this Article, the term "business practices" is used to refer to practices that emerge over time as countless market participants exercise their freedom to engage in profitable transactions. For an account of the evolution of business practices, see infra Part II. As used here, "business practices" is broader and less technical than "trade usage," which the Code narrowly defines as "any practice or method of dealing having such regularity of observance in a place, vocation, or trade as to justify an expectation that it will be observed with respect to the transaction in question." U.C.C. 1-205(2). [FOOTNOTE 5 ENDS] This is particularly true of the recent revisions to Articles 3 (Negotiable Instruments), 4 (Bank Deposits and Collections) and 5 (Letters of Credit).

#### ‘Prohibition’ must ban anticompetitive practices without exception

E. Norman Veasey 95, Chief Justice on the Delaware Supreme Court, “Snell v. Engineered Sys. & Designs”, Supreme Court of Delaware, 669 A.2d 13, 17-18, 1995 Del. LEXIS 338, 9/13/1995, Lexis

The interpretation of the statute is aided by the synopsis to a recent amendment to Section 2825. This synopsis states [\*\*12] that the amendment "clarifies the limitations on the public use of the word engineering by those not authorized to practice engineering for the general public." 68 Del. Laws, c. 24 (emphasis added). Had the General Assembly intended to ban all uses of the word "engineer" by those not certified, it would have been more logical for it to have used the word "prohibition" (or the equivalent) rather than the word "limitations" in the synopsis. Section 2825 must be analyzed, therefore, with the understanding that it bans only uses of the term "engineer" which would "lead to the [\*18] belief that such person is entitled to practice engineering"--i.e., a misleading use of any derivative of the word "engineer."

#### That means the only topical mechanism is to apply per se illegality

John Paul Stevens 90, Justice, Supreme Court of the United States, “FTC v. Superior Court Trial Lawyers Ass'n,” 493 U.S. 411, Lexis

LEdHN[3C] [3C]LEdHN[14] [14]Equally important is the second error implicit in respondents' claim to immunity from the per se rules. In its opinion, the Court of Appeals assumed that the antitrust laws permit, but do not require, the condemnation of price fixing and boycotts without proof of market power. 15 The opinion further assumed that the per se rule prohibiting such activity "is only a rule of 'administrative convenience and efficiency,' not a statutory command." 272 U.S. App. D. C., at 295, 856 F. 2d, at 249.This statement contains two errors. HN10 [\*\*\*\*42] The per se [\*433] rules are, of course, the product of judicial interpretations of the Sherman Act, but the rules nevertheless have the same force and effect as any other statutory commands. Moreover, while the per se rule against price fixing and boycotts is indeed justified in part by "administrative convenience," the Court of Appeals erred in describing the prohibition as justified only by such concerns. The per se rules also reflect a long-standing judgment that the prohibited practices by their nature have "a substantial potential for impact on competition." Jefferson Parish Hospital District No. 2 v. Hyde, 466 U.S. 2, 16 (1984).

[\*\*\*\*43] LEdHN[15] [15]As we explained in Professional Engineers, HN11 the rule of reason in antitrust law generates

"two complementary categories of antitrust analysis. In the first category are agreements whose nature and necessary effect are so plainly anticompetitive that no elaborate study of the industry is needed to establish their illegality -- they are 'illegal per se.' In the second category are agreements whose competitive effect can only be evaluated by analyzing the facts peculiar to the business, the history of the restraint, and the reasons why it was imposed." 435 U.S., at 692.

[\*\*\*873] "Once experience with a particular kind of restraint enables the Court to predict with confidence that the rule of reason will condemn it, it has applied a conclusive presumption that the restraint is unreasonable." Arizona v. Maricopa County Medical Society, 457 U.S. 332, 344 (1982).

[\*\*781] LEdHN[16] [16] [\*\*\*\*44] The per se rules in antitrust law serve purposes analogous to per se restrictions upon, for example, stunt flying in congested areas or speeding. Laws prohibiting stunt flying or setting speed limits are justified by the State's interest in protecting human life and property. Perhaps most violations of such rules actually cause no harm. No doubt many experienced drivers and pilots can operate much more safely, even at prohibited speeds, than the average citizen.

[\*434] If the especially skilled drivers and pilots were to paint messages on their cars, or attach streamers to their planes, their conduct would have an expressive component. High speeds and unusual maneuvers would help to draw attention to their messages. Yet the laws may nonetheless be enforced against these skilled persons without proof that their conduct was actually harmful or dangerous.

In part, the justification for these per se rules is rooted in administrative convenience. They are also supported, however, by the observation that every speeder and every stunt pilot poses some threat to the community. An unpredictable event may overwhelm the skills of the best driver or pilot, even if the [\*\*\*\*45] proposed course of action was entirely prudent when initiated. A bad driver going slowly may be more dangerous that a good driver going quickly, but a good driver who obeys the law is safer still.

#### Vote Neg:

#### 1) GROUND---key to link uniqueness and a unidirectional topic.

#### 2) LIMITS---too many possible standards, each requiring distinct answers makes the topic unmanageable

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#### States CP

#### The 50 state governments and relevant sub-federal territories, in coordination through the National Association of Attorneys General, should substantially increase prohibitions on private sector conduct that is more restrictive of competition than reasonably necessary to enable creation of information technology standards.

#### State action solves, won’t be preempted, and causes federal follow-on

Juan A. Arteaga 21, Partner at Crowell & Moring LLP, Former Senior Official in the Antitrust Division of the US Department of Justice, JD from Columbia Law School, and Jordan Ludwig, Counsel in the Antitrust Group at Crowell & Moring LLP, JD from Loyola Law School, “The Role of US State Antitrust Enforcement”, Private Litigation Guide – Second Edition, Global Competition Review, 1/28/2021, https://globalcompetitionreview.com/guide/private-litigation-guide/second-edition/article/the-role-of-us-state-antitrust-enforcement

Prior to the enactment of the first federal antitrust law – the Sherman Act – in 1890, state antitrust enforcement was quite robust in the United States because at least 26 states had already enacted some form of antitrust prohibition.[2] In addition, state enforcers had often used general corporation law and common law restraint of trade principles to regulate anticompetitive business practices and transactions.[3] This well-established state antitrust enforcement infrastructure – coupled with the fact that the Antitrust Division and FTC had only recently been created – permitted state attorneys general to continue playing a leading enforcement role for the first 30 years after the Sherman Act’s passage.[4] Indeed, state attorneys general successfully prosecuted a number of the most consequential antitrust enforcement actions during this period.[5]

In the early 1920s, however, state antitrust enforcers began playing a less prominent role because ‘the national dimension of the most important trusts, . . . as well as their ability to restructure in order to evade problematic state laws’, made clear that the federal government needed to step forward in order to adequately protect consumers and the competitive process.[6] As a result, the DOJ and FTC – whose national jurisdiction and greater resources enabled them to tackle the most pressing competition issues of the time – displaced state attorneys general as the primary source of government antitrust enforcement within the United States.[7] This largely remained true until the mid-1970s when Congress, in response to the DOJ and FTC’s perceived inactivity, passed two laws that expanded the authority of state attorneys general to enforce the federal antitrust laws and provided them with financial resources to do so.[8]

In 1976, Congress passed the Hart-Scott-Rodino Antitrust Improvement Act, which, among other things, authorised state attorneys general to bring *parens patriae* suits (i.e., legal actions brought on behalf of natural persons residing within their states) seeking monetary (treble damages) and injunctive relief for Sherman Act violations.[9] Congress also passed the Crime Control Act of 1976, which, among other things, provided state attorneys general with tens of millions in federal grants as ‘seed money’ for the creation of antitrust bureaus within their offices.[10] These laws had their intended effect of reinvigorating state antitrust enforcement.

During the 1980s, for example, state attorneys general once again emerged as vigorous antitrust enforcers, especially with respect to the prosecution of resale price maintenance practices and other vertical restraints.[11] The rise in the level and prominence of state antitrust enforcement during this period was largely due to a perceived enforcement void at the federal level, where the DOJ and FTC had mostly limited their focus to ‘prohibiting cartels and large horizontal mergers’.[12] No longer content with ceding antitrust enforcement to federal enforcers, state attorneys general expanded their antitrust dockets from prosecuting purely ‘local matters, such as bid-rigging on state contracts’, to actively investigating and litigating matters with multistate and national implications.[13] To help ensure that they had a larger seat at the antitrust enforcement table, state attorneys general also increased the coordination of their enforcement efforts and competition advocacy through organisations such as the National Association of Attorneys General (NAAG), which created a Multistate Antitrust Task Force and issued state Vertical Restraints and Horizontal Merger Guidelines during this period.[14]

Since the reawakening of state antitrust enforcement nearly 30 years ago, state attorneys general have continued to play an important role in the enforcement of both state and federal antitrust laws. During periods of lax federal antitrust enforcement, state attorneys general have often ramped up their enforcement activity in order to protect consumers from anticompetitive transactions and business practices.[15] During periods of vigorous federal antitrust enforcement, they have often served as strong partners for the DOJ and FTC by, among other things, offering valuable insights about competitive dynamics in local markets, assisting with obtaining information from key market participants (including state governmental entities that are direct purchasers of goods and services), and helping develop and implement litigation strategies for cases being tried before federal judges presiding in their states.[16]

Since January 2017, state attorneys general have increasingly played a leading and independent antitrust enforcement role. State antitrust enforcers have significantly increased their enforcement activity and willingness to act separately from their federal counterparts because many of them believe that there has been ‘under-enforcement’ by the DOJ and FTC.[17] State antitrust enforcers have also been able to enhance their influence over key competition policy issues and the antitrust enforcement agenda within the United States because there appears to have been a significant decline in the coordination and relationship between the DOJ and FTC.[18]

In once again flexing their enforcement muscle, state attorneys general have shown a willingness to publicly disagree with the DOJ and FTC on both policy and enforcement decisions, and have also sought to pressure their federal counterparts into more aggressively policing certain industries. Recent examples of the increased independence and assertiveness of state antitrust enforcers include:

* The DOJ, FTC and several state attorneys general have been actively investigating and prosecuting ‘no-poach’ agreements (i.e., where competitors for employees agree not to recruit or hire each other’s employees) in recent years. However, the DOJ and state attorneys general have taken directly opposing positions in private litigation challenging the legality of ‘no-poach’ clauses in corporate franchise agreements. The DOJ has argued that courts should review these clauses under the rule of reason whereas various state attorneys general have argued that these clauses should be deemed per se unlawful.[24]
* In their joint investigation into the T-Mobile/Sprint merger, nearly 20 state attorneys general sued to block the transaction in September 2019 even though the DOJ, along with seven state attorneys general, approved the deal after securing certain structural and behavioural remedies.[19] After the DOJ announced its proposed settlement with the companies, the Attorney General for New York, who led the states’ challenge to the merger, issued a press release dismissing the adequacy of the remedies negotiated by the DOJ: ‘The promises made by [the divestiture buyer] and [the merging companies] in this deal are the kinds of promises only robust competition can guarantee. We have serious concerns that cobbling together this new fourth mobile [phone] player, with the government picking winners and losers, will not address the merger’s harm to consumers, workers, and innovation.’[20] Thereafter, the DOJ opposed the states’ enforcement action by, among other things, moving to disqualify the private counsel hired by the states to represent them[21] and filing submissions that argued against the states’ requested injunction.[22] Ultimately, the state attorneys general were unsuccessful in their bid to block the deal.[23]
* None of the more than 20 state attorney general offices that actively investigated the AT&T/Time Warner merger joined the DOJ’s unsuccessful challenge to the transaction despite the DOJ’s concerted effort to secure their support.[25] In fact, nine state attorneys general filed an amicus brief opposing the DOJ’s appeal of the trial court’s decision.[26]
* After the FTC declined to seek any Colorado-related remedies in connection with Optum’s acquisition of DaVita Medical Group, the Attorney General for Colorado required the merging companies to lift the exclusivity provisions in contracts with certain healthcare providers and to extend their existing contracts with certain health insurers. In announcing this settlement, the Colorado Attorney General stated: ‘I recognize that this case marks an important step in state antitrust enforcement . . . . I am committed to protecting all Coloradans from anticompetitive consolidation and practices, and will do so whether or not the federal government acts to protect Coloradans.’[27]

After voicing displeasure with federal antitrust enforcement in the technology sector, numerous state attorneys general launched their independent investigations into ‘Big Tech’ companies even though the DOJ and FTC have ongoing investigations into these companies.[28]

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#### BBB will pass---timing and focus are key

Laura Barron-Lopez 11/11, White House Correspondent for POLITICO, “Dems to White House: The only prescription is more Biden”, <https://www.politico.com/news/2021/11/11/dems-white-house-biden-520946>, November 11th, 2021

After months of deference to Congress, President Joe Biden moved more assertively last week to shepherd half his domestic agenda into law. With the other half still in limbo, Democrats want some of that Biden punch again.

Outside groups fear that congressional Democrats could come up short on Biden’s social spending package. They are concerned that moderates in the House may end up buckling if the budget scores on the bill come back worse than anticipated. And there is residual anxiety that one of the two wavering Senate Democrats — Joe Manchin of West Virginia and Kyrsten Sinema of Arizona — could vote “no” over concerns about inflation and long-term debt.

The clearest solution to avoiding this, they argue, is more Biden.

“All eyes are on the president, all expectations are on the president,” said Lorella Praeli, co-president of the progressive Community Change Action. “We are playing our role. We are mobilizing. We're reminding people everyday what this is about.”

Praeli added that Biden must ensure there aren’t future cuts to the package, which dropped from $3.5 trillion to $1.75 trillion to accommodate centrist Democrats in the House and Senate. “This is what he campaigned on. Only the president can deliver it in the end.”

Until last week, Biden’s involvement in negotiations had been more deferential than managerial. That befuddled lawmakers, who were waiting for him to draw red lines about which priorities he wants in and out of the deal or to even demand votes. To date, Biden has publicly refrained from drawing a red line around including paid leave in the final version of the legislation, leaving the leadership in the House at odds with centrists in the Senate.

But Biden did ramp up his involvement in the negotiations last week. And Democrats viewed that as key to getting an agreement in the House on their infrastructure bill, as well as on a rule to move forward with their social spending package, which funds universal pre-K, expands Medicare access, cuts taxes for families with children 18 years old and under, and combats climate change.

Now they want more. Expectations are high for Biden to keep the House to its promise of a vote on that social spending plan the week of Nov. 15.

“They basically made a promise,” said Rahna Epting, executive director of the progressive advocacy group MoveOn. “And Biden was able to get enough progressives to vote for the bipartisan infrastructure bill, on that promise. We are expecting Biden and the Democratic Caucus will make good on their word and pass the Build Back Better Act no later than Nov 15th as stated.”

White House officials contend that Biden and his team remain in close touch with the Hill, and their legislative affairs staff continues to push the social spending bill toward a vote. The White House said it is communicating regularly with a range of lawmakers including Manchin, but did not answer when asked whether Biden has spoken to the West Virginia senator or other moderates in recent days.

“There has been no kind of slowdown when it comes to our Hill outreach,” a White House official said.

The growing demands for Biden to stay heavily involved reflect a fear in the party that the window to act on the agenda is quickly closing, especially as concerns mount about lingering inflation and the midterms near. If the House meets its deadline next week and passes the social spending bill, some Democrats want Biden to issue a deadline for the Senate to act. Others noted that the end-of-year legislative calendar is short and brutal.

The “dynamic has totally changed,” said a Democratic strategist. “The president secured this agreement with the five holdouts for House passage of BBB next week and it’s on him to enforce it.”

A top climate operative echoed that assessment telling POLITICO that Biden “will have failed” on tackling climate change if the second piece of the agenda doesn’t pass.

But the operative also expressed a newfound fear that Biden’s current effort to sell the benefits of the infrastructure bill could distract or complicate Democrats’ attempt to keep public interested in the social spending plan.

"They need to sell [physical infrastructure] but also act like it's not enough," said the activist.

"How are they also creating the urgency for BBB to get done, for it to stay on the timeline of getting it done by Thanksgiving? It's a balancing act.”

Matt Bennett, co-founder of the moderate group Third Way, agreed that the dynamics were “tricky” in trying to sell one just-passed bill as historic while simultaneously making the case that another ambitious bill is needed. Biden will travel to New Hampshire and Michigan next week to highlight the money the infrastructure bill will direct toward new roads, bridges and transit projects across the country.

“This moment that we're in is hard,” said Bennett. “It will be much, much easier when both bills are completed. There is a very profound political imperative for Democrats to get this finished, to end the infighting and sausage-making and shift to creating a narrative about what Democrats have just done for Americans because they've been utterly unable to do that.”

A number of groups plan to amp up pressure next week as Congress returns. House Speaker Nancy Pelosi and the White House have repeated their desire to have a vote on the social spending plan by the end of next week. The Service Employees International Union will descend on Capitol Hill with some 500 union members, said Mary Kay Henry, the union’s president.

“We are escalating phone calls, text messages,” said Henry. “We're bringing members into Washington next Tuesday, we have the president's back, to get Congress to act quickly and get the full back package.”

Democratic outside groups have spent more than $150 million on TV and digital ads promoting the president’s social spending plan, known as “Build Back Better.” The League of Conservation Voters and Climate Power launched new digital ads calling on the five moderates who reached an agreement with the White House and House leadership last week to follow through on their commitment to pass the second piece of Biden’s economic agenda “next week.”

The longer it takes to pass the social spending plan, the harder it becomes to keep the party unified, Democrats warn, especially amid up-and-down economic news. A new report Wednesday revealed inflation hit 6.2 percent in October, its highest point in 31 years, contributing to high gas, car and food prices. It forced Biden to quickly issue a statement addressing the issue and ever-so-slightly shift his messaging, arguing that passage of the social spending plan would combat inflation.

“Inflation hurts Americans’ pocketbooks, and reversing this trend is a top priority for me,” Biden said in a statement. “It is important that Congress pass my Build Back Better plan, which is fully paid for and does not add to the debt, and will get more Americans working by reducing the cost of child care and elder care, and help directly lower costs for American families.”

#### The plan trades-off

Peter C. Carstensen 21, Fred W. & Vi Miller Chair in Law Emeritus at the University of Wisconsin Law School, LL.B. from Yale Law School, MA in Economics from Yale University, “The “Ought” and “Is Likely” of Biden Antitrust”, Concurrences – Antitrust Publications & Events, February 2021, https://www.concurrences.com/en/review/issues/no-1-2021/on-topic/the-new-us-antitrust-administration-en

14. Similarly, despite bipartisan murmurs about competitive issues, the potential in a closely divided Congress that any major initiatives will survive is limited at best. In part the challenge here is how the Biden administration will rank its commitments. If it were to make reform of competition law a major and primary commitment, it would have to trade off other goals, which might include health care reform or increases in the minimum wage. It is likely in this circumstance the new administration, like the Obama administration’s abandonment of the pro-competitive rules proposed under the PSA, would elect to give up stricter competition rules in order to achieve other legislative priorities.

15. Another key to a robust commitment to workable competition is the choice of cabinet and other key administrative positions. Here as well, the early signs are not entirely encouraging. In selecting Tom Vilsack to return as secretary of agriculture, the president has embraced a friend of the large corporate interests dominating agriculture who has spent the last four years in a highly lucrative position advancing their interests. Given the desperate need for pro-competitive rules to implement the PSA and control exploitation of dairy farmers through milk-market orders, the return of Vilsack is not good news. Who will head the FTC and who will be the attorney general and assistant attorney general for antitrust is still unknown, but if those picks are also centrists with strong links to corporate America the hope for robust enforcement of competition law will further attenuate!

16. In sum, this is a pessimistic prognostication for the likely Biden antitrust enforcement agenda. There is much that ought to be done. But this requires a willingness to take major enforcement risks, to invest significant political capital in the legislative process, and to select leaders who are committed to advancing the public interest in fair, efficient and dynamically competitive markets. The early signs are that the new administration will be no more committed to robust competition policy than the Obama administration. Events may force a more vigorous policy—I will cling to that hope as the Biden administration takes shape.

#### Failure causes extinction

Jeff Goodell 21, American Author and Contributing Editor to Rolling Stone Magazine, Senior Fellow at the Atlantic Council and 2020 Guggenheim Fellow, “Joe Manchin Just Cooked the Planet,” Rolling Stone, 10-1-2021, https://www.rollingstone.com/politics/political-commentary/joe-manchin-reconcilation-bill-big-coal-1235597/amp/

West Virginia Sen. Joe Manchin just cooked the planet. I don’t mean that in a metaphorical sense. I mean that literally. Unless Manchin changes his negotiating position dramatically in the near future, he will be remembered as the man who, when the moment of decision came, chose to condemn virtually every living creature on Earth to a hellish future of suffering, hardship, and death.

Quite a legacy. But he has earned it.

Last night, during the insane and at times comical negotiations over President Biden’s infrastructure bill and his $3.5 trillion Build Back Better agenda (aka the reconciliation bill), Manchin let it be known that he was not going to vote for any measure above $1.5 trillion. And because Democrats can’t afford to lose a single vote in the Senate, if Manchin won’t vote for it, the reconciliation bill won’t pass.

The $3.5 trillion reconciliation bill includes a long list of programs and tax reforms that will help reduce poverty and improve the social safety net, such as universal child tax credit, universal pre-K, free community college, and an expansion of Medicare. But it is also the primary vehicle for President Biden’s ambitious climate action agenda, including cuts in subsidies for the fossil fuel industry, and, most importantly, the Clean Energy Performance Package (CEPP), which is a clean energy standard that incentivizes power companies to shift away from fossil fuels.

From a climate point of view, the importance of these climate policy measures is impossible to overstate. In order to have a decent chance at maintaining a habitable planet, scientists agree that the world needs to zero out carbon pollution by 2050. And to have any shot at that, we have to start moving now. Every year, every month, every hour of delay makes that goal more difficult to achieve, and increases the risks of accelerated climate chaos that will make this past summer of hellish wildfires, storms, and droughts look like the good old days.

The zero carbon by 2050 goal is not a political slogan or environmentalist’s dream. It is what the best scientists in the world are telling us we need to do to avert climate catastrophe. It is also the basis for Biden’s goal of a 100 percent clean energy grid by 2035, and a 50 percent reduction in CO2 pollution by 2030. For Biden, taking strong action on climate is not just important in itself. It is also key to giving the U.S. climate negotiators something to bring to the table at the upcoming Glasgow climate talks, which begin on October 31st. After President Trump pulled the U.S. out of the Paris climate deal, the rest of the world has looked at the U.S. with distrust. Passage of strong climate measures in Congress before the Glasgow meeting would not only rehabilitate America’s standing as a nation that takes its contribution to solving the climate crisis seriously, but give U.S. negotiators leverage to push other nations to take action.

For Biden, and for the world, it all rests on the ability to get the reconciliation bill through Congress. With Republicans not willing to do anything, this was the only chance they had to get climate policy through. It was a gamble, but it was a gamble they had to take.

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#### BizCon DA

#### The plan spills over, decimating business confidence and overall economic recovery

Trace Mitchell 21, Policy Counsel at NetChoice, JD from the George Mason University, Antonin Scalia Law School, Former Research Associate at the Mercatus Center at George Mason University, BA in Political Science and Government from Florida Gulf Coast University, “Weaponizing Antitrust to Attack Big Tech Is a Bad Idea”, Morning Consult, 3/3/2021, https://morningconsult.com/opinions/weaponizing-antitrust-to-attack-big-tech-is-a-bad-idea/

From the House Judiciary report calling for dramatic antitrust reform to federal antitrust regulators and state attorneys general initiating lawsuits against Facebook and Google, government officials are once again calling for more aggressive antitrust enforcement to go after America’s tech businesses.

And while critics from all sides are reaching for any and all tools to go after “Big Tech,” weaponizing antitrust will only end up harming American consumers and the American economy at a time when we’re still trying to keep our heads above water.

Using antitrust to go after American tech won’t stop at Silicon Valley. Every sector of our economy will be at risk of politically motivated antitrust enforcement. And that won’t just hurt consumers searching for information on Google or shopping for products on Amazon — America’s economy could lose its global competitiveness amid a global pandemic.

In fact, the recent cases against Google from the Department of Justice and state attorneys general are a great example of just how this misuse of antitrust could harm Americans across the country and halt innovation in its tracks.

These suits conveniently forget how consumers benefit from Google’s suite of products in attempts to claim that Google unfairly monopolized the search and search advertising markets. Even worse, by claiming consumer harm, the government fails to truly grasp what consumers actually want.

You see, under the consumer welfare standard, antitrust enforcement is built to focus on what consumers want and whether consumers benefit. When the government argues Google is harming Americans because its products are preinstalled and even the default search engine on Apple, the government forgets that American consumers don’t think this is a problem.

The vast majority of search users prefer Google to its competitors. And through preinstallation, we get free-to-use products, quick searches and near-limitless information in an integrated system with the click of a mouse. It isn’t a problem; it’s a time saver. Further, because Google can reinvest in developing more user-friendly tech in a preinstalled ecosystem, we get interoperable apps that make our experience that much more convenient and intuitive. And even if consumers do want a different app, they can fix this problem with no heavy leg work or travel — just the swipe of a finger.

But if the government gets its way, the message could be disastrous for innovation: Even if your business benefits Americans and improves the user experience, the government can still put a target on your back. Not to mention, the government would be more likely to put a target on your back if you’re large and politically disfavored. Consumers across the internet and the American economy would be hurt and left without more accessible and more affordable technology as options.

We should be working to reward, not punish, innovation. Otherwise, the next Google may just decide it isn’t worth the time and effort.

Similarly, the Federal Trade Commission’s recent case against Facebook also puts the wants of policymakers above the actual interests of consumers.

Here, the government claims that Facebook harms consumers by acquiring and then integrating services like Instagram and WhatsApp. So harmful, the Federal Trade Commission says, that Facebook must divest from these services, even if that would harm American consumers, innovation and entrepreneurship for decades to come.

But this is not a case of consumer harm or bad behavior — Facebook’s acquisition of Instagram and WhatsApp helped ensure that consumers’ desires were prioritized. Through millions of investment dollars into research and development, Facebook turned good services into great services that consumers actively keep coming back to.

Through relentless product improvement, WhatsApp became a free-to-use platform and Instagram became one of the most successful photo-sharing social media apps in the world. In both cases, consumers benefited from convenient and state-of-the-art advancements. No longer do we have to pay to use messaging or search through multiple results to shop our influencer feed.

As it stands, the Federal Trade Commission case could splinter one successful tech company into multiple, less efficient organizations, setting a precedent that could affect every American industry. Consumers would not only lose Facebook’s free-to-use services but also potentially the next big clothing brand or the next hit microbrewed beer.

By impeding mergers, the sheer fear of potential antitrust enforcement would shutter the doors on small businesses from all sectors of the economy. So much investment in innovation is built on the possibility of being acquired by a larger player. Entrepreneurs and innovators from manufacturing, automotive and tech alike would be left with an unfortunate takeaway — succeed and benefit consumers, but not too much.

And with an economy still struggling to recover, the absolute last thing we need is to leave consumers without innovative and affordable choices, small businesses without key investment opportunities and our economy without a competitive edge globally.

But by weaponizing antitrust, we’ll get neither thoughtful intervention nor consumer benefits. Instead, the United States will lose ground to foreign competitors and American consumers will ultimately pay the price.

#### Decline cascades---nuclear war

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Various scholars and institutions regard global social instability as the greatest threat facing this decade. The catalyst has been postulated to be a Second Great Depression which, in turn, will have profound implications for global security and national integrity. This paper, written from a broad systems perspective, illustrates how emerging risks are getting more complex and intertwined; blurring boundaries between the economic, environmental, geopolitical, societal and technological taxonomy used by the World Economic Forum for its annual global risk forecasts. Tight couplings in our global systems have also enabled risks accrued in one area to snowball into a full-blown crisis elsewhere. The COVID-19 pandemic and its socioeconomic fallouts exemplify this systemic chain-reaction. Onceinexorable forces of globalization are rupturing as the current global system can no longer be sustained due to poor governance and runaway wealth fractionation. The coronavirus pandemic is also enabling Big Tech to expropriate the levers of governments and mass communications worldwide. This paper concludes by highlighting how this development poses a dilemma for security professionals.

Key Words: Global Systems, Emergence, VUCA, COVID-9, Social Instability, Big Tech, Great Reset

INTRODUCTION

The new decade is witnessing rising volatility across global systems. Pick any random “system” today and chart out its trajectory: Are our education systems becoming more robust and affordable? What about food security? Are our healthcare systems improving? Are our pension systems sound? Wherever one looks, there are dark clouds gathering on a global horizon marked by volatility, uncertainty, complexity and ambiguity (VUCA).

But what exactly is a global system? Our planet itself is an autonomous and selfsustaining mega-system, marked by periodic cycles and elemental vagaries. Human activities within however are not system isolates as our banking, utility, farming, healthcare and retail sectors etc. are increasingly entwined. Risks accrued in one system may cascade into an unforeseen crisis within and/or without (Choo, Smith & McCusker, 2007). Scholars call this phenomenon “emergence”; one where the behaviour of intersecting systems is determined by complex and largely invisible interactions at the substratum (Goldstein, 1999; Holland, 1998).

The ongoing COVID-19 pandemic is a case in point. While experts remain divided over the source and morphology of the virus, the contagion has ramified into a global health crisis and supply chain nightmare. It is also tilting the geopolitical balance. China is the largest exporter of intermediate products, and had generated nearly 20% of global imports in 2015 alone (Cousin, 2020). The pharmaceutical sector is particularly vulnerable. Nearly “85% of medicines in the U.S. strategic national stockpile” sources components from China (Owens, 2020).

An initial run on respiratory masks has now been eclipsed by rowdy queues at supermarkets and the bankruptcy of small businesses. The entire global population – save for major pockets such as Sweden, Belarus, Taiwan and Japan – have been subjected to cyclical lockdowns and quarantines. Never before in history have humans faced such a systemic, borderless calamity.

COVID-19 represents a classic emergent crisis that necessitates real-time response and adaptivity in a real-time world, particularly since the global Just-in-Time (JIT) production and delivery system serves as both an enabler and vector for transboundary risks. From a systems thinking perspective, emerging risk management should therefore address a whole spectrum of activity across the economic, environmental, geopolitical, societal and technological (EEGST) taxonomy. Every emerging threat can be slotted into this taxonomy – a reason why it is used by the World Economic Forum (WEF) for its annual global risk exercises (Maavak, 2019a). As traditional forces of globalization unravel, security professionals should take cognizance of emerging threats through a systems thinking approach.

METHODOLOGY

An EEGST sectional breakdown was adopted to illustrate a sampling of extreme risks facing the world for the 2020-2030 decade. The transcendental quality of emerging risks, as outlined on Figure 1, below, was primarily informed by the following pillars of systems thinking (Rickards, 2020):

• Diminishing diversity (or increasing homogeneity) of actors in the global system (Boli & Thomas, 1997; Meyer, 2000; Young et al, 2006);

• Interconnections in the global system (Homer-Dixon et al, 2015; Lee & Preston, 2012);

• Interactions of actors, events and components in the global system (Buldyrev et al, 2010; Bashan et al, 2013; Homer-Dixon et al, 2015); and

• Adaptive qualities in particular systems (Bodin & Norberg, 2005; Scheffer et al, 2012) Since scholastic material on this topic remains somewhat inchoate, this paper buttresses many of its contentions through secondary (i.e. news/institutional) sources.

ECONOMY

According to Professor Stanislaw Drozdz (2018) of the Polish Academy of Sciences, “a global financial crash of a previously unprecedented scale is highly probable” by the mid- 2020s. This will lead to a trickle-down meltdown, impacting all areas of human activity.

The economist John Mauldin (2018) similarly warns that the “2020s might be the worst decade in US history” and may lead to a Second Great Depression. Other forecasts are equally alarming. According to the International Institute of Finance, global debt may have surpassed $255 trillion by 2020 (IIF, 2019). Yet another study revealed that global debts and liabilities amounted to a staggering $2.5 quadrillion (Ausman, 2018). The reader should note that these figures were tabulated before the COVID-19 outbreak.

The IMF singles out widening income inequality as the trigger for the next Great Depression (Georgieva, 2020). The wealthiest 1% now own more than twice as much wealth as 6.9 billion people (Coffey et al, 2020) and this chasm is widening with each passing month. COVID-19 had, in fact, boosted global billionaire wealth to an unprecedented $10.2 trillion by July 2020 (UBS-PWC, 2020). Global GDP, worth $88 trillion in 2019, may have contracted by 5.2% in 2020 (World Bank, 2020).

As the Greek historian Plutarch warned in the 1st century AD: “An imbalance between rich and poor is the oldest and most fatal ailment of all republics” (Mauldin, 2014). The stability of a society, as Aristotle argued even earlier, depends on a robust middle element or middle class. At the rate the global middle class is facing catastrophic debt and unemployment levels, widespread social disaffection may morph into outright anarchy (Maavak, 2012; DCDC, 2007).

Economic stressors, in transcendent VUCA fashion, may also induce radical geopolitical realignments. Bullions now carry more weight than NATO’s security guarantees in Eastern Europe. After Poland repatriated 100 tons of gold from the Bank of England in 2019, Slovakia, Serbia and Hungary quickly followed suit.

According to former Slovak Premier Robert Fico, this erosion in regional trust was based on historical precedents – in particular the 1938 Munich Agreement which ceded Czechoslovakia’s Sudetenland to Nazi Germany. As Fico reiterated (Dudik & Tomek, 2019):

“You can hardly trust even the closest allies after the Munich Agreement… I guarantee that if something happens, we won’t see a single gram of this (offshore-held) gold. Let’s do it (repatriation) as quickly as possible.” (Parenthesis added by author).

President Aleksandar Vucic of Serbia (a non-NATO nation) justified his central bank’s gold-repatriation program by hinting at economic headwinds ahead: “We see in which direction the crisis in the world is moving” (Dudik & Tomek, 2019). Indeed, with two global Titanics – the United States and China – set on a collision course with a quadrillions-denominated iceberg in the middle, and a viral outbreak on its tip, the seismic ripples will be felt far, wide and for a considerable period.

A reality check is nonetheless needed here: Can additional bullions realistically circumvallate the economies of 80 million plus peoples in these Eastern European nations, worth a collective $1.8 trillion by purchasing power parity? Gold however is a potent psychological symbol as it represents national sovereignty and economic reassurance in a potentially hyperinflationary world. The portents are clear: The current global economic system will be weakened by rising nationalism and autarkic demands. Much uncertainty remains ahead. Mauldin (2018) proposes the introduction of Old Testament-style debt jubilees to facilitate gradual national recoveries. The World Economic Forum, on the other hand, has long proposed a “Great Reset” by 2030; a socialist utopia where “you’ll own nothing and you’ll be happy” (WEF, 2016).

In the final analysis, COVID-19 is not the root cause of the current global economic turmoil; it is merely an accelerant to a burning house of cards that was left smouldering since the 2008 Great Recession (Maavak, 2020a). We also see how the four main pillars of systems thinking (diversity, interconnectivity, interactivity and “adaptivity”) form the mise en scene in a VUCA decade.

ENVIRONMENTAL

What happens to the environment when our economies implode? Think of a debt-laden workforce at sensitive nuclear and chemical plants, along with a concomitant surge in industrial accidents? Economic stressors, workforce demoralization and rampant profiteering – rather than manmade climate change – arguably pose the biggest threats to the environment. In a WEF report, Buehler et al (2017) made the following pre-COVID-19 observation:

The ILO estimates that the annual cost to the global economy from accidents and work-related diseases alone is a staggering $3 trillion. Moreover, a recent report suggests the world’s 3.2 billion workers are increasingly unwell, with the vast majority facing significant economic insecurity: 77% work in part-time, temporary, “vulnerable” or unpaid jobs.

Shouldn’t this phenomenon be better categorized as a societal or economic risk rather than an environmental one? In line with the systems thinking approach, however, global risks can no longer be boxed into a taxonomical silo. Frazzled workforces may precipitate another Bhopal (1984), Chernobyl (1986), Deepwater Horizon (2010) or Flint water crisis (2014). These disasters were notably not the result of manmade climate change. Neither was the Fukushima nuclear disaster (2011) nor the Indian Ocean tsunami (2004). Indeed, the combustion of a long-overlooked cargo of 2,750 tonnes of ammonium nitrate had nearly levelled the city of Beirut, Lebanon, on Aug 4 2020. The explosion left 204 dead; 7,500 injured; US$15 billion in property damages; and an estimated 300,000 people homeless (Urbina, 2020). The environmental costs have yet to be adequately tabulated.

Environmental disasters are more attributable to Black Swan events, systems breakdowns and corporate greed rather than to mundane human activity.

Our JIT world aggravates the cascading potential of risks (Korowicz, 2012). Production and delivery delays, caused by the COVID-19 outbreak, will eventually require industrial overcompensation. This will further stress senior executives, workers, machines and a variety of computerized systems. The trickle-down effects will likely include substandard products, contaminated food and a general lowering in health and safety standards (Maavak, 2019a). Unpaid or demoralized sanitation workers may also resort to indiscriminate waste dumping. Many cities across the United States (and elsewhere in the world) are no longer recycling wastes due to prohibitive costs in the global corona-economy (Liacko, 2021).

Even in good times, strict protocols on waste disposals were routinely ignored. While Sweden championed the global climate change narrative, its clothing flagship H&M was busy covering up toxic effluences disgorged by vendors along the Citarum River in Java, Indonesia. As a result, countless children among 14 million Indonesians straddling the “world’s most polluted river” began to suffer from dermatitis, intestinal problems, developmental disorders, renal failure, chronic bronchitis and cancer (DW, 2020). It is also in cauldrons like the Citarum River where pathogens may mutate with emergent ramifications.

On an equally alarming note, depressed economic conditions have traditionally provided a waste disposal boon for organized crime elements. Throughout 1980s, the Calabriabased ‘Ndrangheta mafia – in collusion with governments in Europe and North America – began to dump radioactive wastes along the coast of Somalia. Reeling from pollution and revenue loss, Somali fisherman eventually resorted to mass piracy (Knaup, 2008).

The coast of Somalia is now a maritime hotspot, and exemplifies an entwined form of economic-environmental-geopolitical-societal emergence. In a VUCA world, indiscriminate waste dumping can unexpectedly morph into a Black Hawk Down incident. The laws of unintended consequences are governed by actors, interconnections, interactions and adaptations in a system under study – as outlined in the methodology section.

Environmentally-devastating industrial sabotages – whether by disgruntled workers, industrial competitors, ideological maniacs or terrorist groups – cannot be discounted in a VUCA world. Immiserated societies, in stark defiance of climate change diktats, may resort to dirty coal plants and wood stoves for survival. Interlinked ecosystems, particularly water resources, may be hijacked by nationalist sentiments. The environmental fallouts of critical infrastructure (CI) breakdowns loom like a Sword of Damocles over this decade.

GEOPOLITICAL

The primary catalyst behind WWII was the Great Depression. Since history often repeats itself, expect familiar bogeymen to reappear in societies roiling with impoverishment and ideological clefts. Anti-Semitism – a societal risk on its own – may reach alarming proportions in the West (Reuters, 2019), possibly forcing Israel to undertake reprisal operations inside allied nations. If that happens, how will affected nations react? Will security resources be reallocated to protect certain minorities (or the Top 1%) while larger segments of society are exposed to restive forces? Balloon effects like these present a classic VUCA problematic.

Contemporary geopolitical risks include a possible Iran-Israel war; US-China military confrontation over Taiwan or the South China Sea; North Korean proliferation of nuclear and missile technologies; an India-Pakistan nuclear war; an Iranian closure of the Straits of Hormuz; fundamentalist-driven implosion in the Islamic world; or a nuclear confrontation between NATO and Russia. Fears that the Jan 3 2020 assassination of Iranian Maj. Gen. Qasem Soleimani might lead to WWIII were grossly overblown. From a systems perspective, the killing of Soleimani did not fundamentally change the actor-interconnection-interaction adaptivity equation in the Middle East. Soleimani was simply a cog who got replaced.

### 1NC

#### Aerojet DA

#### The Lockheed-Aerojet merger will be approved soon because of existing antitrust precedent, but it’s a politicized test of the FTC

Marcus Weisgerber 21, Global Business Editor at Defense One, “Lockheed’s Proposed Aerojet Rocketdyne Purchase Sets Early M&A Test for Biden”, Defense One, 3/21/2021, https://seniordownsizingsolutions.com/rs1kstuq/frank-kendall-northrop-grumman

The Biden administration’s approval — or disapproval — of Lockheed Martin’s planned $4.4 billion acquisition of rocket engine maker Aerojet Rocketdyne could shape defense industry consolidation for years to come.

If approved, the deal would mean the absorption of the last independent American weapons-grade rocket maker. All U.S. rockets would be produced by Northrop, which bought Orbital ATK in 2018, and Lockheed, the world’s largest defense contractor. It would also turn Lockheed into a key supplier of Raytheon Technologies, its major rival in the missiles sector.

Lockheed executives told investors on a Monday morning call that the acquisition would allow the company to deliver weapons to the military faster and cheaper than it can today.

“This helps position us for even greater growth, in hypersonics, missile defense and space, which are key elements of the national defense strategy,” Lockheed CEO Jim Taiclet said.

Taiclet, who became Lockheed’s CEO in June, also cited flat U.S. defense spending projections as a reason for the sale.

“They're going to be asked to do more in these areas with a flattening budget,” Taiclet said. “Having a more efficient supplier and a more robust supplier ... in uncertain economic times is a positive for the Department of Defense and for NASA.”

The proposed deal — which is expected to close in late 2021 — comes two years after Northrop Grumman acquired rocket maker Orbital ATK, a deal stoked industry consolidation fears. The Federal Trade Commission put conditions on the deal that Northrop had to supply solid rocket motors to competitors.

“Our overall expectation is that that may be the same lens through which this particular transaction is viewed because of the similarities there,” Taiclet said.

Still, Boeing claimed Northrop’s buying Orbital ATK prevented it from entering a bid for an $85 billion contract to build new intercontinental ballistic missiles. That left Northrop as the only bidder.

Orbital ATK, now part of Northrop, and Aerojet Rocketdyne are the only two U.S. makers of the solid rocket motors used in ICBMs and missile interceptors.

“The proposed purchase of Aerojet Rocketdyne (AJRD) by Lockheed Martin (LMT) is the first test of the Biden Administration and its views on defense sector consolidation and structure,” Capital Alpha Partners analyst Byron Callan said in a Monday note to clients. “It may take weeks and months before those views are known.”

Loren Thompson, a consultant and defense industry analyst with the Lexington Institute, said Lockheed’s acquisition of Aerojet would create more competition for solid rocket motors.

“Aerojet Rocketdyne will now have the same kind of financial resources to draw on as Orbital did when it joined Northrop, assuring that both domestic suppliers of large solids can remain active in military and civilian markets,” Thompson wrote Monday in Forbes.

A number of government organizations — including the Defense Department — are involved in the regulatory approval process. When Lockheed acquired helicopter-maker Sikorsky in 2015, Frank Kendall, who served as the Pentagon’s top weapons buyer during the Obama administration, expressed concerns that the deal would reduce competition. Kendall is reportedly under consideration to become Biden’s deputy defense secretary.

#### The plan causes compensating denial of the deal

William E. Kovacic 20, Professor at the George Mason University School of Law, JD from Columbia University, BA from Princeton University, “Keeping Score: Improving the Positive Foundations for Antitrust Policy”, University of Pennsylvania Journal of Business Law, Volume 23, Issue 1, 23 U. Pa. J. Bus. L. 49, Lexis

THE POLITICAL ASSAULT ON THE FTC

From the late 1960s through the 1970s, the FTC pursued an extraordinarily ambitious agenda of competition and consumer protection matters. Significant antitrust litigation included challenges to dominant firm misconduct and collective dominance, distribution practices, horizontal restraints, and facilitating practices. Many matters involved powerful economic interests, and in a number of cases the Commission sought structural relief in the form of divestitures or the compulsory licensing of [\*75] intellectual property. In 1974, the agency also initiated a program that required certain large firms to provide "line-of-business" data concerning a range of performance indicators.

In the same period, the Commission used a mix of litigation and rulemaking to transform its consumer protection agenda. Through policy guidance and litigation, the agency introduced its advertising substantiation program that required firms to have support for factual claims made in their advertisements. The Commission initiated over twenty-five rulemaking proceedings and promulgated final rules involving a broad collection of product and service sectors.

As a group, the FTC's competition and consumer protection initiatives aroused fierce opposition from the affected firms and industries, which contested the agency's actions in court and before Congress. The complaints of industry resonated with a large, powerful bipartisan coalition of legislators who criticized the Commission's activism, proposed various measures to curb the agency's authority, and ultimately adopted a number of restrictions in The Federal Trade Commission Improvements Act of 1980 [\*76] (FTC Improvements Act). In 1980, bitter opposition to elements of the FTC's competition and consumer protection programs led Congress to allow the FTC's funding to lapse, forcing the agency to temporarily cease operations. Perhaps emboldened by the weak political support the Commission enjoyed before 1981, when the Democrats controlled the White House and both chambers of Congress, the Reagan administration briefly resumed the assault on the agency's funding. In January 1981, David Stockman, Ronald Reagan's first Director of the Office of Management and Budget (OMB), launched a short-lived effort to eliminate funding for the FTC's competition policy program.

The congressional and executive branch officials who criticized the FTC in this period advanced two positive claims to justify recommendations for withdrawing authority or funding for the Commission. One claim was that the agency's choice of competition and consumer protection programs had contradicted congressional guidance about how the FTC should use its authority and resources. Many legislators complained that the agency had disregarded the legislature's preferences and used its powers in ways that Congress never contemplated to fall within the FTC's remit. As Congress considered bills in 1979 to limit the Commission's powers, Congressman [\*77] William Frenzel captured the prevailing legislative mood:

It is bad enough to be counterproductive and therefore highly inflationary, but the FTC compounds its sins by generally ignoring the intent of our laws, and writing its own laws whenever the whimsey strikes it . . .

Ignoring Congress can be a virtue, but the FTC's excessive nose-thumbing at the legislative branch has become legend. In short, the FTC has made itself into virulent political and economic pestilence, insulated from the people and their representatives, and accountable to no influence except its own caprice.

The Commission, Frenzel concluded, was "a rogue agency gone insane."

The accusation of Commission disobedience figured prominently in Senate deliberations on the 1980 FTC Improvements Act. In less flamboyant but still pointed terms, the chief Senate sponsors of the FTC Improvements Act said restrictions were necessary to curb the agency's unauthorized adventurism. Senator Howard Cannon explained: "The real reason that we have proposed this legislation for the FTC is because the Commission appeared to be fully prepared to push its statutory authority to the very brink and beyond. Good judgment and wisdom had been replaced with an arrogance that seemed unparalleled among independent regulatory agencies."

The accusation of disregard for congressional will soon echoed in statements by high level officials in the newly arrived Reagan administration. OMB Director Stockman recited a variant of this theme in an appearance before a House of Representatives Committee early in 1981 to address his proposal to eliminate funding for the agency's competition mission. Stockman said, " . . . in recent years the FTC has served the public interest very poorly, in major part because it has sought to expand its power and influence beyond that envisioned by Congress."

Beyond generalized claims of institutional disobedience, the accusation of disregard for congressional will was invoked to justify proposals to impose restrictions on specific FTC initiatives. For example, in the fall of [\*78] 1979, the Senate Commerce Committee held hearings on a proposal by Senator Howell Heflin to eliminate the FTC's power to order divestiture or other forms of structural relief in non-merger cases. This was a shot across the bow of the FTC's pending "shared monopoly" cases involving the breakfast cereal and petroleum refining sectors, where the FTC had requested structural relief (divestitures and, in the cereal case, compulsory trademark licensing) to restore competition. Congress did not adopt the Helfin proposal, but the idea of eliminating or restricting the FTC's power to seek divestiture remained a serious threat to the agency. Roughly a year after the Commerce Committee hearings on the Heflin amendment, on the day before the balloting in the 1980 presidential elections, Vice-President Walter Mondale appeared at a campaign rally in Battle Creek, Michigan (the headquarters of the Kellogg Company). The Vice-President assured his audience that, if he and President Jimmy Carter were reelected, the Carter administration would seek legislation to ban the FTC from obtaining divestiture in the breakfast cereal shared monopolization case.

A second, related claim was that the FTC had abandoned any adherence to sound administrative practice and descended into utterly irrational decision making. The agency was not merely disobedient ("rogue") but [\*79] crazy ("insane"), as well. Here, again, Congressman Frenzel pungently made the point. The FTC, Frenzel said, "is a king-sized cancer on our economy. It has undoubtedly added more unnecessary costs on American consumers who it is charged with protecting, than any other half dozen agencies combined." David Stockman's initial broadside against the Commission in February 1981 echoed this sentiment. In a newspaper interview, Stockman said the FTC "is a passel of ideologues who are hostile to the business system, to the free enterprise system, and who sit down there and invent theories that justify more meddling and interference in the economy."

The accusation of disobedience and the diagnosis of insanity fit poorly, or at least awkwardly, with the positive record of the FTC's activities in the 1970s. As discussed immediately below, the rogue agency story clashes with the many instances, especially between 1969 and 1976, in which congressional committees and key legislators directed the agency to carry out an aggressive, innovative enforcement program against major commercial interests. In 1969, numerous legislators endorsed the view of two external studies that the FTC had used its authority timidly and ineffectively. Leading members of Congress demanded that the agency [\*80] transform its competition and consumer programs or face extinction. Congress described the content of the desired transformation in several ways. At a high level, oversight committees and individual legislators called for a dramatic boost in the agency's appetite to undertake ambitious, risky projects--to replace a cautious, risk-avoiding decision calculus with a bold philosophy that erred in favor of intervention and used the agency's elastic powers innovatively. Congress's admonition to be aggressive and use power expansively emerged again and again in confirmation proceedings and routine oversight hearings. During hearings in 1970 to confirm Caspar Weinberger to be the Commission's new chair, Senator Warren Magnuson, Chairman of the Senate Commerce Committee, told the nominee to "maintain the right kind of morale by recruiting strongly and expanding . . . Trade Commission programs in order to perform the job well." In setting out this charge, Magnuson seemed to recognize that the FTC would have to be steadfast in resisting backlash--including from Congress--that would emerge as the FTC went about "expanding" its programs. The Commerce Committee Chairman said Congress was calling on the FTC to perform "tasks that require a great deal of attention and a great deal of fortitude not to respond to any pressures that come from any place."

Weinberger's successor, Miles W. Kirkpatrick, received similar, and even more explicit congressional guidance, to apply the Commission's powers broadly and aggressively. In 1969, Kirkpatrick had chaired a blueribbon American Bar Association panel whose report recommended the FTC implement an ambitious antitrust agenda that involved significant doctrinal, operational, and political risks. In his appearances as FTC chair before [\*81] congressional committees, Kirkpatrick often heard legislators applaud the risk-preferring approach of the ABA study. In Kirkpatrick's first appearance before the Commission's Senate Appropriations subcommittee in 1971, the Subcommittee Chairman, Senator Gale McGee, provided the following guidance:

I think this is one of the Federal commissions that has a much larger responsibility and capability than sometimes it has been willing to live up to for reasons of congressional sniping at it in some respects or pressures put on it through the industry and the like.

Too often it has been either shy or bashful. . . . That is why we were having a rather closer look at your requests just in the hopes of encouraging you, if anything, to make mistakes, but I think the mistakes you are to make ought to be mistakes in doing and trying rather than playing safe in not doing.

I believe that is the most serious mistake of all . . . you are not faulted for making mistakes. You may be for making it twice in a row, for not learning properly but, we would rather you make a mistake innovating, trying something new, rather than playing so cautiously that you never make a mistake. . . .

In his appearance before the same subcommittee a year later, Senator McGee observed with approval that Kirkpatrick had "responded to the criticism . . . by both Mr. [Ralph] Nader and the American Bar Association by moving aggressively against some of the major industries in the United States." Recognizing that the approach he described could elicit opposition from affected business interests, McGee promised that he and his colleagues would exercise best efforts to watch the agency's back: "[I]f you step on toes you are going to catch flak for it, but I hope we will be able to push this even more aggressively by backing you more completely with the kind of help that I think you require." McGee closed the proceedings with [\*82] militant instructions:

"Stay with it and flex your muscles, clinch your fists, sharpen your claws, and go to it. We think this is desperately important in the interest of the Congress, whose creature you are, and the consumer whose faith and substantive capabilities in surviving hang very heavily upon what you succeed in doing."

Kirkpatrick served as the FTC's chair for just over twenty-nine months. The Commission's new chair, Lewis Engman, received the same policy guidance that Congress had provided Weinberger and Kirkpatrick. At Engman's confirmation hearing before the Senate Commerce Committee early in 1973, Senator Frank Moss observed:

Under . . . Weinberger and Kirkpatrick, the Commission has taken on new life beginning with the search for strong and imaginative, rigorous developers and enforcers of the law and reaching out with innovative programs to restore competition and to make consumer sovereignty more than chamber of commerce rhetoric.

With evident approval, Moss recounted how the FTC had "stretched its powers to provide a credible countervailing public force to the enormous economic and political power of huge corporate conglomerates which today dominate American enterprise." The members of the Senate Commerce Committee, Moss concluded, "consider it one of our solemn duties to protect the Commission from economic and political forces which would deflect it from its regulatory zeal." Member after member of the Commerce Committee echoed Moss's message to Engman. Senator Ted Stevens, an Alaska Republican, told the nominee, "I am really hopeful that . . . you will become a real zealot in terms of consumer affairs and some of these big business people will complain to us that you are going too far. That would be the day, as far as I am concerned."

The FTC got the message. The words and actions of Weinberger, Kirkpatrick, Engman, and other FTC leaders in this period reflected a preference for boldness, aggressiveness, innovation, and zeal. In a letter to Senator Edward Kennedy in July 1970, Weinberger reported that the FTC was trying "to make the most of that other resource given to us by Congress [\*83] -- our statutory powers." Weinberger said the Commission had "encouraged the staff to make recommendations to us which will probe the frontiers of our statutes," had made progress in "[p]robling the outer limits" and "exploring the frontiers" of the agency's authority, and had shown it "is receptive to novel and imaginative provisions in orders seeking to remedy unlawful practices." In a speech to a professional association in 1971, Kirkpatrick reported that the Commission was "moving into 'high gear' in the task of preserving and promoting competition in the American economy." He said he and his fellow board members "fully intend to be in the vanguard of exploration of the new frontiers of antitrust law."

By mid-1974, the FTC had launched several significant cases involving monopolization and collective dominance, including pathbreaking shared monopolization cases against the breakfast cereal and petroleum refining industries. With these matters underway, Engman in 1974 appeared at a congressional hearing of the Joint Economic Committee and received criticism that the FTC had been insufficiently active in challenging monopolies. The Joint Committee's chairman, Senator William Proxmire, told Engman "the FTC, like a number of other regulatory agencies seems to concern itself with minor infractions of the law, and to spend much of its time on cases of small consequence." Perhaps astonished to hear that cases to break up the nation's leading breakfast cereal manufacturers and petroleum refiners involved minor infractions or matters of small consequence, Engman replied, "The Federal Trade Commission today is very aggressive. . . . We have seen a total turnaround in terms of the types of matters which are being addressed by the Bureau of Competition."

[\*84] Beyond general policy exhortations to exercise power boldly and to err on the side of intervention, of doing too much rather than too little, Congress in the early to mid-1970s instructed the Commission to focus attention on specific commercial sectors and competitive problems within them. In the face of severe fuel shortages and price spikes for petroleum products in the early 1970s, numerous legislators demanded that the FTC conduct investigations and challenge the conduct of large, integrated petroleum companies. Many insisted that the FTC use its competition mandate to force integrated refiners to deal on equitable terms with independent refiners and distributors. The Commission's decision to file the Exxon shared monopoly case, which sought extensive horizontal and vertical divestiture remedies, can be explained as a response to these demands. In the same period, Congress applied strong pressure upon the FTC to examine and correct what it believed to be serious structural obstacles to effective competition in the food manufacturing industry. Here, also, the agency's decision to prosecute the shared monopolization case against the country's leading producers of ready-to-eat breakfast cereals can be seen as a response to this concern and faithful to the congressional prescription that the FTC use novel, innovative approaches to cure competitive problems. In these and other matters, the Commission explored the frontiers of its powers in the development of new cases.

When one aligns the guidance of Congress in the early to mid-1970s about the appropriate content of FTC policy making with the FTC's activity in the decade, it is apparent that the critique of the agency as disobedient to legislative will is a fiction, or at least badly misleading. A more accurate positive depiction of events in the 1970s is that the Commission faithfully followed legislative instructions given from 1970 up through the mid-1970s about the appropriate philosophy and means of enforcement, and that, as the decade came to a close, Congress changed its mind about what the FTC [\*85] should do and how it should do it. As described below in Section IV.D., that change in legislative temperament and the response by Congress to industry backlash against the FTC's program have important implications for how the FTC plans programs and selects projects in the future. Accurate positive analysis reveals that the agency was not disobedient to Congress but was inattentive to the operation of a political feedback loop that exposes Congress to industry pressure once the FTC implements programs that involve significant economic stakes and endanger powerful commercial interests.

Nor does a careful study of the positive record of the 1970s show that the FTC policy making was "insane." Measured by its contributions to institution-building, the Commission did many things that epitomize good public administration. It carried out important organizational and personnel reforms that upgraded its operations and personnel. As explained more fully below, the agency also improved its mechanisms for setting priorities and selecting projects to achieve them and strengthened investments in policy research and development (including a program to evaluate the effects of completed cases). The FTC successfully carried out new regulatory duties entrusted by Congress in the 1970s; most notable was the implementation of the premerger notification mechanism that Congress created in the Hart-Scott-Rodino Antitrust Improvements Act of 1976. In all of these areas, the Commission of the 1970s made enduring enhancements to the institution and set important foundations for successful programs that followed in the next forty years. An insane agency could not have done so.

[\*86] Another focal point for attention in assessing the FTC's performance in the 1970s was the quality of its substantive agenda. Was the FTC's substantive program in the 1970s "insane"? Many Commission competition and consumer protection initiatives in the 1970s encountered grave problems. FTC efforts to execute the bold, innovative, risk-preferring program that Congress had called for earlier in the decade generated a number of serious project failures. Insanity, on the part of individual leaders or the institution as a whole, does not explain the failures. These outcomes have more prosaic causes whose understanding is important to the future formulation of competition policy. Chief among the FTC's flaws were a lack of historical awareness about the political hazards associated with undertaking an agenda of bold, innovative cases against powerful commercial interests; inadequate appreciation for the demands of bringing large numbers of difficult cases and promulgating ambitious trade regulation rules would impose on the agency's improving but uneven human capital; and underestimation of the change in the center of gravity of economic learning that supports the operation of the U.S. antitrust system. As described below, many of these failings are rooted in weaknesses in the FTC's knowledge in the 1970s of the positive record of its past enforcement experience.

B. The Inadequate and Misdirected Enforcement Activity Narrative

Like the hyperactivity narrative described above, the inadequate activity narrative relies heavily on enforcement data to support the view that the federal antitrust agencies have brought too few cases overall and, when filing cases, have focused resources on the wrong types of matters.

Implicit or explicit assumptions about the level of enforcement activity have provided a central foundation in the modern era for broad normative claims of poor system performance. One collection of inadequacy critiques attacks federal enforcement program of the Reagan administration -- a period characterized by what one journalist described as an "almost total abandonment of antitrust policy." In 1987, in discussing Reagan-era [\*87] federal antitrust enforcement, Professor Robert Pitofsky said the DOJ and the FTC had produced "the most lenient antitrust enforcement program in fifty years." Professor Milton Handler remarked that in the Reagan era "a policy of nonenforcement has set in, much to the distress of those who believe that without antitrust the free market cannot remain free." Professors Lawrence Sullivan and Wolfgang Fikentscher observed, in addressing the treatment of civil nonmerger matters, "enforcement ceased."

A second body of commentary assails the work of the federal agencies in the George W. Bush administration. For example, in 2008, during his campaign to gain the Democratic Party's nomination for the presidency, Barack Obama said the George W. Bush administration "has what may be the weakest record of antitrust enforcement of any administration in the last half-century." The Obama statement did not compare activity levels across all administrations over the 50-year-long comparison period, but the statement suggested that the general claim was based on variations in activity over time.

A third version of the inadequacy narrative marks the beginning of the decline of effective enforcement at the outset of the George W. Bush administration and extending through the present.

A fourth variant writes off the entire period from roughly 1980 onward as an antitrust catastrophe. After noting that for most of the 20th century "antitrust enforcement waxed or waned depending on the administration in office," Professor Robert Reich recently wrote that "after 1980 it all but [\*88] disappeared." He added that Presidents Bill Clinton and Barack Obama "allowed antitrust enforcement to ossify, enabling large corporations to grow far larger and major industries to become more concentrated."

Presented below are categories of arguments that rely upon specific assertions about the positive record of modern antitrust enforcement. These arguments make positive claims regarding either the amount of activity, the reasons for observed behavior, or both.

GENERAL CRITICISMS OF ANTITRUST ENFORCEMENT: BORK, REAGAN, AND THE DESTRUCTION OF U.S. COMPETITION POLICY

Many commentators have offered explanations for why federal antitrust enforcement became inadequate after the late 1970s. One major positive explanation is that the modern Chicago School of antitrust analysis, grounded largely in the writings of Robert Bork, inspired a severe retrenchment of enforcement at the DOJ and the FTC and led the federal courts to narrow antitrust doctrine since the late 1970s. A major focus of this discussion of the causes for changes in enforcement involves rules governing the treatment of dominant firms.

A second cause offered to explain a redirection of enforcement is the ascent to the presidency of Ronald Reagan and his appointment of permissive leadership to the DOJ and the FTC. The Reagan administration [\*89] is said to have inherited a generally well-functioning antitrust enforcement system and run it into the ground.

The Chicago School, Bork-centric, and Reagan-centric explanations for policy change can be misleading due to mischaracterizations of what took place and their tendency to omit other forces that had helped narrow the scope of antitrust enforcement. Bork and the Chicago School unmistakably have exerted a significant impact upon modern antitrust policy, but the retrenchment of antitrust enforcement in some areas cannot accurately be attributed to them entirely or, for a number of important developments, even principally. Many proponents of the inadequacy narrative make little or no mention of the role of modern Harvard School scholars, such as Philip Areeda and Donald Turner, in leading courts and enforcement agencies to move the antitrust system toward a less interventionist stance.

Areeda and Turner encouraged courts to forego reliance on noneconomic goals in deciding antitrust cases. The two Harvard scholars also advocated the adoption of stricter procedural and doctrinal screens to counteract what they perceived to be flaws in the U.S. system of private rights of action. The inadequacy narrative often overlooks the influence of the modern Harvard School and thus misses how much the permissiveness of modern antitrust policy reflects the Harvard School's concern that private rights of action over-deter legitimate business conduct by dominant firms. [\*90] This yields a faulty positive diagnosis of the forces that have reduced the reach of the U.S. antitrust regime. As noted below, understanding how the institution-grounded limitations proposed by the modern Harvard School have imposed greater demands on plaintiffs has important implications for government plaintiffs seeking to devise a strategy to reclaim doctrinal ground lost since the 1970s.

Similar imprecision and omission characterize the portrayal of the Reagan administration as the force that swung antitrust policy away from a sensible interventionist equilibrium and gave it a durably noninterventionist orientation. Some elements of the Reagan-centric narrative turn events 180 degrees around from their positive roots. More significant, the narrative does not address how badly the Congress and the White House had damaged the FTC's stature and operations before Ronald Reagan took office in late January 1981. By the end of 1980, the Commission had been shoved into the equivalent of political bankruptcy by a Congress and a White House under the control of the Democratic Party.

By treating the 1980 presidential election as the cause of an abrupt change in federal antitrust enforcement policy, the Reagan-centric inadequacy narrative fails to grasp the significance of the political assault, led by Democrats, against the FTC in the late 1970s. Recognition of how the FTC's relationship with Congress changed over the course of the 1970s forces one to confront the question of why an agency that enjoyed powerful congressional support through much of the decade came to grief so quickly. The episode has a sobering cautionary lesson for contemporary policy making: it demonstrates how quickly congressional attitudes can change once powerful business interests affected by FTC actions bring their [\*91] resources to bear upon Congress, and how turnover in the legislature can erode vital political support. An accurate positive account of the 1970s suggests that an agency should strive to complete its cases and rulemaking initiatives as expeditiously as possible, lest long lags between the start and conclusion of matters expose the agency to debilitating political backlash. This policy making prescription becomes apparent only by forming an accurate picture of what happened to the FTC in the 1970s.

CHICAGO-SCHOOL INSPIRED FOCUS ON PRICE EFFECTS

Critics of modern FTC and DOJ law enforcement often state that the federal agencies focus entirely on price and output effects in selecting and prosecuting cases. This tunnel-visioned approach is said to ignore important considerations involving the harmful effects of business behavior on quality and innovation.

In 2019, in a newspaper op-ed, Rana Fordoohar, a journalist who covers the tech sector, stated: "But monopoly policy in America is currently driven by "Chicago School" thinking, which espouses the idea that as long as consumers aren't paying too much for a good or service, all is well." In August 2020, Joshua Brustein, a business journalist, said: "For decades, antitrust enforcers have centered on the consumer welfare standard, which defined price increases as the only valid focus of antitrust action."

Like the portrayal of activity levels, these positive descriptions of the policy concerns that have guided FTC and DOJ law enforcement are faulty. The claim that the federal antitrust agencies since the late 1970s have focused solely upon price and output effects overlooks the many important instances in which innovation and other quality-related effects were paramount in FTC and DOJ decisions to challenge mergers and bring nonmerger cases. Among other areas from the 1980s to the present, the DOJ and the FTC have emphasized innovation effects in analyzing competitive effects in deals involving defense contractors and transactions [\*92] in the health care sector.

[FOOTNOTE] See, e.g., Joint Statement of the Department of Justice and the Federal Trade Commission on Preserving Competition in the Defense Industry (Apr. 12, 2016) ("In the defense industry, the Agencies are especially focused on ensuring that defense mergers will not adversely affect short- and long-term innovation crucial to our national security. . . ."); Daniel L. Rubinfeld & John Haven, Innovation and Antitrust Enforcement, in DYNAMIC COMPETITION AND PUBLIC POLICY 65 (Jerry Ellig ed., 2001) (discussing DOJ emphasis on innovation-related effects in antitrust enforcement, including the Department's challenge to Lockheed Martin's effort to purchase Northrop Grumman in the late 1990s); William E. Kovacic, Competition Policy Retrospective: The Formation of the United Launch Alliance and the Ascent of SpaceX, 27 GEO. MASON L. REV. 863, 867-68, 899-900 (2020) [hereinafter Competition Policy Retrospective] (discussing centrality of innovation issues in modern antitrust analysis of aerospace and defense mergers). [END FOOTNOTE]

INADEQUATE ENFORCEMENT AGAINST DOMINANT FIRM MISCONDUCT

A recurring critique of modern U.S. federal enforcement is the failure of the DOJ and the FTC to police dominant firm misconduct. In 2002, Professor Robert Pitofsky wrote that "during the Reagan years, there was no enforcement whatsoever" against attempts to monopolize and monopolization. At a conference in 2009, Professor Harvey Goldschmid observed that during the George W. Bush presidency "there has been no enforcement" of Section 2 of the Sherman Act.

In a wide-ranging attack upon federal antitrust enforcement since the 1970s, Jonathan Tepper and Denise Hearn concluded:

The evidence confirms the death of antitrust. When surveying merger challenges, [Professor Gustavo] Grullon found that enforcement of Section 2 of the Sherman Act fell from an average of 15.7 cases per year from 1970-1999 to less than 3 over the period 2000-2014. . . . The recent failure to enforce antitrust is horrifying, considering how industries have become more concentrated every year.

In May 2018, Senator Richard Blumenthal and Professor Tim Wu [\*93] authored an op-ed piece that recited similar statistics: "Enforcement of the antimonopoly laws has fallen: Between 1970 and 1999, the United States brought about 15 monopoly cases each year; between 2000 and 2014, that number went down to just three."

Each of these statements about the amount of federal enforcement activity is incorrect. The Reagan antitrust agencies did not bring many cases involving attempted monopolization or monopolization, but the number exceeded what Professor Pitofsky called "no enforcement whatsoever". The number of FTC attempted monopolization and monopolization cases initiated from 2001 through 2008 exceeded what Professor Goldschmid called "no enforcement." From 1970 through 1999, federal enforcement of Section 2 of the Sherman Act and the enforcement of Section 5 of the FTC Act to challenge collective dominance or single-firm exclusionary conduct did not exceed four cases per year - a notably lower rate of activity than the number of cases per year reported by Senator Blumenthal and Professor Wu ("about 15 cases each year") and the number for the same period reported by Jonathan Tepper and Denise Hearn (15.7 cases per year).

[\*94] INADEQUATE MERGER ENFORCEMENT

Inadequacy narratives frequently use categorical statements about activity levels to demonstrate weaknesses in federal merger enforcement. In a discussion of Reagan administration antitrust policy, Professor Eleanor Fox observed that "U.S. federal merger enforcement ground to a halt." In the 2010 edition of their antitrust casebook, Professor Robert Pitofsky, Professor Harvey Goldschmid, and Judge Diane Wood observed that there was "no enforcement at all against vertical or conglomerate mergers during the Bush Administration." In a recent book discussing U.S. antitrust policy, Professor Tim Wu observed that the DOJ in the George W. Bush administration "did not block any major mergers."

The factual claims contained in these assessments are incorrect. Federal merger enforcement during the Reagan administration did not grind to a halt. The George W. Bush Administration did not challenge large numbers of vertical mergers, but the number was greater than the "no enforcement at all" amount claimed by Professor Pitofsky, Professor [\*95] Goldschmid, and Judge Wood. During the Bush administration, the DOJ sued and blocked mergers involving General Dynamics/Newport News Shipbuilding (nuclear submarine design and production) and United Airlines/US Airways (airline transportation services). Given the significance of the merging parties and the importance of the economic sectors at issue, competition law experts, in responding to Professor Wu, likely would score these proposed transactions as "major" mergers.

C. How Narratives Predicated Upon Mistaken Positive Assumptions Distort Understanding About the Functioning of the U.S. Antitrust Regime

Should the competition policy community of academics, advocacy groups, government officials, and practitioners care about these and other inaccurate depictions of federal enforcement activity? Indeed, they should. There is a danger that the fractured positive accounts of past activity will be taken as true and inform the debate about the future of competition policy. There is a fast-expanding literature that contends, as Professor Daniel Crane puts it, that "antitrust enforcement has drifted toward near-oblivion, with potentially dire consequences for our economy, and society more generally." The portrayal of inert federal agencies as abandoning a sensible earlier custom of robust enforcement is a particularly important pillar of modern calls for sweeping reform.

Failure to Learn from Earlier Enforcement Activities. A major hazard of the inadequacy narratives and their dismal depiction of modern antitrust policy is that they impede the learning by which an antitrust agency improves over time. If it is assumed as a fact that the federal antitrust enforcement [\*96] policy was devoid of useful activity for the past forty years or longer, then there is no point in looking for positive accomplishments. A listener who accepts as true the claim that nothing happened, or that what happened was the work of an insane agency, reasonably might conclude that there is nothing worth emulating from the earlier period.

There is a serious cost to embracing the excessive activity narrative or the inadequate activity narrative as resting on sound positive foundations. By writing off the relevant eras as a wasteland, one ignores noteworthy policy developments that modern analysts can use to guide policy going forward. Merger enforcement provides an example. If federal merger enforcement actually ground to a halt between 1981 and 1988, there would be no merger challenges to study. Yet the federal enforcers blocked a number of deals in this period and, in some instances, the government gained favorable judicial decisions that provide clues about how to formulate successful challenges in the future.

Perhaps the most notable of the government's merger litigation victories in the 1980s was the FTC's successful challenge to Hospital Corp.'s effort to acquire Hospital Affiliates International, Inc. and Health Care Corp. The Commission argued that the acquisitions would reduce competition by enabling the surviving firms to coordinate behavior more effectively with regard to pricing and other terms of service. The 117-page opinion for the Commission by Commissioner Terry Calvani is a textbook model of superb opinion-writing, what the Seventh Circuit called a "model of lucidity." Commissioner Calvani carefully set out the arguments of complaint counsel and the defendants, reviewed the precedent and literature regarding the coordinated effects theory of harm, and displayed [\*97] the type of erudition and expertise that is offered as a justification for entrusting antitrust adjudication to an expert administrative body.

Every commissioner who is assigned to write an opinion for the FTC should feel an obligation to read the Calvani Hospital Corp. decision to see the quality of analysis and style of presentation that can impress a court of appeals favorably. Rather than dismiss the period since 1980 as a barren era in federal enforcement, the advocates for a major expansion of intervention should assemble an accurate positive record of every decision and every initiative that can help them achieve their ends.

In the face of a demanding judiciary, the FTC will need every advantage it can obtain, including footholds provided by enforcement measures undertaken from the early 1980s forward. If proponents of fundamental change treat the past forty years as an empty space in antitrust policy, they will walk past precedents and practices that would advance their cause. If one assumes that timidity bordering on cowardice gripped the federal agencies after 1999, there is likewise no point in considering how the FTC in the 2010s achieved considerable success in three consecutive trips to the Supreme Court in antitrust cases - the first time the Commission had won three straight cases before the high court since the 1960s - or bothering to understand what mix of strategy and advocacy (and, perhaps, luck) made it possible.

The analysis of innovation issues provides another example of how an accurate grasp of the positive record can help build a new program. Consider the claim, noted above, that the federal agencies brought no vertical merger cases between 2001 and 2008. An observer who embraced this view is likely to overlook the FTC's decision to block the proposed merger of Cytyc and Digene. The Commission's analysis of this transaction teaches a lot about how to analyze innovation markets that reach back to the earliest stages of an R&D pipeline.

Adherence to the view that modern antitrust policy has ignored [\*98] innovation effects in merger analysis and in nonmerger cases likewise will miss important sources of insight. The experience of the two federal agencies since the early 1980s in reviewing aerospace and defense industry mergers illuminates how to analyze innovation issues and formulate successful merger challenges in dynamic, high technology sectors. The federal government's analysis of these transactions has been representative of a larger awareness that innovation concerns should be decisive, or at least equal in importance to price effects, in a significant number of merger reviews and nonmerger matters.

Diagnosing the Obstacles to Litigation Success and Overcoming Them. A second and closely related reason to resist faulty positive accounts of past experience is that they obscure the path to possible litigation success in single-firm monopolization cases. In the FTC's unsuccessful Rambus case, the U.S. Court of Appeals for the District of Columbia relied heavily on a Supreme Court decision ( NYNEX Corp. v. Discon, Inc. ) that was premised in part on concerns about overdeterrence that might arise from private treble-damage law suits. The FTC might have argued to the D.C. Circuit that the Commission, as a federal government agency, was a responsible steward of the public trust and need not be bound by doctrines designed to confine private litigants. Future attempts to use litigation to condemn dominant firm conduct, and extend the reach of antitrust oversight, might emphasize the distinctive role of public enforcement and, perhaps, resort more extensively to the FTC's administrative adjudication process.

In other words, seeing more clearly the foundations of defendant-friendly doctrine indicates what litigation strategy (i.e., premised on the distinctive role of the public prosecutor and the special capacity of the FTC's administrative process) promises the greatest prospects for success in what is today a daunting judicial environment. To use litigation to expand the zone of potential intervention, the Commission will need to study and build [\*99] upon litigation successes such as McWane, Inc. v. FTC, where the Commission prevailed on a monopolization theory of liability before a court of appeals that has not always been a favorable forum for the review of Commission antitrust cases. If one assumes, as some commentators suggest, that the federal agencies brought no monopolization cases in the past twenty years, then one is unlikely to look for or study McWane - to recognize the doctrinal footholds it provides for future cases, to analyze how the agency assembled a convincing factual record, and, more generally, to see how the agency can replicate the success in the future.

Setting a Common Foundation for Debate About Future Antitrust Enforcement. A third reason to remedy the uncertain grasp of the past is its importance to the modern debates about the proper direction for the U.S. antitrust system. Without a common understanding of what actually happened in the past, how can policy makers and commentators make sound normative judgments about what the U.S. enforcement agencies should do in the future? Professor Douglas Melamed recently has posited that the contestants in the modern debate about antitrust policy often talk past each other and do not engage on questions crucial to deciding whether and how much to modify current antitrust policy, or to create new competition policy instruments and institutions. It is doubtful that what Professor Melamed calls two largely disconnected "conversations" can be joined up without a better common understanding of what actually has taken place. In so many ways, accurate comprehension of what happened is the essential foundation for the processes of interpretation (What explains the behavior in question? What is its significance?), evaluation (Was the behavior good or bad?), and refinement (What should we do next time?).

Think of it in terms of teaching a class. Suppose the bases for the grade in the course are (a) regular attendance in class, (b) contributions to class discussion, and (c) performance on an end-of-term examination. Before we determine the quality of the student's work and assign a grade, we need first to agree about whether the student showed up for class, spoke in class, and turned in an exam. Modern discourse about U.S. competition law indicates a lack of agreement on equivalents of these basic predicates for a normative assessment of the performance of the antitrust enforcement system.

Appreciating How Institutional Arrangements Shape Substantive [\*100] Outcomes. Both of the inadequacy narratives described above lapse into describing the U.S. antitrust system as regularly succumbing to irrational (or, as Representative Frenzel put it, insane) swings in behavior, from wild overreaching in the 1970s and in earlier periods of antitrust history to excessive restraint from the late 1970s to the present. In their positive description of why events transpired as they did, the inadequacy narratives focus heavily on the role of agency leadership and personality. For example, the excessive enforcement narrative portrays federal enforcement officials in the 1960s as possessed by a deranged opposition to mergers and depicts Michael Pertschuk, the FTC's chairman from 1977-1981, as a singularly malevolent force who drove the agency off the rails. The inadequate enforcement narrative damns William Baxter, who chaired the DOJ Antitrust Division from 1981 through 1983, and James C. Miller III, who chaired the FTC from 1981 to 1984, as irrational extremists with no fidelity to norms that promote sound policy making.

The abilities and instincts of individual leaders are undoubtedly important to the success of a competition authority. Yet the personality-driven explanation for agency behavior overlooks the role that institutional arrangements have played in shaping outcomes - for example, by moderating policy impulses of some leaders and creating structures and mechanisms (such as a program of ex post evaluation of agency decisions) that improve policy making regardless of who is in charge. The single-minded focus on personalities also obscures the extent to which various institutional arrangements played central roles in the agency's achievement of successful policy outcomes. In short, one loses the ability to develop a [\*101] better sense of what accounts for policy successes and failures. Replacing a supposed pariah with a presumed miracle worker may not improve the status quo by much if deep-seated institutional weaknesses are major sources of observed policy failures.

#### Blocking the merger obliterates containment of hypersonic threats from Russia and China

Don Nickles 21, Chairman and CEO of The Nickles Group LLC, Former United States Senator, Former Director of Chesapeake Energy and Valero Energy, Degree in Business Administration from Oklahoma State University, “Why Lockheed's Acquisition of Aerojet Will Be A 'Boon for U.S. Innovation'”, Politico, 3/22/2021, https://www.politico.com/news/2021/03/22/lockheed-aerojet-acquisition-477491

The proposed acquisition by defense prime contractor Lockheed Martin of propulsion provider Aerojet Rocketdyne is facing some criticism due to alleged concerns that it would give Lockheed an unfair competitive advantage on missile and missile defense contracts.

Raytheon Technologies in particular has publicly complained that the combination would leave it dependent on a direct competitor for much of the propulsion in its missile offerings. Indeed, Aerojet Rocketdyne is a supplier of solid rocket motors and also is a source of defense technologies including hypersonic engines and the propulsive Divert and Attitude Control System that steers missile defense kill vehicles.

Such concerns ignore the important benefits, including the increased competition, which will result from this merger. And, Lockheed Martin has made it clear that Aerojet Rocketdyne will remain a merchant supplier, so these benefits will flow to all customers, including the U.S. government.

More importantly, the Lockheed-Aerojet merger will be a boon for U.S. innovation and competitiveness at a time when it faces growing threats from increasingly capable adversaries like China and Russia.

There are significant national advantages to bringing Aerojet Rocketdyne under the corporate roof of a prime contractor with $65 billion in annual revenue. Broadly speaking, it will provide financial stability for the propulsion provider while making more resources available for research and development in key technology areas.

As a stand-alone company with $2 billion in annual revenue, Aerojet Rocketdyne’s financial fortunes are tied to a few large programs that are subject to shifting political winds and the whims of prime contractors. A large program cancellation or a prime’s decision to change suppliers could substantially weaken the company, leaving it vulnerable to a takeover on unfavorable terms.

A well-resourced defense contractor like Lockheed Martin, by contrast, could be expected to invest in Aerojet Rocketdyne’s core propulsion capabilities. One area likely to see substantial investment is hypersonic weaponry, where the nation by some estimates has fallen behind Russia and China.

Moreover, by bringing a key link of its supply chain in house, Lockheed Martin will be positioned to offer better prices to its government customers and the transaction also will lead to efficiencies and innovation that will benefit the whole industry.

Such national benefits are not unique to the proposed Lockheed Martin-Aerojet Rocketdyne deal. Consider, for example, what United Technologies Corp. said in announcing its planned merger with none other than Raytheon, a deal which closed last year:

"By joining forces, we will have unsurpassed technology and expanded R&D capabilities that will allow us to invest through business cycles and address our customers' highest priorities,” said then-UTC chair and CEO Greg Hayes, who now sits at the helm of the combined company. “Merging our portfolios will also deliver cost and revenue synergies that will create long-term value for our customers and shareowners."

One of the public comments about the Lockheed Martin-Aerojet Rocketdyne deal is rooted in a commonly held assumption that vertical integration, in which primes take ownership of supply chains, stifles competition by giving these companies excessive marketplace clout. That view is myopic, especially in industries that are highly dynamic such as the defense industry.

Consider the case of United Launch Alliance, the Boeing-Lockheed Martin joint venture that until about a decade ago had a de facto monopoly on the business of launching operational U.S. government satellites. That monopoly was toppled by SpaceX, which builds some 85 percent of the components for its Falcon rockets, notably the engines, in house.

Experts have long cited SpaceX’s vertically integrated structure as the source of the company’s competitive strength, in large part because it eliminates supply chain profit margins. SpaceX founder Elon Musk has applied the same in-sourcing strategy in building up his Tesla electric car company, which has put U.S. industry at the forefront of a global trend in automobile manufacturing.

Vertical integration has been a fact of life in the aerospace and defense industry since the early 1990s, when the end of the Cold War triggered a wave of consolidation that continues today. On the propulsion side, a flurry of activity over a three-year period starting in 2001 reduced the number of U.S. solid rocket motor providers from five to just two: Aerojet Rocketdyne (then known as Aerojet); and ATK.

That situation lasted until 2014, when ATK merged with rocket and satellite maker Orbital Sciences Corp. to create the vertically integrated Orbital ATK. Less than five years later, Orbital ATK was acquired by aerospace and defense giant Northrop Grumman, a direct competitor to Lockheed Martin with nearly $37 billion in annual revenue.

Already the dominant supplier of large-diameter solid rocket motors, ATK can now draw on the resources of Northrop Grumman to advance its capabilities and boost competitiveness. Northrop Grumman recently won the prime contract for the nation’s next-generation ICBM, the Ground Based Strategic Deterrent, ensuring a healthy workload for its solid rocket motor business for years to come and ratcheting up the competitive pressure on Aerojet Rocketdyne.

As it happens, Northrop Grumman tapped Aerojet Rocketdyne for a smaller but significant role on its GBSD team, demonstrating that primes will join forces with competitors when it makes business sense.

Perhaps a better example — one that directly refutes assertions that competition requires subcontractor independence — is Northrop Grumman’s role in the Space Force’s all-important launch services program, where it supplied solid rocket motors for ULA’s Vulcan rocket even as it vied for that business with its own OmegA vehicle. In a similar vein, Blue Origin’s entry into that competition with its New Glenn vehicle didn’t stop it from supplying the main engine for Vulcan, which ultimately won the biggest share of launches.

The defense industry is replete with examples of companies supplying hardware and technology to rivals, even for programs where they compete head-to-head. Another relevant example: Raytheon in 1998 won a lucrative contract to supply missile defense kill vehicles incorporating DACS technology that at the time was supplied by Boeing — a competitor for that same contract.

For acquisitions that raise questions about access to critical capabilities, government regulators sometimes require consent decrees that commit the buyer to make these technologies available to competitors at market rates and to wall off proprietary information they might obtain in the process. In recent years, antitrust agencies have not shied away from investigating and enforcing compliance with consent decrees, including in the defense industry. There is no reason to think that would change in the future.

Some observers view the Lockheed Martin-Aerojet Rocketdyne merger as an early test of the Biden administration’s antitrust enforcement policies, and regulators will no doubt scrutinize it thoroughly to ensure competition is preserved. But there’s much more at stake here: This is about how the administration intends to deal with growing threats posed by peer and near-peer adversaries, who have eroded many of the technological advantages this nation has long taken for granted.

If the U.S. is to retake, and maintain, the lead in areas like hypersonic weaponry, a healthy and vibrant propulsion industry featuring players competing on a level playing field is essential. Regulators and policymakers should view this merger through that lens and render their decision accordingly.

#### Nuclear war

Dr. Richard H. Speier 17, Adjunct Staff with the RAND Corp, Founded the Office of Non- Proliferation Policy at the DOD, Recipient of the Meritorious Civilian Service Medal as the “Father of the MTCR,” now Consults in the Washington DC area; George Nacouzi, Senior Engineer at the RAND Corporation, Supports Projects within PAF (Project Air Force) and NSRD (National Security Research Division), Carrie A. Lee, Researcher at RAND, and Richard M. Moore, Researcher at RAND. 2017. “Hypersonic Missile Nonproliferation: Hindering the Spread of a New Class of Weapons.” RAND. https://www.rand.org/pubs/research\_reports/RR2137.html

Strategic Implications of Hypersonic Weapons Compressed Timelines The U.S. military uses an acronym to describe the decisionmaking and action process cycle: OODA (Observe, Orient, Decide, Act). These four steps take time, and hypersonic missiles compress available response time to the point that a lesser nation’s strategic forces might be disarmed before acting. As an illustration of the time required to act with respect to an existential missile threat, the Nuclear Threat Initiative organization estimated a timeline for a U.S. response to a massive Russian intercontinental ballistic missile (ICBM) attack, as follows:9 • 0 minutes—Russia launches missiles • 1 minute—U.S. satellite detects missiles • 2 minutes—U.S. radar detects missiles • 3 minutes—North American Aerospace Defense Command (NORAD) assesses information (2 minutes max) • 4 minutes—NORAD alerts White House • 5 minutes—first detonations of submarine-launched ballistic missiles • 7 minutes—locate president and advisers, assemble them, brief them, get decision (8 minutes max) • 13 minutes—decision • 15 minutes—transmit orders to start launch sequence • 20 minutes—launch officers receive, decode, and authenticate orders • 23 minutes—complete launch sequence (2 minutes max) • 25 minutes—Russian ICBM detonations. This timeline is not, of course, representative of two hostile parties in closer proximity or with less effective warning systems than Russia and the United States. Nor is it representative of less-than-Armageddon possibilities. However, for adjacent enemies within a 1,000-km range, a hypersonic missile traveling at ten times the speed of sound could cover that distance and reduce response times to about six minutes.10 Targets As discussed earlier, hypersonic missiles increase the threat over current generations of missiles in cases where the target nation has missile defenses. The targets in such nations would primarily be high value and heavily defended. Prime targets could include destroying a nation’s leadership and command and control, referred to as “decapitation,” to prevent the target nation from responding with an effective follow-on attack. Other key targets could be carrier strike groups, with the objective of striking a key blow or pushing the naval formation further from the coast. And, because of their time sensitivity, strategic forces and storage facilities for weapons of mass destruction (WMDs) could warrant hypersonic attack. Implications for Targeted Nations Any government faced with the possibility that hypersonic missiles would be employed against it—particularly in a decapitating attack— would plan countermeasures, many of which could be destabilizing. For example, countermeasures could include devolution of strategic forces’ command and control so that lower levels of authority could execute a strategic strike, which would obviously increase the risk of accidental strategic war; or strategic forces could be more widely dispersed— a tactic risking greater exposure to subnational capture. An obvious measure would be a launch-on-warning posture—a hair-trigger tactic that would increase crisis instability. Or the target nation could adopt a policy of preemption during a crisis—guaranteeing highly destructive military action. To be sure, such measures could be invoked against threats from current types of missiles.11 But, for nations with effective ballistic mis- sile and/or cruise missile defenses in the time frame when hypersonic missiles might proliferate, the hard choices would be forced when facing hypersonic threats. Advanced nations with adequate resources could take other steps against hypersonic threats. They could strengthen the resilience of their command and control, harden the siting of their strategic forces, and make a deterrent force mobile or sea-based. These tactics may or may not be effective, especially for lesser nations. And they certainly will be expensive—putting them out of reach of some. Even for major powers, the proliferation of hypersonic missiles will create new threats by allowing lesser powers to hold them at risk of effective missile attacks especially against “unhardened” targets, e.g., cities. Over the coming decades, the ability of a lesser nation with a handful of ICBMs to threaten major powers will continue to decrease as wide area missile defenses continue to improve. However, HGVs and HCMs will be more difficult to defend against. Implications for Major Powers The ability of hypersonic missiles to penetrate advanced missile defenses will increase the risks for nations with such defenses. Lesser powers with hypersonic weapons may see these weapons as a deterrent against greater power intervention, and feel free to pursue potentially destabilizing regional agendas. Moreover, lesser nations with hypersonic missiles could affect the force deployments of major powers. As noted above, carrier strike groups might be pushed further out to sea or an intervening power’s regional military bases might become exposed to more effective attacks. The Broader Picture of Increased Risk The ability of hypersonic forces to penetrate defenses and compress decision time could aggravate the instabilities in regions that are already tense—for example, Iran-Israel and North Korea–Japan. Conflicts in these regions could evolve to include major powers aligned on opposite sides. An Israel-Iran conflict, with the United States and much of Europe aligned with Israel and Russia and perhaps China aligned with Iran, would create new paths for escalation to an even-larger conflict. The basic roles of external actors would not necessarily change—the alignments would stay the same—but external powers might suddenly find themselves in a more-unstable situation in which their patron states are increasingly trigger-happy. As noted previously, lesser powers could gain influence over major powers by threatening a hypersonic attack. At the least, lesser powers might be emboldened if they saw themselves as possessing a deterrent against major power intervention. Finally, because hypersonic weapons increase the expectation of a disarming attack, they lower the threshold for military action.

### 1NC

#### The United States federal government should prohibit

#### monopoly pricing

#### price-gouging

#### selective licensing and refusal to license

#### patent assertion that unduly weakens competition

#### Regulation solves without ‘antitrust’ or FTC involvement

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A. Antitrust and Regulation as Policy Alternatives

A variety of institutions can govern economic competition. Decentralized, capitalist economies generally rely on markets themselves to provide the incentives and discipline necessary to keep prices low, output high, and innovation moving forward. 8 But sometimes market forces alone cannot ensure efficiency and economic welfare--for example, when the market structure has changed due to mergers or the rise of a dominant firm, or when the market is an oligopoly susceptible to parallel conduct or collusion. In such cases, governance of competition by a nonmarket institution might be warranted. Because concentrated markets or even monopolies can arise for good reasons related to efficiency, innovation, and consumer preference, the governance of competition more often involves vigilance than liability or injunctions. Then-Judge Stephen Breyer, long [\*1926] a leading scholar of antitrust and regulation, described the best situation as being an unregulated, competitive market in which "antitrust may help maintain competition." 9

Antitrust law aims to prevent the improper creation and exploitation of market power on a case-by-case basis while avoiding the punishment of commercial success justly earned through "skill, foresight and industry." 10 Thus, competition authorities like the FTC and the DOJ's Antitrust Division review mergers, investigate single-firm conduct, and prosecute collusion. 11 Private plaintiffs can pursue civil antitrust liability through suits in the federal courts. 12 To win their claims, enforcement agencies and private plaintiffs bear the burden of showing that the effect of a firm's activity is "substantially to lessen competition, or to tend to create a monopoly," 13 or to constitute a "contract, combination, . . . or conspiracy" in restraint of trade, 14 or to "monopolize, or attempt to monopolize" any line of business. 15

Antitrust is not, however, the only institution through which government addresses competition concerns and market failures. Congress can give regulatory agencies authority to intervene where they see the need to address competition and market structure--and Congress has often done so. With such statutory authority, "[i]n effect, the agency becomes a limited-jurisdiction enforcer of antitrust principles." 16 For example, the Department of Transportation (DOT) has jurisdiction to approve transfers of routes between airlines carriers, giving it a role in reviewing airline mergers. 17 The 1992 Cable Act gave the FCC authority [\*1927] to limit the share of the national cable market that a single operator could serve, thereby giving the agency some control over the industry's market structure. 18 The FCC has long regulated market entry and, through its control over license transfers, reviewed mergers and acquisitions in several sectors of the telecommunications industry. More recently, the FCC issued, 19 and then repealed, 20 "network neutrality" regulations intended to preserve ease of entry and a level playing field for digital services. The Food and Drug Administration (FDA), Securities and Exchange Commission (SEC), Department of Energy, and numerous other federal agencies have various powers that directly affect competition. 21 State regulation can be important as well in governing competition, particularly in the insurance and healthcare industries. 22

In contrast to the case-by-case approach of antitrust, regulation typically imposes ex ante prohibitions or requirements on business conduct. The Telecommunications Act of 1996, for example, required incumbent local telephone companies to grant new competitors access to parts of their networks and prohibited incumbents from refusing to interconnect calls from their customers to customers of competing networks. 23 With the rule in place, the FCC bore no burden of proving that a specific instance of network access was necessary for competition, or that a specific denial of interconnection would harm competition. In contrast [\*1928] to antitrust, where the burden of proving liability is on the agency, under a regulatory regime the burden of seeking a waiver from regulation or challenging an agency's enforcement decision is usually on the regulated party.

Antitrust and regulation therefore present alternative approaches to governing competition and addressing market failures. 24 The government can review individual mergers under the antitrust laws, as it does in most markets, or it can set rules that impose clear, ex ante limits on the extent of concentration, as the FCC did for media ownership under the Communications Act. 25 Government can investigate under the antitrust laws whether a firm has monopoly power that it has "willful[ly]" acquired or maintained other than "as a consequence of a superior product, business acumen, or historic accident." 26 Alternatively, with authority from Congress an agency can regulate how much of a market a single firm can serve, as the FCC tried to do with cable companies, 27 or require firms to dispose of key assets in order to promote competition in a relevant market, as the DOT has done with airline slots. 28

### 1NC

#### T Subsets

#### ‘Antitrust’ applies to the entire economy---targeting single industries isn’t topical

Dr. Babette Boliek 11, Associate Professor of Law at Pepperdine University School of Law, J.D. from the Columbia University School of Law, and Ph.D. in Economics from the University of California, Davis, “FCC Regulation Versus Antitrust: How Net Neutrality is Defining the Boundaries”, Boston College Law Review, 52 B.C. L. Rev. 1627, November 2011, Lexis

Although the two regimes share a commonality of purpose--to protect consumers and to promote allocative efficiencies in production--the two have quite distinct, predominately opposing, means of securing social benefits. As Justice Stephen Breyer stated when serving [\*1629] as a judge on the U.S. Court of Appeals for the First Circuit, although regulation and the antitrust laws "typically aim at similar goals--i.e., low and economically efficient prices, innovation, and efficient production methods"--regulation looks to achieve these goals directly "through rules and regulations; [but] antitrust seeks to achieve them indirectly by promoting and preserving a process that tends to bring them about." The battle between these two regimes may be broadly summarized in a single issue thusly: in the face of the industry-specific regulator, what is (or what should be) the role of antitrust law?

Antitrust law preserves the process of competition across all industries by condemning anticompetitive conduct when it occurs. In contrast, industrial regulation by its nature is a public declaration that, in a given industry, market forces are too weak or underdeveloped to produce the consumer benefits that are realized in competitive markets--regulated industries are carved out from the rest of the economy and are subject to proactive, regulatory intervention that goes above and beyond antitrust enforcement measures. Not surprisingly, regulatory agencies were historically created as substitutes for market forces in the few markets that, by the nature of the product or technology, were natural monopolies or severely prone to monopoly. In the vast majority [\*1630] of markets, however, the antitrust law is the default government control, designed to supplement market forces to inhibit or prevent the growth of monopoly.

Again, although the goals of the two regimes may be similar, the means by which each can achieve those goals are in opposition. Therefore, the threshold determination of which industries are to be singled out for industry-specific regulation, and to what degree, is of vital importance as it simultaneously determines the predominance of the regulator versus the antitrust authority in securing the social good.

#### Vote neg:

#### Limits---they devolve into hundreds of subsets like aviation, ag, defense or rail AND allow thousands of cases that deny single mergers OR regulate individual companies.

#### Ground---economy-wide change ensures links to core generics by forcing the aff to structurally change antitrust AND be big enough to deviate from daily enforcement.

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#### Reg Neg CP

#### The United States federal government should convene binding negotiated rulemaking over whether to increase prohibitions on private sector conduct that is more restrictive of competition than reasonably necessary to enable creation of information technology standards and implement the outcome.

#### Antitrust litigation is uniquely complex and resource-intensive---a spike trades-off with judicial functioning in other areas

Daniel R. Warren 15, JD from the Boston University School of Law, BS from Ohio State University, “Stress Fractures: The Need to Stop and Repair the Growing Divide in Circuit Court Application of Summary Judgment in Antitrust Litigation”, Review of Banking and Financial Law, 35 Rev. Banking & Fin. L. 380, Lexis

A. Summary Judgment Can Cut Short Extreme Costs

Antitrust litigation can involve enormous discovery costs, particularly when antitrust litigation overlaps with class action litigation. Due to the wide scope of many antitrust claims, discovery can implicate a broad range of documents, records, interrogatories, and depositions. In fact, "[s]trategically minded" plaintiffs can take advantage of antitrust law's "onerous discovery costs" by requiring the defendant "to respond to wide-ranging interrogatories, produce documents, and prepare for and defend depositions" with only a "facially plausible allegation" of an antitrust violation. These costs can take a very large toll on both large and small businesses. The legal hours necessary to answer and address discovery challenges can also impose extreme costs.

Plaintiffs can often use discovery costs as a weapon against defendants in antitrust litigation. The Seventh Circuit Court of Appeals stated that "antitrust trials often encompass a great deal of expensive and time consuming discovery and trial work" in explaining that the "very nature" of antitrust litigation should encourage summary judgment. The court's language here supports [\*389] the idea that in antitrust litigation, summary judgment has a special value, greater even than its normal use in other areas of the law. Summary judgment can be used to cut short lengthy litigation where parties have already accrued extreme costs from discovery and one party still cannot produce a genuine issue of material fact.

In antitrust litigation, the value of summary judgment to mitigate discovery costs through shortening litigation is elevated to a special importance even greater than normal for three reasons. First, antitrust litigation normally involves large organizations, which magnifies the costs of those firms going through the discovery process. Large firms have a great number of involved employees and departments, all of which would likely be subject to the broad discovery that is characteristic of antitrust litigation. Summary judgment, though normally considered after discovery, is a procedural weapon available at nearly any point in this process, as "a party may file a motion for summary judgment at any time until 30 days after the close of all discovery." The existence of a stay for extension of discovery shows that summary judgment need not automatically wait for discovery's completion, and thus can be an invaluable safeguard against otherwise incredibly costly discovery. This safeguard allows summary judgment to be a powerful tool to radically lower discovery time and costs without "railroad[ing]" the other party.

Second, antitrust litigation is normally a slow process that takes a great deal of time. The amount of time necessary to process and review evidence produced by discovery leads to incredible legal costs, often disproportionately placed on the defendant firm. The plaintiff has the advantage over the defendant in deciding the scope of discovery costs, and may often tailor its claim in such a way as to avoid the discovery costs that a defendant's counterclaim may reflect [\*390] back on the plaintiff. These lengthy trials can be effectively truncated by summary judgment, and thus summary judgment's normal value is even greater in the world of antitrust litigation where protracted trials are the norm.

Finally, the vast amount of evidence necessary to prove the elements of an antitrust claim contribute to the large discovery costs tied to antitrust litigation by overwhelming judges' ability to reign in discovery costs. Currently, we rely on judges to limit the range of discovery requested, but in the context of antitrust litigation, judges have difficulty dealing with the broad variety of evidence that may be called for. One analysis of the power of discovery described it as a costly and potentially abusive force, and determined judges' abilities to limit discovery costs on their own as "hollow" at best:

A magistrate supervising discovery does not--cannot--know the expected productivity of a given request, because the nature of the requester's claim and the contents of the files (or head) of the adverse party are unknown. Judicial officers cannot measure the costs and benefits to the requester and so cannot isolate impositional requests. Requesters have no reason to disclose their own estimates because they gain from imposing costs on rivals (and may lose from an improvement in accuracy). The portions of the Rules of Civil Procedure calling on judges to trim back excessive demands, therefore, have been, and are doomed to be, hollow. We cannot prevent what we cannot detect; we cannot detect what we cannot define; we cannot define "abusive" discovery except in theory, because in practice we lack essential information. Even in retrospect it is hard to label requests as abusive. How can a judge distinguish a dry hole (common in litigation as well as in the oil business) from a request that was not justified at the time?

[\*391] Summary judgment can also reduce costs to both parties by reducing time and discovery costs to the parties, and to the judicial system itself, by cutting short lengthy litigation. Both sides often incur costs from employing experts in various areas, researching and producing evidence necessary to prove or disprove elements of antitrust actions, and in the great many legal hours necessary for both plaintiffs and defendants--not to mention costs to the state--during lengthy litigation that is often fruitless due to an "incentive to file potentially equivocal claims." Antitrust law is structured in such a way as to have a "special temptation" for what would otherwise be frivolous litigation. As antitrust law is, by its very nature, between competitors, there is significant motivation to force costs on to other firms, perhaps even through frivolous legal claims or intentionally imposing other large legal costs. Costs can also multiply in antitrust litigation because antitrust actions are often combined with other particularly complex areas of law, such as patent law or class actions. Class actions particularly in the antitrust context can make trials "unmanageable." Combining two already complex areas of law is a recipe for large legal costs and prolonged litigation. The value of cutting costs short cannot be overstated, as antitrust litigation takes place in the arena of business competition. This means that firms are already engaged in close competition for antitrust cases to be relevant, and thus unnecessary costs can further distort the market.

#### Docket overload wrecks biotech---extinction

John Raidt 14, Vice President, Jones Group International Scholar, U.S. Chamber of Commerce Foundation Senior Fellow, Atlantic Council, "Patents and Biotechnology", US Chamber of Commerce Foundation, https://www.uschamberfoundation.org/patents-and-biotechnology

The biotechnology industry is vital to human progress and America’s economy. The sector depends heavily on the incentive provided by patents to rationalize the enormous risk of investing in life science research and development (R&D). These risks pay off for society by generating solutions that help diagnose, prevent, and treat diseases and disorders; improve human health and food production; and provide greater energy security, water development, and environmental protection. These accomplishments, moreover, create well-paying jobs and drive global competitiveness. Despite these positive attributes, questions and controversies are emerging at the nexus of biotechnology and our patent system. These challenges will have significant impact on a wide array of scientific disciplines, including molecular biology, biotechnology, embryology, genetics, and bioinformatics. Indeed, these are sectors in which the United States has a comparative advantage that must be maintained. How well society addresses these issues will significantly influence the state of our economy and creative capacities for years to come. ADMINISTRATIVE CHALLENGES. The patent system is plagued by the following three major problems that create uncertainty and pile on higher costs that encumber the biotech sector’s ability to maintain a high rate of innovation: 1. Patent backlogs and application processing delays due to the U.S. Patent and Trademark Office’s (USPTO’s) mushrooming workload, the increasing complexity of patent claims, and an inability to recruit and retain technically savvy examiners. 2. Poor patent quality, such as overly broad or ill-defined intellectual property (IP), which adds uncertainty and spawns resource-sapping lawsuits. 3. Excessive litigation, including the actions of patent trolls created to buy patents for the purpose of claiming infringement and extracting fees, rather than using IP to market useful goods. LEGAL CHALLENGES. Four major legal challenges dominate the biotech patent landscape: 1. Defining what degree of alteration to naturally occurring matter, such as a gene sequence, is necessary to qualify as a patentable “invention” in light of the Supreme Court’s 2013 Association for Molecular Pathology v. Myriad Genetics, Inc. decision. 2. Identifying what constitutes patentable utility, novelty, unobviousness, and description of altered genomic and proteomic material. 3. Classifying what constitutes patent infringement, particularly for academic research using patented genomic material. 4. Protecting IP rights, particularly abroad. INNOVATION CHALLENGES. Meeting four major challenges arising at the intersection of biotech and patent policy will deeply influence the fertility of the U.S. innovation system: 1. Finding the innovation sweet spot where genuine intellectual property is duly protected, while stimulating the openness, freedom, and collaboration upon which the scientific process thrives. 2. Clarifying what qualifies as pure research versus commercial pursuit for purposes of patent infringement indemnification. 3. Fostering the sharing of biomedical data as an open platform to drive innovation. 4. Reducing policy and legal uncertainty, created by changing patent standards, in transparency of patent awards, uneven IP protection, trolling abuses, and privacy rules, so that the innovation system can function more efficiently. ETHICAL CHALLENGES. Four ethical challenges must be overcome to maintain a vigorous pace of biotech development: 1. Addressing public concerns regarding the human alteration of genetic codes—the blueprints for life. 2. Coping with unintended scientific, social, environmental, and public health consequences from DNA manipulation. 3. Making lifesaving biomedicine available to those who can’t afford it while continuing to incentivize innovation. 4. Protecting privacy of personal genomic information. ORGANIZING GOALS AND PRINCIPLES. The effort by policymakers, business leaders, and the public to grapple with these challenges must be informed by a central organizing point: patents are a tool to drive innovation, not the other way around. Focusing on this strategic guidepost and observing a set of core principles will help us navigate the challenges more successfully. Harness incentive to drive R&D and the deployment of goods, services, and solutions. Maintain a set of essential balances between patent exclusivity and open scientific inquiry, society’s need for lower-cost therapies and the incentive needed to produce them, collaboration and competition in the innovation process, and the basic and applied research necessary for biotech invention. Mind the law of unintended consequences in policy setting, and ensure that innovation policymaking is proactive and well informed. Facilitate public support by protecting human dignity, personal privacy, and the public interest. MAJOR ISSUES TO WATCH. After the Supreme Court’s Myriad decision stating that genes are a product of nature and therefore not patentable, two pivotal questions remained: (1) What degree of DNA alteration by humans renders genetic material patentable? (2) Will the inability to patent genetic sequences that are excised from the body stifle research and the ability to bring novel gene-based tests, medicines, and therapies to market? As we tackle these questions, stakeholders should remain vigilant for significant developments that will shape the biotech innovation landscape: Response to Myriad. Look for changes resulting from the Supreme Court’s decision in capital investment and research patterns, gene therapy development and the search for single gene mutations, and the volume and claims of gene patent applications. America Invents Act (AIA). It is important to examine how the speed and accuracy of patent processing is improved by AIA reforms, including the expedited examination of applications, a new “first to file” standard, and the establishment of USPTO satellite offices. Patent standards/USPTO modernization. Keep an eye on any changes that occur in patent eligibility criteria—specifically, the core tenets of invention, novelty, utility, and unobviousness as they relate to genomic and proteomic applications. Observers should see the degree of improvement on genetic material that is needed for it to be patentable. Synergy of genetic science, information technology, and big data. Gene science is utilizing supercomputing and big data to understand and sequence the human genome; find correlations between genetic factors and human maladies; screen genes for drug leads; and develop better diagnostic tools, drugs, and therapies. Look for developments at the intersection of these disciplines, particularly in privacy issues and personalized care. Patent trolls. Look for efforts to curb lawsuit abuse and whether the cases are properly tailored in order not to envelope patent holders that maintain IP for legitimate reasons. International. Seek developments in biotech/biomed IP issues in international trade negotiations and patent harmonization efforts, particularly with the U.S.-EU and the Trans-Pacific Partnership negotiations. Microbial evolution. Look for public health and biomedical implications as microbes mutate around countermeasures more quickly, shortening the useful life of antibiotic medications and the window for biomedical firms to recoup investment. STEPS TO CONSIDER. To better prepare ourselves to cope with life science patenting challenges and opportunities, consider the following steps: Reevaluate the architecture and performance of our biotech policymaking and administrative institutions in light of the system’s purpose of promoting innovation that serves the public interest. Improve the collection, analysis, and dissemination of biotech innovation data. Useful data  on the impact that patent laws, policies, practices, and standards have on creativity will increase our understanding of the U.S. innovation system and better inform policymaking. Implement an IP education campaign. Public attention on IP issues is on the rise. Stakeholders at home and abroad need to understand the important role that IP plays in meeting human needs. Develop a biotech innovation policy strategy. The United States must be more strategic and purposeful in strengthening its innovation ecosystem in the critical biotech arena. A well- conceived strategy that calibrates our complex maze of laws, policies, and initiatives to bring solutions to the market faster would serve us well in years to come. Business and industry associations should measure the impact of public policy on the life sciences as well as clearly communicate what’s at stake. There’s a particular need for knowledgeable actors to speak to the questions we’ve asked and to create a home for life science innovation policy.  Despite the array of impressive benefits that genetic science has already yielded, Science magazine predicts that “biotech’s best years are yet to come, particularly in the pharmaceutical trade.” The National Research Council notes that “advances in the life sciences have the potential to contribute innovative and mutually reinforcing solutions to global-reaching, societal challenges ... and at the same time, serve as the basis for new industries that will anchor the economies of the future.”  Perhaps most exciting is that we find ourselves in the infancy of what Massachusetts Institute of Technology (MIT) calls the “Third Revolution”—in which the “convergence of life sciences, physical sciences and engineering” will spawn revolutionary new products and processes with new market opportunities. Without a more purposeful and comprehensive national attention to fostering life science innovation, the status quo could clog the pipeline of useful products and services on which our global competitiveness and prosperity will heavily rely. Competitors in Europe and in Asia understand the importance of life science innovation and are focusing research, development, and deployment initiatives on this future-defining arena. The warning for the United States to “innovate or abdicate” rings loudly. This begins going back to the strategic premise: the patent system exists to drive innovation and not the other way around. OVERVIEW Breakthrough In April 3, 2003, scientists representing the Human Genome Project (HGP) rose to the podium at a crowded news conference and made a historic announcement. The team had decoded the human genome—among the most important achievements in human history. Building on decades of genetic research, the pioneers had produced the Rosetta stone for deciphering the blueprints of life. Cracking the genetic code has enabled mankind to read the billions of miles of DNA in the human body and comprehend its instructions for producing proteins—the building blocks of life. It has advanced man’s ability to anticipate and shape biological outcomes, as well as imitate, combine, and customize genetic instructions to create new life-forms of increasing sophistication and complexity. Breakthroughs in genetic understanding have yielded new methods of anticipating, preventing, diagnosing, and treating human diseases and disorders. But the benefits continue to extend  well beyond human health. Gene-based innovation involving plant, animal, microbial, and other nonhuman life-forms has the potential to help meet major global challenges involving food production, energy development, and environmental protection. By all accounts, the most spectacular life science marvels are yet to come; and the most disruptive breakthrough will likely be one we can barely imagine today. What’s certain, however, is that achievements in life science hinge on America’s ability to maintain a superb ecosystem of innovation—an asset produced by the synergy of four key elements: World-class brains.  Ample resources to finance solutions, research, development, and deployment. Excellent cross-disciplinary collaboration to drive transformational insight.  Strong incentive to invest time, money, and energy in the innovation process. Each of these ingredients is vital. The focus of this report, however, is on “incentive.” It’s the aspect that encourages creators to employ their minds, resources, and collaborative energies to bring to life know-how, products, services, and solutions that meet human needs. Incentivizing and enabling individuals and enterprises with vision, talent, and ambition to turn creative ideas into useful goods is the mission of the U.S. patent. From its inception 225 years ago, the patent system has been the central catalyst of U.S. innovation that drives the most productive economy on Earth. A patent grants the holder exclusive intellectual property rights to his or her invention or discovery for a limited period of time in exchange for making the innovation public. This enables the inventor to recoup his or her investments, before being undercut by imitators who neither risked capital nor toiled to invent, and reap the fruits of a job well done. Patents, in the words of Abraham Lincoln, “added the fuel of interest to the fire of genius.” The quality and scope of U.S. patent laws, policies, and procedures will heavily influence our ability to fuel the fire of genius in the cutting-edge disciplines of bioscience and bring its life- improving potential to fruition in the years to come. PURPOSE It is not the purpose of this paper to mire the reader in the arcana of bioscience patent law or the complexities of genetic science. The aim is to provide useful and timely input to policymakers, business leaders, and the public through the following: 1. Exploring why bioscience (i.e., genetics) is so essential to the nation’s economic future. 2. Examining the important role that patent policy will play in shaping the future. 3. Identifying the major issues and controversial questions at the intersection of genetics and  patent policy. 4. Suggesting strategic objectives, principles, and approaches that may be helpful in coping with the legal, economic, and social challenges materializing on the biotech patent policy front. BIOTECHNOLOGY: THE OPPORTUNITIES AND STAKES Broad Benefits The marvels listed in this paper are but a small sampling of the transformational capabilities emerging from our biotechnology innovation system. As the state of genetic science matures, a greater variety of ways to meet essential human needs will be revealed. The industry’s crucial role in the country’s economy will expand. Reaping its full benefits, however, requires wise and prudent public policy—informed by a clear understanding of the stakes. BENEFITS: JOB CREATION. As reported in Science magazine, “The North American biotech business has grown to a behemoth that consists of more than 1,280 companies, with market capitalization exceeding $200 billion. Last year’s sales of $13.4 billion and revenues of $18.6 billion more than doubled the industry’s figures for 1993, according to consulting firm Ernst & Young.” Moreover, in 2012, “American biotechnology companies spent $9.9 billion on research and development (R&D)” to keep the pipeline of solutions and job creation flowing. According to the Biotechnology Industry Organization, the industry is responsible for “directly employing 1.42 million Americans in high-quality jobs and indirectly supporting an additional 6.6 million workers; [and] the average biotechnology employee makes $77,595 annually, far above the national average salary.” Wages in the field remain “79% greater than the average paid in the overall national private sector.” By some estimates, “biomedical engineering jobs are expected to grow a staggering 72% by 2018, the highest percentage growth of any field by far.” “The message is clear,” says the Battelle and Biotechnology Industry Organization and Biothreport, “a strong bioscience industry base offers the United States of America ... a high value economic driver. It stands out in its creation of high quality jobs, the breadth of markets it serves, and its research and development.” BENEFITS: COMPETITIVENESS. The United States, however, is not alone in recognizing the enormous potential of biotech. The Battelle and Biotechnology Industry Organization report cites the “mounting global competition for bioscience industry development as both developed and developing nations seek to grow and advance in this high-wage, high-growth industry.” As the National Technical Information Service reports, “A number of nations have targeted biotechnology as being critical for future economic growth.” China is investing heavily in biotech and “hopes to keep the average annual rate of growth of the industry at 20% between 2013 and 2015.” Across the globe, biotech hubs and clusters are proliferating, taking center stage in the competitiveness strategies of countries both big and small. Not just in China, but in Canada (particularly the provinces of Ontario, Quebec, British Columbia), Asia (including Japan, Singapore, Taiwan, China, South Korea, Malaysia, and Australia), and Europe (especially Munich, Germany; Cambridge, United Kingdom; Basel, Switzerland; Oslo, Norway; as well as France, Denmark, Sweden, the Netherlands, and Belgium). Our comparative advantage, though, is huge. We have the world’s greatest public and private research institutions, unique biomedical infrastructure, and strong federal support. The American system synchronizes the collaboration of academia, government, and the private sector, making us the global leader in delivering biotechnological developments. Our leadership, however, will be tested mightily in the years to come as demand grows and competition stiffens. Maintaining our excellence in this field of the future is a strategic and economic necessity. BENEFITS: REVOLUTIONIZING HEALTH CARE. The field where biotechnology is expected to have its keenest impact is health care. The breakthroughs in diagnosing, preventing, and treating disease have not come as swiftly as predicted a decade ago. It turns out that diseases and disorders have more complicated origins than predisposition correlated to a single gene or set of genes. The genetic factors are themselves more complex than previously understood and many “nurture” issues also play a hand. Deciphering the multiform causes of human health problems has been complicated and time-consuming work, as has been deriving therapies from genomics and proteomics. Nevertheless, “more than 350 biotechnology-based drugs—designed to treat AIDS, Alzheimer’s disease, diabetes, heart disease, multiple sclerosis, and obesity, among other conditions—have started human clinical trials.” Increasingly, we will look to pharmacologists, makers of advanced medical devices and equipment, and providers of research, testing, and medical services to deliver better health care at far lower cost. A report produced by the Human Genome Project (HGP) notes, “as our understanding at the molecular level of how things like diabetes or heart disease or schizophrenia come about, we should see a whole new generation of interventions, many of which will be drugs that are much more effective and precise than those available today. The HGP reports that “most new drugs based on the completed genome are still perhaps 10 to 15 years in the future.” The next great leap forward is the era of personalized medicine. It will soon be possible to  have one’s personal genome sequenced for $1,000, providing individualized data on hereditary susceptibility to disease and enabling prevention and customized therapies that could “transform the practice of medicine.” By some estimates, genetically based diagnostics and preventative care could help stop health care costs in their tracks—an economic imperative for a country that is reeling from the highest health care costs in the world. In 2010, the United States spent $2.6 trillion on health care— by far more in gross terms and as a share of Gross Domestic Product (GDP) than any other country. U.S. health care spending leapt from 7.2% of GDP in 1970 to 17.9% of GDP in 2010. No other country even comes close, and our costs continue to expand at a faster clip than our productivity. Enormous health care costs are placing a debilitating strain on our households, enterprises, and public finances—an average of $8,402 per person per year and growing. In many instances, these expenses are borne by businesses struggling to compete in a price-sensitive global economy.  In a 2010 survey of more than 500 U.S. chief financial officers and senior comptrollers about their cost concerns, the No. 1 by far was the rising expense of employee benefits, including health care and pensions. Moreover, rising health care costs play a significant role in massive federal and state budget imbalances that degrade our business environment and endanger the country’s prosperity. By expanding productivity, spurring job growth, and reining in health care costs, biotech innovation is an economic necessity. A troubling aside is the little bang we get for our health care buck. In its January 2013 report titled U.S. Health in International Perspective: Shorter Lives, Poorer Health, the Institute of Medicine of the National Academies says that while the United States is “among the wealthiest nations in the world ... it is far from the healthiest. Although Americans’ life expectancy and health have improved over the past century, these gains have lagged behind those in other high- income countries.” Ranking 17 high-income countries by life expectancy at birth (in 2007), U.S. males and females placed 17th and 16th, respectively. The “health disadvantage prevails even though the United States spends far more per person on health care than any other nation.” The Institute went on to say that “[t]he tragedy is not that the United States is losing a competition with other countries, but that Americans are dying and suffering from illness and injury at rates that are demonstrably unnecessary.” BENEFITS: MODERN AGRICULTURE, ENERGY, AND JUSTICE ADMINISTRATION. The benefits of biotech extend well beyond the ability to revolutionize man’s ability to cost- efficiently predict, prevent, diagnose, and treat diseases and disorders. The industry will factor heavily in achieving global energy, water, and food security. Genetic technology is helping render crops more disease resistant, water efficient, and nutritious, and may be the only way to meet global food demand—expected to double by 2050—while protecting natural resources. More than 13.3 million farmers around the world use agricultural biotechnology to increase yields, prevent damage from insects and pests, and reduce farming’s impact on the environment. In the energy sector, genetic know-how is being employed to alter how plants turn sunlight into chemical energy, making possible new, cheaper, and more environmentally friendly forms of biofuel. Craig Venter, widely credited as the first person to sequence the human genome, is working to genetically modify algae to produce energy. No fewer than 50 biorefineries are being built across North America to test and refine technologies to produce biofuels and chemicals from renewable biomass, which can help reduce greenhouse gas emissions. Even in the administration of justice, biotechnology is transforming the state of the art, helping genetically identify the guilty and exonerate the innocent. BENEFITS: TRANSFORMING THE FUTURE. Despite the array of impressive benefits that genetic science has already yielded, Science magazine predicts that “biotech’s best years are yet to come, particularly in the pharmaceutical trade.” The National Research Council’s study titled A New Biology for the 21st Century notes that “advances in the life sciences have the potential to contribute innovative and mutually reinforcing solutions to global-reaching, societal challenges ... and at the same time, serve as the basis for new industries that will anchor the economies of the future.” Perhaps most exciting is that we find ourselves in the infancy of what MIT calls the “Third Revolution”—in which the “convergence of life sciences, physical sciences and engineering” will spawn revolutionary “new products and processes with new market opportunities.” The potential was captured by authors John Naisbitt and Patricia Aburdene in their book Megatrends 2000: “As we move through the next millennium, biotechnology will be as important as the computer.” Looking ahead to 2050, The Economist says, “Medical miracles are likely to come from genetically targeted drugs, vaccines that do not need refrigeration during transport and stem cells that grow new tissues.” MEETING A FUNDAMENTAL CHALLENGE. Such a future will not come to fruition, however, unless we are able to sustain a fertile environment in which the promise of biotech can blossom to its full potential—a strategic objective that can’t be achieved without a modern, efficient patent system. The patent system is an integral component of America’s overall innovation system—one that doesn’t run on autopilot, oblivious to the legal and economic environment. It is a complex architecture that is responsive to public policy choices and incentives that will either nurture or stymie it. Moreover, the view that intellectual property is bad for society is on the rise at home and abroad. An informed public discussion is essential to ensure that policymaking is positively influenced by educated public sentiment. WHY PATENT POLICY MATTERS The intellectual property rights (IPR) protection system has been the lifeblood of American economic prowess since the birth of the nation. Its foundations were established in Article I of the U.S. Constitution, which empowered Congress “to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.” In 1790, Congress exercised this authority to establish a national patent system for granting intellectual property protection to “any new and useful art, machine, manufacture, or composition of matter, or any new or useful improvement thereof.” Now, as then, the award of a U.S. patent confers on the recipient the exclusive right to make, use, and sell an invention for a limited period of time (usually 20 years) in exchange for public disclosure of the invention. The system is administered by the U.S. Patent and Trademark Office (USPTO) and enforced by the federal courts. More than two centuries later, patent-driven innovation remains America’s fountainhead for job creation, productivity, and a rising quality of life. Nearly half of U.S. GDP since World War II has been derived from patent-reliant technology. IP-intensive industries employ more than 40 million workers and generate $7.7 trillion in gross output (nearly 33% of the total). The IP system will continue to pace our country’s development, particularly in the trade-based global economy where the sustaining a high rate of innovation is crucial. Importance to Biotech. While we rely on the IP system to stimulate innovation across the economy, the modern biotech sector is perhaps the most patent dependent by virtue of the enormous costs of discovery in such a long-lead and labor-intensive industry. It takes nearly 10 years and on average costs $1.8 billion to bring a new pharmaceutical to market. Even longer periods of time and higher costs are required to produce genetically derived therapies—in which failure is an integral part of the discovery process. “Typically, less than 1% of the compounds examined in the pre-clinical period make it into human testing. Only 20% of the compounds entering clinical trials survive the development process and gain Food and Drug Administration approval.” Without having to incur these monumental development costs, imitators can readily reproduce winning therapies and offer them at far lower prices than those who bore the sacrifice of discovery. Lower costs sound appealing to a cash-strapped health care system. But without the ability to recoup their investments, the willingness of biotech innovators to spend enormous sums necessary on investigation will wither, starving the pipeline of new therapies. This dynamic is especially relevant to “recombinant protein therapeutics” (RPT), the most promising biomedical frontier. The process of mixing and matching genetic material to derive therapies is exceptionally expensive, and the products are harder to bring to market than conventional drugs. This is why RPT development depends so heavily on patent protection. “Patents,” reports the National Institutes of Health (NIH), “have largely played their traditional role of inducing investment in engineering and product development, including expensive post-discovery clinical research to prove safety and efficacy.” What would our innovation system look like without patents? It’s hard to imagine that it would be much to look at given that the primary alternative would be trade secrecy. But the high cost of seeking patent protection overseas, among other reasons, is elevating the status of trade secrecy as an IP tool of choice, despite its chief shortcoming. As the NIH points out, “trade secret protection lasts for as long as the secret is kept confidential. If the secret is never publicly disclosed, it will never lose its protection. If the secret is uncovered by means of industrial espionage, disloyal employees, theft, or the like, the owner of the secret has legal recourse against those who misappropriated the secret, or anyone who procured it through such impropriety.” Protection is not afforded, however, “in the event that someone managed to successfully duplicate the recipe by legitimate means.” A trend toward greater trade secrecy to avoid the pitfall of an insufficient patent regime poses two significant problems. For companies, it’s unsustainable because today’s technology makes inimitability exceedingly difficult to maintain. For society, it’s undesirable because secrecy deeply undermines the scientific process that feeds on the kind of transparency and collaboration that the patent system was conceived to deliver. Opting for trade secrecy over patent protection will have a chilling effect on innovation and threatens to undermine broad-ranging scientific advancement. The quality of innovation touches our lives and enterprises in so many ways. Thus, we are all stakeholders in the patent debate and, in particular, the life science patent debate. U.S. PATENT SYSTEM: THE CHALLENGES Biotech, though a highly unique sector and particularly reliant on IP, must meet the same patent criteria for its innovations as apply to those of all other industries and faces the same challenges posed by the administration of the system. Regardless of industry, winning a patent for a “discovery” or “invention” requires the claimant to meet a four-part test. The discovery or invention must be novel. It must have usefulness. It must be unobvious. And it must be adequately described. As simple as these requirements may appear, devising and applying fair, rational, and up-to- date criteria for each standard is extremely difficult, particularly when the system is dealing with complex, technical material in a high-stakes environment. Biotech, like other industries, lives  at the mercy of the USPTO and suffers greatly when the IPR process is deficient, as does our economy from jobs and opportunity lost. Three problems continue to loom large with our patent system in general—a significant and persistent backlog of patent applications, poor patent quality, and an increasing level of IPR litigation and violation. A poorly performing patent system is a major liability when speed to market, first-mover positioning, and cost control in a global economy are necessities, particularly in the frontier biotechnology field where the United States must remain a world leader. BACKLOGS AND DELAY. As of September 2012, the USPTOs reported a logjam of unexamined patent applications exceeding 608,000 submissions. First Office Action Pendency (the average number of months from the patent application filing date to the date a “First Office Action” [i.e., the first documentary action made by the examiner regarding the substance of the patent is dispatched by the USPTO]) is currently 21.9 months. Traditional Total Pendency (the time that a patent application is originally filed to when the USPTO issues or abandons the patent) is currently 32.4 months. In 2008, the USPTO director, noting the trend of increasing applications and longer pendency periods, stated that the office’s “biggest challenge is to address the growth of pendency and the backlog of patent applications waiting to be examined while maintaining high quality.” In 2012, the USPTO received more than 576,000 applications, three times the number submitted in 1992. Each year the applications are more technical and challenging. Meanwhile, the USPTO continues to experience difficulty maintaining a qualified cadre of examiners able to make good decisions in a timely fashion. POOR PATENT NOTICE AND QUALITY. The USPTO’s deficit in human capital not creates only a sclerotic patent system but also one that issues too many poor-quality patents. Poor patents (those that are overly broad or don’t truly meet the novelty, utility, unobviousness, and describe- ability criteria) impede innovation as does the rejection or delay of legitimate applications. As former Senator John Sununu pointed out in a recent Boston Globe editorial, “When the U.S. Patent and Trademark Office issues a patent that is overly vague, broad, or trivial, it invites uncertainty and litigation.” Moreover, insufficient patent notice and titling is a significant burden on the system. Ill-defined and poorly publicized patents in particular, and improper patent decisions more generally, foster resource-sapping litigation that enriches lawyers at the expense of research and product development. According to one study of gene patents, more than one-third of a sampling examined was deficient. Not only do these insufficiencies stem from patent examiners who aren’t up to speed on technology, but the lack of technological expertise by the judges who hear patent cases contributes to the problem. LAWSUIT ABUSE. For those who successfully navigate the USPTO’s wickets and obtain a patent, another major problem awaits—costly lawsuit abuse. The problem has reached epic proportions with the emergence of sophisticated “patent trolls.” These are entities that exist for the purpose of filing patent lawsuits. The White House has described them as “firms who do not practice the patents they own and instead engage in aggressive litigation to collect license and other fees from alleged infringers” A 2007 study by the University of Houston Law Center found that patent litigation increased 120% between 1990 and 2005. The American Enterprise Institute observes: “Patent law has turned into a legal game ... [and] there is an increasing trend of parties buying up patents and then suing companies that touch those patents.” These “parties,” otherwise known as patent trolls, have “perfected the art of turning patents into a lottery.” As described in a 2011 Harvard Business Review article, “[M]any of these patent trolls don’t produce anything, but rather scoop up patents, wait for a successful product or service to come to market, and then threaten to sue the ‘infringers.’ The targets of their lawsuits are often the startups that are trying to drive real innovation in our economy, companies that rarely have the resources to fight back.” “Patent lawsuits, on average, cost about $10 million, take about five years to process, and ultimately inhibit future scientific developments.” This is time and money that could otherwise be devoted to inquiry and innovation. PricewaterhouseCoopers reports that the biotechnology and information technology sectors are seeing the fastest rise in patent dispute cases. Experts believe that there are 219 patent troll organizations with more than 800 subsidiaries. According to PatentFreedom, trolls were party to more than 5,000 new litigation events in 2011. Many companies are responding by purchasing patents solely as a defensive measure against trolling abuses—a remedy that unnecessarily raises the cost of bringing innovative goods to market. NEW APPROACHES. In 2011, to help solve three overarching problems—backlog, delay, and lawsuit abuse—Congress passed the America Invents Act. The law increased the number of USPTO satellite offices to speed processing. It replaced a “first to invent” standard with one favoring the “first inventor to file” to cut down on litigation and harmonize the U.S. approach with global standards. A Patent Trial and Appeal Board was established to provide a “Post Grant Review” process to facilitate speedier dispute resolution. And the law expanded the universe of what constitutes “prior art,” rendering more claims unpatentable for lack of novelty or for obviousness. Implementation of the law is recently under way, and time will tell whether the reforms will have the effect Congress intended. KEY ISSUES AND CONTROVERSIAL QUESTIONS: The Intersection of Genetics and Patent Policy The biotech industry will reap the benefits if the America Invents Act hits its mark or suffer the consequences if the reforms fall flat. In either case, this vital industry will continue to face exceptional challenges. The intersection of gene science and patent law creates an additional layer of complexity for our patent and innovation systems. Just a few years ago, the USPTO “granted the 50,000th U.S. patent that entered the DNA Patent Database at Georgetown University.” What’s unique about this milestone is that the leading holders of human gene patents are not companies but, rather, the federal government (e.g., the National Institutes of Health) and universities, which often develop their intellectual property using federal research funding. So the U.S. government is not just an innovation funder, IP policymaker, and patent administrator, but also a significant patent holder, especially in the gene science arena. If America’s economy is to thrive in the 21st century, lawmakers, business leaders, and society at large must successfully cope with the spiraling complexities of life science policymaking and the consequential legal and administrative, economic, and ethical challenges involved. LEGAL AND ADMINISTRATIVE. Fundamental legal and administrative questions are at the core of the public debate. Is nature patentable? What’s the standard for determining what constitutes “nature,” and what is altered by the hand of man? What are the limits to gene patenting? What standards apply to evaluate novelty, utility, and obviousness in determining the patentability of gene-based methods and materials? What constitutes infringement of patented biotechnology? What remedies should be available? ECONOMIC. The answer to these legal and administrative questions helps evaluate a set of key economic questions with the objective of maximizing innovation. Where in patent policy is the sweet spot between proprietary protection and the academic openness to maximize innovation? What patent standards are necessary to protect bona fide intellectual property, while further engendering the freedom and collaboration on which the scientific process thrives? Does the use of patented material or a proprietary process in noncommercial research constitute infringement? Should it? What qualifies as pure research versus commercial pursuit? How does it affect basic inquiry when licenses to use patented “art” are nonexistent or prohibitively priced? ETHICAL. A third set of issues touches on sweeping philosophical questions that will heavily influence the debate and policymaking. Is it proper for man to intervene in the coding of life? At what point are we trying to play God? Is it morally right to purposely forgo innovation that could cure debilitating diseases and disorders? What are the unintended scientific, social, environmental, and public health consequences that may result from manipulating human and animal DNA? Where does society draw the line? Who decides? Moreover, some argue that IP is a barrier to access to medicine, a cruel tax from rich countries on poor countries. What are the moral and public health implications of patented medicines and monopolistic pricing? What would be the cost to innovation if innovative companies are stripped of their patent rights in many countries? How we answer these intricate and interrelated questions will bear heavily on the future of mankind, the quality of human health care, the vibrancy of our economy, the success of our firms, and the dignity of human life. LEGAL AND ADMINISTRATIVE ISSUES IN FOCUS From the advent of genetics, two main questions have been at the center of the intellectual property debate. Is nature patentable? If so, under what circumstances? It should be noted that the manipulation of nature to produce varieties of plants and animals bearing characteristics beneficial to human beings is an ancient practice. A commission established by President Reagan to examine the ethics of biomedical research observed, “For at least 10,000 years—since long before the principles of classical genetics had been scientifically established—human beings have brought about deliberate genetic changes in plants and animals through traditional reproductive methods. Many of the domestic animals, crops, and ornamental plants in existence today are human creations, achieved through selective breeding aimed at enhancing desired characteristics. In a broad sense, such genetic manipulation by breeding for a desired outcome might be considered genetic ‘engineering.’” Modern genetic engineering, of course, is far more technical and hands-on. The answer to the basic question of whether a discovery of something inherently natural can be legally patented, however, is no. The Supreme Court has ruled unambiguously that patent eligibility does not extend to “laws of nature, natural phenomena, and abstract ideas.” As the research arm of Congress notes, “[The] processes for extracting those objects can be patented, but not the objects themselves. For example, a newly discovered plant or bird or mineral cannot be patented.” The lack of “novelty” in discovering some natural material or process is uncontroversial. Yet 80 years ago when man’s ability to directly manipulate genetic material in plants came of age, a more ambiguous question complicated the legal debate. What constitutes nature? The question was put to judicial test in a 1930 case looking at whether human-bred plants were patentable. At issue was the work of horticulturalist Luther Burbank, who used techniques such as grafting, hybridization, and breeding to develop “more than 800 strains and varieties of plants ... including fruits, flowers, grains, grasses, and vegetables.” The Supreme Court’s decision swung in Burbank’s favor finding that “a variety [of plant] resulting from cultivation was the creation of human agency and therefore was patentable.” In that same year Congress passed the Plant Patent Act legislatively affirming the patentability  of human-derived plant material (while limiting patent protection to “plants that could be reproduced asexually.”) The effect of these judicial and congressional actions was to firmly establish the legal principle that the human manipulation of plant DNA to produce a useful form of vegetation was not nature but a patentable, man-made “invention.” Thomas Edison, testifying before Congress in support of the pro-patent legislation, stated that “this [bill] will, I feel sure, give us many Burbanks.” But 50 years later, the “patentability” question became even more complex as the ability to manipulate genes graduated from vegetation to higher life-forms. As noted by a National Research Council committee, “The advent of the molecular era in biology in the 1940s and 1950s, and in particular the development of the tools of recombinant DNA in the mid- 1970s, made it possible for scientists to isolate individual genes and determine their chemical composition and ultimately to sequence entire genomes.” This advancement gave rise to a previously inconceivable human milestone—the man-made creation of a life-form unknown to nature. This was the achievement of General Electric chemist A.M. Chakrabarty. He had bioengineered a microorganism capable of consuming oil slicks;  and in 1980, the question of whether the microbe was a patentable “invention” came before the Supreme Court in the case of Diamond v. Chakrabarty. The Court ruled definitively that “whether the invention is alive or not is irrelevant. The determinative consideration, instead,  is whether the invention is a product of human ingenuity.” The justices determined that the creation of the microbe was such product and upheld the patent. Notably, the justice’s opinion went even further, setting an overarching U.S. patent standard: “Anything under the sun that is made by man,” ruled the Court, is patentable subject matter. The Chakrabarty decision set the stage for major pro-patent legislation passed later that year by Congress. These important measures combined with rapid advances in genetic science and a generous flow of funding for life science research to spur a groundswell of gene patent activity. The legislation in question was the Bayh-Dole Act of 1980 (Patent and Trademark Law Amendments Act), which enabled universities to patent the “products and processes” stemming from federally funded research. The legislation transformed the patent landscape, creating an enormous incentive for universities to marshal their intellectual capital to research and produce patentable advancements. For this reason, academic institutions own 39% of DNA patents, while holding only 3% of all general patents. Through “technology transfer” offices, patents are transferred or licensed by the university to corporate sponsors under “research and development” agreements. These arrangements have become an important source of revenue for higher education institutions and have stimulated the pursuit of marketable innovations, placing our higher education system squarely in the debate on the standards and practices of patent law. The Court’s “anything under the sun” standard prevailed again on the heels of the Chakrabarty case when Harvard University submitted a patent application for its “invention” of a life-form even more sophisticated than General Electric’s oil-eating bacterium. Harvard scientists had genetically engineered a rodent predisposed to cancer for use in oncological medical research. Patent rights for the so-called Oncomouse were acquired by DuPont and granted by the USPTO along with the Canadian, European, and Japanese patent authorities. The creation of the Oncomouse symbolized the enormous progress being achieved in genetics. Human manipulation of DNA had started with plants a century ago, graduated to microbes and small mammals, and was soon to enter the human realm. Paced by the federally funded Human Genome Project (HGP) and a parallel private effort called Celera, our best scientific minds had busied themselves laying bare the full complement of 40,000 genes and the order of the 3 billion chemical “base pairs” that make up human DNA. Since unraveling the “language of life”—the landmark celebrated at the HGP press in 2003— mankind has continued to gain a deeper understanding of cellular function at the molecular level. As the science has moved further into the domain of human genetics, however, the issues over the patentability of discovery and invention stemming from this work have grown trickier and more controversial. Human genes in the body are clearly a product of nature and therefore unpatentable. The question of patentability as it relates to genetic material that is removed from surrounding tissue and altered to exist external to the body has proved to be far more ambiguous and contentious. Understanding how particular genes determine human characteristics, finding consequential genetic mutations, and correlating them to human diseases and disorders requires excising targeted genetic sequences from longer DNA strands so that they can be studied and tested for both research and clinical purposes. This is taxing work requiring time, money, and determination. Whether these sacrifices are made by a university, a nonprofit research institute, or a corporate lab, the prospect of a patent is a significant incentive to do the hard work. The way in which this work is conducted, however, has raised new and challenging questions bearing on how we delineate nature and define “human ingenuity.” THE MYRIAD DECISION. These issues came to the fore in a case decided by the Supreme Court in early June 2013. At issue in the case was a full complement of core issues at the intersection of cellular biology and patent law—that of nature versus human invention as well as the scope of standards such as novelty, utility, and unobviousness. In 1994, genetic scientists at Utah University in association with Myriad Genetics isolated two DNA fragments (BRCA1 and BRCA2) found to present particular mutations that indicate the carrier’s hereditary susceptibility to breast and ovarian cancer. The company reported that it spent $500 million over 17 years of study to isolate the genetic mutations and correlate them to the incidence of cancer. To wit, the company sought patent protection against unauthorized use of the gene it had isolated, its process for mutation testing, and any other tests that might “isolate the same gene.” The USPTO awarded Myriad a set of patents two years later, effectively granting it a monopoly on diagnostic testing for the particular mutations of the genes and on the isolated genes themselves, which had become the firm’s intellectual property. The practical criticism and policy concerns raised by the patent focused on two issues. First, the patents may block research on the genes. In defending its patent, Myriad had issued cease and desist letters to academic centers doing patient research on BRCA1 and BRCA2 (and at least in some cases, the work was being performed for commercial purposes). Second, the price on the diagnostic test was viewed as too costly. The challengers in the case argued that “methods of isolating genes or using them therapeutically may be patentable. Yet DNA itself, whether resident in the body or extracted in the laboratory, is a product of nature and therefore cannot be patented.” Myriad argued that isolating the gene (meaning “divested of ‘junk’ elements, and sequenced  it through human intervention”) and purifying it (meaning excluding it “from the way the particular DNA occurs in nature”) was the act of human ingenuity entitling it to the patent on the extracted gene itself. The USPTO awarded the patents to Myriad based on that rationale. There was judicial precedence as well. In the case of Parke-Davis & Co. v. H.K. Mulford & Co. (1912), “the applicant had patented adrenalin. The first claim of the patent was as follows: A substance possessing the herein-described physiological characteristics and reactions of the suprarenal glands in a stable and concentrated form, and practically free from inert and associated gland tissue. The Court held that a substance derived and purified from nature could be patentable.” The case received significant public attention and has been the subject of much commentary by press and academia. The debate produced a fair amount of misinformation and abstraction. For instance, claims were made that genetic patent holders “own the genes” in our body—a falsehood that has dramatic appeal but no basis in truth. The law is clear that “naturally occurring genes as they exist in their native state (e.g., as they exist in the human body) are un-patentable products of nature, as is raw genetic sequence information.” Some of these abstractions stemmed from passion surrounding the practical criticisms regarding potential research impediments and the high cost of diagnostic testing rather than whether the patents met the legal test of a patent. Nevertheless, on June 13, 2013, the Supreme Court issued its ruling. It found unanimously that the patenting of DNA, even in the form of a section excised from surrounding sequence and isolated from the body, does not constitute an “invention” or “discovery” and thus is unpatentable. Justice Thomas, in writing the court’s opinion, stated simply, “separating the gene from its surrounding genetic material is not an act of invention." On behalf of the Court, Thomas went on to state, “The rule against patents on naturally occurring things has limits, however. Patent protection strikes a delicate balance between creating ‘incentives that lead to creation, invention, and discovery’ and ‘imped[ing] the flow of information that might permit, indeed spur, invention.” The outcome of the Myriad case is the most recent pivot point—albeit an important one—in a continuously evolving process of defining what the limits Thomas referred to will be and the consequences. In many ways, the most significant part of the opinion was not what the Court said about the circumstance at hand but about the science to come. Of the Court’s judgment, Thomas wrote, “We [did not] consider the patentability of DNA in which the order of the naturally occurring nucleotides has been altered. Scientific alteration of the genetic code presents a different inquiry, and we express no opinion about ... such endeavors. We merely hold that genes and the information they encode are not patent eligible ... simply because they have been isolated from the surrounding genetic material.” The Department of Justice’s Solicitor General, Donald B. Verrilli, Jr., ostensibly agreed that DNA, whether in the body or isolated by human intervention, is not eligible for patenting, but it added that “a variety synthesized from other genetic components, known as cDNA (complementary DNA), should be.” MYRIAD IN CONTEXT. First, Myriad’s patents and its arguments defending them were not rejected by the Court in whole. The Court upheld Myriad’s testing protocol as legitimate intellectual property. What’s significant is its opinion that the isolated gene itself is not patent eligible. How the decision will affect similarly situated patents is still not clear. First, they are difficult to inventory. Second, every patent award presents different facts and circumstances. Third, the term “gene patents” is ill-defined. Christopher Holman observes “the word gene is used in a variety of divergent ways, and often has dramatically different meanings for scientists working in different disciplines. In fact, many patents routinely referred to as ‘gene patents’ actually claim molecular constructs that do not exist in nature, but that instead merely correspond to, or are derived from, naturally occurring genes.” These would be patents that don’t fall within the purview of the Supreme Court’s Myriad decision. What will the post-Myriad patent landscape look like, and what will be the net effect on innovation? The views expressed in the popular press and trade journals were schizophrenic, ranging from the gene patent system as we know it has been turned upside down, to it’s “no big deal.” The fact is that only time will tell. Those who see in the decision far-reaching consequences would nod to a paper produced by Cornell University that looked at “longer claimed DNA sequences from existing gene patents, which ranged from a few dozen bases [base pairs] up to thousands of bases of DNA, and found that these long, claimed sequences matched 41% (9,361) of human genes. Their analysis concluded that almost all clinically relevant genes have already been patented, especially for short sequence patents, showing all human genes are patented many times over.” The specific facts and circumstance related to each patent will determine if the Myriad decision has material consequences. Those who see little impact may note that the initial reaction on Wall Street to the decision resulted in an increase in the value of Myriad stock. More consequentially, however, they would point to the fact that patenting of particular genetic sequences is being overtaken by time  and science. Many of the gene sequence patents first obtained in the 1990s are on the cusp of expiration. In fact, several of Myriad’s BRCA patents have already expired, and others were set to expire soon but for the Supreme Court’s decision short-circuiting the timeline. Other analyses downplaying the effects point out that many “gene patents” don’t claim the genetic material itself as the innovation but rather the process for identifying the mutation. Ultimately, the consequences won’t be determined by law alone but also by a shifting scientific landscape. We are learning that many diseases can’t be correlated to a particular gene mutation but are produced by multiple factors. This raises the question whether a short gene sequence patent would have the “utility” required if put to an IP infringement test. Some observers may find that these trends diminish the relevance of the Myriad decision relevance; others will see quite the opposite. The logic for the latter view is that if disease involves a more complex set of genetic interactions, then the need to finance the investigative process will become greater and still costlier. Rather than looking for a needle in one haystack, we must find the needles in multiple haystacks and figure out how they work together in the causation or predisposition to adisease or disorder. There are thousands of diseases to explore for genetic precursors. The question is whether the Myriad decision’s limits on patentability will inhibit this investment, slow the rate discovery, and weaken the flow of therapies. It’s important for policymakers and stakeholders, including the public, to understand that the Court’s determination was a “legal” decision having policy implications, not the other way around. The patents were not nullified because they were shown to be anticompetitive, proven to adversely affect public health, or because of some other undesirable consequence. The justices were simply unconvinced that removing a piece of DNA from surrounding genetic material constituted something “new.” Whether the decision will have net beneficial or detrimental effects will be proven by how our innovation system responds. Evidence is already materializing on one consequence of the decision. Now that the genes themselves are not considered intellectual property, the competition for testing has increased. Press reports indicate that “just after the decision was released, DNATraits, a division of Houston-based Gene By Gene Ltd., announced that it would offer testing for the BRCA1 and BRCA2 genes in the United States for $995. That compares to $4,000 for the Myriad test.” This is evidence that patients, insurance companies, and premium payers will benefit from the lower cost of testing for this particular genetic mutation. This also bodes well for consumers of genetic testing in general as the overall market is projected to grow by 9% between 2012 and 2017. Current spending on genetic tests is around $5 billion a year and is expected to reach $25 billion by 2021. What’s not clear is whether inquiry into isolating particular genes and analyzing correlation to other diseases will be less robust in the wake of the decision. If so, what effect will this have on science and innovation? Will biotech companies alter their investment patterns and adjust their research focus away from finding genetic links to other diseases in the absence of a stronger patent incentive? How will the decision affect the flow of venture capital to the biotech sector in general and to genomic and proteomic research in particular? What, if anything, won’t we cure as a consequence of the effects of the Myriad decision? If other gene sequence patents are nullified, what will that mean for continued research and development? These are not questions for courts of law. They are issues for the public, Congress, and stakeholders to examine, and, if required, to remedy through the appropriate policymaking processes. Another consequence policymakers must examine is how the Myriad decision comports with international patent norms and standards. International legislative bodies and courts have rejected broad sweeping prohibitions on gene patenting in biotechnology, and a blanket prohibition on genes or other biological materials is inconsistent with the Agreement on Trade-Related Aspects of Intellectual Property Rights accord (TRIPS). Most industry experts urge harmonization of international patent regimes to improve IP protection and facilitate international trade, particularly in genetics where the U.S. biotech industry has earned a significant comparative advantage in global markets. Some experts have opined that the Myriad decision makes the United States the first country to categorically reject the patentability of isolated gene sequences. If so, what does the disparity mean? How will it affect our trade position and appeal as a location for biotech firms? What are the implications for the United States and our competitiveness given that we have always been expansive in our interpretation of patentable “art”? Many of the most important questions here have measurable answers. It’s uncertain, however, whether Congress or the administration has its microscope and tape measure in hand. LEGAL AND ADMINISTRATIVE CHALLENGES—WHAT’S NEXT? The answer to the question of what’s next at the intersection of gene science and patent law was foreshadowed in the Myriad decision when it upheld the patentability of methods to isolate and purify genes and for DNA altered in the laboratory. Perhaps in retrospect, the Court’s action will become more noteworthy for the aspects of gene patents it sustained than the claim it rejected. A future legal scrum may well center on the question of what constitutes “altering” DNA in the laboratory such that it is a patentable invention. As pointed out in the patent trade press, “The Court did not provide guidance about the extent to which a naturally occurring DNA sequence must be modified to become patent-eligible, nor did it suggest how it would rule on other purified, isolated, or synthesized materials that may have a naturally occurring counterpart. All of these issues are likely to be the subject of future patent litigation.” A Congressional Research Service report echoed the point, saying that “products of nature (a preexisting substance that is found in the wild) may not be patented, per se. However, a product of nature may be patentable if significant artificial changes are made. By purifying, isolating, or otherwise altering a naturally occurring product, an inventor may obtain a patent on the product in its altered form.” In light of Myriad, what degree of modification of a naturally occurring genetic material will constitute a novel, utile, and unobvious discovery or invention that is patentable? As the state of the art in science becomes better known, will the goalpost change on what makes a new genetic intervention “unobvious”? A Stanford University report on the implications of the case suggested that patent applicants provide a description to the USPTO that “emphasizes the differences between the natural composition of matter and the claimed invention. Patent applicants with vulnerable claims should add new method claims about how to create or use the DNAs of interest and should  add construct claims. ” Given these new approaches it’s possible that even the fundamentals of Myriad could be revisited at some point in adjudicating what level and aspects of “isolation” and “purification” may sufficiently alter the nature to make it a product of human ingenuity. It could also be a topic Congress uses its lawmaking powers to address. The foundational policy question was posed by a widely cited academic report: So while genes lay peacefully within the body, with no identified start and stop and no understanding of the correlation between an error in the genetic code and increased risk of disease, why shouldn’t there be a reward for those who spend time and money on genetic discoveries, even if it involves a piece of the human body? In its Myriad case filing, the Justice Department indicated that there should be such a reward when it stated that patents should remain available “to cDNA, an edited version of the DNA that’s injected into a cell to produce a specific protein. That would provide some incentive for the first person to isolate a gene, but leave any given sequence of DNA open for research.” The answer to the question of “what’s next” will also be heavily influenced by knowledge gained from the application of supercomputing power and big data to the study of gene sequences. These applications, deemed the gateway to personalized genomes and therapies, are sure to spawn new discoveries and inventions that may well end up writing the next chapter in the legal anthology of gene patents. As the World Intellectual Property Organization observes, “The development of personalized medicine and therapeutic innovation, however, has renewed interest in understanding which pharmaceutical and biotechnology inventions are patent-eligible.” Again, patent eligibility is a legal question with vast policy implications. Many of the legal issues that will bubble up in and through the courts can’t be anticipated. But decision makers can help our innovation system remain more predictable, efficient, and fertile by proactively setting clear, purposeful patent law and policy. Doing so will help the country stay focused on the strategic goal of innovation and help reduce the legal uncertainty that impedes investments in biotechnology—resources that are critically needed to unlock the toughest life science mysteries and solve our most consequential challenges. JUDGING NOVELTY, UTILITY, AND UNOBVIOUSNESS. A significant legal and practical matter that influences the efficiency and effectiveness of life science patenting is how the qualification standards are applied to life science patent submissions. The definitional nuances and legal intricacies of how applicants comply with norms and how patent examiners evaluate novelty, utility, and unobviousness are too numerous and complex to address them adequately in this report. Suffice it to say that proper scope and quality of patent claims and awards are essential to an efficiently functioning innovation system. Harvard’s patent application for Oncomouse provides a perfect example. The university used its application to declare intellectual property rights not just for the particular processes and genetic material used to create the mouse but for “any transgenic mammal, excluding human beings, which contained in its genes an activated oncogene that had been introduced at its embryonic stage.” The system eventually narrowed the patent, but the administrative time, cost, and energy of dealing with overly broad claims of this nature is burdensome. There is evidence that this practice is not uncommon in gene-based patenting. According to the findings of a comprehensive patent claim study published in Science magazine, “Some applicants took advantage of the redundancy of the genetic code by, for example, claiming the sequence of a protein within a patent and then also asserting rights over all of the DNA sequences that encode for that protein without describing those DNA sequences.” While individual interest might be served by making overly broad patent claims, the general practice can’t help but impede the system to the nation’s detriment. The problems exceed questions of patent scope. More generally, the Congressional Research Service reports that “the quality of the gene patents awarded by the USPTO is a concern for some experts. A study by professors Jordan Paradise, Lori Andrews, and Timothy Holbrook found that 38% of the claims contained in 74 patents on human genetic material were ‘problematic.’ This means that they had significant questions of whether they met the three-part test of being novel, utile, and nonobvious. Just performing the patent process better can help eliminate problems with “patent thickets.” Applying the three criteria involves judgment, but the practical implication of defective patents is that they “... can act as a brake on research, since going to court to contest them is an expensive undertaking.” The USPTO has implemented measures to tap the expertise of the scientific community for improving the examination process that deals with both human and agricultural genetic art. Among the greatest administrative challenges to our innovation development system will be ensuring that the examiners and their procedures can keep pace with the increasing complexity of gene science. This will require effective initiatives to recruit and retain qualified examiners and ensure they have ongoing technical training to keep pace. INFRINGEMENT. Patent infringement occurs when one “makes, uses, or sells a patented invention without the patent holder’s permission ... and generally gives rise to liability.” Remedies can include temporary or permanent injunctive relief as well as suit for damages. The legal interpretation of “infringement” is another complex aspect of patent law and beyond the scope of this paper. Critical aspects with a significant influence on life science innovation bear addressing. The first is whether purely academic research using a patented method or material constitutes an illegal trespass. The second is whether physicians are infringing when they use, without license or permission, a patented method for delivering “standard of care” health services. The research question will be probed more deeply later in the report. As a matter of law, however, “there is no U.S. statutory exemption for non-commercial research on patented subject matter.” There is, however, a sweeping exemption for clinical research, both academic and commercial, enacted by Congress: “Anyone who wishes to obtain regulatory approval under the FDA statute for the manufacturing of a protein drug using patented recombinant DNA technology is immune from liability for patent infringement for all reasonably related activities. Such a person or company may, without fear of liability or injunction, make a patented gene construct, create a recombinant host with it, express a protein from it, and sell it to any other entity involved in carrying out clinical research.” Some believe that this exemption is applied so broadly and sweepingly as to constitute a defacto safe harbor for research. Aside from that exemption, there had been a historic practice of allowing academicians to borrow patented material for noncommercial use. However, the 2002 federal circuit court of appeals decision in the case Madey v. Duke narrowed it to the point that it is unavailable in most practical circumstances; and it “shattered any illusion that just because research is not commercial one could proceed with indifference toward patents.” What the practical implications are of a highly limited and generally inaccessible research exemption in law is not clear. The fact is that patent infringement actions against universities for research are exceedingly rare. Patent litigation is very expensive time consuming, and creates bad public relations for the plaintiff. Moreover, it can be self-defeating for the patent holder in that one doesn’t know what finding a university researcher may make that could confer even greater value to the patent and by extension on its holder. According to a report by subject expert Christopher Holman there has been only one final judicial determination of infringement dealing with research. A 2008 article in Science magazine discovered that “only six lawsuits had been filed in connection with gene-patented diagnostics and all had been dismissed or settled, apparently with negligible impact on scholarly research.” In regard to standard of care medical services, the conflict between medical practitioners and patent holders has been described as follows: “On the one hand, the diagnostic industry wants to control diagnostic testing methods by mandating use of their test kits through patent enforcement in order to offset their costs of bringing a test kit to market. On the other hand, the clinical laboratory physicians need to provide clinical testing for their patients in a timely and cost-effective manner.” Congress approved legislation in 1996 holding free from liability physicians and institutions for infringement of “pure process” medical patents. This narrowly tailored “medical procedures” exemption protects “any ‘medical practitioner’ or ‘related health care entity’ from injunction or damages if the practitioner or entity is carrying out a ‘medical or surgical procedure on a body.’ While the exemption applies to the administration of the genes to the patient, it does not extend to the “patented genetic constructs or isolated human genes.”In their report Human Gene Patents, Goldstein and Golod note that “if a commercial infringer does not fall under the clinical research or medical procedures immunities, it could be permanently enjoined from continuing its activities.” The decision in the Myriad case would appear to further free researchers and medical practitioners from infringement liability. However, what tension remains between patent holders and the use by medical practitioners of patented materials and methods for clinical diagnosis and patient testing is unclear and will need to be assessed in the aftermath of the Myriad judgment. Pre-Myriad, however, the practical implications of patents on testing were examined by the Association of American Medical Colleges. It reported that: “Nowhere is there any objective evidence that any patient has been denied access to available genetic tests due to a patentee’s refusal to allow the test to be done. Nowhere is there any objective evidence that research on gene therapies has been inhibited by gene patents. The main issues of the most vocal of the gene patent opponents seem to reduce to their unhappiness that gene patents enable their inventors to recoup their investment in the inventive process by charging royalties for a license to their invention, or that the patentee asserts its right to perform the test itself.” ENFORCEMENT. Of course, the practical value of a patent to its owner is only as good as the ability to enforce it. The theft of IP costs U.S. businesses billions of dollars per year and endangers jobs in IP-intensive industries. Generally, the “willful” piracy of IP copyright and infringement of trademark is a crime and is prosecutable. However, enforcement is the job of the patent holder through the civil justice system. Remedies include seeking injunctive relief to stop the infringement and suing for the payment of damages caused by the infringement. Most human gene patent litigation involves infringement allegations “based on the recombinant production of a therapeutic protein.” Only 1%–2% of patents are litigated, but these cases and the policies that flow from them reverberate throughout the bioscience community. Suffice it to say that the enforcement of IP protocols at home and abroad has an enormous influence on U.S. economic well-being. Patent infringement is a growing problem, and its consequences will intensify as we increasingly rely on overseas sales of American innovation to create jobs and prosperity here at home. In the international trade arena, the Office of the U.S. Trade Representative and the Federal Trade Commission (Commerce), the International Trade Commission (Commerce), and the Department of Justice all play key roles in developing bilateral and multilateral IP protection protocols as they monitor, report on, and advocate for the protection of IP rights. As a Duke University report warned, “Without a well-structured system of global patent protection, neither the research pharmaceutical industry nor the generic industry would be able to grow and prosper, as the rate of new product introductions and patent expirations would decline significantly.” The Obama administration announced its White House IP enforcement plan in 2013. General recommendations for enforcing patents overseas include the following: Enhancing foreign law enforcement cooperation. Strengthening intellectual property enforcement through international organizations. Promoting enforcement of intellectual property rights through trade policy tools. Combatting foreign-based and foreign-controlled websites that infringe American intellectual property rights. Protecting intellectual property at ICANN (International Consortium for Assigned Names and Numbers). Supporting U.S. small and medium-sized enterprises in foreign markets. Examining labor conditions associated with infringing goods. ECONOMIC/INNOVATION ISSUES IN FOCUS The legal issues reviewed here are largely definitional, technical questions bearing on the qualification standards, processing procedures, and IP protection mechanisms on behalf of any “new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.” At the intersection of biotechnology and patents, however, are key economic issues vitally important to the societal role of these systems.  The goal of our patent system is to promote the development and publicity of new inventions and discoveries. Propelling innovation creates jobs, drives U.S. competitiveness, and improves quality of life. Success in turning scientific insight into marketable solutions at an escalating rate requires striking the right balance: incentivizing investment of time, capital, and brainpower through the exclusivity of a patent on one hand and maintaining the openness and collaboration needed to keep the pipeline of discovery delivering strongly on the other. INNOVATION, PATENTS, AND RESEARCH. The record on the extent to which gene patents impede scientific research is conflicting. Some reports claim that such impediments are rampant; others avow that they are extremely rare. Whether patents and research are at odds is a monumental question considering that the two were meant to be symbiotic. Patents are designed to spawn greater research, while vigorous research is supposed to yield practical inventions. Given its importance, the question demands officially generated, empirical evidence. The National Institutes of Health (NIH), the Food and Drug Administration, the National Academy of Sciences, the National Research Council, the Government Accountability Office, and the relevant committees of Congress, among other institutions, have jurisdictional stakes and responsibilities in the field and can contribute to the richer factual and analytical record on these critical issues. Some key questions stand out. Is genetic patenting cramping openness and collaboration? What is the right balance of protection and access needed to drive creative progress, when even among researchers there is tension? Basic researchers seek maximum access to research tools, while applied researchers want “exclusion and protection.” Are the rights and privileges associated with the use of patents fair and productive? Would as much time, effort, and money be poured into isolating genetic material and studying the correlation of particular genes to health? Part of answering these questions involves asking whether there is a “‘tragedy of the anti-commons’; as in, the possibility that the large number of patents on genes and their diverse set  of owners will make it difficult to acquire the rights to all necessary research inputs, which could, in turn, result in the under use of valuable technologies.” The existence of such a problem would present heightened concern “for diseases and condition associated with multiple genes [for which] fragmented licensing burdens the development of treatment options.” As stressed throughout this report, patents are an effective tool not only for stimulating creativity but for ensuring that innovations are laid bare for the public to examine. Fostering openness is an organic purpose of the patent system. As the Congressional Research Service (CRS), the research arm of Congress, points out, “Public science has flourished by permitting scientists to challenge and build upon the work of rivals.” The NIH adds that U.S. science has been built upon “its general openness and the sharing of data and research resources.” The alternative to patenting is the use of trade secrecy—hardly a winning strategy for fostering collaboration. As CRS reports, despite the problems with patents “the disclosure obligations of the patent systems may better serve the objective of encouraging the diffusion of knowledge and raising social returns than the chief legal alternative, trade secret protection.” For now, patents are the method of choice, particularly for the pharmaceutical industry where formulas are easy to imitate. Critics, however, argue that while far better than the opaqueness of trade secrecy, the legal and cost impediments associated with patenting can’t help but hamper free academic inquiry and, by extension, scientific breakthroughs and disruptive solutions that are the centerpiece of U.S. economic success. Many practitioners of basic research have long believed that genes, particularly human DNA (versus plant, animal, and microbial genetics), whether found in nature or altered through isolation and purification from their natural setting by human intervention, are inherently natural and should not be eligible for patent protection. This was the basis for urging the creation of a broad research exemption so that academics are free to use patented materials and methods without threat of liability or having to pay licensing fees that will slow down or price out scientific inquiry. The question is to what extent the Myriad decision mollifies concerns about the stifling of academic research. As noted earlier “there is no U.S. statutory exemption for non-commercial research on patented subject matter.” Moreover, the FDA exemption described earlier is available. Regardless of whether it is interpreted to be broad or narrow, the fact remains that the predominance of empirical studies fails to find a strong impediment to research. Working through the patent problem, Walsh and Cohen discuss the survey they conducted of research stakeholders. While the respondents cited an increasing number of patents per innovation (including patents on research tools), the authors stated “almost none of our respondents reported worthwhile projects being stopped because of issues of access to IP rights to research tools.” In his study on human gene patent litigation, Christopher Holman states, “Criticism of human gene patents is largely based on an assumption that these patents have a negative impact on biomedical research, public health, and perhaps even human dignity and personal autonomy ... however these fears have, for the most part, not materialized, in the form of actual patent enforcement.” A study by Walsh, Cohen, and Cho says that only about 1% of the random sample of academics report experiencing delay or modification in their research due to patents. Similarly, a report published by the NIH notes little empirical evidence substantiating the fears that patent thickets are retarding research. According to the NIH, one of the reasons for the paucity of evidence of patent-related research blockage is that commercial and academic research institutions are exercising a menu of workarounds. They include, “inventing around, going offshore, challenging questionable patents, and using technology without a license. ... The research system works because university scientists pervasively ignore the rights that technology licensing officials at the same university argue are necessary to generate income.” As a report by the American Enterprise Institute puts it, “It turns out that researchers seldom worry about what is patented and what is not. Moreover, litigation has been amazingly rare.” These findings are reinforced by congressional reporting that discovers little evidence that work has been curtailed due to intellectual property issues associated with research tools. Scientists are able to continue research by “licensing, inventing around patents, going offshore, the development and use of public databases and research tools, court challenge and simply using the technology without a license (i.e., infringement).” In observing the absence of an “anti-commons effect,” the NIH observed that “the effects  are much less prevalent than would be expected if its hypothesized mechanisms were in fact operating. The data show a large number of patents associated with genes. A recent study found that nearly 20% of human genes were associated with at least one U.S. patent, and many had multiple patents.” It goes on to say that “despite the large number of patents and numerous, heterogeneous actors—including large pharmaceutical firms, biotech startups, universities and governments studies that have examined the incidence of anti-commons problems find them relatively uncommon.” Despite the lack of evidence for now, experts issue a note of caution. An NIH committee reported finding that “the number of projects abandoned or delayed as a result of difficulties in technology access is found to be small, as is the number of occasions in which investigators revise their protocols to avoid intellectual property issues or in which they pay high costs to obtain intellectual property. Thus, for the time being, it appears that access to patented inventions or information inputs into biomedical research rarely imposes a significant burden for biomedical researchers. For a number of reasons, however, the committee concluded that the patent landscape ... could become considerably more complex and burdensome over time.” One of the key reasons for this is “a general lack of awareness or concern among academic investigators about existing intellectual property. That could change dramatically and possibly even abruptly under two circumstances. First, institutions, as they become aware that they may enjoy no protection from legal liability. ... Alternatively, patent holders, aware that universities are not especially shielded by law from patent infringement liability, could take more active steps to assert their competing patents.” This debate is overshadowed by a more fundamental question of whether universities are protected from patent infringement actions under the doctrine of sovereign immunity. Marybeth Peters, former U.S. Register of Copyrights, testified before Congress in 2000 on the topic.  She stated: “For most of our history, it has been assumed that the States enjoyed no special immunity from suits for infringement of intellectual property rights, but in the past fifteen years those assumptions have been called into question as the Supreme Court has breathed new life into the doctrine of sovereign immunity. Last year, the Court held that provisions of the patent law and the Lanham Act permitting suits for damages against States were unconstitutional, and the Court offered little reason to hope that the analogous provision in the Copyright Act could be found constitutional. This year a court of appeals held that the copyright law provision is unconstitutional, and today we find ourselves in a situation where States can infringe copyrights, patents, and trademarks with impunity.” Notwithstanding this important legal question, some believe that the likelihood of companies suing research institutions remains low for the practical reason that there are no commercial damages. That’s not to say this will always be the case. The NIH points to “the longstanding concern that the owners of patents on fundamental technologies will exercise their rights to exclude in ways that will prevent others from developing or accessing the technology.” In fact, the NIH reports indications that university researchers are becoming stingier about sharing research findings. This is a worrisome trend and bears close monitoring to see how extensive it is, why it’s happening, and if it is related to patents held by universities or corporate sponsors of the academic research. Vigilance must be strongly informed by continuously seeking answers to fundamental questions: What are the chilling effects on research, if any, of proprietary research tools and materials? As our knowledge of genomics and proteomics advances and an increasing number of patents are in play, how will this affect research? How will the effect influence the pipeline of new discoveries, products, and solutions? To what extent does the requirement to work around a patent lead to new and useful discoveries? INNOVATION AND PATENT LICENSING. A common means of recouping value by patent holders and avoiding infringement by patent users is through licensing. The practice of licensing, whether it’s by a university, clinic, or corporate lab, is a way of ensuring that a potential commercial rival seeking to make a competing product bears a fair share of the cost of the innovation. For licensees, it’s a way of adopting a solution so that resources can flow to innovation where the field is still open.  While both sides of a license transaction are served, an argument is made that licensing can be impedimental if it is unduly restrictive or excessively costly. To avoid the problem, some have called for compulsory research licensing or recommended that the NIH, which provides the bulk of federal bioscience research funding, condition grants and contracts on the agreement of recipients to provide “royalty-free research-use licenses to all inventions that they make using government funds.” Of course, this proposal begs the question of what delineates “research” activity from commercial enterprise.  In any event, policymakers and patent holders need not rely solely on NIH policy or patent law to promote liberal licensing. IP owners can individually and collectively adopt policies, such as opting not to enforce patents against university researchers and reducing licensing fees for clinical testing by nonprofit clinics and hospitals. Other nonprescriptive alternatives include “liability exemptions, patent pools, experimental-use exemptions.” Other regulatory approaches are compulsory licenses and the prohibition of exclusive licensing.  “There is much to be said for broad licensing of gene patents and diagnostics based upon them,” says a report published by American Enterprise Institute. “On the whole, though, gene patents are turning out to work more or less the way patents are supposed to work and have been working for a couple of centuries and more. The research process, and ultimately patients, are the beneficiaries.” Britain’s scientific journal Nature found that “prices of patented and exclusively licensed tests are not dramatically or consistently higher than those of tests without a monopoly.” Whether exclusive or nonexclusive patent licensing, “compulsory licenses are viewed as being an unwanted and unnecessary governmental intrusion into the rights of citizens to carry out commerce and to contract freely.” The reality is,“For the most part, patent-holders take care to stay on the right side of the research community, offering free licenses and not enforcing most of the rights associated with their patents.” Litigation against research institutions is costly, generates poor public relations, and can result in forfeiting the development of better uses of a patent from which the holder can benefit. The NIH and National Science Foundation (NSF) point to Stanford University’s experience with the Cohen-Boyer patents (gene splicing) as exemplary for its openness and inclusiveness in regard to its broad licensing to promote follow-on research. These types of best practices should be encouraged to find the sweet spot of access and incentive. INNOVATION, PATENTS, AND UNCERTAINTY. One of the greatest impediments to investment for research and development is “uncertainty.” The elements of uncertainty are wide-ranging—not only for economic, market, and competitive uncertainty, but also for legal and political risk. For the biotech industry and the research community, risk is inherent in the USPTO processes and practices, including the definition of “patentability”; how the courts may alter the landscape; whether one will be sued for using methods or materials known or unknown to be under patent; or in the predation of patent trolls, just to name a few potentialities. As an NIH report observes, “Uncertainty about how courts will resolve disputes ... could be detrimental to both academic researchers and the infant biotechnology industry. ... [R]egardless of the merit of claims by the different interested parties, resolving the current uncertainty may be more important to the future of biotechnology than resolving it in any particular way.” Economic, market, and even political uncertainty can never be completely eliminated. However, if the nation wishes to sustain a vigorous biotech industry and its solutions, then public policy must be shaped to help eliminate unnecessary risk, particularly when it emanates from the rules and actions of government. This includes stopping the predatory abuses of patent trolls without harming legitimate patent holders; working to be as clear and consistent as possible in the form and application of patent rules, standards, and guidelines; ensuring the efficient and timely processing of patent claims; and providing transparent guidance on what practices constitute infringement, among many others. ETHICAL ISSUES IN FOCUS The controversies involved in biotech patenting extend well beyond the treatment of IP claims related to human gene sequencing. They extend to issues of personal rights and human ethics. In many ways, the ethical issues emerging from the interplay of genetic science and patent law are the most difficult and emotional. As the research arm of Congress reports, “It is also clear that the pace of genetic research and its likely impacts upon us has accelerated to the very limits of our ability to grasp its significance. We are developing the practical means to direct our course as a species in ways that would baffle the science fiction of only a few decades ago and we struggle to phrase these issues as matters that merit our solemn and resolute attention.” HUMAN DIGNITY AND RESPECT FOR LIFE. During the debate leading up to the Myriad case, headlines and editorials raged that the genes in our body are owned by someone with a patent on them. This, as noted earlier, is not the case. The genes in a person’s body belong to no one but the individual. However, “The courts have taken the position that a person does not own any tissues or cells once they are outside the person’s body. They belong to the doctor or hospital.” This is an aspect of U.S. law likely to offend many people and color how they perceive the fairness of bioscientific policy. An individual may have moral, religious, or even economic reservations about tissue from his or her body being used without permission for research or other purposes with which he or she may disagree. What should law, policy, and practice require in such cases? Donor notification? Prior approval? Or is it a just premise that human tissue, once excised from the body, is no longer the property of the individual, even if the tissue is used for some purpose which the individual does not agree? Man is in the midst of a steadily advancing march “to manipulate—indeed, literally to splice together—the material that is responsible for the different forms of life on earth.” What are the implications of these capabilities, good and ill? Weighing these existential considerations, planning for them, and, where appropriate, factoring them into law and policy is not the purview of the courts or the USPTO but, rather, of society at large and of elected leaders responsible for balancing public priorities and national interests. As the nation parses through the ethical and even theological aspects of genetic science, it benefits us to exercise that responsibility by the light of broad public purposes and strategic goals—that is to say the objective of improving human life and the world in which we live. HUMAN NEEDS, FREEDOMS, AND RESPONSIBILITIES. While the number and scope of DNA-derived innovations (with or without patent protection) seem limitless, undoubtedly there are checks society could and should place on the enterprise. The question of can we do something must be accompanied by the question should we. Recombinant DNA technology (rDNA) presents the opportunity to gain new scientific insights and suggests profound capabilities that will improve life. Yet, if we can tweak a gene sequence to make a protein that prevents a human disorder, we can use the know-how to produce one that’s viral and deadly. If we can genetically alter plants to yield more fruit, we can either purposely or inadvertently make genetic changes that render material less hospitable to the environment. If we can make an algae capable of producing energy, is it possible to introduce some custom-created life-form that could inadvertently interrupt natural cycles with unintended consequences that we are unable to foresee or even imagine? As our capabilities expand deeper into the human domain, the issues will become even more complicated. Will there be a point when genetic therapy for man is no longer applied simply to diseases and disorders but to enhancing human features? Will there be a field of “cosmetic genetics,” or the ability to imbue our children while in the fetal stage with physical and perhaps intellectual and emotional characteristics of our choosing? How about genetically engineering a super race of athletes or super minds? We are not there yet, but one can conceive of it on the horizon. Placing limits on individual and collective freedoms to serve greater societal interests is a well- established norm, but liberties are accompanied by responsibilities. We have the freedom of speech but the responsibility not to yell “fire” in a crowded theater when there is no emergency. We have the right, indeed the obligation, of scientific inquiry and to explore the limits of nature, but setting responsible limits requires that we ask ourselves fundamental questions. Where should man draw the line on his willingness to manipulate instructions of life, particularly human life? What’s our goal in undertaking this work? Under what circumstances and limits should this take place? Who will set those limits, by what criteria, and how will they be enforced? To answer these questions, we must have a keen respect for consequences—intended and unintended. Assessing them requires that we ask ourselves a more granular set of questions. What are the risks to human health, natural systems, and the environment of creating life-forms with no precedence in nature? What would be the social and moral impact of manipulating genes not only to predict, diagnose, prevent, and treat diseases and disorders but to enhance human characteristics? How can we anticipate and prevent or mitigate potential adverse consequences? What should the processes, rules, and standards be to keep up with technology, and who will be the custodian? This paper doesn’t aspire to answer these questions—only to put them on the record and to foster the idea that we need to start thinking more seriously about them. There is nothing in patent law or procedure that allows examiners to consider or factor in ethical considerations in the patent process. It is not, and should not be, the role of the USPTO to make such value judgments. That obligation rests with policymakers and other institutions better suited for these purposes. But the fact remains that these determinations will have to be made. In 1978, Congress established the President’s Commission for the Study of Ethical Problems  in Medicine and Biomedical and Behavioral Research “because of an urgent concern expressed to the President that no governmental body was ‘exercising adequate oversight or control, nor addressing the fundamental ethical questions’ of these techniques, known collectively as ‘genetic engineering,’ particularly as they might be applied directly to human beings.” The need still exists, now more than ever, as our creative capacity graduates from developing microbes and mice to larger and more complex life-forms. We will need proper national and international bodies (in the form of public commissions and/or expert advisory committees) to consider the many ethical issues, examine our body of laws and institutions in light of these, and recommend ways to address them prudently and proactively, without impeding progress. The proper institutions must be complemented by appropriate legal and administrative mechanisms and procedures to ensure that ethical considerations are factored in to policymaking. Among the ethical considerations at the center of the patent debate is the justice of exclusive interests in lifesaving therapy and pricing that makes it harder to make treatments available to those who need them. Again, these critical considerations must be measured against the potential that such therapies will never come into existence without patent incentive. Additionally, the issue of monopolistic pricing is mitigated by two factors—first, in many instances national health care systems serving countries around the world negotiate price with providers, greatly reducing the potential for monopoly premiums. Second, mandatory licensing rules and other mechanisms to foster price competition are available as tools to address public health care concerns. Whether these tools are appropriate or sufficient will remain hotly debated. The issues of principle, ethics, and morality simply must be addressed; otherwise, we place at risk the enormous good that biotechnology can do—the kind of good that patent policy is intended to foster. An NIH advisory committee on the scientific, ethical, and legal issues associated with rDNA technology identified the importance of proactive debate and “enabling public acceptance of a critically important technology and creating an environment in which science can advance in an informed, safe, and ethical manner. Of biotechnology, the 1978 commission observed a truth that resonates today and will into the future “as a product of human investigation and ingenuity, the new knowledge is a celebration of human creativity, and the new powers are a reminder of human obligations to act responsibly.” Among the responsibilities inherent in genetic science are the security of personal genomic information and the respect of privacy rights. Early in 2013, it was reported that researchers with online access and “armed with little more than an internet connection identified nearly 50 people who participated in a large genomic study based on some of the participants’ genomes and other publicly accessible information.” The case highlighted huge gaps in privacy in genomic data collection, storage, and use. The computerization of personal genomic information is needed to mine big data for insights to improve human health. The potential abuses inherent in the collection and storage of personal information place a heavy burden on our laws, policies, and practices to ensure that privacy rights are fully respected and protected. Doing so is essential if computer-based genomic research that depends on large volumes of personal data is to maintain the public trust and yield the human health insights we hope for. LOOKING AHEAD Evolving Landscape The United States now enters the post-Myriad era of gene science and patent law. In turning our attention to the future, among the first priorities is to track and assess the effect of the Court’s decision on the biotech industry and the U.S. pipeline of innovation. Of equal importance, though, is to take stock of the changing environment and key emerging issues also likely to influence our capacity to turn greater scientific understanding into new products, services, and solutions. In the lead-up to the Myriad decision, there were two big strategic questions. One, whether and under what circumstance is it appropriate to grant property rights to any part of human DNA? Two, do such gene sequence patents impede research and the delivery of health care? The question set has now changed. They are now, one, what degree of human alteration of DNA renders the material patentable? Two, will the inability to patent genetic sequences excised from the body and correlated to disease stifle research and the intensity of bringing new gene-based tests, medicines, and therapies to market? At the outset of the report, we mentioned that excellent innovation is a function of the incentive that patenting provides. This incentive will be needed more than ever for four reasons: The demand for higher-quality but lower-cost health care is critical to meet the needs of an aging population and reduce the health care burden on families, enterprises, and public treasuries. We are in an era of government austerity, in which the private sector will be counted on to generously fund research and development to make up for limits on federal resourcing. Our economic recovery remains sluggish. Jobs are at a premium. Maintaining good-paying employment opportunities provided by the biotech industry depends on a robust flow of new therapeutics. America’s economic future depends on extending its comparative advantage in areas where it excels, such as biotech, to remain competitive in a tightly contested global economy.  Above all, biotechnology has the capacity to help solve our most pressing global challenges in health care, food security, and energy production. Emerging legal, economic, and ethical developments and factors are likely to influence gene patents and therefore our ability to mobilize biotech to meet these pressing needs. The next section of this report looks to the future in three parts. The first section suggests for the reader’s consideration some key goals and principles that should inform public debate on biotech patent policy. Second, it provides a sampling of key issues and questions likely to influence the debate and shape real world outcomes. Finally, it offers a selection of approaches that policymakers and stakeholders may consider to better position themselves to handle key challenges, recognizing that given the importance of the issues surrounding biotech patenting, we are all stakeholders. GOALS AND PRINCIPLES Earlier, the report noted that the Myriad decision was an interpretation of law, not a policy statement, about whether gene sequence patents are good or bad. The question before the Court was whether the gene sequence in question met a legal test: Was DNA the product of nature or of human invention? The Court decided the former. One can quibble with the determination, but it’s important for policymakers and the public to understand exactly on what question the Court was ruling. GOALS AND PRINCIPLES: PATENTS AS A TOOL. In assessing the consequences of the ruling, we would do well to pull back for a strategic-level view of the issues at hand and for policymakers to refocus on the fundamental purposes of the patent system. The patent system was not established to make domestic or industrial policy or value judgments, nor was the Court for that matter. Its job is to adjudicate a basic question: Does the “discovery” or “invention” meet the test for patentability under applicable laws and standards? The patent system is a tool—one that has served our nation well from its inception. The tool wasn’t conceived as a way to enrich inventors or increase the nation’s fund of monopolies. The purpose was to “promote the progress of science and useful arts.” It was designed to help bring to fruition and public light innovation that might not otherwise materialize or be made public without the incentive of recoupment. The idea was to stimulate the investment of time, brainpower, and money by extending a period of exclusive rights and foster the publicity of innovation so that society could use and build upon it. Quite aside from Supreme Court decisions, the system’s ability to perform these functions efficiently is the measure by which policymakers and the public must evaluate it. Where it fails in that function our policymakers are obliged to take remedial action or, alternatively, to accept the consequences of such deficiency. The latter is fine as long as society consciously understands the ramifications and is able to make a rational, purposeful judgment about the superiority of the alternative objective to which we would be yielding. For this reason, as the nation considers the weighty issues involved with life science patents, we should retrain our focus on what’s key: the purpose of the system and the roles and missions of its institutions. This entails evaluating the USPTO’s job of administering the process, the judiciary’s role in interpreting patent law, and Congress’ responsibility of ensuring that the system is fulfilling its mission and making necessary adjustments when it is not. With a keen focus on the strategic goal in question, our evaluation should start with understanding that the patent system was built around a central premise: “incentives matter.” GOALS AND PRINCIPLES: HARNESSING INCENTIVE. Lisa Haile of the San Diego Union-Tribune observes, “Understandably, if there is not a competitive advantage in the form of patents, investors may balk at sinking millions of dollars into development of a product if other companies can freely develop the same product.” As we navigate the post-Myriad world we should come back to the principle of incentive and in doing so ask ourselves again some basic questions: How powerful is the patent incentive in stimulating investment in discovery? Does the existence of life science patents disincentivize more robust innovation by discouraging  minds and investment from particular areas in which broad patents are established? Does the existence of a patent for a process or material stimulate creativity in finding alternatives? Will the decision that DNA sequences excised from the body are not patentable cause R&D resources to flow elsewhere? To where? For what purpose? And are these changes desirable? Will the disappearance of some unproven fear of patent infringement liability stimulate researchers to apply new vigor to gene research?  By all accounts, incentives still matter greatly and their effects are knowable if we choose to understand them. The principle must continue to undergird the structure and evaluation of the innovation system. GOALS AND PRINCIPLES: BALANCING ELEMENTS AND INTERESTS. Another preeminent requirement to maintain a healthy innovation system is ensuring that the patent system strikes a set of important balances.  The first is balancing patent exclusivity with the openness of scientific inquiry needed to drive innovation, stoking the fires of genius by granting a reward that does not “impede further advancements.” Finding this balance will be difficult, but strike it we must.  As the Association of Medical Colleges observes, “A patent policy that is hostile to research tools and their developers will certainly not encourage the development of products that promise to accelerate research processes and make them more efficient.” Conversely, if openness renders exclusivity meaningless, the incentive to make the substantial investments in bringing goods, services, and solutions to market is severely diminished. Focusing on gene science, the National Human Genome Research Institute puts it this way: “[The] fundamental question is how to provide access to genetic information and inventions without inhibiting the commercial development of new products and services by the biotechnology and pharmaceutical industries.” The goal of finding the sweet spot that provides the reward of exclusivity while ensuring that creators and improvers are able to build upon existing ideas, add new twists, and rework innovations to still greater advantage is an important goal to which the country must devote significant policy focus. Maintaining the sweet spot in a constantly evolving economic, scientific, and social landscape is likely to be the toughest job of all. Ultimately, the objective is not just to balance exclusivity and open inquiry but to synergize them to maximize our innovative powers. Another area where balance is required is between the rights of life science IP holders and the broader needs of society. Once again, this is a tough but essential reconciliation to achieve—a job that falls to Congress, not to the USPTO or the courts. Sustaining a strong patent system requires a broad societal view that it is working well for the public. When compelling public interests collide, lawmakers must weigh the competing interests, examine the options, measure the consequences, and act. Recall the controversies surrounding the Waxman- Hatch Act, which played a major role in relaxing the regulatory hurdles for generic firms and facilitating higher levels of generic entry. A Government Accountability Office (GAO) study found that from 1999 to 2010, generic drugs saved pharmaceutical purchasers more than $1 trillion. What we cannot know is what drugs or therapies would have been created had at least a portion of the proceeds been plowed back into biomedical research. Certainly, without the innovation of new drugs, facilitated by the patent incentive, new generic drugs have no basis to emerge. Society’s need for lower-cost drugs to benefit human health and reduce the health care budget burden is as compelling as is the need to maintain the integrity of the patent system to produce the therapies in the first place. As described in a report on biotech innovation: A different set of tradeoffs has figured in the debate about drug patents. The pharmaceutical industry, lobbying for stronger patent laws throughout the world, has sung the praises of the patent system as a means of promoting costly and risky investments in research and development (“R&D”). In contrast, public health advocates, calling for restrictions on patent rights, have stressed the importance of improving access to drugs for people who otherwise cannot afford them. Congress examined closely the term of patent protection needed to provide incentive to develop while ushering in generics as quickly as possible to induce price competition. It found somewhere between 11.5 and 14 years to be the sweet spot. The point is that the competing needs were acknowledged and reconciled, not by changing the entire patent system but through targeted changes in law seeking to strike a correct balance. Whether we have achieved the correct equilibrium in this instance can be debated, but the need to keep trying seems evident. In terms of pricing, we must try to find some appropriate balance between ensuring affordability of medicines without destroying the incentive system that spawns their development. This balance finding is required under the international patent policy as well. “Under Trade-Related Aspects of Intellectual Property Rights (TRIPS) rules, a voluntary license is required if an entity other than the patent holder wants to market the patented product. However, in the case of a national emergency, extreme urgency, or public noncommercial use, the need for a voluntary license can be waived and a compulsory license issued by a judicial or administrative authority.” Mandatory licensing has become a tool used by policymakers to reconcile public health requirements with the need to protect valid IP. A report by the World Health Organization (WHO) asserts, “While patents and intellectual property rights protect innovation, they directly and adversely affect access to HIV/AIDS medicines and supplies in developing countries. Licensing, voluntary or not, is increasingly used to mitigate the problem.” One of the strategies that the WHO has employed is the Medicines Patent Pool, which “works to stimulate pooling of patents on antiretrovial drug, and makes available assessments of their patent situations in countries.” At Doha, it was agreed that in the interests of public health, patents could be broken. Important questions prevail: What constitutes an emergency? How is “public interest” defined? How will we resolve conflicts over emergency declarations? What can be done to provide flexibility so that public officials can respond to emergencies while providing therapy providers with a reasonable amount of certainty needed to make rational decisions on which the flow of new and improved medicines rely? How can safeguards be placed so that these flexibilities are not utilized by a government as industrial policy to promote domestic generics industries under the guise of public health? Further, the system must find a synergistic balance between collaboration and competition in the innovation process. Competitive fire to be first and best drives innovative excellence as it does performance in every other area of human endeavor. What’s clear, though, is that innovation today is achieved at the intersections and margins of multiple disciplines, a reality requiring that we collaborate as well as compete. The NIH reported a survey of stakeholders which found “substantial evidence of a ... remediable burden on research—private as well as public—stemming from difficulties in accessing proprietary research materials, whether patented or unpatented. The committee found that impediments to the exchange of biomedical research materials remain prevalent and may be increasing.” This isn’t a patent problem; it’s a transparency and systems approach problem. We continue to witness the power of crowd sourcing across many domains of society. The innovation process is no exception. We need as many great minds as possible trained on scientific breakthrough and finding the most promising solutions to our greatest challenges. In the 21st century, the symbiosis of collaboration and competition propels innovation. Policy attention must focus on the architecture necessary to nurture and feed it. Finally, we must strive for balance between basic and applied research. The federal government mainly finances basic research, whereas companies focus resources on applied science. This creates a continuum of innovation in which the private and public sectors are interdependent partners. Basic research is an essential platform to build applications, and without applied research, good things don’t get to market, making the basic research count. Striking the balance between federal and private funding and between basic and applied research is essential to maintaining the vigor and productivity of our innovation system. GOALS AND PRINCIPLES: BEWARE OF THE LAW OF UNINTENDED CONSEQUENCES AND OVERREACH. As we seek a patent system that harnesses incentive, balances exclusivity with openness, and synergizes collaboration and cooperation to “promote the progress of science and useful arts,” we must remain alert to the gremlin of unintended consequences. This requires a disciplined process and relentless questioning to ensure that policy is developed judiciously, based on evidence and the due consideration of actions’ full net effects. Questions like these will be important: Lower-priced therapies are essential, but do efforts to compel lower prices dry up the incentive to create the treatments in the first place? Exclusivity is a vital incentive. But if the application impedes scientific advancement or other societal needs, is its purpose being served? Judging that a DNA sequence is a product of nature rather than of man may be legally correct, but should it remain unaddressed if found to impede investment and research in essential gene-based diagnostics and therapies? Patent trolls are harmful, but should the effort to defang them threaten patent holders with loss of rights or diminished enforceability for reasons having nothing to do with filing predatory lawsuits? Creating a bacterium to remediate pollution is good and patentable, but if the life-form threatens to impair a fragile ecosystem should it stand?   The author doesn’t presume to offer answers to these questions or the many like it that must be asked. He’s only urging that policymakers keep asking and answering them if we are to achieve the strategic goal of spawning rapid and beneficial life science innovation. GOALS AND PRINCIPLES: PROACTIVITY. As we ask tough but essential questions, we should do so with the objective of being proactive. Innovation is too important and the global economy moves too swiftly for our policymaking and oversight apparatus to be continuously in reactive mode. It ill-serves the public, the economy, commerce, and the nation if we are not constantly scanning the horizon for trends, threats, and opportunities affecting our innovation system and its patent component. The United States creates a Global Trends report regarding issues affecting national and international security. We should employ similar methods of identifying meaningful trends and factors bearing on our innovation future. The aim should be to implement policies that head off adverse trends and avoid threats to innovation. Doing so will improve America’s innovation ecosystem and minimize the uncertainty that impedes investment and sound decision making. GOALS AND PRINCIPLES: PATENT EFFICIENCY. Given that the patent system is a keystone of our innovation architecture, the nation’s policy apparatus needs to continuously scrutinize the efficiency and accuracy with which intellectual property is defined, scoped, and approved. An excellent patent system must value both speed and accuracy if it is to keep pace with the nation’s needs in a fast-paced economy. This makes it incumbent upon government to ensure that the system is guided by clear laws, policies, practices, and standards and that the USPTO is properly resourced to do its job. The strategic goal is not only the sheer quantity and timeliness of patents handled but the quality of patent examination as well. Poorly defined, overly broad, and dubious patents are not useful. They clog the courts, improperly provide exclusivity, and cordon off subject matter from full inquiry. So, too, the rejection of patents that should be granted lurks in unknown quantity but does as much damage to incentives for innovation. Avoiding these detriments to innovations is a shared responsibility: • If biotech companies wish timelier patent decisions, a more efficient system, and less litigation, then patent applications must be properly tailored and well defined. • If the USPTO and policymakers wish to avoid patent conflicts and unnecessary constraints on inquiry, then the system must have the clearest possible qualification standards. • If Congress wants a thriving biotech patent system to drive beneficial solutions to the market, then it must properly direct and resource the nation’s patent system to get the job done.

### FRAND

#### Rules fail---they slow down SSOs and reduces legal clarity.

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These two interpretations have fundamentally different bases and policy implications. In our opinion, it is simply unnecessary to adopt mandatory rules in this area. SSOs are perfectly capable of adopting their own search, disclosure, and licensing rules, and of adapting those rules to the needs of the SSO participants. The results of Professor Lemley's survey indicate that SSOs have a variety of different rules. 227 There is no reason why a "one size fits all" mandatory-type approach is appropriate. 228

[\*1986] We find it is extremely telling that, at the recent FTC and Department of Justice (DOJ) hearings on the intersection between antitrust and intellectual property, both of the comments from SSOs expressed the belief that the current system worked reasonably well, and expressed concern that the antitrust authorities might adopt a "one size fits all" interventionist approach to standards issues. 229 We believe that those comments, coupled with the results of Professor Lemley's survey showing the wide diversity of policies across SSOs, 230 strongly suggest that the antitrust authorities should proceed cautiously in this area.

In particular, we are concerned that antitrust intervention may reduce the clarity of the rules, thereby making participation in SSOs more risky and reducing the willingness of firms with valuable IP (and which therefore presumably have much to contribute to selecting the appropriate standard) to participate. If the SSO's rules are unclear, the obvious public policy solution is to encourage SSOs to adopt clearer rules on a going-forward basis.

Most significantly, we believe that intervention runs a significant risk of slowing down the standards-setting process, thus delaying the adoption of new standards and new products made in accordance with those standards, to the detriment of consumers and of society generally.

This is not, of course, to suggest that there will never be an appropriate role for antitrust scrutiny of the standards-setting actions of SSOs or their participants. There is no question but that the activities of SSOs can affect non-participants, and one [\*1987] rationale for antitrust intervention is to protect the interests of such non-participants from being adversely affected by decisions in which they did not participate or could not exert influence. And there are obvious examples of manipulation of SSO rules/policies, such as the "stuffing the ballot box" example of Allied Tube, 231 in which antitrust intervention may be the only solution.

But we believe that the antitrust authorities are likely to give too little weight to the fact that SSOs, as voluntary organizations, must often walk a fine line between competing interests. In our view, ex post intervention runs the serious risk of failing to recognize the ex ante balancing of competing interests.

#### Better FRAND won’t be enforced---antitrust authorities want to stay out of it.

Eliana Garcés Tolon 13, Senior Economist and Deputy Head of the Unit for Industrial Competitiveness Policy at the European Commission, Ph.D. in Economics from the University of California, Los Angeles, “Licensing Of Standard Essential Patents: Antitrust Intervention Is Not Big Enough A Fix,” Competition Policy International, Vol. 9, Autumn 2013, accessed via Lexis

Antitrust intervention against injunctions to assert SEPs relies on the hold-up theory rather than on a violation of FRAND terms. None of the reasoning justifying antitrust intervention based on hold-up theory seems to rely on the existence of FRAND commitments, even though the existence of such commitments is sometimes referred to as further evidence of abuse. Once established that the extraction of market gains from participation in the standard is illegitimate and unwarranted because it does not reflect the value of the technology for the licensee, showing a violation of FRAND terms is superfluous. It is at best an exercise of tautology where the violation of FRAND and the definition of the infringement are done concomitantly.

By definition, FRAND terms will be violated if there is an attempt to extract illegitimate rent from the [\*94] licensee, and in this sense antitrust intervention informs on the definition of FRAND by making explicit the kind of rent it should not include and the kind of behavior that would be suspicious of extracting that rent opportunity. But so far the investigations opened have stayed away from defining the value or terms of the license that is in fact legitimate to extract. Many will welcome this as prudent behavior and argue that it is not for antitrust regulators to define fair, reasonable and non-discriminatory licensing terms. 9

Antitrust intervention in Europe seems so far to have been quite careful not to be seen as determining the scope of FRAND commitments or finding a violation of FRAND terms. Although it has contributed to the determination of FRAND commitments by arguing that the recourse to injunction is inadmissible in some cases, it has only done so indirectly by restricting the patent owner's behavior during the negotiating process. Beyond this behavioral restriction, there have been no limitations by antitrust regulators so far of what FRAND terms can or cannot include.

One can only relate the lack of enthusiasm by antitrust authorities to get involved in the discussions surrounding the meaning of FRAND to the general avoidance in past years of cases involving arguments of excessive pricing and exploitative abuses. This aversion to getting involved in anything that could be associated with price determination is in fact the main reason why antitrust intervention is not well equipped to resolve the litigious dynamics that have developed around SEP licensing.

B. FRAND determination requires a theory of fair value

The general reticence so far to determine more concretely what is and what is not FRAND is not justified by the lack of analytical tools. A theoretical body of literature has addressed the question on how to value the technology absent the market power of the standard. The most pervasive methodology proposes a valuation based on the ex-ante value of the technology, that is, before the technology is included in the standard. 10 Ways to calculate such valuation include estimating the value of the differential impact of a technology compared to the next best alternative. Such methodologies, if implemented, could help determine the "excess price" that is gained by hold-up. This ex-ante methodology has been endorsed by the European Commission as one acceptable way to approach FRAND. 11 But no methodology has yet been proposed in an antitrust investigation, and antitrust regulators have stopped short of defining any range for FRAND terms.

One could raise the valid argument that the current licensing terms agreed between licensing parties involve a complex equilibria of reciprocal commitments and that this does not make FRAND terms susceptible to optimal ex-ante determination. Licensing contracts for SEPs include long lists of specific rights and obligations by the signing parties and such agreements are best left to be negotiated without any outside constraints. How far can one go with determining FRAND by behavior? If such is the case, the approach adopted by antitrust authorities in Europe to only sanction behavior that is susceptible to distort negotiations is correct. The question is then whether there are other means than injunctions to extract illegitimate rent. So far, no other theory of harm has been taken up by regulators in the EU or the US, although some players in the industry have raised concerns about behavior such as the bundling of patents or the cross-licensing demands of certain SEP holders. [\*95] Assessing whether such demands are consistent with FRAND or not is in fact very difficult to do without addressing upfront the question of what constitute reasonable and fair licensing terms in the case of SEPs. Antitrust enforcers have no far shown no inclination to do this.

#### The problem just doesn’t exist

Ginsburg et al. 15, Douglas H. Ginsburg, Professor of Law in the Antonin Scalia Law School at George Mason University, J.D. from the University of Chicago Law School, former Chief Judge of the United States Court of Appeals for the District of Columbia; Koren W. Wong-Ervin, Director of the Global Antitrust Institute and Adjunct Professor of Law in the Antonin Scalia Law School at George Mason University, Attorney Advisor and Counsel for Intellectual Property and International Antitrust at the Federal Trade Commission, J.D. from the University of California, Hastings College of Law; Joshua D. Wright, Commissioner of the Federal Trade Commission, Ph.D. in Economics from the University of California, Los Angeles, “The Troubling Use of Antitrust to Regulate FRAND Licensing,” CPI Antitrust Chronicle, Vol. 10, No. 1, 10-15-2015, https://ssrn.com/abstract=2674759

Although there is serious and important scholarly work exploring the theoretical conditions under which patent holdup might occur, this literature merely demonstrates the possibility that an injunction (or the threat of an injunction) against infringement of a patent can in certain circumstances be profitable for the licensor and potentially harmful to consumers. This same theoretical literature has also recognized, with respect both to intellectual and to tangible property, the threat of both reverse holdup and holdout. Holdup requires lock-in, and standard-implementing companies with asset-specific investments can be locked in to the technologies defining the standard. On the other hand, innovators that are contributing to an SSO can also be locked-in, and hence susceptible to holdup, if their technologies have a market only within the standard. Thus, incentives to engage in holdup run in both directions.

There is also the possibility of holdout by an implementer. While reverse holdup refers to the situation in which a licensee uses its leverage to obtain rates and terms below FRAND, holdout refers to a licensee either refusing to take a FRAND license or delaying doing so.

It is important to distinguish the hypotheses generated in the theoretical literature on patent holdup from such empirical evidence as would substantiate those hypotheses. The existing empirical evidence is not consistent with the view that holdup is a prevalent or systemic problem and is causing harm to consumers.6 The evidence required to support the new antitrust rules requires that there be a probability, not a mere possibility, of higher prices, reduced output, and lower rates of innovation.

In fact, as mentioned above, evidence from the smartphone market is to the contrary: Output has grown exponentially, while market concentration has fallen, and wireless service prices have dropped relative to the overall consumer price index (“CPI”).7 More generally, prices in SEP-reliant industries in the United States have declined faster than prices in non-SEP intensive industries.8 A recent study by the Boston Consulting Group found that globally the cost per megabyte of data declined 99 percent from 2005 to 2013 (reflecting both innovation making data transmission cheaper as well as the healthy state of competition); the cost per megabyte fell 95 percent in the transition from 2G to 3G, and 67 percent in the transition from 3G to 4G; and the global average selling price for smartphones decreased 23% from 2007 through 2014, while prices for the lowest-end phones fell 63 percent over the same period.9 All of this indicates a thriving mobile market as opposed to a market in need of fixing.

Economic analysis provides the basis upon which to understand the apparent disconnect between holdup theory and the available evidence. As economic theory would predict, patent holders and those seeking to license and implement patented technologies write their contracts so as to minimize the probability of holdup.

In addition, several market mechanisms are available to transactors to mitigate the incidence and likelihood of patent holdup. For example, reputational and business costs may deter repeat players from engaging in holdup and “patent holders that have broad cross-licensing agreements with the SEP-owner may be protected from hold-up.”10 Also, patent holders often enjoy a first-mover advantage if their technology is adopted as the standard. “As a result, patent holders who manufacture products using the standardized technology ‘may find it more profitable to offer attractive licensing terms in order to promote the adoption of the product using the standard, increasing demand for its product rather than extracting high royalties’” per unit.11 This is not surprising. The original economic literature upon which the patent holdup theories are based was focused upon the various ways that market actors use reputation, contracts, and other institutions to mitigate the inefficiencies associated with opportunism in transactions involving tangible property.12

Recognizing the theoretical nature of holdup concerns, the United States Court of Appeals for the Federal Circuit has held that a claim of holdup must be substantiated with “actual evidence,” and that the burden is on the accused infringer to show the patent holder used injunctive relief to gain undue leverage and demand supra-FRAND royalties.13

#### FRAND is carefully calibrated---upsetting its balance with antitrust decks innovation.

Gregory J. Werden & Luke M. Froeb 19, former Senior Economic Counsel in the Antitrust Division of the U.S. Department of Justice; William C. Oehmig Chair in Free Enterprise and Entrepreneurship at Vanderbilt University, former Chief Economist of the Antitrust Division of US Department of Justice, Ph.D. in Economics from the University of Wisconsin, “Why Patent Hold-Up Does Not Violate Antitrust Law,” Texas Intellectual Property Law Journal, Vol. 27, 2019, accessed via Lexis

A (valid) patent can have great value if it claims technology essential to devices from which many consumers derive substantial utility. The owner of such a patent possesses a monopoly of sorts, and the investment in the technology could pay off handsomely. A technology standard tends to increase the pay off by causing standard-essential technology to be used in more units of royalty-paying components or devices. 13Moreover, a standard locks in technology choices, so patents essential to a standard-complaint version of a particular component or device could be inessential [\*6] to a noncompliant version of the component or device that uses alternative technologies.

Inventors that become monopolists with the adoption of a standard generally accept an important restriction on the grant of monopoly. They commit to license their SEPs to all comers and to do so on FRAND terms. FRAND, however, is neither a number nor a formula, and innumerable FRAND commitments were made before any court had interpreted the concept. As a matter of economic theory, broad agreement exists on how to conceptualize a FRAND royalty: It is the royalty that would have been negotiated just before the standard was adopted. 14This is the benchmark used in economic analyses of patent hold-up. 15The scenario defining FRAND is properly termed " ex interim bargaining" because it occurs before implementers invest but after inventors invest. 16

Bargaining theory predicts that bilateral negotiations divide the total gain to both parties reaching agreement. 17The original theory of John Nash posited an even division, 18but economic analyses of patent hold-up posit a division determined by relative bargaining skill. 19In ex interim bargaining, inventors and implementers would have divided the incremental gain from using the best technical solution instead of the next-best alternative. This incremental gain would be huge for a breakthrough invention but very small if alternative technical solutions to a particular problem were almost equally good.

Licensing SEPs before adoption of a standard likely is infeasible because some SEPs have not been issued and their claims are unsettled. 20Before taking all the necessary licenses, implementers are apt to make sunk investments in product development and manufacturing. Once they have, replacing a particular technology in a standard with the next-best alternative ex interim might be impossible, in which [\*7] case all of an implementer's sunk investments in standard-compliant products would be lost if bargaining over the royalty failed to produce an agreement. This puts SEP holders in a position to engage in what is called patent hold-up, meaning that the SEP holder exploits the bargaining advantage afforded by the implementer's sunk investment.

A concrete example clarifies the insight that ex interim and ex post bargaining produce different royalties because they involve different metaphoric pies: Suppose that an implementer expects to manufacture a standard-compliant component with a marginal cost of $ 2 and a price of $ 8. The difference of $ 6 is not expected profit because the implementer incurred sunk costs. But once those costs are sunk, the per-unit gain from reaching agreement with holders of SEPs is the full $ 6, so ex post bargaining splits $ 6. If sunk development costs amortized to $ 4 per unit, ex interim bargaining would have split just $ 2. If bargaining splits gains evenly a la Nash, conducting the bargaining after product development costs are sunk increases the per-unit royalty (divided among all SEP holders) from $ 1 to $ 3. 21

The foregoing ignores external influences on the bargaining outcome, and there are several. An inventor can seek an injunction, and threat of an injunction could affect the bargaining outcome. 22An implementer can seek a declaratory judgment that the patent is invalid or not infringed, 23and the threat to do so could also affect the bargaining outcome. And, of course, an implementer can bring an action to enforce the FRAND commitment, 24and the threat to do that could also affect the [\*8] bargaining outcome. Courts have observed that a FRAND commitment is meant to achieve the outcome that ex interim bargaining would have produced, 25and they have acted accordingly in determining SEP royalties. 26

Antitrust intervention in patent royalty disputes also would alter the bargaining outcome. Section 4 of the Clayton Act allows any person injured "by reason of anything forbidden by the antitrust laws" to sue for treble damages. 27If patent hold-up was deemed an antitrust violation, damages presumably would be computed as the difference between the royalties paid and the royalties later determined to have been FRAND. With uncertainty about what royalty a court would choose, the threat of antitrust damages would cause the bargaining to settle on a royalty less than the expected court-determined FRAND royalty. 28Reducing SEP royalties would cause inventors to reduce their investment and would result in less innovation, thereby harming consumers. 29

#### The status quo solves---adding antitrust to the equation makes everything worse.

Joshua D. Wright 14, Commissioner of the Federal Trade Commission, Ph.D. in Economics from the University of California, Los Angeles, “SSOS, Frand, and Antitrust: Lessons from the Economics of Incomplete Contracts,” George Mason Law Review, Vol. 21, 2014, accessed via HeinOnline

In my view, the antitrust laws are not well suited to govern contract disputes between private parties in light of remedies available under contract or patent law. The same concerns extend to attempts by antitrust agencies to influence SSOs' IPR policies. Caution should be exercised in both situations. Indeed, economists have long viewed the holdup problem, and ex post opportunism more generally, as a problem sounding in contract law, with its default substantive rules and remedies, rather than in antitrust law.5 6 The risk of imposing antitrust remedies in pure contract disputes can have harmful effects in terms of dampening incentives to participate in standard-setting bodies and to commercialize innovation. These would be unfortunate consequences of policy reforms and enforcement efforts designed to improve the competitive process. They are also avoidable consequences. The sanctions available to address patent holdup and related concerns under other legal regimes are more than adequate to provide optimal deterrence against patent holdup.57 Antitrust enforcement remains available in cases of true anticompetitive price fixing or deceptive manipulation of standards. In the absence of robust empirical evidence to suggest that SSOs' adaptation of their IPR policies over time have been inadequate in minimizing the probability of holdup, there is little reason to bring to bear the blunt weaponry of antitrust rules and remedies to micromanage the competitive process in the name of improving SSO contracts.

#### No cyber escalation---Russia attacks prove.

#### Innovation is high.

Thomas A. Lambert 20, Wall Chair in Corporate Law and Governance and Professor of Law at the University of Missouri School of Law, J.D. from the University of Chicago, “The Case Against Legislative Reform of U.S. Antitrust Doctrine,” University of Missouri School of Law Legal Studies Research Paper No. 2020-13, 05-12-2020, https://ssrn.com/abstract=3598601

Reduced Investment in Innovation? Proponents of reforming the antitrust laws have also pointed to reductions in the level of venture capital investment as indicative of a market power crisis in the U.S. Such investment slowed somewhat after 2015 (though it appears to have rebounded),27 and some venture capitalists have referred to a “kill zone” around dominant technology firms.28 The claim is that big technology firms either usurp small firms’ innovations or use their power over platforms to force smaller firms that need access to those platforms to sell out at a bargain price. Venture capitalists are less inclined to invest if such outcomes are likely, and innovation therefore suffers.

The evidence, however, does not support the view that lax U.S. antitrust is reducing innovation. Eleven of the top sixteen global spenders on research and development are U.S. firms,29 and six of those—Amazon, Alphabet, Intel, Microsoft, Apple, and Facebook—are “Big Tech” firms that have been accused of acting like monopolists. Moreover, the U.S. is home to half (178 of 356) of the world’s so-called “unicorn” companies—i.e., private companies valued at greater than $1 billion. China ranks second with 90, and all of Europe contains a fraction of that number. The U.S. also far outpaces Europe in terms of venture capital spending, with 10,777 investments in 2019 worth $136.5 billion compared to Europe’s 5,017 deals worth $36.3 billion. Finally, the fact that large American technology firms are purchasing smaller producers of complementary products or technologies in no way implies that the incentive to innovate is thereby reduced. Many start-ups are organized with the goal of being bought out by a larger firm; a buy-out option allows the initial investors in a company to enjoy a return on their investment without the company’s having to incur the significant cost of a public offering.

#### No Chinese 5G---Huawei proves they’re unable to turn tech into dominance.

Hal Brands 9-19, Henry A. Kissinger Distinguished Professor of Global Affairs at the Johns Hopkins School of Advanced International Studies, Scholar at the American Enterprise Institute, Ph.D. from Yale University, “Huawei’s Decline Shows Why China Will Struggle to Dominate,” Bloomberg, 09-19-2021, https://www.bloomberg.com/opinion/articles/2021-09-19/huawei-s-decline-shows-why-china-will-struggle-to-dominate

One of the biggest geopolitical developments of the last two years has been the quiet decline of Huawei Technologies Co. In 2019, the Chinese telecommunications behemoth was racing toward dominance of the world’s 5G networks. It was a symbol of Beijing’s apparent rise to technological primacy. Today, however, Huawei isn’t thinking about supremacy: “Our aim is to survive,” its chairman has announced.

Since 2020, Huawei has been caught in the global blowback against Chinese belligerence. It has been pummeled by a U.S. diplomatic and sanctions campaign. Barring an unexpected rescue, its prospects will worsen next year, when Huawei exhausts its limited supply of state-of-the-art— the vital components for modern electronics. For years, many experts believe, Huawei has been tightly linked to the Chinese Communist Party. Now, it is semiconductors becoming a casualty of America’s intensifying technological conflict with Beijing.

Huawei’s decline is instructive for several reasons. It shows how China is often its own worst enemy, as its global assertiveness makes its rivals multiply. It represents bipartisan effectiveness: President Joe Biden has prosecuted the assault against Huawei by refining policies that President Donald Trump initiated with strong congressional support. Not least, it shows that the U.S. has the tools, and can assemble the strategy, to win a high-tech rivalry with China — provided Washington can avoid losing crucial near-term battles first.

Huawei became a telecommunications giant thanks to a unique combination of advantages. It received generous government subsidies, totaling perhaps $75 billion, which allowed it to develop quality products while undercutting its competitors’ prices. Unlike its foreign competitors, Huawei had unfettered access to China’s vast domestic market, which allowed it to operate at a scale that further drove down costs. And it benefitted from the political and diplomatic support of the Communist Party, which viewed 5G telecommunications as a critical arena in the struggle for global power — at a time when America was, one Trump-era official acknowledged, “asleep at the switch.”

By 2020, Huawei controlled 31% of the global telecommunications infrastructure market and had more contracts to build 5G networks than any other company. Its customers were not just cost-conscious developing countries: Roughly half of Huawei’s 91 contracts for 5G were in Europe, and even close U.S. allies such as the U.K. had chosen to include Huawei’s gear in their networks. Meanwhile, the U.S. response was fitful.

If Huawei built the world’s 5G networks, U.S. officials feared, Beijing could cite its National Intelligence Law to demand access to sensitive information flowing through them. China would reap enormous geopolitical leverage, much as the U.K. had by dominating the world’s undersea communications cables in the late 19th and early 20th centuries. Beijing’s vision of the future, in which advanced technologies turbocharge autocratic capitalism, would move closer to reality. And because 5G networks feature infrastructure that is costly and difficult to replace, countries that chose Huawei now might have to rely on its upgrades for years to come. “The race for 5G is on, and America must win,” Trump declared.

Through 2019, however, a divided Trump administration struggled to respond. The potentially punishing sanctions the president leveled against the company were, in practice, patchy and inconsistent. Trump launched an anti-Huawei diplomatic campaign, enlisting Australia, Japan and countries that relied heavily on American protection, such as Poland. Yet the president undermined his own efforts by suggesting that Huawei was just a bargaining chip in the broader U.S.-China dispute.

An “America First” administration also had trouble with the daunting task of developing affordable, non-Huawei options. When Secretary of Defense Mark Esper warned European elites not to rely on Chinese technology in February 2020, a response from the crowd — “are you offering an alternative?” — produced laughter and applause.

Huawei seemed to be running away with the race to wire the world for the next generation. In fact, its fortunes were about to fade.

China’s own behavior is partly to blame. Beijing had already shown a capacity to unintentionally undercut Huawei’s prospects, as when it alienated Canada by effectively kidnapping two Canadian citizens in 2018. The outbreak of Covid-19, and the way China attempted to exploit the pandemic, forced countries around the world to reconsider ties to the regime.

A slew of European countries walked away from Huawei; China’s overall global favorability ratings dropped sharply. Similarly, after Chinese forces clashed with India high in the Himalayas in June 2020, the Indian government effectively barred Huawei from the country’s 5G networks.

The U.S. has been well-positioned to profit from this blowback, because a three-pronged strategy — begun by Trump and continued by Biden — has begun to cohere.

First is a renewed diplomatic push. Pressure from Trump, including threats to curtail intelligence sharing, ultimately helped sway Britain and other close allies to distance themselves from Huawei. The U.S.-sponsored Clean Network, a coalition of countries that have pledged to exclude high-risk vendors, gathered more adherents during 2020 as American officials consistently drove home the dangers of working with Huawei.

In 2021, the fact that U.S. policy has become less gratuitously antagonistic toward allies under Biden has also made it easier to rally international support. Yan Xuetong, dean of the Institute of International Relations at Tsinghua University, acknowledges that the president’s “multilateral club strategy” has taken a toll.

Second, Washington has used powerful sanctions to starve Huawei of vital inputs. By ending Trump’s ambivalence about China, Covid accelerated his anti-Huawei campaign. By the close of the Trump years, Huawei was prohibited from doing business with Google, Facebook and other U.S. firms that provided key software for its phones. More important, Washington had cut off Huawei from the highly sophisticated semiconductors on which its products rely.

Washington’s success came from exploiting asymmetric strengths — the reach of the U.S. financial system, America’s unmatched geopolitical influence, and the ubiquity of U.S. and allied technology at the highest ends of the semiconductor value chain — to turn its policy toward a global prohibition on providing advanced semiconductors or semiconductor technology to China. The U.S. does not, for example, produce the world’s most advanced chip-making equipment; a Dutch firm, ASML, does. But Washington has used its leverage to prevent ASML from exporting specialized chip-making equipment to China, and to stop foreign chipmakers, such as Taiwan Semiconductor Manufacturing Company, from selling their top products to Huawei. Even in highly globalized industries, the arm of American power is long.

The U.S. thus struck at an asymmetric Chinese weakness: It remains unable, despite massive investments, to design and produce cutting-edge semiconductors itself. “The fact that core technology is controlled by others,” President Xi Jinping has admitted, “is our greatest hidden danger.” Here, too, Biden has picked up where Trump left off, limiting Huawei’s ability to raise capital in the U.S. and otherwise intensifying the sanctions campaign.

The damage has been substantial. U.S. restrictions have created new uncertainty around Huawei’s supply chain. They have also raised the likelihood that Huawei will soon have to rely on less-sophisticated semiconductors, which consume more power and ultimately make the networks that feature them more expensive to operate over time. American sanctions are thus giving countries an economic motive to shun Huawei, in addition to longstanding security concerns.

These measures are buying time for a third aspect of U.S. strategy: the multilateral development of alternatives to Huawei. The International Development Finance Corporation is offering financing to countries that choose non-Chinese options for their 5G networks. If Huawei can be stymied, then firms in democratic countries will have a better shot at setting the technological standards that will shape the telecommunications industry in the future.

The Biden administration is also betting on something called Open Radio Access Networks, or O-RAN, an effort to develop common standards that promote greater compatibility between different types of telecommunications equipment. In effect, O-RAN allows different companies to plug and play in a single network, making it harder for Huawei or any other firm to dominate global telecommunications infrastructure.

O-RAN has yet to be deployed commercially at any scale. Feasibility and affordability remain significant concerns; it may work better for big countries than for small ones. Yet the pace of deployments is predicted to accelerate rapidly over the next three to five years, so Biden has put it high on the agenda for U.S. diplomacy with key countries (South Korea, Japan, India) as well as institutions such as the European Union and the Quadrilateral Security Dialogue.

America’s strategy, then, is about running faster as well as slowing its rival. Washington aims to break Huawei’s momentum until the U.S. and its friends can develop alternatives that will limit the Chinese firm’s global appeal.

The effects of U.S. policy are starting to accumulate. As of 2021, eight of the world’s 10 largest economies, countries representing over 60% of the world’s cellular equipment market, and nearly all members of the European Union, had either banned or restricted Huawei from their 5G networks.

Many countries that have not imposed formal restrictions, such as Germany and Canada, have subtly made it very difficult for Huawei. The company’s sales of network gear fell 14.2% between mid-2020 and mid-2021. Its overall revenue fell roughly 29% and earnings have slumped in regions from the Middle East to the Americas. Huawei’s founder, Ren Zhengfei, has declared that there is “no chaos within the company,” but the numbers tell a different story.

Huawei’s predicament could get much worse. Probably next year, the company will run out of the advanced semiconductors it stockpiled as U.S. hostility grew. That will force it to fulfill existing contracts with older, less efficient components — or not fulfill them at all. Huawei may be too important for the Communist Party to let it fail. But its global expansion will become increasingly problematic.

Meanwhile, there has been less collateral damage from the anti-Huawei campaign than some observers initially feared. U.S. and foreign chipmakers worried that the sanctions would crush their sales, given that Huawei was the world’s third-largest chip purchaser.

Allied governments chafed at Washington’s push to make its sanctions extraterritorial. But the chipmakers have not been massacred, in part because Huawei’s now-thriving competitors are buying more, and in part because the U.S. has allowed Huawei to purchase older chips not suitable for its 5G business. And American policies have often benefited major foreign firms, such as Samsung Electronics Co., Ericsson AB and Nokia Oyj, by hobbling their principal rival.

O-RAN remains the least developed part of U.S. strategy. But even here, there are encouraging signs. This year, several major European telecom firms agreed to build O-RAN networks spanning the continent. Major mobile carriers in India have also decided to invest in the technology for their domestic networks and develop products for export.

As they do so, O-RAN will start to profit from scale effects of the sort Huawei enjoyed. And because the Indian telecom market has a low average revenue per user, an approach that is economically viable there could be viable almost anywhere. If that happened, Huawei’s price advantage in developing markets — so far, its trump card — may become a thing of the past.

Two years ago, Huawei was a symbol of China’s global tech ambitions. Today, it is an example of persistent Chinese vulnerability, as well as a marker of how America has begun to fuse the unilateral coercion and multilateral construction necessary to wage a technological cold war. Yet Huawei’s story also underscores a final lesson, on the need for speed in U.S. strategy.

The 5G network is a classic example of a technology with first-mover advantages. Companies that build and install the hardware on which 5G networks sit will enjoy lasting influence over the countries those networks serve. The U.S. nearly waited too long to meet the threat — and even as Huawei struggles, the battle isn’t through.

Washington is just beginning to promote alternatives to Huawei, and to make the generational investments needed to keep America and its allies far ahead in designing and producing top-shelf semiconductors. Beijing isn’t conceding defeat: It is quadrupling down on indigenous innovation in hopes of becoming the world’s leader in advanced semiconductors by 2030.

Other battles await. China is bidding for control of the world’s data, through investments in cloud computing, data centers and fiberoptic cables. AI, biotech and quantum computing loom large. The U.S. has begun, albeit belatedly, to address the challenge of Chinese-dominated 5G networks. The lesson for the broader tech competition is not to wait until it is too late.

#### ‘5G racing’ is total B.S.

Nilay Patel 19, J.D. from the University of Wisconsin Law School, Editor-in-Chief of The Verge, Former Acting Managing Editor for Vox, AB in Political Science from the University of Chicago, “Wait, Why The Hell Is The ‘Race To 5G’ Even A Race?”, The Verge, 5/23/2019, https://www.theverge.com/2019/5/23/18637213/5g-race-us-leadership-china-fcc-lte

I have a dumb question that no one seems capable of answering directly: *Why is 5G a race?*

Everyone — the wireless industry, Democrats, Republicans, the major media, you name it — frames the building of next-generation 5G networks as a “race” in which the United States needs to demonstrate “leadership.”

Here is The Washington Post declaring America has the lead in the race to 5G. Here’s CNN asking “Who’s winning the race to 5G?” Here’s AT&T CEO Randall Stephenson declaring that China isn’t beating the US to 5G “yet,” as some sort of ominous warning. Here’s T-Mobile CEO John Legere telling the House Subcommittee on Communications and Technology that merging with Sprint will let his company “win the race to 5G.” Here is an entire microsite from industry lobbying group CTIA titled “The Race to 5G.”

Let us never forget AT&T being so desperate to lead this “race” that it rolled out fake 5Ge logos on its phones.

But the stakes of this supposed race are wholly unclear. What happens if we win, besides telecom execs getting slightly richer? More importantly, what are the drawbacks to coming in second, or even third? Where is the list of specific negative outcomes of China building a 5G network a month, a year, or even five years before the United States? I’ve never seen it, and I keep asking about it.

NO ONE CAN SAY WHAT BAD THINGS WILL HAPPEN IF WE DON’T WIN THE RACE TO 5G

For example, here’s FCC Commissioner Geoffrey Starks on The Vergecast this week, when I asked why 5G is a race.

“I think it is important for us to continue to lead the race ... we obviously led to 4G and I think we get to set some of the standards that are ultimately going to be implemented worldwide, which is why there is a little bit of a race.”

Starks went on to say that China wants to be a global leader in supplying 5G equipment and that’s why Huawei has been so aggressively building and pricing its gear. But Huawei depends on American chip technology to make its products, and the US government has just put Huawei on a blacklist anyway. So... the race is so we can set some wireless standards? I suspect Apple, Google, Qualcomm, Verizon, and AT&T can fend for themselves when it comes to that process.

The other main argument for winning the “race” to 5G is that having the world’s best and fastest networks will create new economic opportunities for businesses of all kinds — we’ll enable self-driving cars and telemedicine and all the other stuff you hear about during interminable 5G slideshows at trade conferences. At a hearing before the Senate Committee on Commerce, Science, and Transportation earlier this year, Mississippi Sen. Roger Wicker confidently declared that “failing to win the race to 5G would not only materially delay the benefits of 5G for the American people, it would forever reduce the economic and societal gains that come from leading the world in technology.”

WE WON THE RACE TO LTE AND OUR LTE NETWORKS ARE AMONG THE SLOWEST AND MOST EXPENSIVE IN THE WORLD

Maybe. It is indeed true that better networks lead to better opportunities, and that widespread high-speed broadband is something everyone wants. But I sincerely doubt that all of these companies will pick up and move to China or Europe if the United States builds 5G networks slightly slower. After all, we already have some of the slowest and most expensive networks in the world, and Apple and Facebook have not yet relocated to South Korea.

The more I hear about the race, the more I don’t buy it. I think the “race” framing is there to make some big decisions seem urgent and important — to make it appear as though some serious trade-offs are worth it in order to “win.” And those trade-offs are indeed serious: 5G networks will require a serious rethinking of how we use wireless spectrum. There are incredible privacy implications around putting millions of IoT devices in a “smart city” on 5G. Investment dollars will naturally flow toward building 5G networks in cities instead of expanding our networks to rural areas, exacerbating the digital divide.

THE “RACE” IS TO THERE TO MAKE SERIOUS TRADE-OFFS SEEM WORTH IT SO WE CAN “WIN”

And once the “race” to build out 5G in big cities is “won,” the pressure to expand access to other places in the country will vanish, making that divide even worse. It is worth carefully considering all of these things before giving in to haste.

Oh, and it appears that some of the required 5G spectrum might interfere with important weather sensors, a concern raised by NASA, the Navy, and the NOAA in hearings before Congress last week. How did the wireless industry respond to these concerns? By writing a blog post accusing meteorologists from across three government agencies of “risking our 5G leadership.” The implication, of course, is that worrying about detecting major weather events could make us lose the race.

This race is imaginary bullshit. It’s being foisted on us by huge telecom companies that know internet access is fundamentally a commodity and want something new to sell at high prices instead of competing to improve service and lower prices on the networks they have. After all, the United States “won” the “race” for LTE, but it bears repeating: our LTE networks are among the slowest in the world, and our prices among the highest. What did winning that race accomplish for the millions of people across the country that still can’t get a reliable LTE signal?

#### A/C to Democracy---HR violations, Authoritarian leaders, and China/Russia influence is inevitable

#### DPT is a statistical artifact---empirical analysis

Michael **Mousseau 18**. Professor @ UCF, PhD PoliSci @ Binghamton. Conflict Management and Peace Science, “Grasping the scientific evidence: The contractualist peace supersedes the democratic peace”, Vol 35(2) 175-192, SagePub.

A weighty controversy has enveloped the study of international conflict: whether the democratic peace, the observed dearth of militarized conflict between democratic nations, may be spurious and accounted for by institutionalized market ‘‘contractualist’’ economy. I have offered theory and evidence that economic norms, specifically contractualist economy, appear to account for both the explanans (democracy) and the explanandum (peace) in the democratic peace research program (Mousseau, 2009, 2012a, 2013; see also Mousseau et al., 2013a, b). Five studies have responded with several arguments for why we should continue to believe that democracy causes peace (Dafoe, 2011; Dafoe and Russett, 2013; Dafoe et al., 2013; Ray, 2013; Russett, 2010). Resolution of this controversy is fundamental to the study and practice of international relations. The observation of democratic peace is ‘‘the closest thing we have to an empirical law’’ in the study of global politics (Levy, 1988: 662), and carries the profound implication that the spread of democracy will end war. New economic norms theory, on the other hand, yields the contrary implication that universal democracy will not end war. Instead, it is market-oriented development that creates a culture of contracting, and this culture legitimates democracy within nations and causes peace among them. The policy implications could hardly be more divergent: to end war (and support democracy), the contractualist democracies should promote the economies of nations at risk (Krieger and Meierrieks, 2015; Meierrieks, 2012; Mousseau, 2000, 2009, 2012a, 2013; Nieman, 2015). In the literature are five factual claims for why we should continue to believe that democracy causes peace: (1) an assertion that in three of the five studies that overturned the democratic peace (Mousseau, 2013; Mousseau et al., 2013a, b), the insignificance of democracy controlling for contractualist economy is due to the treatment of missing data for contractualist economy (Dafoe et al., 2013, henceforth DOR); (2) a claim of error in the measure for conflict (DOR) that appears in one of the five studies that overturned the democratic peace (Mousseau, 2013); (3) an alleged misinterpretation of an interaction term that appears in one of the five studies (Mousseau, 2009) that overturned the democratic peace, along with in inference of democratic causality from an interaction of democracy with contractualist economy (Dafoe and Russett, 2013; DOR); (4) a claim of reverse causality, of democracy causing contractualist economy (Ray, 2013); and (5) a report of multiple regressions with most said to show democratic significance after controlling for contractualist economy (DOR). This study investigates all five of these factual claims. I begin by addressing the issue of missing data by constructing two entirely new measures for contractualist economy. I then take up possible measurement error in the dependent variable by reporting tests using both my own (Mousseau, 2013) and DOR’s measures for conflict. Next, I disaggregate the data to investigate a causal interaction of democracy with contractualist economy. I then examine the evidence for reverse causality, and scrutinize the competing test models to pinpoint the exact factors that can account for differences in test outcomes. The results are consistent across all tests: there is no credible evidence supporting democracy as a cause of peace. Using DOR’s base model, the impact of democracy is zero regardless of how contractualist economy or interstate conflict is measured. There is no misinterpreted interaction term in any study that has overturned the democratic peace, and the disaggregation of the data yields no support for a causal interaction of democracy with contractualist economy. Ray’s (2013) evidence for reverse causality from democracy to contractualist economy is shown to be based on an erroneous research design. And of DOR’s 120 separate regressions that consider contractualist economy, 116 contain controversial measurement and specification practices; the remaining four are analyses of all (fatal and non-fatal) disputes, where the correlation of democracy with peace is limited to mixedeconomic dyads, those where one state has a contractualist economy and the other does not, a subset that includes only 27% of dyads from 1951 to 2001, including only 50% of democratic dyads. It is further shown that this marginal peace is a statistical artifact since it does not exist among neighbors where everyone has an equal opportunity to fight. The results of this study should not be surprising, as they merely corroborate the present state of knowledge. This is because, while DOR ardently assert that four alleged errors, when corrected, each independently save the democratic peace proposition—multiple imputation, the exclusion of ongoing dispute years, an interaction term, and their alternative measure for contractualist economy—they never actually report any clear-cut evidence in support of their claims. One issue not addressed is Dafoe and Russett’s (2013) challenge to Mousseau et al. (2013a) on the grounds that our reported insignificance of democracy is not significant. Like the four claims of error made by DOR addressed here, Dafoe and Russett (2013) made this charge without supporting it. Mousseau et al. (2013b) then investigated it and showed that it too has no support. This issue appears resolved, as Russett and colleagues (DOR) did not raise it again. Nor have DOR or anyone else disputed the overturning of the democratic peace as reported in Mousseau (2012a), which has not been contested with any assertion, supported or unsupported. The implications of this study are far from trivial: the observation of democratic peace is a statistical artifact, seemingly explained by economic conditions. If scientific knowledge progresses and the field of interstate conflict processes is to abide by the scientific rules of evidence, then we must stop describing democracy as a ‘‘known’’ cause or correlate of peace, and stop tossing in a variable for democracy, willy-nilly, in quantitative analyses of international conflict; the variable to replace it is contractualist economy. If nations want to advance peace abroad, the promotion of democracy will not achieve it: the policy to replace it is the promotion of economic opportunity The economic norms account for how contractualist economy can cause both democracy and peace has been explicated in numerous prior studies and need not be repeated here (Mousseau, 2000, 2009, 2012a, 2013). An abundance of prior studies have also corroborated various novel predictions of the theory in wider domains (Ungerer, 2012), and no one has disputed the multiple reports that contractualist economy is the strongest non-trivial predictor of peace both within (Mousseau, 2012b) and between nations (Mousseau, 2013; see also Nieman, 2015). The only matter in controversy is whether democracy has any observable impact on peace between nations after consideration of contractualist economy. My investigation begins below with the allegation of measurement error.

### Cybersecurity

#### No cyber war or retaliation

Jasmine Rodet 18, Master’s Degree in Cyber Security, Strategy, and Diplomacy from the University of New South Wales, Cyber Security Program Manager at Fortescue Metals Group, “The Threat of Cyber War is Exaggerated”, 11/11/2018, linkedin.com/pulse/threat-cyber-war-exaggerated-jasmine-rodet/

For the regular person on the street, the term ‘cyber war’ is more likely to bring to mind the 1983 movie “WarGames” and the doomsday articles that appear regularly in the media about the ‘cyber battlefield’ and an impending World War III. This essay argues that the threat of cyber war is exaggerated and although it can, by definition, be stated that we are already in a state of cyber war, the impact on states is negligible compared to conventional war domains.

The argument is presented in 3 steps. The first step is to define cyber war and cyber weapons, referencing scholars and experts in the area of conventional war and the cyber domain. The second step is to explore who has been exaggerating the threat of cyber war and what their motivations might be. The third is to explore the evidence and quantify the probability and impact that cyberwar has had on states to date.

‘Cyber war’ is a term often used interchangeably in media with cyber-crime, cyber-attacks, cyber-conflict and cyber-incidents, creating confusion amongst the public and scholars alike. Clausewitz (1989, 75), in his book, On War, defines war as ‘an act of force to compel the enemy to do our will’. Rid (2012, 7) on the other interprets Clausewitz use of ‘force’ as meaning ‘violent’ force. According to Rid, if an act is not potentially violent, it is not an act of war. However, Stone (2013, 107) describes ‘cyber war’ as a politically motivated act of force, not necessarily lethal and not necessarily attributable. The definition by Powers and Jablonski states more simply that cyber war is the utilisation of digital networks for geopolitical purposes (Nocetti 2016, 464). Neither of the latter two definitions requires violence to qualify as cyber war. Under these definitions, the Stuxnet cyber-incident in 2010 and the Estonia incident in 2007 would constitute an act of cyber war, and as such we could say that nations have been at cyber war in the past and are likely to continue to engage in cyber war in years to come.

For this essay, I will use Stones definition to argue that even though states may engage in cyber war, the concept of cyber war is exaggerated. It seems that cyber war is deliberately exaggerated in the media and by politicians for financial and political gains. There are countless examples in the media and in politics of the exaggeration of the threat of cyber war and the language used plays a big factor in creating a sense of fear in the community.

The Four Corners report, Hacked, is a classic example where the reporter, Andrew Fowler describes the current situation in Australia as ‘… a secret war where the body count is climbing every day’ (Fowler 2013). The documentary reveals nothing violent or lethal about cyber incidents. The documentary is actually about hackers working from locations overseas, having targeted key Federal Government departments and major corporations in Australia.

In another example, NATO may be interpreted as exaggerating the threat of Cyber War when they invited Charlie Millar to present at their Conference for Cyber Conflict at the NATO Cooperative Cyber Defence Centre of Excellence in 2017. Millar is an independent security evaluator, and his presentation was titled ‘Kim Jong-il and me: How to build a cyber army to attack the US’. He later presented similar content at Def Con 2018. His presentation described the steps he would take to mount a cyber war, including the types of people he would engage, how much he would pay them, what his strategy would be and how much it would cost in total.

Who stands to gain from the exaggeration and hype? Logically, one group would be those that gain financially from the sale of cyber protective services and software. According to Valerino, 57% of technical experts surveyed said that we are currently in a cyber arms race and 43% said that the worst-case scenarios are inevitable (Valeriano and Ryan 2015). Translate this into sales and Gartner projects worldwide security spending will reach $96 Billion in 2018, up 8 Percent from 2017 and to top $113 billion by 2020 (Gartner 2017).

Additionally, there may be political motivations to exaggerate the threat of cyber war. Cyberspace is not well understood by the general public and fear is natural. In the US’s cyber security debate, observers have noted there is a tendency for policymakers, military leaders, and media, among others, to use frightening ‘cyber-doom scenarios’ when making a case for action on cyber security (Dunn 2008, 2).

There is some evidence to suggest that more recently in the political arena; we may be maturing in our understanding of the real threat of cyber war. The Tallinn Manual, an academic, non-binding study on how international law applies to cyber conflicts and cyber warfare, was written at the invitation of the Tallinn-based NATO Cooperative Cyber Defence Centre of Excellence. It was first published in 2013 with the title ‘The Tallinn Manual on the International Law of Cyber War’. In 2017, it was re-released with the revised title ‘Tallinn Manual 2.0 on the International Law of Cyber Operations’. The change in title from ‘war’ to ‘operations’ signifies a more moderate use of language from NATO and is an acknowledgement that cyber incidents generally fall below the threshold at which International Law would declare them to be a formal act of war. Experience over the 4 short years from 2013 to 2017 has demonstrated that cyber incidents tend to have a low-level impact on the target state. As the book’s authors put it ‘the focus of the original Manual was on the most severe cyber operations, those that violate the prohibition of the use of force in international relations, entitle states to exercise the right of self-defence, and/or occur during armed conflict’ while the new version ‘adds a legal analysis of the more common cyber incidents that states encounter on a day-to-day basis and that fall below the thresholds of the use of force or armed conflict’ (Leetaru 2017).

To get a better sense if cyber war is exaggerated, we must also consider the probability of cyber war in the future. The probability of cyber war should be weighed up against the probability of conventional war. Where tensions are already high, for example, between North Korea and the US or Russia and Estonia, I would argue that cyber war is more likely than conventional war. This is due to factors including; cyber warfare is less costly than conventional warfare, states are less rational in their decision space in the cyber realm, states find cyber attribution very difficult to achieve so attacks can be undertaken covertly and cyber war is considered ‘a challenge’ and central to the hackers’ ethos (Junio 2013, 128). Further, Sanger describes in his book, The Perfect Weapon, cyber weapons (such as cyber vandalism, Distributed Denial of Service (DDOS), intrusions and advanced persistent threat (APT)) as the ‘perfect weapons’ for the following reasons;

They are cheap: When compared to Nuclear weapons, there are only a handful of nations globally that can afford the technology to create a nuclear weapon.

They are easily accessible: Unlike a Nuclear bomb that requires uranium, a highly protected metal, in the production process, a cyber weapon can be created with minimal investment and highly available IT infrastructure.

They can be dialled-up or dialled-down relatively easily. A ballistic missile, the force of the explosion cannot be adjusted as easily as a DDOS attack. A DDOS attack can be adjusted to last an hour, a few days or a few weeks.

They have a huge range in how they are used: Sabotage as with Stuxnet, Espionage as with the Chinese industrial spying on the US, North Korea’s infiltration of Sony, the Iranians attack on Las Vegas Sands Corp. casino operators.

The significant factor is that cyber weapons can and are being used every day for discrete, low-level cyber conflicts to undermine and disrupt rivals, but historically it has not progressed to open conflict, nor has it warranted a military response (Sanger 2018). Additionally, massive cyber operations would necessarily impact the civilian population and violate the immunity of non-combatants. The conditions of war dictate that this is “taboo” and to date, rival states have shown restraint in their use of cyber weapons for this reason (Valeriano and Ryan 2015). It appears that the threat that cyber weapons represent to national security is overstated and the threat of cyber war is overstated.

The US and likely other highly networked nations appear reticent about using cyber weapons for significant cyber conflict given their vulnerabilities. Ironically, NSA programs such as PRISM have made the US more of a target given the sheer volume of sensitive information stored in one place. Regardless of US defences, there is no way to make this information completely secure from intrusion, and as such, the very act of storing the information makes them more vulnerable.

Rid (2012) is among some academics who argue that cyber war has never and will likely never eventuate. The benefits of being on this side of the debate mean that public funding can be allocated away from offensive cyber security initiatives to other, potentially more important initiatives, such as public health and housing. The government is constantly under pressure to prioritise public spending and it is imperative that they have realistic, accurate projections regarding the risk of cyber war, the probability and the impact, to allow them to focus spending on the most important areas.

#### Won’t take down the grid

Victoria Craig 16, Analyst at Fox Business, Citing the Senior Manager of Industrial Control Systems at Mandiant, “The U.S. Power Grid is 'Vulnerable,' But Don't Panic Just Yet”, http://www.foxbusiness.com/features/2016/02/02/u-s-power-grid-is-vulnerable-but-dont-panic-just-yet.html

The idea of the nation's power grids becoming the next battleground for cyber warriors could make hacking into consumers’ credit card accounts and personal information seem like child’s play. While U.S. power companies are likely targeted by foreign governments and others in increasingly sophisticated breaches, actually shutting off the lights and causing chaos is far more complicated than many pundits make it seem. Dan Scali, senior manager of industrial control systems at Mandiant, a cybersecurity consulting arm of FireEye ([FEYE](http://www.foxbusiness.com/quote.html?stockTicker=FEYE)), explained that while cyber criminals may gain access to power and utility data systems, it doesn’t necessarily mean the result will be a power outage and a total takedown of power grid control systems. In other words, the power grid is controlled by more than just a panel of digital buttons. “Losing the control system is bad from the perspective that it takes you out of your normal mode of operations of being able to control everything from one command center, but it doesn’t mean you’ve lost control or all the lights go out [in the city],” Scali explained. While many of the systems have been modernized to include digitized control panels, if a hacker were to infiltrate the system, a utility worker could still have the ability to manually control the machines by flipping a switch, pushing a button, or tripping a breaker. As the world saw with the recent attack in Ukraine, which caused a blackout for 80,000 customers of the nation’s western utility, the biggest problem may be ensuring the power grid’s control systems are not vulnerable to cyber break ins. The January attack in Ukraine was likely caused by a corrupted Microsoft Word attachment that allowed remote control over the computer, according to the U.S. Department of Homeland Security. Scali said there was no evidence from the incident in Ukraine that the hacker’s malware was able to physically shut down the power. “It wiped out machines, deleted all the files. Kill disk malware made it impossible to remotely control things. It caused chaos on the business network, and the area where control system operations sat. But the attacker, we believe, would have had to actually used the control system to cause load shedding, which caused the power to go out, or trip breakers to cause the actual problem. Malware itself didn’t turn the power out,” Scali said. He said what most likely happened in that incident was the hacker stole user credentials and logged into the system remotely. The bottom line: Yes, a similar event could happen in the U.S. And corporate America is concerned. A recent survey released in January on the state of information security, conducted by consulting firm Pricewaterhouse Coopers, showed cybersecurity as one of the biggest concerns among the top brass at U.S. power and utilities firms. Part of the problem, Brad Bauch, security and cyber sector leader at PwC said, is the interconnectedness of the industry’s tools. “Utilities want to be able to get information out of [their] systems to more efficiently operate them, and also share that information with customers so they have more real-time information into their usage,” he explained. While allowing access to their own consumption data allows the companies to give their customers more of what they want, it also opens up a host of access points for hackers, making the systems more vulnerable than they otherwise would be. But to say that the power grid is susceptible to cyber hackers is a bit of an oversimplification.

#### Antitrust is developed by adjudication---that creates an ineffective, unpredictable, and unenforceable patchwork

Rohit Chopra 20, Commissioner of the Federal Trade Commission, and Lina M. Khan, Academic Fellow at Columbia Law School, Counsel to the Subcommittee on Antitrust, Commercial, and Administrative Law, US House Committee on the Judiciary and Former Legal Fellow at the Federal Trade Commission, “The Case for "Unfair Methods of Competition" Rulemaking”, University of Chicago Law Review, 87 U. Chi. L. Rev. 357, March 2020, Lexis

I. THE STATUS QUO: AMBIGUOUS, BURDENSOME, AND UNDEMOCRATIC?

Antitrust law today is developed exclusively through adjudication. In theory, this case-by-case approach facilitates nuanced and fact-specific analysis of liability and well-tailored remedies. But in practice, the reliance on case-by-case adjudication yields a system of enforcement that generates ambiguity, unduly drains resources from enforcers, and deprives individuals and firms of any real opportunity to democratically participate in the process.

One reason that antitrust adjudication suffers from these shortcomings is that courts analyze most forms of conduct under the "rule of reason" standard. The "rule of reason" involves a broad and open-ended inquiry into the overall competitive effects of particular conduct and asks judges to weigh the circumstances to decide whether the practice at issue violates the antitrust laws. Balancing short-term losses against future predicted gains calls for "speculative, possibly labyrinthine, and unnecessary" analysis and appears to exceed the abilities of even the most capable institutional actors. 1 Generalist judges struggle to identify anticompetitive behavior 2 and to apply complex economic criteria in consistent ways. 3 Indeed, judges themselves have criticized antitrust standards for being highly difficult to administer. 4 And if a standard isn't administrable, it won't yield predictable results. The dearth of clear standards and rules in antitrust means that market actors face uncertainty and cannot internalize legal norms [\*360] into their business decisions. 5Moreover, ambiguity deprives market participants and the public of notice about what the law is, thereby undermining due process--a fundamental principle in our legal system. 6

Decades ago, former Commissioner Philip Elman observed that case-by-case adjudication "may simply be too slow and cumbersome to produce specific and clear standards adequate to the needs of businessmen, the private bar, and the government agencies." 7Relying solely on case-by-case adjudication means that businesses and the public must attempt to extract legal rules from a patchwork of individual court opinions. Because antitrust plaintiffs bring cases in dozens of different courts with hundreds of different generalist judges and juries, simply understanding what the law is can involve piecing together disparate rulings founded on unique sets of facts. All too often, the resulting picture is unclear. This ambiguity is compounded when the Supreme Court assigns to lower courts the task of fleshing out how to structure and apply a standard, potentially delaying clarity and certainty for years or even decades. 8

#### Nukes wont be hacked

Dr. Andrew Futter 16, Associate Professor of International Politics and Director of Research for Politics and International Relations at the University of Leicester, “War Games Redux? Cyberthreats, US–Russian Strategic Stability, and New Challenges for Nuclear Security and Arms Control”, European Security, Volume 25, Issue 2, p. 171-172

It is of course highly unlikely that either the USA or Russia has plans – or perhaps more importantly, the desire – to fully undermine the other’s nuclear command and control systems as a precursor to some type of disarming first strike, but the perception that nuclear forces and associated systems could be vulnerable or compromised is persuasive. Or as Hayes (2015) puts it, “The risks of cyber disablement entering into our nuclear forces are real”. While the growing possibility of “cyber disablement” should not be overstated (notions of a “cyber-Pearl Harbor” (Panetta 2012) or “cyber 9–11” (Charles 2013) have done little to help understand the nature of the challenge), cyberthreats are nevertheless an increasingly important component of the contemporary US–Russia strategic context. This is particularly the case when they are combined with other emerging military-technical developments and programmes. The net result, especially given the current downturn in US–Russian strategic relations, and the way cyber is exacerbating the impact of other problematic strategic dynamics, is that is seems highly unlikely that either the USA or Russia will make the requisite moves to de-alert nuclear forces that the new cyber challenges appear to necessitate, or for that matter to (re)embrace the “deep nuclear cuts” agenda any time soon.

Assessing the options for arms control and enhancing mutual security

Given the new challenges presented by cyber to both US and Russian nuclear forces and to US–Russia strategic stability, it is important to consider what might be done to help mitigate and guard against these threats, and thereby help minimise the risks of unintentional launches, miscalculation, and accidents, and perhaps create the conditions for greater stability, de-alerting, and further nuclear cuts. While there is unlikely to be a panacea or “magic bullet” that will reduce the risk of cyberattacks on US and Russian nuclear forces to zero – be they designed to launch nuclear weapons or compromise the systems that support them – there are a number of options that might be considered and pursued in order to address these different types of threats and vulnerabilities. None, of these however, will be easy.

The most obvious and immediate priority for both the USA and Russia is working (potentially together) to harden and better protect nuclear systems against possible cyberattack, intrusion, or cyber-induced accidents. In fact, in October 2013 it was announced that Russian nuclear command and control networks would be protected against cyber incursion and attacks by “special units” of the Strategic Missile Forces (Russia Today 2014). Other measures will include better network defences and firewalls, more sophisticated cryptographic codes, upgraded and better protected communications systems (including cables), extra redundancy, and better training and screening for the practitioners that operate these systems (see Ullman 2015). However, and while comprehensive reviews are underway to assess the vulnerabilities of current US and Russian nuclear systems to cyberattacks, it may well be that US and Russian C2 infrastructure becomes more vulnerable to cyber as it is modernised and old analogue systems are replaced with increasingly hi-tech digital platforms. As a result, and while nuclear weapons and command and control infrastructure are likely to be the best protected of all computer systems, and “air gapped”14 from the wider Internet – this does not mean they are invulnerable or will continue to be secure in the future, particularly as systems are modernised or become more complex (Fritz 2009). Or as Peggy Morse, ICBM systems director at Boeing, put it, “while its old it’s very secure” (quoted in Reed 2012).

# 2NC---R1 vs Kansas

## Reg Neg

### Patents---Internals---Trade-Off---2NC

#### Antitrust causes are heard in the same courts as patents---consuming judicial capital shreds R&D and innovation

Gwendolyn G. Ball 10, & Jay P. Kesan; Research Fellow Business, Economics and Law Group Institute for Genomic Biology and Information Trust Institute University of Illinois; Professor and Mildred Van.Voorhis Jones Faculty Scholar College of Law Business, Economics and Law Group Institute of Genomic Biology University of Illinois; 4/30/10; “Judges, Courts and Economic Development: the Impact of Judicial Human Capital on the Efficiency and Accuracy of the Court System”; <https://editorialexpress.com/cgi-bin/conference/download.cgi?db_name=ALEA2010&paper_id=380>

While most economic scholarship analyzing the importance of the courts has focused on disputes over real property, the relationship between the court system and investment is no less strong for intellectual property. And to a large extent, the relationship between the courts and the patent system depends on the quality of “judicial human capital.”

In the United States, as in many countries, the courts are a crucial part of the patent system to the extent that the patent system is can be termed a two-stage process. In the first stage, the U.S. Patent and Trademark Office grants property rights to inventors. In the second stage, inventors can protect those rights through patent infringement suits in the courts and alleged infringers have the right to challenge improvidently granted patents and have them declared invalid. As a consequence, some authors have referred to patent rights as being “probabilistic,” depending not only on whether the innovation embodied in the patent has commercial value, but also on the refinement of that patent property right after litigation.15

Just as with real property, the management of the court system has an impact on both patenting behavior and on investment in research and development. While the majority of all patents are not litigated, those that are disputed in the courts are among the most valuable.16 The rules governing the court system may even “feed back” into patenting behavior; some authors have found evidence that the increasingly “patent friendly” rules17 adopted by the courts are a major factor in the surge in patenting since the 1980s.18 Moreover, the ability to define the “probabilistic” property rights is an important element in determining whether patents fulfill their purpose of promoting innovation.19 Finally, the costs associated with the patent systems can be reduced by an efficient court system; firms may hesitate to invest in new products and technologies which may infringe on existing patents, so any additional delay or cost in clarifying existent rights may slow the process of innovation. The more quickly and cheaply these rights are defined, the more beneficial the patent system will be in promoting and not inhibiting innovation and investment.

However, in the United States this second phase in the patent system is managed by a District Court system in which judges with a general legal background preside over cases ranging from drug trials to anti-trust actions. Under such circumstances, patent infringement suites can pose particular challenges. Patent litigation is officially classified by the U.S. Administrative Office of the District Courts as one of several types of “complex litigation” which place special burdens on judges and other court personnel. Not only are technical issues involved, but there are also procedures and rules that are unique to patent law. For example, since the “Markman” ruling of 1995 on “claim construction,” judges in patent cases have been required to examine the claims stated in the patent document, thereby defining the boundaries of the technology.20 This procedure is a potentially lengthy process involving briefs from the plaintiff and defendant, expert opinions and a special claims construction hearing. Such procedures can create difficulties for judges who are not familiar with the intricacies of patent law. And there is evidence suggesting dissatisfaction with the performance of district courts in patent cases at the District level. Approximately 10% of judgments in other areas of the law are appealed, whereas 50% of the judgments in patent cases are appealed.21 As a consequence, intellectual property disputes are included as one of the topical areas warranting a special section in the Federal Judicial Center (FJC)22 Manual for Complex Litigation (2004), along with anti-trust cases, securities cases, employment discrimination, CERCLA (Superfund) and civil RICO. Moreover, in the FJC’s 2003-04 study of the amount of work required for District Court cases, while an “average” case is assigned a weight of 1, patent cases received a weight of 4.72. Only environmental cases (4.79) and death penalty cases (12.89) received higher weights.23 Thus, lack of familiarity with patent law can be a barrier to efficient resolution of patent disputes, and has led to observations like the following24:

Patent litigation stands among the most complex, with disputes about cutting-edge technology muddied with esoteric and arcane language, laws, and customs.

Even with the assistance of legal and technical experts as well as special masters, generalist judges and juries are often at sea almost from the beginning of a patent case. When compared to other adversarial actions, patent cases benefit significantly from having a judge hear the case who is familiar with technical issues.

#### Patent review is streamlined but resource-intensive---it requires continued efficiency to sustain innovation

Cassandra E. Havens 17, J.D. Candidate at the University of California, Berkeley, School of Law, “Saving Patent Law from Competition Policy and Economic Theories: Kimble v. Marvel Entertainment”, Berkeley Technology Law Journal, 31 Berkeley Tech. L.J. 371, Lexis

3. Judicial Efficiency and Reliance

Courts have limited resources, so methods of streamlining disputes when there is controlling precedent benefit everyone. In patent litigation, efficiency is especially important. Patent trials require an additional procedure of claim construction, known as a Markman hearing. The median time for a patent case to reach trial is 2.4 years, and the cost of patent litigation is also very high. Using stare decisis to resolve aspects of the case can shift attention to the remaining contentious issues.

Both Kimble and Marvel were unaware of Brulotte when drafting their settlement agreement, so while these parties had no strong reliance, other parties over the years have relied on Brulotte. Decisions that affect property and contracts have an increased likelihood of reliance. When people can trust the continuity of the law, they are more encouraged to make deals and "arrange their affairs with confidence."

#### Overextension makes court adjudication ineffective by narrowing the bandwidth for evidence evaluation---that causes errors in decisions about novel inventions and patent scope

Tun-Jen Chiang 15, Associate Professor of Law at the George Mason University School of Law, “Forcing Patent Claims”, Michigan Law Review, 113 Mich. L. Rev. 513, February 2015, Lexis

If we take my argument in Part II as a given--that is, if we assume for present purposes that claims provide valuable but imperfect information about the invention--then what should a court do with them as a policy matter? A common intuition holds that a court's job is to reach the most accurate outcome possible. That is, a court should try to discern the real invention and the optimal patent scope.

Of course, even in an individual case, a court is constrained in its pursuit of accuracy by finite adjudication resources. Courts cannot realistically hold multiyear trials, nor can they summon thousands of experts. Thus, our initial focus on accuracy must be qualified: courts should attempt to achieve the most accurate outcome given their available resources. Notwithstanding such resource constraints, however, the intuition is that no artificial limits should be imposed. Within this paradigm, a court should allocate its budget to maximize its ability to pursue the truth: the court should collect as much evidence as feasible and then consider all that evidence on an equal basis.

By equal weight, I do not mean that a court would say the following: "Witness A, the upstanding citizen, says the defendant stabbed the victim, while Witness B, the known habitual liar, says the defendant did not, and because all evidence is given equal weight, the result is a toss-up." Rather, I mean that a court will consider all the evidence in light of its credibility and in the totality of the circumstances, to get to the result that is most likely to reflect the underlying factual truth on the question at issue. The contradistinction is to a regime where courts are required by a preset rule to favor or disfavor certain types of evidence. For example, a court that excludes a bloody knife that the police obtained through an illegal search thereby gives this evidence zero weight. The court does so not because it thinks that the knife is unreliable evidence or that the underlying factual truth is that the defendant is innocent. It does so because the preset exclusionary rule mandates that courts accord zero weight to evidence obtained through illegal searches.

By definition, therefore, a court that is seeking to maximize accuracy in an individual case would consider equally all the available evidence. But this formulation is not just a rhetorical trick. The substantive point is that, if the goal is simply to maximize accuracy, the law should rarely have categorical rules that exclude or disfavor broad swaths of evidence. It should instead [\*547] use a totality-of-the-circumstances inquiry that considers both the claim text and all reasonably collectible extrinsic evidence. And such totality-of-the-circumstances inquiries are what Corbin and his fellow travelers in patent law generally propose.

### Impact---Terrorism---2NC

#### Judicial overload undermines prosecution of terrorism

Stuart Jr. Taylor 99, “Irrational Excesses, Barbaric Penalties and Political Opportunism”, National Journal, 2/27/1999, Lexis

So did another unhealthy trend, deplored in a Feb. 16 ABA task force report titled ''The Federalization of Criminal Law.'' The 16-member panel was headed by Meese, who is more used to being a punching bag for the liberal-leaning legal establishment than a spokesman for it. He lends bipartisan heft to the ABA report's long-overdue conclusions.      There was only perfunctory media attention to the ABA report because this is bland stuff: no charges of racism or ''sexual McCarthyism,'' no summons to yet another war on drugs, no purple prose.      Still, the message is worthwhile. Although crime rates have fallen, the ABA report explains, the proliferation of new federal criminal prohibitions deserves none of the credit: ''There is no persuasive evidence that federalization of local crime makes the streets safer for American citizens.'' This is because the properly limited (albeit rapidly expanding) number of federal law enforcement officials can conduct only about 5 percent of all prosecutions.      At the same time, federalization does subtle but pervasive damage: It gives federal prosecutors too much inherently arbitrary and unreviewable discretion to focus on a tiny percentage of all possible targets; it clogs federal courts with garden-variety criminal cases, diverting them from national problems such as international terrorism, espionage, bribery of federal officials, big antitrust cases, white-collar fraud, and multistate drug conspiracies; it disrupts the federal-state balance; it moves the nation ''rapidly toward two broadly overlapping, parallel, and essentially redundant sets of criminal prohibitions, each filled with differing consequences for the same conduct.''

#### That causes a wave of attacks----turns adv 2

Jeremy Shapiro 3, Associate Director and Research Associate at the Brookings Institute, “French Lessons: The Importance of the Judicial System in Fighting Terrorism”, March, http://www.brookings.edu/fp/cusf/analysis/ shapiro2003032 5.htm

The unique nature of terrorism means that maintaining the appearance of justice and democratic legitimacy will be much more important than in past wars. The terrorist threat is in a perpetual state of mutation and adaptation in response to government efforts to oppose it. The war on terrorism more closely resembles the war on drugs than World War II; it is unlikely to have any discernable endpoint, only irregular periods of calm. The French experience shows that ad-hoc anti-terrorist measures that have little basis in societal values and shallow support in public opinion may wither away during the periods of calm. In the U.S., there is an enormous reservoir of legitimacy, established by over 200 years of history and tradition, in the judiciary. That reservoir represents an important asset that the U.S. government can profit from to maintain long-term vigilance in this type of war. Despite the unusual opportunity for innovation afforded by the crisis of September 11, the U.S. government has not tried to reform American judicial institutions to enable them to meet the threat of terrorism. To prevent the next wave of attacks, however far off they might be, and to avoid re-inventing a slightly different wheel each time will require giving life to institutions that can persist and evolve, even in times of low terrorist activity. Given the numerous differences between the two countries, the U.S. cannot and should not simply import the French system, but it can learn from their mistakes. Their experience suggests a few possible reforms: • A specialized U.S. Attorney tasked solely with terrorism cases and entirely responsible for prosecuting such cases in the U.S. • Direct and formal links between that U.S. Attorney’s office and the various intelligence agencies, allowing prosecutors to task the intelligences agencies during judicial investigations • Special procedures for selecting and protecting juries in terrorism cases and special rules of evidence that allow for increased protection of classified information in terrorist cases Creating a normal, civilian judicial process that can prosecute terrorists and yet retain legitimacy is not merely morally satisfying. It may also help to prevent terrorist attacks in the long run. Not incidentally, it would demonstrate to the world a continuing faith in the ability of democratic societies to manage the threat of terrorism without sacrificing the very values they so desperately desire to protect.

## Biz Con

### Econ---Impact---2NC

#### It causes terrorism, civil wars, and diversion that go global---nothing checks

Dr. Qian Liu 18, PhD in Economics from Uppsala University, Former Visiting Researcher at the University of California, Berkeley, Managing Director for Greater China at The Economist Group, Guest Lecturer at New York University, Tsinghua University, the Chinese Academy of Social Sciences and Fudan University, “The Next Economic Crisis Could Cause A Global Conflict. Here's Why”, World Economic Forum, 11/13/2018, https://www.weforum.org/agenda/2018/11/the-next-economic-crisis-could-cause-a-global-conflict-heres-why

The next economic crisis is closer than you think. But what you should really worry about is what comes after: in the current social, political, and technological landscape, a prolonged economic crisis, combined with rising income inequality, could well escalate into a major global military conflict.

The 2008-09 global financial crisis almost bankrupted governments and caused systemic collapse. Policymakers managed to pull the global economy back from the brink, using massive monetary stimulus, including quantitative easing and near-zero (or even negative) interest rates.

But monetary stimulus is like an adrenaline shot to jump-start an arrested heart; it can revive the patient, but it does nothing to cure the disease. Treating a sick economy requires structural reforms, which can cover everything from financial and labor markets to tax systems, fertility patterns, and education policies.

Policymakers have utterly failed to pursue such reforms, despite promising to do so. Instead, they have remained preoccupied with politics. From Italy to Germany, forming and sustaining governments now seems to take more time than actual governing. And Greece, for example, has relied on money from international creditors to keep its head (barely) above water, rather than genuinely reforming its pension system or improving its business environment.

The lack of structural reform has meant that the unprecedented excess liquidity that central banks injected into their economies was not allocated to its most efficient uses. Instead, it raised global asset prices to levels even higher than those prevailing before 2008.

In the United States, housing prices are now 8% higher than they were at the peak of the property bubble in 2006, according to the property website Zillow. The price-to-earnings (CAPE) ratio, which measures whether stock-market prices are within a reasonable range, is now higher than it was both in 2008 and at the start of the Great Depression in 1929.

As monetary tightening reveals the vulnerabilities in the real economy, the collapse of asset-price bubbles will trigger another economic crisis – one that could be even more severe than the last, because we have built up a tolerance to our strongest macroeconomic medications. A decade of regular adrenaline shots, in the form of ultra-low interest rates and unconventional monetary policies, has severely depleted their power to stabilize and stimulate the economy.

If history is any guide, the consequences of this mistake could extend far beyond the economy. According to Harvard’s Benjamin Friedman, prolonged periods of economic distress have been characterized also by public antipathy toward minority groups or foreign countries – attitudes that can help to fuel unrest, terrorism, or even war.

For example, during the Great Depression, US President Herbert Hoover signed the 1930 Smoot-Hawley Tariff Act, intended to protect American workers and farmers from foreign competition. In the subsequent five years, global trade shrank by two-thirds. Within a decade, World War II had begun.

To be sure, WWII, like World War I, was caused by a multitude of factors; there is no standard path to war. But there is reason to believe that high levels of inequality can play a significant role in stoking conflict.

According to research by the economist Thomas Piketty, a spike in income inequality is often followed by a great crisis. Income inequality then declines for a while, before rising again, until a new peak – and a new disaster. Though causality has yet to be proven, given the limited number of data points, this correlation should not be taken lightly, especially with wealth and income inequality at historically high levels.

This is all the more worrying in view of the numerous other factors stoking social unrest and diplomatic tension, including technological disruption, a record-breaking migration crisis, anxiety over globalization, political polarization, and rising nationalism. All are symptoms of failed policies that could turn out to be trigger points for a future crisis.

Voters have good reason to be frustrated, but the emotionally appealing populists to whom they are increasingly giving their support are offering ill-advised solutions that will only make matters worse. For example, despite the world’s unprecedented interconnectedness, multilateralism is increasingly being eschewed, as countries – most notably, Donald Trump’s US – pursue unilateral, isolationist policies. Meanwhile, proxy wars are raging in Syria and Yemen.

Against this background, we must take seriously the possibility that the next economic crisis could lead to a large-scale military confrontation. By the logic of the political scientist Samuel Huntington , considering such a scenario could help us avoid it, because it would force us to take action. In this case, the key will be for policymakers to pursue the structural reforms that they have long promised, while replacing finger-pointing and antagonism with a sensible and respectful global dialogue. The alternative may well be global conflagration.

### AT: O/w

#### Decline turns the case---agencies will cease enforcement during the downturn

Anika Dandekar 21, Political Science at University of California, San Diego, “Politics of Antitrust Enforcement: The Influence of Ideology and Party Control on Regulatory Behavior”, Senior Thesis, 3/29/2021, https://polisci.ucsd.edu/undergrad/departmental-honors-and-pi-sigma-alpha/A.Dandekar\_Senior-Honors-Thesis.pdf

1.3.3 Bureaucratic Approach

Some scholars have tried to explain varying antitrust by changing makeup or preferences of regulatory agencies themselves.

Some suggest that the agencies respond to external factors. Amacher et al. (1985) examined FTC enforcement of the Robinson- Patman Act and found that it was influenced by economic conditions, decreasing during business contractions and increasing during periods of expansion. They suggested that this means "the FTC moves to cushion producer losses" during hard economic times, but transfers "wealth to consumers" during economic upswings. Lewis-Beck (1979) found that while small increases in the division's budget did not reduce anticompetitive behavior, a major increase in the division's budget might significantly stem merger activity because of a "threshold effect”.

### Link---2NC

#### Even targeted antitrust sends a broad signal of aggressive overregulation

Raymond J. Keating 21, Chief Economist for the Small Business & Entrepreneurship Council and Adjunct Professor in the MBA Program at the Townsend School of Business at Dowling College, “Antitrust Fictions (and Actions) Will Have Real, Negative Economic Consequences”, SBE Council, 6/18/2021, https://sbecouncil.org/2021/06/18/antitrust-fictions-and-actions-will-have-real-negative-economic-consequences/

It needs to be understood that while supposedly targeting so-called “Big Tech,” these intrusive regulations and substantial costs would fall on competitors as well, thereby actually discouraging competition in technology markets. For good measure, moving ahead with his kind of hyper-antitrust regulation of tech firms lays the groundwork for doing so in other industries, such as in retail, energy, health and medical sectors, and so on. This is what Senate anti-trust crusaders hope to accomplish.

The message is clear: Beware entrepreneurs, businesses and investors if you become too successful or if you cross certain political constituencies. The government stands ready to punish you via intrusive and costly regulation.

#### Legally, antitrust is economy-wide, so there’s no way to limit the plan’s scope AND risk-averse firms and lawyers think it’ll be applied, chilling investment

Thomas Nachbar 19, Professor of Law at the University of Virginia School of Law, JD from the University of Chicago Law School, AB in History and Economics from the University of Illinois, “Book Review: Heroes and Villains of Antitrust”, The Antitrust Source, 18-6 Antitrust Src. 1, June 2019, Lexis

That regulatory skepticism had a particular salience for antitrust law, which itself is designed to maintain a particular balance between private and government action in markets. n53 Since Adam Smith, the argument of so-called free-market intellectuals has not been that markets are perfect but rather that they are comparatively better at solving problems than governments. Part of the argument is that, in most cases, market forces will drive a firm that has adopted an inefficient practice to shift to a more efficient one, lest it lose more business than it gains from the practice. But if antitrust law outlawed a practice, there is no potential for the market to correct--the practice once outlawed would remain outlawed. n54 And because antitrust law applies to all industries, a practice outlawed for one firm or industry would be outlawed for all firms in all industries, or be interpreted as such by risk-averse firms and their risk-averse lawyers--not to mention the treble damages that the liable antitrust defendant would have to pay.

[FOOTNOTE] n55 See Credit Suisse Sec. (USA) LLC v. Billing, 551 U.S. 264, 284 (2007) ("In sum, an antitrust action in this context is accompanied by a substantial risk of injury to the securities markets and by a diminished need for antitrust enforcement to address anticompetitive conduct."); Bell Atl. Corp. v. Twombly, 550 U.S. 544, 546 (2007) ("It is one thing to be cautious before dismissing an antitrust complaint in advance of discovery, but quite another to forget that proceeding to antitrust discovery can be expensive.") Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398, 414 (2004) ("Mistaken inferences and the resulting false condemnations 'are especially costly, because they chill the very conduct the antitrust laws are designed to protect.'") (quoting Matsushita Elec. Indus. Co. v. Zenith Radio Corp., 475 U.S. 574, 594 (1986)). [END FOOTNOTE]

#### The plan’s abrupt expansion creates major uncertainty that disrupts business planning

Alden F. Abbott 21, Senior Research Fellow at the Mercatus Center of George Mason University, J.D. from Harvard Law School and M.A. in Economics from Georgetown University, “Competition Policy Challenges for a New U.S. Administration: Is The Past Prologue?”, Concurrences: Antitrust Publications & Events, February 2021, https://www.concurrences.com/en/review/issues/no-1-2021/on-topic/the-new-us-antitrust-administration-en

12. But recent suggestions put forth in an October 2020 House Judiciary Subcommittee on Antitrust majority report (HJSMR) [12] and in a November 2020 report by the Washington Center for Equitable Growth (WCEGR) [13] (coauthored by various prominent critics of Trump administration antitrust enforcement who served in the Obama administration) would go far beyond application of existing antitrust law to big digital platforms. In particular, the HJSMR proposes taking a highly regulatory approach to digital platforms, including imposing “[s]tructural separations and prohibitions of certain dominant platforms from operating in adjacent lines of business.” [14] The WCEGR also endorses the use of rulemaking (and, in particular, FTC rulemaking) to tackle significant problems of competition. [15] Rushing into rulemakings on platforms (especially without a clear showing of market failure) poses major risks, however, including, in particular, the creation of disincentives to invest in platform-specific innovation; and the interference with potential efficiency-seeking transactions by platform operators and suppliers of complements (in light of inevitable government second-guessing of platform-related business decision-making). The JBA antitrust team may wish to keep such potential costs in mind in setting competition policy vis-à-vis digital platforms.

13. To address the perceived growth and abuse of market power that are said to afflict the American economy, the HJSMR and WCEGR have also proposed to amend and thereby “toughen” the core antitrust statutes, to alter burdens of proof in litigation, and to bestow a substantial increase in resources on federal antitrust enforcers. [16] The problem of scarce agency resources has long been highlighted by enforcement agency leadership, and certainly merits attention. The call for dramatic systemic change in antitrust enforcement norms, however, should be approached cautiously, with a jaundiced eye. In our common-law-based antitrust system, a major disruption to long-familiar statutory schemes would generate major uncertainty regarding antitrust enforcement principles and substantially disrupt business planning for an indeterminate amount of time. Many welfare-enhancing transactions could be sacrificed. The harm to consumer and producer welfare due to lost socially beneficial business initiatives would be hard (if not impossible) to measure, but nonetheless real. It is certainly possible that such losses would outweigh (perhaps substantially) whatever welfare gains might flow from statutory enforcement “reform.” In other words, it should not casually be assumed that “more and different” antitrust would be an unalloyed benefit. As in all other areas of law enforcement, likely costs as well as purported benefits should be central to the antitrust public policy calculus. (Costs would include, of course, the likelihood and magnitude of “false positives” under the new enforcement regime, not just the reduction in socially beneficial transactions.)

## FRAND

### Innovation---FRAND---2NC

#### FRAND is carefully calibrated---upsetting its balance with antitrust decks innovation.

Gregory J. Werden & Luke M. Froeb 19, former Senior Economic Counsel in the Antitrust Division of the U.S. Department of Justice; William C. Oehmig Chair in Free Enterprise and Entrepreneurship at Vanderbilt University, former Chief Economist of the Antitrust Division of US Department of Justice, Ph.D. in Economics from the University of Wisconsin, “Why Patent Hold-Up Does Not Violate Antitrust Law,” Texas Intellectual Property Law Journal, Vol. 27, 2019, accessed via Lexis

A (valid) patent can have great value if it claims technology essential to devices from which many consumers derive substantial utility. The owner of such a patent possesses a monopoly of sorts, and the investment in the technology could pay off handsomely. A technology standard tends to increase the pay off by causing standard-essential technology to be used in more units of royalty-paying components or devices. 13Moreover, a standard locks in technology choices, so patents essential to a standard-complaint version of a particular component or device could be inessential [\*6] to a noncompliant version of the component or device that uses alternative technologies.

Inventors that become monopolists with the adoption of a standard generally accept an important restriction on the grant of monopoly. They commit to license their SEPs to all comers and to do so on FRAND terms. FRAND, however, is neither a number nor a formula, and innumerable FRAND commitments were made before any court had interpreted the concept. As a matter of economic theory, broad agreement exists on how to conceptualize a FRAND royalty: It is the royalty that would have been negotiated just before the standard was adopted. 14This is the benchmark used in economic analyses of patent hold-up. 15The scenario defining FRAND is properly termed " ex interim bargaining" because it occurs before implementers invest but after inventors invest. 16

Bargaining theory predicts that bilateral negotiations divide the total gain to both parties reaching agreement. 17The original theory of John Nash posited an even division, 18but economic analyses of patent hold-up posit a division determined by relative bargaining skill. 19In ex interim bargaining, inventors and implementers would have divided the incremental gain from using the best technical solution instead of the next-best alternative. This incremental gain would be huge for a breakthrough invention but very small if alternative technical solutions to a particular problem were almost equally good.

Licensing SEPs before adoption of a standard likely is infeasible because some SEPs have not been issued and their claims are unsettled. 20Before taking all the necessary licenses, implementers are apt to make sunk investments in product development and manufacturing. Once they have, replacing a particular technology in a standard with the next-best alternative ex interim might be impossible, in which [\*7] case all of an implementer's sunk investments in standard-compliant products would be lost if bargaining over the royalty failed to produce an agreement. This puts SEP holders in a position to engage in what is called patent hold-up, meaning that the SEP holder exploits the bargaining advantage afforded by the implementer's sunk investment.

A concrete example clarifies the insight that ex interim and ex post bargaining produce different royalties because they involve different metaphoric pies: Suppose that an implementer expects to manufacture a standard-compliant component with a marginal cost of $ 2 and a price of $ 8. The difference of $ 6 is not expected profit because the implementer incurred sunk costs. But once those costs are sunk, the per-unit gain from reaching agreement with holders of SEPs is the full $ 6, so ex post bargaining splits $ 6. If sunk development costs amortized to $ 4 per unit, ex interim bargaining would have split just $ 2. If bargaining splits gains evenly a la Nash, conducting the bargaining after product development costs are sunk increases the per-unit royalty (divided among all SEP holders) from $ 1 to $ 3. 21

The foregoing ignores external influences on the bargaining outcome, and there are several. An inventor can seek an injunction, and threat of an injunction could affect the bargaining outcome. 22An implementer can seek a declaratory judgment that the patent is invalid or not infringed, 23and the threat to do so could also affect the bargaining outcome. And, of course, an implementer can bring an action to enforce the FRAND commitment, 24and the threat to do that could also affect the [\*8] bargaining outcome. Courts have observed that a FRAND commitment is meant to achieve the outcome that ex interim bargaining would have produced, 25and they have acted accordingly in determining SEP royalties. 26

Antitrust intervention in patent royalty disputes also would alter the bargaining outcome. Section 4 of the Clayton Act allows any person injured "by reason of anything forbidden by the antitrust laws" to sue for treble damages. 27If patent hold-up was deemed an antitrust violation, damages presumably would be computed as the difference between the royalties paid and the royalties later determined to have been FRAND. With uncertainty about what royalty a court would choose, the threat of antitrust damages would cause the bargaining to settle on a royalty less than the expected court-determined FRAND royalty. 28Reducing SEP royalties would cause inventors to reduce their investment and would result in less innovation, thereby harming consumers. 29

#### The aff over-deters FRAND commitments and stops patent innovation.

Ginsburg et al. 15, Douglas H. Ginsburg, Professor of Law in the Antonin Scalia Law School at George Mason University, J.D. from the University of Chicago Law School, former Chief Judge of the United States Court of Appeals for the District of Columbia; Koren W. Wong-Ervin, Director of the Global Antitrust Institute and Adjunct Professor of Law in the Antonin Scalia Law School at George Mason University, Attorney Advisor and Counsel for Intellectual Property and International Antitrust at the Federal Trade Commission, J.D. from the University of California, Hastings College of Law; Joshua D. Wright, Commissioner of the Federal Trade Commission, Ph.D. in Economics from the University of California, Los Angeles, “The Troubling Use of Antitrust to Regulate FRAND Licensing,” CPI Antitrust Chronicle, Vol. 10, No. 1, 10-15-2015, https://ssrn.com/abstract=2674759

A FRAND commitment is a contractual commitment.14 Economists have long understood that a contractual relationship involving asset-specific investments creates the potential for opportunism. Similarly, a patentee participating in the standard-setting process can, once the standard is adopted by an SSO, “holdup” potential licensees by exploiting asset-specific investments to demand a higher royalty rate than would have prevailed in a competitive setting. The view that contractual opportunism alone gives rise to an antitrust problem rather than a contract problem is in tension with substantial economic literature on the subject.15 Consistent with this view, no United States court has held that seeking injunctive relief on a FRAND-encumbered SEP violates the antitrust laws. Instead, every United States court that has addressed the issue has done so under contract law principles.

With respect to reneging on a FRAND commitment, as the Supreme Court explained in NYNEX Corp. v. Discon, Inc., while the evasion of a pricing constraint may hurt consumers, it does not harm the competitive process.16 The Court distinguished the mere breach of a pricing commitment from the unlawful exercise of monopoly power by pointing out that, with the breach, the “consumer injury naturally flowed not so much from a less competitive market as . . . from the exercise of market power lawfully in the hands of a monopolist.”17

Moreover, an antitrust sanction is not only unnecessary to protect consumer welfare given that the law of contracts is sufficient to provide optimal deterrence, 18 but is likely to be harmful.19 First, significant monetary sanctions are likely to over-deter procompetitive participation in SSOs; FRAND-encumbered SEP holders need the credible threat of an injunction if they are to recoup the value added by their patents and have no other adequate remedy against an infringing user. Indeed, excessive deterrence is particularly likely because, with liability turning upon whether the infringing user was truly a “willing licensee”20—a factual determination that may be far from clear in many cases—the outcome of an antitrust case will necessarily be uncertain. The prospect of penalizing a FRAND-encumbered SEP holder for seeking injunctive relief diminishes the value of its patents and hence reduces its incentive to innovate.

Second, the prospect of antitrust liability for a patentee seeking injunctive relief would enable an infringing user to negotiate in bad faith, knowing its exposure is capped at the FRAND royalty rate; in this way, an unscrupulous or a judgment-proof infringing user can force the SEP holder to take a below-FRAND rate. Indeed, when the worst penalty an SEP infringer faces is not an injunction but merely paying, after a neutral adjudication, the FRAND royalty that it should have agreed to pay when first asked, then reverse holdup and holdout give implementers a profitable way to defer payment—or if they are judgment proof, to avoid payment altogether— and puts SEP holders at a disadvantage that reduces the rewards from, and can only discourage innovation and participation in, standard setting.21

Third, antitrust liability is likely to deter patent holders from contributing their technology to an SSO under FRAND terms if doing so will require them to forfeit their right to protect their intellectual property by seeking an injunction against infringing users. These possibilities, far from protecting the public interest in competition and innovation, actually threaten to reduce the gains from innovation and standardization.

### Innovation---Turn---2NC

#### There’s no incentive to innovate post-aff.

Kyle L. Greene 20, J.D. candidate at Columbia Law School, B.A. from the University of Massachusetts, Amherst, “Standard Essential Patents and Antitrust Law: Balancing Innovation and Competition,” Columbia Business Law Review, 2019, accessed via Lexis

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 innovate 153because 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 [\*1120] 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.

#### No offense---authorities over-enforce, ruining the aff’s innovative potential.

David J. Teece & Edward F. Sherry 3, Mitsubishi Bank Professor in the Haas School of Business and Director of the Institute of Management, Innovation and Organization at the University of California, Berkeley, Ph.D. in Economics from the University of Pennsylvania; Senior Managing Economist at LECG, “THE INTERFACE BETWEEN INTELLECTUAL PROPERTY LAW AND ANTITRUST LAW: Standards Setting and Antitrust,” Minnesota Law Review, Vol. 87, June 2003, accessed via Lexis

In our view, the antitrust authorities have shown what we believe to be an unfortunate tendency to propose royalty-free as a remedy in cases where the antitrust authorities have contended that the patent holder violated the antitrust laws by failing to disclose its patents (or pending patent applications). For example, the In Re Dell consent decree called for Dell to allow others to use its VESA patent on a royalty-free basis. 155 The recent Federal Trade Commission (FTC) complaint against Rambus effectively seeks to compel Rambus not to enforce its patents against users of the JEDEC synchronous dynamic random access memory (SDRAM) and double data rate (DDR) SDRAM standards; if successful, the action amounts to forcing [\*1960] a royalty-free license on Rambus. 156

Such a remedy typically goes far beyond the SSO's requirements, which allow a patent holder to agree to license its patent royalty-free, but also generally allow a patent holder to agree to license on "reasonable and non-discriminatory" royalty-bearing terms. 157 The above analysis suggests that a more appropriate remedy would be to require a patent holder to license its patent to others on terms that are "reasonable" in the ex ante sense.

To be sure, it can be difficult to determine ex post what the ex ante "reasonable" terms would be. It is far easier administratively to propose a royalty-free license as a remedy. The courts are routinely asked, however, to determine ex ante reasonable royalty rates in the context of patent infringement damages. 158 We know of no reason why the analysis that courts use in patent damages cases, such as the well-known Georgia Pacific factors, 159 could not be applied equally well in antitrust cases alleging wrongful non-disclosure. The harsh nature of the proposed royalty-free license as a remedy for (allegedly) wrongful non-disclosure strikes us as out of line with the nature of the offense. In particular, the royalty-free license remedy does not set damages equal to the difference between the actual world and the but-for world.

### Innovation---Turn---Patents---2NC

#### The aff destroys the balance between antitrust and patent law, broadly decking innovation.

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"The patent laws ... are in pari materia with the antitrust laws and modify them pro tanto." 60This is how the Supreme Court once grudgingly acknowledged that whatever patent law authorizes antitrust law must allow. 61For most of the 20th Century, 62however, the Court consistently held that patent law placed little off-limits to antitrust. For example, the Court explained that:

The grant of a patent is the grant of a special privilege "to promote the Progress of Science and useful Arts." Const., Art. I, § 8. It carries, of course, a right to be free from competition in the practice of the invention. But the limits of the patent are narrowly and strictly confined to the precise terms of the grant. 63

The Court condemned any licensing practice seen to extend the patent monopoly beyond the statutory grant, which included essentially every licensing practice that [\*13] came before it. 64Patent law was viewed as impliedly repealing antitrust, 65but implied repeals always have been disfavored and strictly construed. 66

The prevailing view of the relationship between patent and antitrust law owes much to Professor Ward Bowman, whose 1973 book argued "that the antitrust/patent conflict, as courts have assessed it, is to a large extent illusory." 67Bowman argued that the courts were mistaken in thinking that various licensing practices extended the patent monopoly, and he began by asserting that patent and antitrust law share the same "central purpose" of "efficiently providing those things consumers value." 68Bowman explained that patents do so by preventing free riding and thereby increasing the rewards to invention.

During the Reagan Administration, the Justice Department 69and the judiciary began to stress the commonalities of patent and antitrust law. 70The new Federal Circuit declared that patents were "not an "exception' to the antitrust laws," 71and explained that "patent and antitrust laws are complementary" because patents serve "a very positive function in our system of competition" by encouraging risky investment in innovation. 72

[\*14] The primacy of innovation-based competition also came to be recognized in the 1980s, although the idea was not new. When the Supreme Court was declaring all manner of patent-related conduct unlawful, Professor Joseph Schumpeter was arguing that the dominant force of competition was the "perennial gale of creative destruction" that characterizes dynamic, innovation-based competition. 73Whatever the merit of Schumpeter's views on antitrust and monopoly, it is now agreed that productivity increases are responsible for the prosperity of the industrialized nations and that technical progress has driven productivity. 74

In the late 1950s, Robert Solow attributed to technical progress about seven-eighths of the growth in U.S. GDP between 1909 and 1949. 75Follow-on research refined Solow's analysis, but did not overturn his basic conclusion, 76and his work on economic growth won him the Nobel Prize in 1987. Solow later commented that: "Adding a couple of tenths of a percentage point to the growth rate is an achievement that eventually dwarfs in welfare significance any of the standard goals of economic policy." 77He did not have antitrust policy in mind, but the antitrust import of his comment is clear.

Patent law is an intricately crafted policy instrument for fostering technical change. 78"From their inception, the federal patent laws have embodied a careful [\*15] balance between the need to promote innovation and the recognition that imitation and refinement through imitation are both necessary to invention itself and the very lifeblood of a competitive economy." 79Another aspect of the balance struck by patent law is accepting short-term losses in allocative efficiency and consumer welfare that result from higher prices as the cost of obtaining the long-term gains that result from new technology. 80

The reward to inventors contemplated by patent law often is garnered by royalties paid for the use of an invention. The royalty reduces the efficiency of resource allocation by driving a wedge (or enlarging a wedge) between price and the marginal cost of production on all of the affected products, and it reduces consumer welfare as a result of the higher prices for those products. But paying a bit more for products embodying relatively new technology is an extraordinarily good deal for consumers if it secures the continuing flow of new technology. 81Whether it is a good deal or a bad one, however, is a matter for patent policy, not antitrust policy. 82

"Intellectual property rights do not confer a privilege to violate the antitrust laws." 83As the Supreme Court recently confirmed in Actavis, marketplace conduct related to patents, but not specifically authorized by patent law, can run afoul of the [\*16] Sherman Act. 84But it is equally true that "the antitrust laws do not negate the patentee's right to exclude others from patent property." 85And "the patentee may grant a license to make, use[,] and vend articles under the specifications of his patent for any royalty." 86"A patent empowers the owner to exact royalties as high as he can negotiate with the leverage of that monopoly." 87

The Supreme Court has not dealt with patent hold-up, but its jurisprudence leaves little doubt on the most important issue: SEP licensing activity by inventors is authorized by patent law, and therefore normally does not violate antitrust law. And because patent law allows a patent owner to charge any royalty, breaching a FRAND commitment cannot violate antitrust law. In addition, the prevailing view of the patent-antitrust interface suggests that the Court would exercise great caution in applying antitrust law at the interface for fear of undermining innovation-based competition. In any event, we believe that the courts should exercise such caution.

### 5G---No Impact to Chinese 5G---2NC

#### There are no backdoors and simple countermeasures solve

Dr. Jeffrey D. Sachs 19, Professor of Sustainable Development and Professor of Health Policy and Management at Columbia University, Director of Columbia’s Center for Sustainable Development and the UN Sustainable Development Solutions Network, “America’s War on Chinese Technology”, Project Syndicate, 11/7/2019, https://www.project-syndicate.org/commentary/cheney-doctrine-us-war-on-chinese-technology-by-jeffrey-d-sachs-2019-11

That is what US leaders are doing again: creating a panic over Chinese technology companies by raising, and exaggerating, tiny risks. The most pertinent case (but not the only one) is the US government attack on the wireless broadband company Huawei. The US is closing its markets to the company and trying hard to shut down its business around the world. As with Iraq, the US could end up creating a geopolitical disaster for no reason.

I have followed Huawei’s technological advances and work in developing countries, as I believe that 5G and other digital technologies offer a huge boost to ending poverty and other SDGs. I have similarly interacted with other telecoms companies and encouraged the industry to step up actions for the SDGs. When I wrote a short foreword (without compensation) for a Huawei report on the topic, and was criticized by foes of China, I asked top industry and government officials for evidence of wayward activities by Huawei. I heard repeatedly that Huawei behaves no differently than trusted industry leaders.

The US government nonetheless argues that Huawei’s 5G equipment could undermine global security. A “backdoor” in Huawei’s software or hardware, US officials claim, could enable the Chinese government to engage in surveillance around the world. After all, US officials note, China’s laws require Chinese companies to cooperate with the government for purposes of national security.

Now, the facts are these. Huawei’s 5G equipment is low cost and high quality, currently ahead of many competitors, and already rolling out. Its high performance results from years of substantial spending on research and development, scale economies, and learning by doing in the Chinese digital marketplace. Given the technology’s importance for their sustainable development, low-income economies around the world would be foolhardy to reject an early 5G rollout.

Yet, despite providing no evidence of backdoors, the US is telling the world to stay away from Huawei. The US claims are generic. As a US Federal Communications Commissioner put it, “The country that owns 5G will own innovations and set the standards for the rest of the world and that country is currently not likely to be the United States.” Other countries, most notably the United Kingdom, have found no backdoors in Huawei’s hardware and software. Even if backdoors were discovered later, they could almost surely be closed at that point.

The debate over Huawei rages in Germany, where the US government threatens to curtail intelligence cooperation unless the authorities exclude Huawei’s 5G technology. Perhaps as a result of the US pressure, Germany’s spy chief recently made a claim tantamount to the Cheney Doctrine: “Infrastructure is not a suitable area for a group that cannot be trusted fully.” He offered no evidence of specific misdeeds. Chancellor Angela Merkel, by contrast, is fighting behind the scenes to leave the market open for Huawei.

Ironically, though predictably, the US complaints partly reflect America’s own surveillance activities at home and abroad. Chinese equipment might make secret surveillance by the US government more difficult. But unwarranted surveillance by any government should be ended. Independent United Nations monitoring to curtail such activities should become part of the global telecoms system. In short, we should choose diplomacy and institutional safeguards, not a technology war.

The threat of US demands to blockade Huawei concerns more than the early rollout of the 5G network. The risks to the rules-based trading system are profound. Now that the US is no longer the world’s undisputed technology leader, US President Donald Trump and his advisers don’t want to compete according to a rules-based system. Their goal is to contain China’s technological rise. Their simultaneous attempt to neutralize the World Trade Organization by disabling its dispute settlement system shows the same disdain for global rules.

If the Trump administration “succeeds” in dividing the world into separate technology camps, the risks of future conflicts will multiply. The US championed open trade after World War II not only to boost global efficiency and expand markets for American technology, but also to reverse the collapse of international trade in the 1930s. That collapse stemmed in part from protectionist tariffs imposed by the US under the 1930 Smoot-Hawley Act, which amplified the Great Depression, in turn contributing to the rise of Hitler and, ultimately, the outbreak of World War II.

In international affairs, no less than in other domains, stoking fears and acting on them, rather than on the evidence, is the path to ruin. Let’s stick to rationality, evidence, and rules as the safest course of action. And let us create independent monitors to curtail the threat of any country using global networks for surveillance of or cyberwarfare on others. That way, the world can get on with the urgent task of harnessing breakthrough digital technologies for the global good.

### 5G---Long Timeframe

#### It’ll play out over a decade

Elsa B. Kania 19, Adjunct Senior Fellow with the Technology and National Security Program at the Center for a New American Security, PhD Student in Harvard University's Department of Government, Former research Assistant at the Belfer Center for Science and International Affairs and the Weatherhead Center for International Affairs and Boren Scholar, “The United States Must Compete to Innovate in 5G”, The National Interest, 7/28/2019, https://nationalinterest.org/print/feature/united-states-must-compete-innovate-5g-69122

5G is not merely a race to be won, nor should the objective of the United States be simply to deploy it “as soon as possible.” Instead, the deployment and realization of the full potential 5G will play out over at least a decade to come. 5G is not simply faster 4G, but rather creates a new paradigm for connectivity with very high speed, low latency and high throughput. Based on these characteristics, 5G will be integral to realizing the potential of the Internet of Things and promising applications of artificial intelligence, from remote surgeries to autonomous driving in smart cities. In this regard, 5G will become tantamount to critical infrastructure, because its disruption or exploitation could prove deeply damaging, even deadly. Consequently, security will be imperative, and talk of ‘racing’ for 5G risks undermining this critical foundation.

## Cybersecurity

### Cyberattacks D---AT: Nuclear Retaliation---2NC

#### No attribution and non-prolif risks outweigh

Martin Matishak 10, Reporter at Global Security Newswire, B.A. in Multimedia journalism from Emerson College, “U.S. Unlikely to Respond to Biological Threat With Nuclear Strike, Experts Say”, <http://www.nti.org/gsn/article/us-unlikely-to-respond-to-biological-threat-with-nuclear-strike-experts-say/>, 4/29/10

Yet experts say there are a number of reasons why the United States is not likely to use a nuclear weapon to eliminate a non-nuclear threat. It could prove difficult for U.S. leaders to come up with a list of appropriate targets to strike with a nuclear warhead following a biological or chemical event, former Defense Undersecretary for Policy Walter Slocombe said during a recent panel discussion at the Hudson Institute. "I don't think nuclear weapons are necessary to deter these kinds of attacks given U.S. dominance in conventional military force," according to Gregory Koblentz, deputy director of the Biodefense Graduate Program at George Mason University in Northern Virginia. "There's a bigger downside to the nuclear nonproliferation side of the ledger for threatening to use nuclear weapons in those circumstances than there is the benefit of actually deterring a chemical or biological attack," Koblentz said during a recent panel discussion at the James Martin Center. The nonproliferation benefits for restricting the role of strategic weapons to deterring nuclear attacks outweigh the "marginal" reduction in the country's ability to stem the use of biological weapons, he said. In addition, the United States has efforts in place to defend against chemical and biological attacks such as vaccines and other medical countermeasures, he argued. "We have ways to mitigate the consequences of these attacks," Koblentz told the audience. "There's no way to mitigate the effects of a nuclear weapon." Regardless of the declaratory policy, the U.S. nuclear arsenal will always provide a "residual deterrent" against mass-casualty biological or chemical attacks, according to Tucker. "If a biological or chemical attack against the United States was of such a magnitude as to potentially warrant a nuclear response, no attacker could be confident that the U.S. -- in the heat of the moment -- would not retaliate with nuclear weapons, even if its declaratory policy is not to do so," he told *GSN* this week during a telephone interview.

#### Lashout would be conventional---that’s short-term and doesn’t escalate

Fritz 17 – Mark Fritz 4-18, Benzinga Staff Writer, 4-18-2017, "Is Trump's Foreign Policy Belligerence A Diversion From A Stalled Agenda?," Benzinga, https://www.benzinga.com/markets/emerging-markets/17/04/9305488/is-trumps-foreign-policy-belligerence-a-diversion-from-a-stal

It’s called “saber rattling,” a term used when a leader has problems at home and picks a fight abroad. Historians have examined the idea exhaustively, but there’s nothing like seeing it in real time. President Donald Trump and North Korea’s Kim Il Jung, both of whom have an apparent case of missile envy, are rattling their sabers. Trump’s bombardment of Syria and Afghanistan — and his threats against an uncowed North Korea — came after his youngish administration had a bad start on immigration and healthcare reform, conflicts of business interests, ousted underlings with ties to Russia and policy drift in general. During the weekend, Kim’s display of anti-ballistic missiles — some of which had performance issues — was another example of leaders hoping to show strength by fanning the patriotic threat of war with big sticks. Does It Work? “A core finding of my book was that it does not work, often causing those threatened to react in a contrarian way,” B. Dan Wood, author of “Presidential Saber Rattling: Causes and Consequences” (Cambridge University Press), told Benzinga. Both Trump and Kim are engaging in textbook examples of pumping up the local populace by antagonizing an enemy, a tactic that also has an economic imperative, Wood said. Wood’s book analyzed 4,000 instances of drum-beating from 1945 to 2009, which covers the Cold War and the chaos that ensued when the Soviet Union collapsed and left a massive power vacuum still being chaotically filled today. Wood’s research found that isolating and attacking an enemy correlate to domestic problems and can boost a leader’s appeal, albeit only temporarily. Similar studies have come to the same conclusions about what might seem to most people as simply common sense. “It is conventional wisdom that the public rallies 'round the president when military force is used abroad,” according to “Presidents, the Use of Military Force, and Public Opinion,” a study published by the Journal of Conflict Resolution in 1993. “Indeed, this belief has encouraged the view that presidents are apt to rattle the saber to divert attention from domestic problems." The Psychology Of Diversionary War U.S. presidents who are generally distrustful and tend to see the world in simplistic terms are most likely to engage in what historians call diversionary warfare, said Dennis M. Foster, a professor of international studies and political science at the Virginia Military Institute. “I think there are some reasons to believe that the recent behavior is at least in part diversionary; and if it is, it is a historically unique brand of diversion,” he said. Some reasons: Trump’s domestic agenda is stalled “and things don’t look like they are going to get moving anytime soon.” His behavior is in stark contrast to the “quasi-isolationist” foreign policy vision he’d outlined in the past. Trump seems much less sensitive to the consequences of his actions than previous presidents of the post-Cold War period. “Finally, there is no clearly apparent international strategy, either within or across crises, other than the show of American strength in the face of behavior we don't like.” Trump Actions ‘High-Risk’ And ‘Unsettling’ If Trump is in fact creating a diversion, it’s high-risk and doesn’t appear to advance any concrete international strategy, said Foster, who wrote a piece for the Washington Post back in December that pondered whether Trump would go to war to distract from a stalled agenda. “It would thus be, in two fundamental and unsettling ways, very different than any other action I've seen described as diversionary conflict,” he said. In contrast, former President Bill Clinton’s cruise missile strikes on al-Qaeda targets in Sudan and Afghanistan — retaliation for the August 1998 U.S. Embassy bombings in Kenya and Tanzania — came at the height of the Monica Lewinsky scandal and were relatively low-risk, he said. Likewise, former President Richard Nixon’s bombing of Cambodia during the height of street protests against the Vietnam War may have been diversionary, but they clearly advanced a foreign policy agenda. Saber Rattling Impact Usually Short-Lived The whole Machiavellian idea of using war as a diversion from domestic stress is as old as, well, war. And the bully pulpit that is the presidency makes it awfully tempting to shore up support by rallying the people to an exaggerated enemy. Alexis de Tocqueville, the Frenchman who wrote the definitive study of the United States in “Democracy in America,” ruminated that the American president has, when it comes to foreign relations, “almost royal prerogatives.” But, as Brown says, good luck with that. “Generally, the political science literature suggests that any change in approval from presidential saber rattling … is small and short-lived.”

### Cyberattacks D---AT: NC3 Hacking

#### No C3 hacking or accidental launch

Dr. Andrew Futter 16, Associate Professor of International Politics and Director of Research for Politics and International Relations at the University of Leicester, “War Games Redux? Cyberthreats, US–Russian Strategic Stability, and New Challenges for Nuclear Security and Arms Control”, European Security, Volume 25, Issue 2, p. 171-172

It is of course highly unlikely that either the USA or Russia has plans – or perhaps more importantly, the desire – to fully undermine the other’s nuclear command and control systems as a precursor to some type of disarming first strike, but the perception that nuclear forces and associated systems could be vulnerable or compromised is persuasive. Or as Hayes (2015) puts it, “The risks of cyber disablement entering into our nuclear forces are real”. While the growing possibility of “cyber disablement” should not be overstated (notions of a “cyber-Pearl Harbor” (Panetta 2012) or “cyber 9–11” (Charles 2013) have done little to help understand the nature of the challenge), cyberthreats are nevertheless an increasingly important component of the contemporary US–Russia strategic context. This is particularly the case when they are combined with other emerging military-technical developments and programmes. The net result, especially given the current downturn in US–Russian strategic relations, and the way cyber is exacerbating the impact of other problematic strategic dynamics, is that is seems highly unlikely that either the USA or Russia will make the requisite moves to de-alert nuclear forces that the new cyber challenges appear to necessitate, or for that matter to (re)embrace the “deep nuclear cuts” agenda any time soon.

Assessing the options for arms control and enhancing mutual security

Given the new challenges presented by cyber to both US and Russian nuclear forces and to US–Russia strategic stability, it is important to consider what might be done to help mitigate and guard against these threats, and thereby help minimise the risks of unintentional launches, miscalculation, and accidents, and perhaps create the conditions for greater stability, de-alerting, and further nuclear cuts. While there is unlikely to be a panacea or “magic bullet” that will reduce the risk of cyberattacks on US and Russian nuclear forces to zero – be they designed to launch nuclear weapons or compromise the systems that support them – there are a number of options that might be considered and pursued in order to address these different types of threats and vulnerabilities. None, of these however, will be easy.

The most obvious and immediate priority for both the USA and Russia is working (potentially together) to harden and better protect nuclear systems against possible cyberattack, intrusion, or cyber-induced accidents. In fact, in October 2013 it was announced that Russian nuclear command and control networks would be protected against cyber incursion and attacks by “special units” of the Strategic Missile Forces (Russia Today 2014). Other measures will include better network defences and firewalls, more sophisticated cryptographic codes, upgraded and better protected communications systems (including cables), extra redundancy, and better training and screening for the practitioners that operate these systems (see Ullman 2015). However, and while comprehensive reviews are underway to assess the vulnerabilities of current US and Russian nuclear systems to cyberattacks, it may well be that US and Russian C2 infrastructure becomes more vulnerable to cyber as it is modernised and old analogue systems are replaced with increasingly hi-tech digital platforms. As a result, and while nuclear weapons and command and control infrastructure are likely to be the best protected of all computer systems, and “air gapped”14 from the wider Internet – this does not mean they are invulnerable or will continue to be secure in the future, particularly as systems are modernised or become more complex (Fritz 2009). Or as Peggy Morse, ICBM systems director at Boeing, put it, “while its old it’s very secure” (quoted in Reed 2012).

#### Nuclear systems can’t be hacked

Dr. M.N. Sirohi 15, Cyber Terrorism and Information Warfare, p. Google Books

Many computer security specialists believe it is virtually impossible to use the Internet to inflict death on a large scale and scoff at the notion that terrorists would bother trying. The resilience of computer systems to attack, they point out, is no accident but rather the result of significant investments of time, money, and expertise. Nuclear weapons and other sensitive military systems enjoy the most basic form of Internet security. They are “air-gapped,” meaning that they are not physically connected to the Internet and are therefore inaccessible to outside hackers. The Defence Department has been particularly vigilant in protecting key systems by isolating them from the Internet and even from the Pentagon’s internal computer network. All new software must be submitted to the National Security Agency for security testing.

# 1NR

## Ptx

### Politics

#### It’s the only existential risk

Samuel Miller-McDonald 19, PhD Candidate in Geography and the Environment at the University of Oxford, “Deathly Salvation”, The Trouble, 1/4/2019, https://www.the-trouble.com/content/2019/1/4/deathly-salvation

A devastating fact of climate collapse is that there may be a silver lining to the mushroom cloud. First, it should be noted that a nuclear exchange does not inevitably result in apocalyptic loss of life. Nuclear winter—the idea that firestorms would make the earth uninhabitable—is based on shaky science. There’s no reliable model that can determine how many megatons would decimate agriculture or make humans extinct. Nations have already detonated 2,476 nuclear devices.

An exchange that shuts down the global economy but stops short of human extinction may be the only blade realistically likely to cut the carbon knot we’re trapped within. It would decimate existing infrastructures, providing an opportunity to build new energy infrastructure and intervene in the current investments and subsidies keeping fossil fuels alive.

In the near term, emissions would almost certainly rise as militaries are some of the world’s largest emitters. Given what we know of human history, though, conflict may be the only way to build the mass social cohesion necessary for undertaking the kind of huge, collective action needed for global sequestration and energy transition. Like the 20th century’s world wars, a nuclear exchange could serve as an economic leveler. It could provide justification for nationalizing energy industries with the interest of shuttering fossil fuel plants and transitioning to renewables and, uh, nuclear energy. It could shock us into reimagining a less suicidal civilization, one that dethrones the death-cult zealots who are currently in power. And it may toss particulates into the atmosphere sufficient to block out some of the solar heat helping to drive global warming. Or it may have the opposite effects. Who knows?

What we do know is that humans can survive and recover from war, probably even a nuclear one. Humans cannot recover from runaway climate change. Nuclear war is not an inevitable extinction event; six degrees of warming is.

#### It makes nuclear war inevitable in every region

Dr. Michael T. Klare 20, Five Colleges Professor of Peace and World Security Studies at Hampshire College, Ph.D. from the Graduate School of the Union Institute, BA and MA from Columbia University, Member of the Board of Director at the Arms Control Association, Defense Correspondent for The Nation, “How Rising Temperatures Increase the Likelihood of Nuclear War”, The Nation, 1/13/2020, https://www.thenation.com/article/archive/nuclear-defense-climate-change/

Climbing world temperatures and rising sea levels will diminish the supply of food and water in many resource-deprived areas, increasing the risk of widespread starvation, social unrest, and human flight. Global corn production, for example, is projected to fall by as much as 14 percent in a 2°C warmer world, according to research cited in a 2018 special report by the UN’s Intergovernmental Panel on Climate Change (IPCC). Food scarcity and crop failures risk pushing hundreds of millions of people into overcrowded cities, where the likelihood of pandemics, ethnic strife, and severe storm damage is bound to increase. All of this will impose an immense burden on human institutions. Some states may collapse or break up into a collection of warring chiefdoms—all fighting over sources of water and other vital resources.

A similar momentum is now evident in the emerging nuclear arms race, with all three major powers—China, Russia, and the United States—rushing to deploy a host of new munitions. This dangerous process commenced a decade ago, when Russian and Chinese leaders sought improvements to their nuclear arsenals and President Barack Obama, in order to secure Senate approval of the New Strategic Arms Reduction Treaty of 2010, agreed to initial funding for the modernization of all three legs of America’s strategic triad, which encompasses submarines, intercontinental ballistic missiles, and bombers. (New START, which mandated significant reductions in US and Russian arsenals, will expire in February 2021 unless renewed by the two countries.) Although Obama initiated the modernization of the nuclear triad, the Trump administration has sought funds to proceed with their full-scale production, at an estimated initial installment of $500 billion over 10 years.

Even during the initial modernization program of the Obama era, Russian and Chinese leaders were sufficiently alarmed to hasten their own nuclear acquisitions. Both countries were already in the process of modernizing their stockpiles—Russia to replace Cold War–era systems that had become unreliable, China to provide its relatively small arsenal with enhanced capabilities. Trump’s decision to acquire a whole new suite of ICBMs, nuclear-armed submarines, and bombers has added momentum to these efforts. And with all three major powers upgrading their arsenals, the other nuclear-weapon states—led by India, Pakistan, and North Korea—have been expanding their stockpiles as well. Moreover, with Trump’s recent decision to abandon the Intermediate-Range Nuclear Forces (INF) Treaty, all major powers are developing missile delivery systems for a regional nuclear war such as might erupt in Europe, South Asia, or the western Pacific.

#### Warming turns cyberwar

Pieter Arntz 20, Microsoft MVP in Consumer Security for 12 Years Running, “The Effects of Climate Change on Cybersecurity”, Malwarebytes Labs, 3/13/2020, https://blog.malwarebytes.com/awareness/2020/03/the-effects-of-climate-change-on-cybersecurity/

Conversely, global warming and its effects on the climate, environment, and economy do have a direct impact on our everyday lives, and that trickles down to cybersecurity. Some of the projected dangers include:

* Flooding of certain areas
* Prolongation of the wild-fire season
* Spread of diseases
* Economic costs
* Scarcity of fresh water in certain areas

By 2030, climate change costs are projected to cost the global economy $700 billion annually, according to the Climate Vulnerability Monitor. And The International Organization for Migration estimates that 200 million people could be forced to leave their homes due to environmental changes by 2050.

Climate change and its implications will act as a destabilizing factor on society. When livelihoods are in danger, this will spark insecurity and drive resource competition. This does not only have implications for physical security, but in modern society, this also has an impact on cybersecurity and its associated threats.

From a big picture, worst-case-scenario perspective, climate change could trigger profound international conflicts, which go hand-in-hand with cyberwar. Beyond nation-state activity, individuals that have no other means of providing for their families could turn to cybercrime, which is often seen as a low-risk activity with a potentially high yield.

But on a smaller scale, we’re already seeing the impacts of climate change on cybersecurity, whether via social engineering scare tactics embraced by threat actors or disruptions to Internet-connected home heating and cooling devices meant to track energy consumption.

## Aerojet

### Missiles---Impact---2NC

#### Each scenario goes global AND it’s most probable

Michael Richardson 13, Visiting Senior Research Fellow at the Institute of South East Asian Studies in Singapore, Former South-East Asia Correspondent of The Age, “Cruise Missile Threat in Asia”, Japan Times, 6/18/2013, https://www.japantimes.co.jp/opinion/2013/06/18/commentary/world-commentary/cruise-missile-threat-in-asia/#.XYY4IkZJFwB

Cruise missiles that are difficult to detect, increasingly fast and capable of carrying nuclear warheads are spreading, especially in Asia, complicating arms control and raising the risk of catastrophic conflict.

Until recently, most concerns have focused on the actual or potential spread of nuclear-tipped ballistic missiles in China, North Korea, India and Pakistan — the four Asian states known to have atomic arms. Ballistic missiles, launched by rocket engines, follow an arc-like trajectory, attaining hypersonic speeds on the downward leg of their guided journey towards a target.

Until now and probably for some time yet, all long-range ballistic missiles, with atomic warheads small enough to fit on them, are deployed exclusively for strategic nuclear deterrence. The five official nuclear weapon states — United States, Russia, China, Britain and France — use their long-range ballistic missiles, whether launched from land, air or sea, to deter possible attacks by other nuclear-armed nations.

Arms control treaties and agreements have tended to focus chiefly on ballistic missiles. However, another type of weapon, the cruise missile, is multiplying. It is proving to be even more difficult to control, partly because in many cases the same highly accurate missile is designed to carry either a conventional high explosive warhead or a nuclear warhead.

This dual role makes it impossible for a nuclear-armed nation facing a cruise missile attack against its territory or warships to know whether the incoming weapons are conventional or nuclear, an uncertainty that could trigger a nuclear response. Dual-role ballistic missiles of less than intercontinental range pose a similar problem.

The U.S. Air Force Global Strike Command reported last month that both China and North Korea were developing nuclear-capable cruise missiles. The U.S. and Russia lead the world with nuclear-capable cruise missiles, weapons launched from long-range bombers or submarines. But India and Pakistan are also developing such missiles. They each have several different types, with different ranges, in service or being flight tested.

Cruise missiles, powered by jet engines, travel low and fast over land or water, making them difficult to detect. They are also relatively small, compared to long-range ballistic missiles.

There are about 1,140 of the nuclear version of the U.S. AGM-86 air-launched cruise missile in America’s nuclear arsenal. In addition, there are about 460 nuclear-capable AGM-129A advanced cruise missiles. The U.S. Air Force says that the streamlined design of the AGM-129A, combined with radar-absorbing material and several other features, make it virtually impossible to detect on radar.

The range of the U.S. AGM-129 A is officially put at almost 3,220 km. However, the nuclear-ready version of Russia’s Raduga Kh-101 air-launched cruise missile, which is due to become operational this year, is designed to have a maximum flight distance of just over 9,650 km, which puts it in the range category of an intercontinental ballistic missile.

The new Chinese and North Korean cruise missiles appeared on a slide of an unclassified briefing given by Lt. Gen. James Kowalski, head of the U.S. Air Force Global Strike Command, on May 7. The slide shows nuclear weapon modernizations in eight of the world’s nine states known to have atomic arms. Only Israel is not shown.

The Chinese cruise missile is the CJ-20 carried by the long-range H-6 bomber. Hans Kristensen, a nuclear weapons specialist with the Federation of American Scientists, said the listing was the first he had seen in an official U.S. publication crediting a Chinese air-launched cruise missile with nuclear capability.

U.S. defense officials say that a Chinese extended range H-6 bomber using the CJ-20 in a land-attack operation could strike targets all over Asia and eastern Russia as well as the U.S. military base hub on Guam island, in the western Pacific. Two-thirds of Russian territory, east of the Ural mountains, is in Asia.

The nuclear-capable North Korean cruise missile listed on the briefing slide is the KN-09 for coastal defense. It reportedly has a range of just 100 to 120 km.

America’s AGM-86 nuclear-tipped cruise missiles travel at just over two-thirds the speed of sound.

Meanwhile, India is looking to its supersonic Brahmos cruise missile, a joint venture with Russia, as the key new weapon that will give it a strategic advantage over its neighbor and long-time rival, Pakistan. The Brahmos is the only known supersonic cruise missile system in service. Its designer, BrahMos Aerospace of Russia, says it travels at two to three times the speed of sound, or approximately one kilometer per second.

In October, India and Russia agreed to produce more than 1,000 Brahmos missiles for the Indian Air Force, Navy and Army. The two sides also decided to jointly develop a hypersonic version of the missile that would fly more than five times the speed of sound.

The Indian missile, which can be launched from the sea, air or land, has a range of about 300 km. It can carry a conventional or nuclear warhead. The high speed of India’s Brahmos cruise missile means it has the potential to carry out prompt strikes on extremist camps inside Pakistan, to be followed by a punitive invasion by the Indian armed forces.

Because India is so much bigger and stronger than Pakistan, the latter has developed short-range ballistic missiles with low-yield nuclear warheads to deter such attacks. Although still to be verified, Pakistan claims it has miniaturized nuclear warheads so that they will also fit on cruise missiles. India also says that its cruise missiles are nuclear-capable.

The short-warning time should either country use such weapons against the other means that escalation into an all-out nuclear exchange could result.

Shyam Saran, convener of India’s National Security Advisory Board, said in April that in a crisis with Pakistan, India would not be the first to use nuclear weapons. He warned that even if India was attacked with relatively small, or tactical, nuclear arms, it would “engage in nuclear retaliation that will be massive and designed to inflict unacceptable damage on its adversary.”

There is a wider warning here for Asian countries with tactical nuclear-tipped cruise or ballistic missiles in operation or planned. If ever used, such weapons could open a Pandora’s Box of horrendous consequences, proving that a limited nuclear war is a contradiction in terms.

#### Lack of effective defense causes automated early-warning---extinction

Nicolò Miotto 21, MA Candidate at the Erasmus Mundus Security, Intelligence & Strategic Studies Program at the University of Glasgow, “Artificial Intelligence and Nuclear Warfare. Is Doomsday Closer? - Cyber Security and AI Series”, The Security Distillery, 7/7/2021, https://thesecuritydistillery.org/all-articles/artificial-intelligence-and-nuclear-warfare-is-doomsday-closer

AI AND NUCLEAR DETERRENCE: ONE STEP FORWARD, TWO STEPS BACK

With the development of state-of-the-art weapons such as hypersonic missiles, the nuclear balance between countries might shift, leading to potential escalation. As deterrence is likely to be undermined, states are considering the deployment of AI-based weapon systems to repristinate the balance.

As of now, no defensive weapon system is capable of intercepting hypersonic missiles. Current designs are capable of striking a target in an average time of 6 minutes as they greatly exceed the speed of sound, reaching speeds at Mach 5 or above with unpredictable trajectories [3]. Hypersonic technology is being tested by global powers such as the U.S., China and Russia [4]. If equipped with nuclear warheads, hypersonic missiles would significantly change nuclear stability between countries, causing tensions between nuclear powers. Analysts agree that only AI-based predictive analysis, combined with cutting-edge technologies such as quantum computing, might provide effective defence systems against hypersonic missiles [5]. If developed, these technologies would constitute the technological tool necessary to re-balance the instability caused by hypersonic missiles.

However, AI-based missile defence systems might bring about more insecurity than the stability they aim to achieve. Indeed, artificial intelligence offensive capabilities might have a disruptive impact on nuclear deterrence. Partially based on the concept of mutual assured destruction (MAD), nuclear deterrence is preserved when no country can conduct a nuclear attack without suffering a second nuclear strike from the enemy [6]. However, this psychological and technical equilibrium might be undermined by the belief that artificial intelligence can provide the capability of targeting and destroying all enemies’ offensive nuclear weapons before carrying out the first attack. Although this can be proved to be technically implausible, if a government believes that enemies’ AI-based offensive systems can destroy the country’s nuclear weapons, decision-makers may be psychologically encouraged to strike first in case of high-level tensions [7].

THE THREAT POSED BY AI-BASED NUCLEAR C2 SYSTEMS

In most countries, responses to threats are based on the OODA-LOOP model, which consists of four steps: observe, orient, decide, act [8]. However, due to the most recent advancements in military technology, the timeframe to go through the OODA-LOOP decision-making process is more limited, thus requiring faster decisions to respond to the threats. If hypersonic missiles, potentially carrying nuclear warheads, strike the target in a maximum of 6 minutes, actions must be taken promptly. However, immediacy may come at the expense of attentive human judgment, a key factor that has already prevented nuclear war in the 20th century.

Both machines and humans might be driven by misjudgement due to partial or inaccurate information. However, individuals involved in nuclear C2 systems have already avoided nuclear catastrophes during the Cold War. Notorious is the case of Stanislav Petrov who, when in 1983 a Soviet early-warning satellite allegedly detected the launch of five US missiles, decided to declare the incident as a false alarm, assuming that the U.S. would have never conducted a surprise attack with only five missiles [9]. He made the right decision; the Soviet satellite wrongly analysed sunlight bouncing off the clouds as a missile launch [10]. This historical fact demonstrates how machine error might lead to disastrous choices if the human judgment is excluded from the decision-making process.

In the context of modern disinformation campaigns, the negative influence of machine misjudgement on nuclear stability is even greater. The International Institute for Strategic Studies (IISS), in collaboration with the Carnegie Corporation of New York, has conducted tabletop exercises to investigate the vulnerabilities of AI-based nuclear command and control to disinformation [11]. The results are worrying and show how non-state actors’ disinformation operations may bring about a rapid nuclear escalation. In one scenario, fake images of the deaths of three American soldiers by Russian-employed nerve gas in Syria led U.S. officials to build a legal case for the potential use of tactical nuclear weapons. Subsequently, fake news about the families of high-ranking U.S. officials quickly moving to Washington, D.C. and of missile silos going on high-alert worried Russian officials. In response, Russian AI-based early warning systems warned the leadership that a U.S. strike was imminent. The scenario ended with both governments realising the false alarm and disabling the online activity of the non-state actor.

While in the scenario the false alarm was realised, decision-making results might largely differ in the context of the hypersonic missile race. How would governments act in such a tense context? Would officials be able to go through the OODA-LOOP model in less than 6 minutes? To what extent would they rely on AI-based decision-making processes?

#### And, global preemption that goes nuclear

Omar **Lamrani 16**, Senior Military Analyst at Stratfor, M.A. from the Diplomatic Academy of Vienna, B.A. in International Relations from Clark University, “What the Next Arms Race Will Look Like”, Stratfor, 3/21/2016, <https://www.stratfor.com/analysis/what-next-arms-race-will-look>

A new arms race is unfolding between the world's great powers. Hypersonic missiles, which are both accurate and extremely fast, stand to change the face of modern warfare by rendering the current generation of missile defense systems ineffective. As competition heats up among Russia, China and the United States to be the first to deploy hypersonic missiles, each will become more vulnerable to attack by the others. If tensions rise, so will the risk of pre-emptive strikes among the longtime rivals. Hypersonic missiles travel at least five times the speed of sound. Only a few other manmade devices are capable of reaching hypersonic speeds, including ballistic missiles, space launch vehicles and unmanned spacecraft such as the Boeing X-37. The only manned aircraft to achieve hypersonic speed is the rocket-powered North American X-15, which broke speed and altitude records when it was introduced in the 1960s. Recently, the focus of research in hypersonic technologies has shifted toward missile development, but several challenges must be overcome to make hypersonic missiles a reality. First, it is difficult to create a weapon that can reach hypersonic speeds while enduring the stress and extreme temperatures of hypersonic flight. It is harder still to ensure that the weapon can maintain those speeds for an extended period — enough time to reach its target. Second, high velocities can make a hypersonic vehicle sensitive to changes in flight conditions, resulting in instability in the missile's airframe during flight. Coupled with the fact that high speeds leave less time to course correct, this instability can make guidance of hypersonic missiles problematic. Finally, hypersonic vehicles' actual flight paths often do not match the predictions researchers derive from ground tests and theoretical models, lengthening the process of development. Despite these obstacles, hypersonic missiles have some considerable advantages. Their speed enables them to reach their targets much more quickly than other missiles and to better penetrate enemy defense systems. Those with gliding capabilities can also cover great distances, enabling one country to strike at another from farther away. Guided hypersonic missiles would be more accurate than traditional ballistic missiles, and they could conceivably be armed with nuclear warheads, becoming a strike asset or a deterrent in nuclear warfare. From Theory to Reality It will not be long before hypersonic missiles find their way out of the lab and onto the battlefield. In late February, U.S. Maj. Gen. Thomas Masiello announced that the U.S. Air Force plans to have operational prototypes ready for testing by 2020. The U.S. Air Force already conducted four flights of the experimental X-51 hypersonic cruise missile from 2010 to 2013, two of which were considered successes. Meanwhile, Lockheed Martin has made substantial progress on its Hypersonic Air-breathing Weapon Concept and Tactical Boost Glide vehicle. China is close behind, and it appears to be on track for deployment by 2020 as well. In 2014, China conducted three tests of its DF-ZF hypersonic strike vehicle, followed by three more in 2015. The U.S. military deemed all but one of the tests successful. Russia is developing its own hypersonic glide vehicle, the Yu-71, though its ambitions of fielding the vehicle in the next four years may be overly optimistic. (Moscow's sole test of the Yu-71, in 2015, was a failure.) But one of Russia's relatively short-range hypersonic missiles, the 3M22 Zircon, underwent its first test on March 18, and a second model (the BrahMos-II) will be ready for testing around 2017. As the world's biggest powers race to build up their hypersonic arsenals, the nature of battle will fundamentally change. Missile defense systems will struggle to counter hypersonic flight, making targets — especially large naval warships — more vulnerable to attack. In time, this could drive the development of directed-energy weapons (such as high-powered lasers or microwaves) as a possible way of countering hypersonic missiles. But as has been the case for revolutionary military technologies in the past, the best defense will be to destroy the missiles before they can launch, increasing war planners' emphasis on offensive action. Countries will have an incentive to launch pre-emptive strikes against their enemies to knock out hypersonic missile caches before the missiles can be deployed. Moreover, guidance systems, along with command, control, intelligence, surveillance and reconnaissance networks — the weakest components of hypersonic missile capabilities — will become critical targets. At the same time, states with hypersonic missiles (and the bigger offensive advantage they bring) will have less need for stealth technology to penetrate enemy defenses. Nuclear warfare — and strategies to deter nuclear conflict — will be altered as well. Though increasingly effective anti-ballistic missile technologies will continue to be important against opponents that lack hypersonic weapons, they will be of little use in countering hypersonic missiles equipped with nuclear warheads. Because hypersonic missiles are so difficult to detect and counter, countries could be motivated to pre-emptively strike at an enemy developing a hypersonic capability. As hypersonic missiles undermine the fragile balance among global nuclear powers more and more, many countries will be forced to re-examine their deterrence and national security strategies, potentially contributing to greater uncertainty and instability in the long run.

#### Externally---1NC Weisgerber says denial collapses missile defense. Nuclear war from North Korean and Iranian strikes.

Punch Moulton 21, Retired U.S. Air Force Major General, Vice President for Defense Support and Cyber Strategies at Stellar Solutions, and Francis Mahon, Former Director for Strategy, Policy and Plans at North American Aerospace Defense Command and U.S. Northern Command, Independent Aerospace Defense Contractor and Advisor for Stellar Solutions, “Robust, Credible and Layered Missile Defense is the Foundation of Deterrence”, 6/16/2021, https://www.defensenews.com/opinion/commentary/2021/06/16/robust-credible-and-layered-missile-defense-is-the-foundation-of-deterrence/

In 2005, an anticipated missile threat to the homeland prompted the expeditious fielding of a missile defense capability to defend the United States. Today, that threat is real, expanding, and most likely nuclear. Our defense needs to also be real and effective for today and into the future.

A recent report by the think tank Rand estimates North Korea has 50 nuclear weapons in its arsenal and, by 2027, will have in excess of 200 and several dozen intercontinental ballistic missiles to complement its several hundred theater ballistic missiles. The director of national intelligence’s 2021 Annual Threat Assessment clearly states: “North Korea will be a [weapons of mass destruction] threat for the foreseeable future, [and] the country is actively engaged in ballistic missile research and development.”

While we must not cast diplomacy aside, we should recognize deterrence is an essential element in any strategy for dealing with the North Korean nuclear missile threat. Deterrence matters, and Adm. Charles Richard, commander of U.S. Strategic Command, framed the point well when he said: “A robust and credible layered missile defense system paired with our conventional and nuclear force capabilities provide the ability to deter strategic attacks, deny benefits, and impose costs against any potential adversary.”

Deterrence discourages an adversary by instilling doubt and anxiety in their decision calculus. Our Ballistic Missile Defense System “denies benefit” by planting that seed of doubt in North Korea’s decision calculus; the doubt that an attack on the United States will succeed.

Today, our defense rests on the Ground-based Midcourse Defense system, or GMD, and its 44 interceptors. But that alone is not going to be adequate to deal with the threats of 2027. Defending our homeland is vital. Looking to the next decade, we need to stay ahead of our threats. Our concerns are four-fold: technology, numbers, layers and sensors.

Technology: Advancing the effectiveness of our missile defense capabilities is extremely important. The Missile Defense Agency recently awarded two contracts, to two teams, to competitively develop a Next Generation Interceptor, or NGI, to overcome the shortcomings in the current interceptor fleet and provide a path to outpace future threats. This competitive development cycle will add up to 20 new interceptors to the inventory. As long as the program enjoys support and an adequate budget from the Department of Defense and Congress, we are on solid ground for the technology.

Numbers: A point of concern, though, is the math: 20 new intercepts plus the current 44 will give us 64. If Rand is anywhere close, we could be outnumbered by the end of the decade. More important, we certainly cannot accept a 1-to-1 exchange ratio when we are dealing with nuclear missiles coming toward the homeland.

Layers: No single defensive system is successful 100 percent of the time, and we cannot base the defense of America solely on the hope of success for every GMD intercept. We need the opportunity for a second engagement in the event GMD’s interceptors do not destroy the in-bound threat. Developing a layered defense is a vital strategy for our nation. We have the technology. MDA recently demonstrated the SM-3 Block 2A missile could intercept an ICBM. All we need now is an aggressive plan to truly build our layered approach for homeland missile defense.

Sensors: Lastly, our future missile defense architecture needs to have the right capabilities to “see the threat” and enable successful defenses. As Gen. John Hyten, vice chairman of the Joint Chiefs of Staff, has stated: “If you can’t see it, you can’t shoot it. And if you can’t see it, you can’t deter it either.” Today’s sensor suite — a handful of terrestrial sensors — needs to advance to the next generation: space-based sensors. Our defenses need to be able to pick out the lethal objects in a cluster of countermeasures. Further, our sensors need to provide “fire control quality” information to the defensive interceptors. While a space-based sensor architecture will be expensive, it will cost far less — in both dollars and operational risk — than relying solely on a terrestrial network.

We cannot take our foot off the pedal. While it will likely take six to seven years to field our NGI, rest assured our adversaries are not standing still. The threat is real: in North Korea today, and potentially Iran tomorrow.

#### The FTC won’t significantly expand the scope of antitrust because it’s politically cautious

Megan Browdie 21, Jacqueline Grise, and Howard Morse, Partners at Cooley, Washington, DC, “Biden/Harris Expected to Double Down on Antitrust Enforcement: No “Trump Card” in the Deck”, Concurrences: Antitrust Publications & Events, February 2021, https://www.concurrences.com/en/review/issues/no-1-2021/on-topic/the-new-us-antitrust-administration-en

38. Current leadership at the agencies appear to agree with the Republicans’ more cautious approach. For example, Chairman Joe Simons, while having touted himself as “responsible for overseeing the re-invigoration of the FTC’s non-merger enforcement program” during his tenure as director of the FTC Bureau of Competition under Bush, has pushed back on these “expanded” theories of antitrust harm. For example, he argued in January 2020 that “U.S. antitrust laws are sufficiently robust to handle competition problems as they arise. Over the years, antitrust laws have proven to be very flexible and resilient in enabling enforcers to challenge conduct that harms competition in a broad range of markets. These laws have proved themselves effective even as the economy evolved with technological progress.” [42]

39. Given this disagreement, and that the Democrats, at best, will have a very thin majority in the Senate, we anticipate some modest modifications to the antitrust laws but expect serious pushback to substantial overhauls of the system or laws.

#### The FTC’s walking a fine line---drawing some fire BUT broadly retaining support AND avoiding controversial stances

Kate Linebaugh & Ryan Tracy 21, Linebaugh is the co-host of The Journal; Tracy is a Reporter at The Wall Street Journal, “Biden's New FTC Chair Squares Off With Big Tech,” WSJ, 7-30-2021, https://www.wsj.com/podcasts/the-journal/biden-new-ftc-chair-squares-off-with-big-tech/b3aae132-15f2-499f-ab40-51758758ad34

Kate Linebaugh: Now that Kahn is in a powerful position and has shown she's willing to rewrite the rules, the forces against her are piling up, including two of the biggest companies in the world. That's after the break. When Khan took over leadership of the FTC, Amazon publicly challenged her objectivity, citing her past statements and writings.

Ryan Tracy: The FTC has an active antitrust investigation of Amazon, and Amazon has preemptively asked for Lina Khan to be recused from that investigation and any action the agency might take as a result.

Kate Linebaugh: Two weeks later, Facebook, which is being sued by the FTC over antitrust, came out with a similar argument.

Ryan Tracy: In Facebook's view, she should be an impartial observer of these facts. She's brought on to this job, but she has access to the evidence that the agency has. And then she makes a judgment, keeping the public interest in mind and upholding her oath to the Constitution and all these things that public officials are supposed to do. If she's already formed her view, then how can she do that? That's Facebook's argument.

Kate Linebaugh: The FTC's case against Facebook predates Kahn, but it gets right at the heart of her philosophy. It doesn't look at prices for consumers. Instead, it focuses on how Facebook's acquisitions of companies like WhatsApp and Instagram stifled competition and hurt consumers.

Ryan Tracy: What the FTC says is we may not have challenged these mergers back when they happened, but when you look at the whole picture, we think Facebook wasn't making these mergers for good business reasons. We think they were trying to keep competitors out and to create a monopoly for themselves.

Kate Linebaugh: Big high visibility cases like these are important, but they aren't Kahn's only priority.

Ryan Tracy: She's got a lot of other things that she wants to do. She wants to write rules that aim to boost competition and target unfair business practices in sectors across the economy.

Kate Linebaugh: Kahn's plans for the agency were the focus of this week's House hearing, and lawmakers came with a laundry list of what they wanted the FTC to enforce. Everything from online fraud and ransomware to protections for veterans and older adults. Kahn had her own message for lawmakers.

Ryan Tracy: Congress, please give us more money. And if you want us to do all these things well, we're going to need more resources.

Kate Linebaugh: But Republicans voiced their displeasure over Kahn's early steps that they say indicate she's consolidating power. Here's Republican Congresswoman Cathy Rogers.

Audio: I continue to hear that the FTC needs additional funding, staff authorities, but if decisions are being made behind the scenes unilaterally, really makes it hard to justify such requests.

Kate Linebaugh: Despite some critique, Ryan says that Kahn held her own in the hearing.

Ryan Tracy: I once had someone who had testified before Congress tell me that really what you're trying to do is not lose when you're under pressure, and I think she didn't make any errors or have any blow-up moment. It was a fairly even-keeled hearing from her. To the extent she got pushback, it was really on this issue of how she's running the agency, what the agency's internal process and policies and procedures have been under her leadership. A lot of that is coming from Republicans on the Commission being frustrated that she's, in their view, cutting her out of the process. She responded to that by saying she was open to thinking about how to do things differently. That seemed to satisfy lawmakers, at least for now.

Kate Linebaugh: Why does it matter if Congress is happy with her or not?

Ryan Tracy: Look, in terms of conducting her daily business, she's already got this job. Congress doesn't have any direct say about that. On the other hand, she does have things she needs from Congress, and if she wants to get those things, she's got to have support from Democrats and probably also from Republicans, at least on some of them. Because some of that legislation will have to be bipartisan to get through.

Kate Linebaugh: After the hearing, Kahn held a press conference. She stayed on message and didn't ruffle feathers, but there was one notable thing. She had a book with her, a book about a century-old action by the FTC.

Ryan Tracy: She said it had a fairly boring title, like Federal Trade Commission Report on Meatpacking Industry. Basically as she described it, it was the Commission's investigation into this industry and how it worked and how different companies might've had power over different segments of the supply chain and that sort of thing. She also noted with a laugh that the FTC had tried to take action on that industry and that Congress ended up thinking the agency had gone too far in limiting its jurisdiction with respect to that industry. Which I thought was kind of an interesting comment, given that in a lot of people's view, she may try to herself push the bounds of the FTC's legal authority.

#### The FTC’s support is strong, because they’ve been picking their spots and carefully avoiding expanded antitrust

Woodrow Hartzog 15, Associate Professor at the Cumberland School of Law at Samford University and Affiliate Scholar at the The Center for Internet and Society at Stanford Law School, and Daniel J. Solove, John Marshall Harlan Research Professor of Law at the The George Washington University Law School, “The Scope and Potential of FTC Data Protection”, George Washington Law Review, 83 Geo. Wash. L. Rev. 2230, November 2015, Lexis

B. The Appropriate Level of Restraint

As we have argued earlier, the FTC has been rather conservative in its enforcement, eschewing the role of being a norm entrepreneur. There are likely many reasons for this restraint, including a deference to some self-regulatory efforts, limited resources, and political considerations. Thus, the FTC's conservative approach has brought considerable benefits, and has been quite wise. But the fact [\*2292] that this approach has worked in the past does not mean that it is best suited for the future.

We contend that the FTC should not continue on with the same level of restraint that it has exhibited thus far. In the early days of FTC data protection enforcement, so many privacy norms had yet to develop. Most companies lacked privacy officers. There was barely a privacy bar. In contrast, today there is an established support system of privacy professionals dedicated to helping companies understand their obligations under certain privacy regimes like the FTC. Andrew Clearwater and Trevor Hughes wrote:

From essentially no active professionals in the 1970s and 1980s, the privacy profession has grown to at least 13,000 people working on managing information privacy within their organizations. As the information economy continues to grow - pushed by the breath-taking speed of technological development, cloud computing, big data, and emerging uses for exponentially increasing stores of data - it is reasonable to expect that the privacy profession will grow.

These counselors have a nuanced understanding of the significance of the FTC complaints and are able to rely on the FTC's guidance as well as industry standards to competently advise their clients. In short, the system is primed and ready for the FTC to take on a bigger role.

The threats to privacy posed by the digital age are no longer novel, but privacy law has yet to adequately respond to many of them. With an established regulatory compliance support system in place and a grant of power well suited to tackle the slipperiest aspects of privacy law, the time has come for the FTC to fulfill its potential.

The viability of the FTC's role depends partially on the extent of its influence on privacy professionals. The FTC has limited resources and can only pursue a few privacy and data cases each [\*2293] year. One reason it is able to achieve broad enforcement without having to bring thousands of cases each year is that privacy professionals review the FTC's activities and take steps to comply. In-house privacy counsel have an incentive to stay ahead of the FTC and avoid regulatory trouble for their organizations. They help bring the FTC's activities to the attention of the C-Suite, who otherwise might not be aware of what the FTC is doing, or why it matters. Outside counsel also advise on the FTC's activities. Whenever the FTC resolves a new case, the privacy bar goes aflutter, and blog posts are written on blogs of large law firms, as are updates in various other media forums. In other words, whenever the FTC speaks, the privacy bar amplifies it and spreads the word. This helps to encourage companies to comply.

Once the FTC has brought an enforcement action based on a particular standard, that standard achieves a new level of legitimacy and formality. For all intents and purposes, the standard becomes law.

Because the law of privacy and data security is so fragmented, so magma-like in its nature, the FTC has had an unusually influential role in shaping the law of privacy and data security by embracing certain standards and norms that have achieved a decent level of consensus. The FTC should certainly push toward the logical implications of certain norms, but it must be careful not to be too radical. There must be a foundation.

Given the amplifying and legitimizing role of FTC actions, the agency should be careful to avoid embracing norms that lack a fair degree of consensus. Sunstein has written that

existing social conditions are often more fragile than might be supposed, because they depend on social norms to which - and this is the key point - people may not have much allegiance. What I will call norm entrepreneurs - people interested in changing social norms - can exploit this fact.

So far, the FTC has served as "more of a standard codifier than a standard maker. Instead of blazing a trail by creating new norms and [\*2294] standards, the FTC has waited until norms and standards have developed and then begun enforcement."

Though the FTC's direct and indirect powers are great, the FTC is still subject to political pressure. In describing some practical restraints on the FTC, Sovern has noted that Congress has the power to limit FTC power if the FTC oversteps, and that the FTC has budget and staff limitations and thus is "unlikely to expend its scarce resources on trivial deceptions."

#### FTC legitimacy is robust because it’s narrowly focused, avoiding expansion of antitrust scope beyond the political consensus

Maureen K. Ohlhausen 15, JD from George Mason University School of Law, BA from the University of Virginia, “The Importance of Agency Design for Successful Competition Policy in Broadband”, Colorado Technology Law Journal, 14 Colo. Tech. L.J. 37, Lexis

A. Political Support

1. The FTC

As a threshold matter, an agency needs consistent and strong political support. Kovacic and Hyman note:

An agency is doomed if it lacks a supportive constituency, or if the performance of its duties generates crippling political opposition. More broadly, an agency will not be able to operate effectively if its structure raises serious doubts about its legitimacy or increases the vulnerability to political pressure that the performance of its duties will arouse.

This first factor speaks directly to the FTC's origins and the stability of its structure as a bipartisan entity. The FTC was born out of early twentieth century dissatisfaction with the relatively lax way in which the Department of Justice and the courts were interpreting and enforcing the Sherman Act. In the years preceding the FTC's creation in 1914, the country underwent a tremendous wave of corporate consolidation. In the decade straddling the turn of the twentieth century there were forty-two deals that resulted in companies with over seventy percent market share in their respective industries. At the crest of this wave, in the years from 1898 to 1902, at least 303 companies disappeared each year and in 1899, over 1,208 were merged out of existence. For several years, the government offered essentially no meaningful response.

The concept of antitrust that evolved during these early years, particularly from 1890 to 1900, initially represented more a "movement" of "public agitation" at the growth of industrial enterprise and concentration of wealth during the Gilded Age. When President [\*40] Theodore Roosevelt entered office in 1901, relatively little antitrust jurisprudence existed and it was unclear whether the Sherman Act even covered mergers. The disconnect between the public's concerns about trusts and the government's largely indifferent enforcement was a product of many factors, including: a still-nascent understanding of the economic implications of corporate consolidations; political indifference (or worse); and a Supreme Court that had expressly called into question whether the Sherman Act applied to mergers in its 1895 decision in United States v. E.C. Knight Co. In that case, the Court rejected the government's attempt to stop the sugar trust from buying four Pennsylvania plants, even though it would give the trust a ninety-eight percent share of the national market. The Court read the Commerce Clause to exclude these transactions from federal law, because they impacted commerce "only incidentally and not directly." Moreover, since the trust was mainly a manufacturer, the Court noted that, "commerce succeeds to manufacture, and is not part of it."

Roosevelt spearheaded the conversion of public agitation about big business into government action with the formation of the Bureau of Corporations in 1903 - a predecessor of the Federal Trade Commission housed within the Department of Commerce and Labor - and by pushing the Department of Justice to litigate cases like Northern Securities Co. v. United States, which established the Sherman Act's coverage of mergers and dismantled a large holding company that had brought together three major competing railroad companies in the Midwestern and Western United States.

Roosevelt's push for greater antitrust enforcement was a promising start, but his later policies and dealings with industrialists and financiers like J.P. Morgan, with whom he entered a "gentlemen's agreement" to resolve competitive issues less formally, led some to question the direction of American antitrust enforcement. In particular, one of his deals with J.P. Morgan during the financial panic of 1907, in which Roosevelt agreed to allow Morgan to purchase Tennessee Coal & Iron to stabilize the stock market despite Sherman Act concerns, created considerable controversy, leading to Congressional hearings, and becoming a national campaign issue in the 1909 and 1912 presidential [\*41] elections.

Over time, Roosevelt grew to believe that concentration was a natural development for an increasingly efficient economy and that government's best role was to expand direct regulation and control of those larger enterprises. Big government could manage big business.

Roosevelt's successor in office, lawyer and jurist William Howard Taft, was far less interested in the type of administrative state Roosevelt had appeared to embrace. Rather, Taft believed in the courts' development and application of a rule of reason test under the Sherman Act. This view of the important role of courts in legal development prompted Taft to pursue an even more active enforcement agenda than Roosevelt, with his administration relying less heavily on the Bureau of Corporations and instead pursuing more federal court antitrust cases - roughly twenty per year in comparison to an average of six per year under Roosevelt. Nonetheless, near the end of his term, Taft lamented the lumbering pace of jurisprudential development and weak remedies typically handed down by the courts in antitrust cases. Competition enforcement continued to be an issue through the 1912 presidential election.

By the time Woodrow Wilson entered office in 1913, two perspectives on how to approach antitrust enforcement had gained prominence. The first view held that Congress should create a new agency similar to the DOJ that would enforce existing antitrust laws, but that would be politically independent and possess flexible substantive jurisdiction to allow it to actively shape business behavior. The second view wanted to move away from the DOJ model and create an independent policy body, similar to Roosevelt's Bureau of Corporations. This policy agency would have special power to work with the business community, research competition issues, and then issue reports, regulations, and guidelines that would help shape industry's conduct.

The FTC represented a compromise between these views. The result is an independent, bipartisan, policy-oriented, and research-based enforcement agency. The Commission's bipartisan structure, its research [\*42] and advocacy missions, and its statutory focus on two relatively narrow and complementary areas of law have generally allowed it to navigate a sure course over the years. More specifically, the Commission's bipartisan composition, supported by three Bureaus of equal standing under direct control of the Commission, including a Bureau of Economics, promotes thoughtful analysis and discussion of the legal and economic implications of market and agency actions at both the Bureau and Commission level. In addition, the research, outreach, and advocacy missions of the agency allow it to identify and then promote best practices for enhancing competition and consumer protection in industry, among consumers, and even with other government actors. The outreach also encourages transparency with the agency's stakeholders and promotes dialogue and, ultimately, buy-in to the agency's mission from multiple constituencies.

Over the years, the agency has been able to generate important industry studies, reports on specific issues, and guidelines for industry practices and agency enforcement policies. A good example is the FTC's merger review program generally and, in particular, the Horizontal Merger Guidelines. Since the 1990s, these Guidelines have become [\*43] widely accepted tools for merging parties to evaluate and defend proposed deals, and they have had a profound influence on merger review by federal courts. In particular, over twenty years ago, they introduced new empirical, economic analyses to reflect the growing consensus in the bar and academia that economics, not political or social factors, should determine the outcome of the agency's merger review.

These efforts to reflect and adopt modern analysis also earned the agency considerable legitimacy with its constituents and political benefactors. In a 2005 speech on the bipartisan legacy of antitrust, former FTC Commissioner Thomas Leary observed "there really is no such thing as a "Republican' or a "Democratic' antitrust agenda today. People may have different views on the facts of individual cases for a variety of reasons, but there is a broad mainstream consensus on the basic approach to antitrust issues."

### Link---2NC

#### Even if the plan itself doesn’t result in FTC overstretch, it greenlights the FTC to expand its enforcement activities into new areas in the future

Ty Perkins 21, Reporter at Broadband Breakfast, “FTC Divided Over Increasing Agency Jurisdiction at Congressional Hearing,” Broadband Breakfast, 7/29/21, https://broadbandbreakfast.com/2021/07/ftc-divided-over-increasing-agency-jurisdiction-at-congressional-hearing/

Critics of Expanding FTC Authority

Earlier this month, the FTC held an open meeting of which Commissioner Noah Phillips was a critic. The FTC voted on several measures, including rescinding a rule that limited the agency’s enforcement powers, and allowed time for public comment after the vote had been taken. Phillips said he believes that allowing the public to comment after the vote has signaled a departure from public accountability.

“On July 1, without input from the public, we adopted rules to enable us to promulgate regulations with less objectivity, less oversight, and less public input,” Phillips said. “The Commission majority is reducing what it calls red-tape on the commission to impose more red-tape on American businesses—large and small.”

He added that regulating big technology companies, such as Facebook and Google, is work best suited for Congress, not an independent government agency with less democratic accountability.

“Well-crafted regulation can help consumers and businesses, but poor regulatory design can raise prices, stifle innovation, and reduce consumer choice,” Phillips said.

Phillips’ Republican counterpart on the Commission, Christine Wilson, joined in his critique, fearing that increasing the FTC’s jurisdiction could lead to FTC overreach in the future.

#### The plan depletes the FTC’s PC, preventing risky action in other areas

Filippo Maria Lancieri 19, Master’s Degree in Economics from Insper, Research Fellow at the Stigler Center, J.S.D. and LLM Candidate at the University of Chicago Law School, BA in Law from FGV - Fundação Getulio Vargas, “Digital Protectionism? Antitrust, Data Protection, and the EU/US Transatlantic Rift”, Journal of Antitrust Enforcement, Volume 7, Number 1, 8/19/2019, Lexis

This is better seen as a regulator’s endogenous decision that reflects both the political climate in which he operates and the toolkit at his disposal-leading different regulators to opt for different solutions. As a result, it is feasible that European anti-trust policymakers’ actions partially reflect concerns regarding the economic power of companies that handle large amounts of personal data. In the US, the response may be different, as local preferences and available tools are different. In other words, if agencies are *‘continually engaged in a process of accumulating and spending political capital’* when taking enforcement decisions, European regulators have incentives to increasingly act to reign-in, through all means available (antitrust being an important one), on the power of data companies. In doing so, they demonstrate their alignment to political priorities and accumulate political capital to spend in other areas. The same does not hold true for American regulators operating in a political environment where similar actions entail an expenditure of political capital that may be better allocated elsewhere.

#### The FTC is a political actor, acutely aware of its finite PC---it’ll avoid repeatedly confronting Congress by altering antitrust enforcement in other cases

D. Daniel Sokol 10, Assistant Professor at the University of Florida Levin College of Law, Senior Research Fellow at the George Washington University Law School Competition Law Center, LLM from the University of Wisconsin Law School, JD from the University of Chicago, MS in History from the University of Oxford, AB from Amherst College, “Antitrust, Institutions, and Merger Control”, George Mason Law Review, 17 Geo. Mason L. Rev. 1055, Summer 2010, Lexis

Both antitrust's statutory authority and each country's current policy outlook are functions of policy choice discretion. Antitrust agencies must take into account their political capital and how to expend it vis-a-vis other government actors, states, and privately-owned enterprises that wield significant political power. These public choice calculations color how agencies order their enforcement priorities. Agency discretion through agency inaction illustrates the limits of competition advocacy and other forms of antitrust enforcement against public restraints.

The history of U.S. antitrust enforcement illustrates public choice concerns. In 1890, Congress enacted antitrust legislation at the federal level. At its very roots, antitrust emerged in part as a result of political bargaining. Some of the rationale behind the Sherman Act was to protect producer interests against more efficient large-scale operations. To think that antitrust is not influenced by political interests naively suggests that public choice theory applies in other regulatory settings but not antitrust.

In some instances, antitrust enforcers may be subject to capture. Antitrust agencies may act politically in a number of ways. Agencies are political players that attempt to increase their size and power. Agencies may [\*1074] act politically in case selection. The more high profile the case successfully brought, the greater the potential rewards are for antitrust lawyers going forward as they advance within government or exit government for private practice. Cases not brought are equally important. Agencies may choose not to bring difficult cases because they could result in a defeat. A decision against the agency may affect the future budget of the agency and the quality of its staff. Antitrust agencies also may be chilled from bringing a case, if in doing so they threaten the interests of government officials that have budgetary or oversight authority over the agency. For example, when an enforcer rules the "wrong" way because she looks to efficiency rather than industrial policy concerns, political repercussions may ensue.

Both the executive and the legislative branches may push the antitrust agencies toward certain goals. Antitrust agencies face potential cuts in funding if their enforcement and non-enforcement priorities are inconsistent with Congressional wishes. Such threats limit the potential scope of agency decision making. Similarly, the executive branch may try to influence the DOJ Antitrust Division to push an enforcement agenda based on its own policy agenda. The antitrust bar may also influence the antitrust agencies. Prestige in the eyes of the practitioner community and potential private firm opportunities after government service may shape some agency decision making at both staff and leadership levels of the antitrust agencies.

#### Even if not reality, the agency thinks this way---they’ll pick their spots to avoid a critical mass of opposition

William E. Kovacic 15, Global Competition Professor of Law and Policy, George Washington University Law School and Non-executive Director, United Kingdom Competition and Markets Authority, JD from Columbia University Law School, BA from Princeton University, and Marc Winerman, Formerly of the Federal Trade Commission, “The Federal Trade Commission as an Independent Agency: Autonomy, Legitimacy, and Effectiveness”, Iowa Law Review, 100 Iowa L. Rev. 2085, https://ilr.law.uiowa.edu/print/volume-100-issue-5/the-federal-trade-commission-as-an-independent-agency-autonomy-legitimacy-and-effectiveness/

H. Summary: Significance of the Pressure Points

The political branches of government have a variety of measures to influence competition agencies to consider and respond to their preferences, even when the competition agency is established as an administration body that stands outside any government ministry and is headed by a board whose members have fixed terms and can be removed only for good cause. In many jurisdictions, executive bodies and legislatures have shown their willingness to use these techniques.

Actual or threatened recourse to pressure points has major implications for the operations of a competition agency. No agency can prosper unless it takes account of these pressure points and considers how to maneuver through the external political environment. The formulation of an agency’s strategy requires it to consider the political consequences of its actions. Every day, an agency acquires or spends political capital. The agency should consider new projects in light of their political costs in several respects. The agency should identify how it can amass political support—for example, through the media—for projects that are certain to arouse political opposition. The agency also should be careful to avoid choosing so many politically sensitive targets at any one time that a critical mass of opposition will form and overwhelm the agency, as happened to the FTC from the late 1970s until restrictive legislation was adopted in 1980.

### U---AT: Antitrust Now---2NC

#### FTC’s firmly committed not to push statutory limits

Cathy Anne McMorris Rodgers 21, American politician who is the U.S. Representative for Washington's 5th congressional district; Janice Danoff Schakowsky is an American politician who has served as the U.S. Representative from Illinois's 9th congressional district since 1999; Lori Ann Loureiro Trahan is an American businesswoman and politician who serves as the U.S. Representative for Massachusetts's 3rd congressional district; Lina Khan is Chair of the FTC; Rebecca Slaughter is Commissioner at the FTC, “Transforming the FTC: Legislation to Modernize Consumer Protection,” Committee on Energy and Commerce, 6/28/21, https://energycommerce.house.gov/committee-activity/hearings/hearing-on-transforming-the-ftc-legislation-to-modernize-consumer

Cathy Anne McMorris Rogers (4:00:11): I look forward to further conversations with you because I am concerned about rumors of the FTC acting outside of Congress and issuing a rule on privacy. And with that, I'll yield back.

Jan Schakowsky (4:00:25): Congresswoman Trahan. It's your five minutes.

Lori Trahan (4:00:32): Thank you Madam Chair, and Chair Khan, and fellow commissioners, thank you for your patience and for being here today discuss how this essential agency can better protect our consumers. President Biden's most recent executive order promoting competition in the American economy encouraged the commission to exercise the FTC's statutory rulemaking authority in regards to, and I quote, unfair data collection and surveillance practices that may damage competition, consumer autonomy, and consumer privacy. Now, in October 2020, Google Ads updated its policy to restrict the serving of high fat sugar, salt, food, and/or non alcoholic beverages advertising for minors under 18 in the United Kingdom, and in the European Union, but has refused to make similar changes here in the United States. A recent policy change by Facebook is a step in the right direction, but it's far from perfect when you consider that a May 2021 study by the Tech Transparency Project found that Facebook allows advertisers to target ads for electronic cigarettes, pill parties, and extreme weight loss product products to children as young as 13 across the US. Plainly, Facebook and Google are using troves of personal data belonging to teens and adults to target harmful advertisements in ways that are not transparent to users. So Chair Khan, would you consider these examples of the types of surveillance practices that may damage consumer autonomy and consumer privacy?

Lina Khan (4:02:05): Absolutely, Congresswoman.

Lori Trahan (4:02:06): Thank you for that. And Commissioner Slaughter. If the commission were to begin rulemaking today to protect consumers, including our children, from surveillance advertising, what would be the process under the Commission's existing Mag-Moss authority? And would the commission face difficulties? If you could speak to that it would be great.

Rebecca Kelly Slaughter (4:02:30): Thank you, Congressman. It's a great question. And I want to start by responding to suggestion from the ranking member of the committee that the Commission might act without Congress or outside of congressionally delegated authority. I want to be very clear: the commission cannot, should not, and will not, with my support, act outside of congressionally delegated authority. But we absolutely should look at the authority Congress has delegated to us, and it has specifically delegated to us rulemaking authority under Section 18 of the FTC Act, which is referred to as Mag-Moss, to promulgate rules to address unfair and deceptive acts or practices that are prevalent in interstate commerce. And so data abuses could fall very much into that category. Rulemaking under Section 18, to answer your question briefly, looks like APA rulemaking, but with much, much more process. So we can't begin with a notice of proposed rulemaking - we have to begin with an advance notice of proposed rulemaking that asks questions about the issues that we will consider. We have to notify Congress before we do that. We have to do then in a notice of proposed rulemaking identify any issues of material fact that are disputed, and again, notify Congress. And if there are issues of material fact, the statute requires us to have an informal hearing to adjudicate them. So it is a very process-intensive statute that requires lots of, and provides opportunity, for lots of participation. It is absolutely burdensome to the commission to do it. I think it's worth it for us to try. But we should make no mistake that it would not be a quick or fast effort.

#### There’s no significant antitrust enforcement

Joseph Charles Folio 21 III, Lawyer at Morrison Forrester, and Lisa M. Phelan Co-chair Global Antitrust Law Practice Group at Morrison Forrester, Jeff Jaeckel, Co-chair Global Antitrust Law Practice Group at Morrison Forrester, and Alexander Paul Okuliar, Co-chair Global Antitrust Law Practice Group at Morrison Forrester, “Antitrust Update: Up and Down the Avenue”, 3/22/2021, https://www.mofo.com/resources/insights/210322-atr-update.html

Are the stars aligning for antitrust reform? President Biden is filling key positions in the White House (Timothy Wu, National Economic Council) and at the FTC (Lina Khan, nominee for commissioner) with lawyers who have advocated for increased antitrust enforcement, especially against “big tech.” In Congress, the House antitrust subcommittee concluded a year-long investigation in October 2020 and found bipartisan agreement on discrete areas for reform. With Democrats now in control of both houses of Congress, antitrust legislation seems close. But not so fast.

The House and Senate antitrust subcommittees have held four hearings since February 25, 2021, but it is crucial to view these recent developments in their proper context. Even when politicians and enforcers appear to agree on a goal, it can still be a long and winding road to actual policy reform.

Two to go

Although antitrust reform advocates cheered President Biden’s initial appointments, two of the most consequential antitrust positions—the assistant attorney general (AAG) for antitrust and the FTC chair—remain open. Both the AAG and FTC chair wield tremendous authority; they approve cases, guide investigations, and will decide how to proceed with ongoing litigation. It is unlikely that the Biden administration will make any significant decisions, or support any particular legislation, before its key personnel are firmly in place. And that can take time. Former AAG Makan Delrahim was nominated in March 2017 but not confirmed until September 2017.

Interestingly, the pressure to nominate like-minded antitrust reformers for these two positions is coming from multiple angles. One public interest group recently sent a letter to White House chief of staff Ron Klain and, after “highly commend[ing]” the nomination of Ms. Khan to be an FTC commissioner, warned against the influence of certain White House and DOJ officials over the AAG and FTC chair nominations because of their links to “big tech” companies.[1] Additionally, many in the press have been critical of the level of tech enforcement activity during the Obama administration and want to avoid a replay of those years.[2]

#### Nothing will get past GOP opposition

Dave Perera 21, Master’s Degree from the Columbia University School of International and Public Affairs, Technology Reporter at mLex, Veteran Cybersecurity Reporter for Politico and Former Editor for FierceMarkets Publications, “US Antitrust Legislation Faces Uphill Battle Despite Unified Democratic Government”, mLex, 3/12/2021, https://mlexmarketinsight.com/news-hub/editors-picks/area-of-expertise/antitrust/us-antitrust-legislation-faces-uphill-battle-despite-unified-democratic-government

Renewed interest among US lawmakers in antitrust legislation is unlikely to produce radical policy shifts, notwithstanding the Democratic Party’s unified control of the federal government.

Democrats promised a “big, bold agenda” after they captured the Senate by a hairsbreadth in January. Democratic lawmakers may very well stick to those ambitions and announce audacious legislative proposals. But the fate of those bills is at the mercy of a political dynamic ensuring that the more liberal the policy prescriptions, the less likely they are to become law.

The most likely outcome over the next two years is more funding for enforcers at the Department of Justice and Federal Trade Commission, whether directly through appropriated funds, steeper merger notification filing fees, or both.

It’s also possible Congress could incrementally tinker along the edges of antitrust. It might lower the threshold for challenging mergers, or mandate data portability requirements for social media companies.

Those expecting — or fearing — more ambitious outcomes likely won’t see them enacted. So until America’s November 2022 election, scratch from the list of high probabilities reforms such as requiring dominant firms to separate lines of business, or shifting the burden of proof onto an acquiring company.

Put another way, unless a bill can attract significant Republican support, not even two years of unified Democratic government can guarantee reforms.

### U---AT: Antitrust Now---Biden XO---2NC

#### The XO is empty talk that’s years from being implemented

Jeff Jaeckel 21, Co-Chair Global Antitrust Law Practice Group at Morrison & Foerster, Alexander Paul Okuliar, Co-Chair Global Antitrust Law Practice Group at Morrison & Foerster, and Lisa M. Phelan Co-Chair Global Antitrust Law Practice Group at Morrison & Foerster, and Megan E. Gerking Partner at Morrison & Foerster, “Charting a New Course for Antitrust: President Biden’s Executive Order Promoting Competition in the American Economy”, Client Alert, 7/14/2021, https://www.mofo.com/resources/insights/210714-president-biden-executive-order-antitrust.html

Despite its breadth, the immediate effect of the EO on law or regulation is less clear. The EO itself does not enact any new law or regulation. Rather, the EO often uses vague language in instructing or guiding the actions of agencies. This is likely purposeful in many instances, including when the EO refers to independent agencies, like the FTC, Federal Communications Commission, Maritime Commission, Consumer Financial Protection Bureau, and the Surface Transportation Board. Nonetheless, for almost every initiative, there is likely to be a significant gap between the action directed or encouraged by the EO and the time it will take for the relevant agency to investigate, evaluate, and potentially implement a new rule or policy. Even where the direction to an agency is explicit, issuing a new rule or regulation takes time. An agency must first draft a rule, allow for a notice-and-comment period, make any necessary revisions, and then issue and start to enforce a final rule. And this does not account for likely legal challenges. In some instances, the EO directs the agencies to submit a report on the issue first rather than make any immediate changes, pushing any resulting regulatory activity out at least until the period following completion of the report.

#### It's non-binding AND will be blocked by the court and Congress

Lewis Brisbois 21, Lewis Brisbois Bisgaard & Smith LLP, “President Biden Signs Executive Order on Promoting Competition in the American Economy”, 7/12/2021, https://lewisbrisbois.com/newsroom/legal-alerts/president-biden-signs-executive-order-on-promoting-competition-in-the-american-economy

On July 9, 2021, President Biden signed an “Executive Order on Promoting Competition in the American Economy.” According to a Fact Sheet released in advance of the signing, the Executive Order takes “decisive action to reduce the trend of corporate consolidation, increase competition, and deliver concrete benefits to America’s consumers, workers, farmers, and small businesses.”

Among other things, the Executive Order encourages the Federal Trade Commission (FTC) and the Antitrust Division of the Department of Justice (DOJ) to focus enforcement efforts on problems in key markets and coordinate other federal agencies’ responses to corporate consolidation. Further, the Executive Order calls on the FTC and DOJ to “enforce the antitrust laws vigorously.” The Executive Order would also make it easier for high tech workers to change jobs by banning or limiting non-compete agreements, lower prescription drug prices by supporting programs to import cheaper prescription drugs from Canada, make it less expensive to repair products by limiting manufacturers from barring self-repairs or third-party repairs of their products, and increase opportunities for small businesses by directing all federal agencies to promote greater competition through procurement and spending decisions. In all, the Executive Order outlines 72 initiatives that attempt to rein in corporate powerhouses that control markets.

In the Fact Sheet, the Biden Administration compared its Executive Order to the responses of previous Administrations to “growing corporate power,” expressly citing the trust-busting efforts of the Theodore Roosevelt and FDR Administrations’ “supercharged antitrust enforcement” agendas.

Although Democratic lawmakers and union leaders have cheered the Executive Order, some business advocacy groups have reportedly warned that such measures as those in the Executive Order could slow the economy.

Executive Orders are expressions of policy intent that have no actual binding legal force. Their ability to change the law lies in follow-up implementation by federal agencies that act to implement presidential initiatives. Those changes are limited by the extent of underlying statutory authority, and the courts in recent years have appeared reluctant to expand the scope of what is considered anticompetitive activity under the antitrust laws. Business interests should keep a close eye on the regulatory proposals that result from this Executive Order and consider engaging on those that affect their business operations.

### Missiles---Merger Solves---2NC

#### Hypersonic imbalance causes launch on warning or crisis escalation that goes nuclear---robust U.S. capabilities solve by solidifying deterrence and strategic stability

Seth Cropsey 8-5, Senior Fellow at the Hudson Institute and Director of Hudson’s Center for American Seapower, Former Deputy Undersecretary of the Navy, and Harry Halem, Research Associate at the Hudson Institute and Graduate Student at the London School of Economics, “Hypersonic Weapons Could Tilt War In Favor Of Russia, China”, The Hill, 8/5/2021, https://thehill.com/opinion/national-security/566534-hypersonic-weapons-could-tilt-war-in-favor-of-russia-china

Hypersonic weapons could well transform the strategic balance. The United States’ adversaries recognize this fact — Russia and China have both tested hypersonics and appear to have prioritized integrating them into their combat forces. The U.S. must do the same — or accept a strategic balance in our adversaries’ favor.

The Washington news cycle typically overlooks subtle yet consequential policy choices. Biden’s FY2022 defense budget request of $715 billion constitutes a functional decrease from the previous budget — its $11 billion “increase” does not keep pace with inflation. Although the Obama administration’s most robust technologists, former Undersecretary of Defense Robert Work foremost among them, are not serving in this administration, their imprint is clear. Biden cut $8 billion of procurement, and in turn boosted broader research and development by $5.5 billion.

Thus, its envisioned military will rely upon a small number of high technology platforms, a sort of “third offset” redux. Given this context, even the Biden administration’s apparently small funding choices will have a significant impact upon future American force structure, capabilities, and strategy — hence the Biden administration’s increased funding for hypersonic development must be considered more specifically.

Trump’s FY2021 budget included $3.2 billion for hypersonics. Biden’s FY2022 request provides $3.8 billion, an 18 percent funding increase. Moreover, the administration resumed hypersonic testing after a brief pause before the U.S.-Russia summit in June. This past month, the Air Force successfully detonated the AGM-183a ARRW hypersonic missile’s warhead and conducted its second air-launched flight test of the weapon.

Hypersonic missiles travel far faster than today’s cruise missiles — around Mach 5, which is perhaps twice as fast as Russia’s Kalibr and some six times faster than the U.S. Tomahawk. This speed, plus their maneuverability, make them relatively invulnerable to today’s air defense systems.

A military that gains hypersonic missiles can strike with shorter warning times, hit targets without regard to air defenses, and coordinate strikes across much greater width and depth.

Our adversaries understand the advantage hypersonic weapons will provide if fielded in sufficient numbers before a rival obtains the capability. China and Russia have distinctly aggressive intentions. Their objectives require dominating their neighbors and ensuring that the U.S. encounters significant obstacles in conducting a counterattack. By jeopardizing U.S. missile defenses, shortening warning times, and increasing the depth of exposed American and allied forces, China and Russia could tilt the strategic balance in their favor.

A hypersonic *imbalance* therefore invites attack by tempting an aggressor to use its advanced capabilities to penetrate missile defenses. As such, our adversaries have accelerated testing along with America. According to Israeli sensors, Russia may have tested a Kinzhal hypersonic missile in the Eastern Mediterranean in late June. Several weeks earlier, the U.S. Missile Defense Agency publicly confirmed that the Chinese DF-17, designed to carry the hypersonic glide vehicle DF-Z, is sufficiently developed to threaten U.S. carrier strike groups in the Indo-Pacific.

There is fear, however, that the general development of hypersonic weapons, deployed in balanced or imbalanced numbers, will cultivate “strategic instability” — that is, a military balance that trends towards aggression and conflict, rather than deterrence and defense.

Hypersonic deployment in large numbers, it is argued, will reinforce first-strike incentives. Both combatants will recognize that their missile defenses are ineffective. Thus, they will attempt to pre-empt each other, launching their hypersonic missiles at enemy capabilities virtually without warning. Moreover, the speed of hypersonic weapons encourages a “launch on warning” mentality. Because a defender lacks sufficient warning time to reposition or harden targets to limit damage, the temptation will exist to launch on warning of an attack, even if, given the vulnerability of modern combat systems to electronic and cyber compromise, a command system makes a severe targeting error.

This fear of strategic instability harkens back to Cold War nuclear arguments. Increasing armaments, it was theorized, would progressively intensify crises and make global thermonuclear war inevitable after a certain point.

Over time, this transformed into a conviction in nuclear stability. If both parties fielded sufficient offensive nuclear capabilities and were vulnerable to attack, then the logic of mutually assured destruction — essentially a transnational murder-suicide pact — would take hold, precluding crisis escalation into thermonuclear conflict. In turn, this faith in mutually assured destruction morphed into an antipathy against short-range nuclear weapons designed for use against military targets and, in the 1980s, a crusade against missile defense systems that would threaten the Soviet Union’s ability to make credible its side of the murder-suicide pact.

Distinguishing the arguments of academic and policy opponents of missile defenses from the logic behind the INF and ABM treaties is important. But the specific benefits of contingent policy choices cannot be confused for broader arguments supporting a comprehensive strategic perspective. The choice, in principle, to eschew certain weapons systems — or defense systems — was problematic throughout the Cold War.

Arguments against the development of hypersonic weapons have a similar tenor. Their opponents, who call for global regulation, arsenal mitigation, and ideally elimination, cite the concerns discussed above, and argue that hypersonics only will increase crisis instability. But any form of deterrence breaks down if one party functionally pledges to refrain from employing capabilities that increase its military effectiveness. Deterrence is founded upon warfighting capability — the ability to at minimum jeopardize an adversary’s combat objectives and at best deny them outright.

Hypersonics are a clear way to hold Chinese objectives at risk through counterstrikes against critical command nodes and military assets. China’s rulers understand that. The PLA has invested in missile defenses and hardening mechanisms in anticipation of a war against a more advanced adversary — in the 1980s the Soviet Union, from the 1990s the United States. Hypersonics would prove a useful counter to these defenses.

The Biden administration should be commended for increasing hypersonic funding, continuing testing, and engaging in a broad effort to modernize U.S. military capabilities for a confrontation with China. But its timetable remains too extended. Sino-American antagonism is not imaginary. The CCP is approaching the point at which it may choose force to achieve its international objectives, the “reunification” of Taiwan with the mainland foremost among them.

If the Biden administration is unwilling to fund a military capable of fighting close to China, it must prioritize capabilities, like hypersonics, that can be launched at a greater distance, and can do more damage to their selected targets. Thus, it must increase funding for hypersonic development and push the services to begin integrating hypersonics into their force structures. Technological modifications must be funded, for example, to place hypersonics on U.S. attack and guided-missile submarines. And the administration must compel the services to consider more thoroughly the consequences of hypersonic attacks and the need to “harden” American bases and naval groups, the most likely targets of Chinese or Russian hypersonic weapons.

Recently retired as commander of the U.S. Indo-Pacific Command, Admiral Phil Davidson, warned the Senate Armed Services Committee in March that the U.S. is “accumulating risk that may embolden China to unilaterally change the status quo before our forces may be able to deliver an effective response.” A hypersonic arsenal capable of striking hardened targets within China and neutralizing the PLA’s carrier groups in the South and East China Seas offer the U.S. a powerful deterrent that would tilt the military balance back in America’s favor.

#### Merging accelerates innovation and prevents supplier collapse---that keeps tech superiority, preventing conflict with Russia, China, Iran, and North Korea

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Lockheed Martin’s efforts to acquire Aerojet is an initiative that, not unlike Northrop’s acquisition of Orbital ATK several years ago, is generating clearly unfair comments and criticisms on the basis that it will somehow raise antitrust issues and compromise needed competition from within the defense industrial base.

However, all of this is untrue.

Arguments about diminishing competition among defense sector firms are familiar to most defense observers, however the contention that a merger of this kind might impair or somehow compromise the kind of innovation needed to address changing global threats does not make any sense whatsoever.

This incorrect argument goes something like this: defense industrial base consolidation can reduce the ability for small companies to pursue enterprising kinds of innovations or technical initiatives likely to drive rapid modernization and free-market competition.

Looking at mergers such as Northrop and Orbital ATK, Raytheon and UTC, and some others, there certainly has been consolidation to a large extent within the defense industrial base. This is likely one of the reasons why the Federal Trade Commission mandated certain guidelines for Northrop. Those requirements include that they firewall the majority of their businesses from elements related to Orbital’s production of rocket propulsion technologies.

Despite these precautions, detractors argue that a Lockheed-Aerojet acquisition would still reduce the possibilities for innovation anyway. But if the proper mechanisms are taken to ensure competition, would that really be the case?

Lockheed and Aerojet: A Winning Combination

The answer to any objective observer is a clear no.

No way, to put it rather bluntly.

In fact, it could be argued the Lockheed-Aerojet merger is a smart move that can only make the U.S. defense industry more dynamic and prepared for the threats of the future, such as great power competition from China and Russia, who are modernizing their armed forces at a rapid clip.

There are several reasons why this is the case, such as the growing extent to which the largest defense firms have been immersed in innovation, both in competition with one another as well through collaboration.

Also, perhaps of greatest significance, large defense companies operate an extremely large and diverse set of subcontractors and technology suppliers and consistently hold competitions to award subcontractor and supplier deals.

The F-35: A Case Study

Lockheed’s F-35 Joint Strike Fighter, for example, is an integrated system with technological components from as many as 1,000 small business suppliers, according to Lockheed’s F-35.com website. Also, the F-35 contains major subsystems from many of Lockheed’s large competitors.

For example, Northrop makes the Active Electronically Scanned Array and other kinds of F-35 avionics, software, and communications technologies, Raytheon makes F-35 Electro-Optical targeting sensors, BAE Systems is involved in manufacturing parts of the tailfins and fuselage for the aircraft and General Dynamics makes the F-35s 25mm cannon. As part of this kind of process, there is massive amounts of competition among small and large vendors to provide subcontractor support on the F-35. This phenomenon is also true of many other large platforms across the service.

Innovation is Key

The other piece of this dynamic innovation circle, which is many times overlooked, is that while the major defense vendors produce well-known large platforms, they also engage in large amounts of innovation.

For example, Lockheed’s famous Skunk Works is known to operate well ahead of the curve regarding the extent of technological possibility, as evidenced by the number of ground-breaking programs it has created, including the U-2 spy plane and F-22 stealth jet fighter.

Raytheon has in recent years created its own Skunk Works equivalent called Advanced Concepts & Technologies, which is producing new breakthrough systems such as laser communications networking.

Most if not all of the large defense firms invest hundreds of millions every year in internal Research & Development (R&D) aimed to anticipate, meet or be in front of emerging U.S. military requirements for new capabilities. The strategy is to draw upon internal academic and engineering experts to succeed in envisioning the kinds of technologies and systems the military is likely to pursue. The majority of defense R&D comes from the largest defense firms.

“In 2019, the U.S. led the world in R&D spending, but China is rapidly closing the gap. Top defense company R&D is a quarter, proportionally, of what Facebook, Amazon, and Google spend,” a Pentagon document called “a 21st Century Defense Industrial Strategy for America,” writes.

Added to this equation, entities such as the Office of Naval Research, Army Research Laboratory (ARL), or Air Force Research Laboratory (AFRL) regularly find and fund small businesses, many of whom compete for grants and opportunities for academic collaboration. For example, the AFRL and ARL are working intently to solicit small company input on a wide sphere of areas to including lasers, hypersonics, sensing, and artificial intelligence.

A Paradigm Shift in the Making

The defense industrial base is also experiencing a paradigm shift in many respects.

While major manufacturing of large platforms such as tanks, aircraft carriers, and fighter jets still takes place in the United States to a very large degree, Pentagon reports do express concern about the overall level of foreign involvement in the defense process. Further, much of the most cutting-edge innovation is taking place in the realm of software and digital technology, as opposed to physically “bending metal,” a circumstance that invites more innovation from smaller firms less likely to be able to manufacture or produce large weapons systems.

All of this can only prove one thing: that many large or expanding companies are not only involved in major innovations but are also generators of significant volumes of free enterprise competition by virtue of the number of small companies who compete for sub-tier supplier deals. Furthermore, with government funding in particular areas of defense innovation being unpredictable or subject to large fluctuations, being acquired may simply be a way that small innovators can survive and stay in business.

If small companies are kept in business to an extent by large, parent companies funding them so they can survive through drops in short-term revenue, then enterprising experimentation and innovation is more likely to increase. The bigger the cash flow large companies have, the more resources they have to allocate to smaller businesses in their portfolio. As one of just a few companies building rocket propulsion technology for major weapons systems, some have suggested that Aerojet might need Lockheed to stay competitive with its Northrop-acquired competitor, Orbital ATK.

It is also possible that a lack of stable funding, coupled with now declining defense budgets, also introduces a dynamic wherein major companies might be more hesitant to enter the defense arena as an avenue for innovations.

Therefore, this notion that consolidated or merged firms massively reduce innovation and free-enterprise competition is misplaced considering such variables. If there is concern about consolidation leading to an anti-competitive industrial base, then perhaps a solution is to simply enforce the tools the government must ensure competition, as was the case in the Northrop-ATK deal.

In fact, this kind of approach might ultimately favor both more competition and more innovation by virtue of keeping companies—who might otherwise disappear—more likely to pursue defense sector business opportunities.

Letting the Market Work

Some degree of regulated defense industry consolidation can not only help to preserve competition to a large extent but also help reduce U.S. defense industry reliance upon foreign investment. The Pentagon’s 2020 A&S Industrial Capabilities Annual Report found that the Defense Industrial base has some real “fragile spots” regarding its reliance upon single sources and foreign investment.

But America now has an opportunity to reduce one of these fragile spots.

Make no mistake, the Lockheed-Aerojet merger is an extremely positive thing for the defense industrial base and U.S. global technological superiority.

This deal is clearly in the best interests of the country and takes into account the need to sustain technological superiority over adversaries, a pursuit that has only become more strained and challenged in recent years.

Simply put, this merger is about capability more than anything else, and responsible provisions can be put in place to ensure sufficient competition is maintained.

There is no logical reason for this deal to be stopped—although Moscow, Beijing, Tehran, or Pyongyang would be pleased if it were. That simply cannot be allowed to happen.

# 2NR

### Noko First Strike Bad

#### No NoKo EMP.

Brian **Barrett 17**. News Editor on WIRED citing Philip Coyle, a senior science fellow at the Center for Arms Control and Non-Proliferation, who served as the Assistant Secretary of Defense and Director of Operational Test and Evaluation at the Pentagon, and spent decades studying nuclear weapons at Lawrence Livermore National Laboratory, and Sharon Burke, who served as Assistant Secretary of Defense for Operational Energy in the Obama administration and is currently a senior adviser at the New America Foundation, a non-partisan think tank. 11-1-2017. "North Korea'S Plenty Scary Without An Overhyped Emp Threat." Wired. <https://www.wired.com/story/north-korea-emp-threat/>

Blackout or Bust It’s important to note early that the EMP threat has become an **unlikely live wire**. Its most extreme proponents genuinely fear near-total annihilation; its vocal detractors dismiss the threat as science fiction. In between, though, lie some important subtleties. Crucially, you won’t find much disagreement on the very basic science. In fact, both the US and Russia have proven this out in practice. In 1962, the US conducted a nuclear test known as Starfish Prime, in which it detonated a 1.4 megaton nuclear warhead 240 miles above the Pacific. The resulting EMP knocked out hundreds of street lights, and some telephone communications, 900 miles away in Hawaii. Russian tests at around the same time, over Kazakhstan, reportedly resulted in an EMP that took out a 300-mile communication line, among other assorted impacts. Evidence persists beyond those specific corollaries as well. “You don’t need to do high-altitude nuclear tests to know the EMP threat is real,” says Dr. Peter Pry, who served on the Congressional EMP Commission and has published several books about its potential impacts. Pry points to data gleaned from underground nuclear tests and EMP simulators, all of which, he says, indicate the strong potential for devastation. “I’m sure you’ve had the experience of driving a car down the road, listening to the radio, and then you’ve driven under a high power line, and suddenly your radio doesn’t work. You come out the other side and it works again. What’s happened is you’ve passed through an electromagnetic field that upset your radio,” says Pry. “I don’t think you have to be Albert Einstein to realize that if that electromagnetic field were, say, a billion times more powerful, that your radio would not just be upset but it would be destroyed, the electronics in your car destroyed. Imagine that now not being a localized phenomenon, but extended to the whole North American continent.” The commission Pry served on—tasked with investigating the threat—laid out that case in a 200-plus page 2008 report, and Pry himself speaks passionately on the topic. But EMP skeptics still abound, particularly in the North Korean context. And the EMP Commission shut down on September 30, after the Department of Defense and Department of Homeland Security didn't seek funds from Congress to continue its operation. “The fact that North Korea has tested a larger yield nuclear weapon than before is of concern because of the yield of the nuclear weapon, not because of EMP,” says Philip Coyle, a senior science fellow at the Center for Arms Control and Non-Proliferation, who served as the Assistant Secretary of Defense and Director of Operational Test and Evaluation at the Pentagon, and spent decades studying nuclear weapons at Lawrence Livermore National Laboratory. Coyle acknowledges that EMPs can be a problem—the electromagnetic pulse from an 1859 solar storm, known as the Carrington Event, would have devastating consequences if repeated today—but he and others remain skeptical as to the true impact of the type of nuclear-based attack outlined by the EMP Commission. “I don’t know how the proponents of EMP get such huge results. I just **don’t follow their logic,”** says Coyle. “There just **isn’t a scientific basis** to get these huge results, these huge numbers.” “There’s still **not proof** that it would destroy a wide area of electrical equipment today," says Sharon Burke, who served as Assistant Secretary of Defense for Operational Energy in the Obama administration and is currently a senior adviser at the New America Foundation, a non-partisan think tank. "There’s **no actual proof** that this would happen.” Pry dismisses those who regard EMP as science fiction as “idiot naysayers.” But Coyle, Burke, and others who have raised doubts don’t deny the underlying scientific principles. “Nuclear weapons do put out electromagnetic pulses of different varieties, and some of them are quite dangerous,” Burke says. “You’ll find that a lot of US military equipment, at least from the Cold War, was **shielded** against those kinds of EMPs.” For EMP threat skeptics, though, decades-old tests and modern simulations don’t equal a guaranteed result today. Which means the right question to ask isn’t if North Korea **could** explode a nuclear weapon high over the United States. It’s **whether Kim Jong Un would take that risk**, uncertain of the ultimate effect, but knowing that his country would receive the **full weight of American military response in return**. Or, as Burke puts it: “If you’re a country that wants to go to war with the United States, and you want to cause maximum damage, you want to be pretty sure it’s going to work.” Risky Business North Korea attacking the US with an EMP would be a **fantastically high-risk** maneuver, with **uncertain gains**. And even if it did incapacitate much of the US power grid, it **wouldn’t prevent a counterstrike**. US **military** equipment is **hardened**, and its response could come from plenty of places **other than North America**. In fact, even **testing the effects** of an EMP attack could provoke US military engagement, says Bruce Bennett, who specializes in asymmetric threats at the Rand Corporation. “The North Korean foreign minister recently threatened to detonate a nuclear weapon over the Pacific to demonstrate their missile capabilities. I think if he even does that, not as EMP, there is a fairly significant chance that the US would respond,” says Bennett. That sort of provocation would be **out of character** for Kim Jong Un, who despite the **public bluster** has historically **known where the boundaries are**, and managed not to cross them. His **main objective** is the survival of his regime; exploding a nuclear weapon above the United States would almost **certainly assure its destruction**. Given all the uncertainty, the takeaways about the EMP threat are also unclear. Long-term investment in hardening US grid infrastructure makes some sense, but headlines blaring that North Korea could kill 90 percent of the US population with one EMP strike seem **counterproductive**. “The threat of nuclear weapons and nuclear war with North Korea is a plenty big enough threat as far as I’m concerned,” says Coyle. “Talking about EMP, I think it’s just a **distraction**. I don’t know why it keeps coming up.”

#### First strike shatters norms, the nuclear taboo, alliances, US-China relations, and causes a humanitarian crisis---extinction.

Stephen J. Cimbala 20, Distinguished Professor of Political Science at Penn State University – Brandywine, USA, “Chapter 6: The Trump Administration’s Nuclear Posture Review and Presidential Nuclear Prerogative,” in The United States, Russia and Nuclear Peace, 02/03/2020, Springer Nature.

In contrast to a decision for preemption or retaliation, a decision for preventive war would be discussed and debated over a longer period of time and perhaps within a wider circle of participants. A nuclear preventive strike in the absence of any imminent attack would require the United States to walk away from its historical traditions and, as well, aspects of international law to which the United States is committed. In general, the United States recognizes three kinds of situations in which the use of military force against or within another state is permitted. First, the United Nations Security Council may authorize the use of force, under its mandate to deal with threats to the peace and for peace enforcement. Second, the United States may be under attack or imminent threat of attack (against either itself or allies. Third, the use of force by the United States within another state may take place with the consent of that state (e.g., in counterterror or counterinsurgency operations on behalf of the governments of Iraq and Afghanistan). None of these three categories fits a nuclear first strike justified as a preventive war.27

Apart from its legal implications, an American nuclear first strike would provide an historical turning point against the previously held taboo against nuclear first use. The durability of nuclear deterrence as a guarantor of peace would be called into question. Russia’s military doctrine that accepts the use of low-yield theater nuclear weapons under certain conditions, in order to “de-escalate” a conventional war that is otherwise going unfavorably for Russia, would receive a booster shot.28 And the collateral effects of a US nuclear attack on North Korea could be felt by neighboring countries, including US allies as well as Russia and China. It is difficult to imagine that Chinese-American relations would ever be the same thereafter. A Chinese nuclear military buildup would almost certainly follow, together with a more assertive military posture overall in the South China Sea and other regions of potential conflict.

Most important of all, with respect to a US nuclear preventive strike, would be the humanitarian consequences in North Korea and elsewhere in the region. Nuclear weapons even used in “surgical” attacks create unprecedented societal destruction along with their intended military effects.29 Thus, in the aftermath of nuclear strikes against North Korea, surviving populations in the DPRK will attempt to migrate across the borders with China, Russia and South Korea. China has already anticipated that this will happen in the case of a large-scale conventional war, notwithstanding a nuclear one. China can be expected to deploy significant military forces across its border into North Korea in order to forestall these and other side effects of any war on the Korean peninsula.

#### Failure causes extinction.

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The final scenario also begins with a provocative action. In this case, North Korea might again bombard South Korea's Yeonpyeong Island. Strikes could escalate into a larger conflict as South Korea implements its "disproportionate response" doctrine. 40 North Korea's nuclear arsenal has grown to a between fifteen and sixty deployed weapons; by all accounts, it will soon acquire a survivable nuclear force capable of holding the continental US at risk. 41 Eliding North Korea's nuclear and chemical weapons, the arsenal of conventional missiles and artillery fielded by North Korea in hardened facilities is capable of inflicting civilian casualties in the hundreds of thousands in a matter of minutes. Fifty percent of the South's population centers and economic activity are within range of these fires, which are capable of launching 500,000 shells per hour for several hours. 42 North Korea also holds a 2:1 advantage in troops vis-à-vis the US and South Korea. Estimates suggest militarily meaningful US reinforcements will be unable to reach the Peninsula for weeks or months. 43 A limited ground invasion to seize the Kaesong Heights on which this artillery and associated forces are dug in would require at least two infantry and mechanized corps, with the estimated loss of an entire corps in the offensive. 44

Again, confronting an adversary possessing local conventional superiority, the US could face pressure to escalate to nuclear use. However, the military utility of this option is not particularly compelling, and the prospects for such strikes to avoid escalating the conflict are daunting. Whereas North Korea can hold at risk numerous military, political and economic assets, the options are less apparent for the US and its allies. Preemptively striking North Korea's nuclear arsenal would likely require at least 50 bombs or warheads. 45 Not only would such a strike not be "limited," but the fallout from it would impact both South Korea and Japan. Striking North Korean conventional positions in the Kaesong Heights is equally problematic, given the challenge of distinguishing between a limited offensive and an attempted regime change. 46 Thus, the strategic utility of nuclear weapons seems marginal, at a minimum because such a strike carries significant potential for [End Page 48] North Korea to escalate with nuclear strikes on US allies and perhaps even the United States.

### AT: Iran Prolif

#### Extinction---nuke winter, ag

Steven **Starr 17**. Director, University of Missouri’s Clinical Laboratory Science Program; senior scientist, Physicians for Social Responsibility. 1/9/2017. “Turning a Blind Eye Towards Armageddon — U.S. Leaders Reject Nuclear Winter Studies.” Federation of American Scientists. <https://fas.org/2017/01/turning-a-blind-eye-towards-armageddon-u-s-leaders-reject-nuclear-winter-studies/>

Now 10 years ago, several of the world’s leading climatologists and physicists chose to reinvestigate the long-term environmental impacts of nuclear war. The **peer-reviewed studies** they produced are considered to be the most authoritative type of scientific research, which is subjected to criticism by the international scientific community before final publication in scholarly journals. No serious errors were found in these studies and their findings **remain unchallenged**.

Alan Robock et al., “Nuclear winter revisited with a modern climate model and current nuclear arsenals: Still catastrophic consequences,” Journal of Geophysical Research: Atmospheres 112 (2007).

Owen Brian Toon et al., “Atmospheric effects and societal consequences of regional scale nuclear conflicts and acts of individual nuclear terrorism,” Atmospheric Chemistry and Physics 7 (2007).

Michael Mills et al., “Massive global ozone loss predicted following regional nuclear conflict,” Proceedings of the National Academy of Sciences of the United States of America 105, no. 14 (2008).

Michael Mills et al., “Multidecadal global cooling and unprecedented ozone loss following a regional nuclear conflict,” Earth’s Future 2.

Alan Robock et al., “Climatic consequences of regional nuclear conflicts,” Atmospheric Chemistry and Physics 7 (2007).

Working at the Laboratory for Atmospheric and Space Physics at the University of Colorado-Boulder, the Department of Environmental Sciences at Rutgers, and the Department of Atmospheric and Oceanic Sciences at UCLA, these scientists used **state-of-the-art computer modeling** to evaluate the consequences of a range of possible nuclear conflicts. They began with a hypothetical war in Southeast Asia, in which a total of 100 Hiroshima-size atomic bombs were detonated in the cities of India and Pakistan. Please consider the following images of Hiroshima, before and after the detonation of the atomic bomb, which had an explosive power of 15,000 tons of TNT.

The detonation of an **atomic bomb** with this explosive power will instantly ignite fires over a surface area of three to five square miles. In the recent studies, the scientists calculated that the blast, fire, and radiation from a war fought with 100 atomic bombs could produce direct fatalities comparable to all of those worldwide in World War II, or to those once estimated for a **“counterforce”** nuclear war between the superpowers. However, the long-term environmental effects of the war could significantly disrupt the global weather for at least a decade, which would likely result in a vast global famine.

The scientists predicted that nuclear firestorms in the burning cities would cause at least five million tons of black carbon smoke to quickly rise above cloud level into the stratosphere, where it could not be rained out. The smoke would circle the Earth in less than two weeks and would form a global stratospheric smoke layer that would remain for more than a decade. The smoke would absorb warming sunlight, which would heat the smoke to temperatures near the boiling point of water, producing ozone losses of 20 to 50 percent over populated areas. This would almost double the amount of UV-B reaching the most populated regions of the mid-latitudes, and it would create UV-B indices unprecedented in human history. In North America and Central Europe, the time required to get a painful sunburn at mid-day in June could decrease to as little as six minutes for fair-skinned individuals.

As the smoke layer blocked warming sunlight from reaching the Earth’s surface, it would produce the coldest average surface temperatures in the last 1,000 years. The scientists calculated that global food production would decrease by 20 to 40 percent during a five-year period following such a war. Medical experts have predicted that the shortening of growing seasons and corresponding decreases in agricultural production could cause up to two billion people to perish from famine.

The climatologists also investigated the effects of a nuclear war fought with the **vastly more powerful** modern **thermonuclear weapons** possessed by the United States, Russia, China, France, and England. Some of the thermonuclear weapons constructed during the 1950s and 1960s were 1,000 times more powerful than an atomic bomb.

During the last 30 years, the average size of thermonuclear or “strategic” nuclear weapons has decreased. Yet today, each of the approximately 3,540 strategic weapons deployed by the United States and Russia is seven to 80 times more powerful than the atomic bombs modeled in the India-Pakistan study. The smallest strategic nuclear weapon has an explosive power of 100,000 tons of TNT, compared to an atomic bomb with an average explosive power of 15,000 tons of TNT.

Strategic nuclear weapons produce **much larger nuclear firestorms** than do atomic bombs. For example, a standard Russian 800-kiloton warhead, on an average day, will ignite fires covering a surface area of 90 to 152 square miles.

A war fought with hundreds or thousands of U.S. and Russian strategic nuclear weapons would ignite immense nuclear firestorms covering land surface areas of many thousands or tens of thousands of square miles. The scientists calculated that these fires would produce up to 180 million tons of black carbon soot and smoke, which would form a dense, global stratospheric smoke layer. The smoke would remain in the stratosphere for 10 to **20 years**, and it would block as much as 70 percent of sunlight from reaching the surface of the Northern Hemisphere and 35 percent from the Southern Hemisphere. So much sunlight would be blocked by the smoke that the noonday sun would resemble a full moon at midnight.

Under such conditions, it would only require a **matter of days** or weeks for daily minimum temperatures to fall below freezing in the largest agricultural areas of the Northern Hemisphere, where freezing temperatures would occur every day for a period of between one to more than two years. Average surface temperatures would become colder than those experienced 18,000 years ago at the height of the last Ice Age, and the prolonged cold would cause average rainfall to decrease by up to 90%. Growing seasons would be **completely eliminated** for more than a decade; it would be too cold and dark to grow food crops, which would **doom the majority of the human population**.2

#### Iran will keep complying to stave off EU sanctions---that solves prolif

---their goal is sanctions relief, not successful enrichment

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In spite of the Trump administration’s best efforts, the Iran deal has not collapsed completely. In 2018, the administration ceased providing Iran with promised sanctions relief. In response, Iran gradually ramped up its nuclear program, breaching the deal’s limits on uranium enrichment. Nonetheless, Iran hoped that President Donald Trump would lose the 2020 U.S. presidential election and a new Democratic administration would want to reenter the deal. Accordingly, Tehran did not withdraw or restart its plutonium program. It has continued to accept exceptionally intrusive monitoring of its ongoing nuclear activities. And it could reverse its ongoing noncompliance quickly and easily. If Biden can provide Iran with the sanctions relief it was promised, he can likely reassemble the deal (to which all the other signatories are still committed).

If he fails, Tehran will almost certainly escalate its violations. It probably won’t try to build a nuclear weapon (although the possibility it might is reason enough to preserve the deal). Instead, Iran will likely opt to scale up its nuclear program—by developing better centrifuges, installing more of them, stockpiling ever-greater amounts of enriched uranium, and perhaps even enriching to higher levels. In short, Iran will pick up exactly where it left off in 2013 when its nuclear program was first constrained by the Joint Plan of Action, the less comprehensive predecessor to the Joint Comprehensive Plan of Action. Iran will likely try to use its ramp-up to pressure the United States into negotiating an end to sanctions. Because of all the additional leverage at Tehran’s disposal, any new deal—if one is ever reached—will likely have to tolerate more nuclear activity in Iran than is currently permitted.

#### No spread AND no impact

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Other analysts have sounded a much less alarmist tone, however. Some scholars even suggested that an Iranian bomb held great potential for stabilising an unbalanced and volatile Middle East (Waltz, 2012). Closer to the mainstream of Western strategic discourse, various experts have argued that despite the risks of proliferation, nuclear weapons, and the deterrent they provide should get (more) credit for contributing, in combination with other factors, to what has been labelled ‘the Long Peace’ among the great powers since 1945 (Gaddis, 1999, p. 268–271; Gavin, 2012a, p. 164; Acton 2010, pp. 16–17). Still others have contended that because nuclear proliferation is such a rare phenomenon, and since robust nonproliferation measures tend to be disruptive, the net destabilising effect of new nuclear countries is quite small and, therefore, manageable (Mueller 2010, pp. 95–99; Hymans 2013, pp. 293–296).

The question of whether nuclear proliferation has stabilising or destabilising effects is not just fascinating for scholars of the nuclear age, but also highly consequential for practical policy issues. For in order to debate the merits of particular policy choices – such as preventive military strikes against nuclear facilities, grand bargains with potential proliferators or complete nuclear disarmament – we need to understand first how the spread of nuclear weapons impacts regional and global security.

The chapter proceeds in three steps. The first section provides the foundation for the other parts by summarising what we know about empirical patterns of proliferation and the utility of nuclear weapons for statecraft. The second section then engages the literature on the consequences of proliferation, focusing in particular on how proliferation has influenced international stability. The final section explores whether some states have been more affected than others, and what measures these states have taken to prevent proliferation, or at least mitigate its negative consequences.

Patterns of nuclear proliferation and the utility of nuclear weapons

Nuclear proliferation is commonly defined as the spread of nuclear weapons to states that did not previously have them. Within a broader conceptual framework that is rarely used by scholars, yet popular in the arms control community, this diffusion of nuclear weapons to additional states is labelled horizontal proliferation. It is conceptually accompanied by the notion of vertical proliferation, which refers to qualitative improvements and increases in the number of nuclear weapons in the stockpiles of existing nuclear weapon states. In accordance with the typical usage of the term in the scholarly debate, this chapter focuses only on how the horizontal proliferation of nuclear weapons affects international stability.

One important empirical pattern that has shaped how nuclear proliferation is understood concerns the way in which nuclear weapons have spread. The word ‘spread’ appears to suggest that the established nuclear powers have provided other interested nations with (at least a few) operational nuclear warheads. Yet such transfers have never been undertaken. Certainly, states that sought nuclear weapons have often received significant assistance from other nations (Schofield, 2014; Fuhrmann, 2012), sometimes in the form of highly sensitive technologies (Kroenig, 2010). Nonetheless, since all these transfers remained well below the weapons threshold, nations seeking nuclear weapons always had to build them indigenously. Hence, in reality, the spread of nuclear weapons has meant that merely the ambition to possess a nuclear arsenal has spread to additional states, each of which then had to pursue that goal primarily through indigenous efforts.

Importantly, since a state’s national efforts to turn its desire for nuclear weapons into reality naturally span several (and sometimes many) years, nuclear proliferation must be conceived of as a process, as opposed to just a single step (Meyer, 1986). This point is reinforced by the fact that 29 out of 39 states that have embarked upon that path (Müller and Schmidt, 2010, p. 157; Mikoyan, 2012; Santoro, 2017) have not acquired a nuclear arsenal. Hence, a lot of nuclear proliferation activity has been undertaken by nations that did not ultimately become nuclear weapon states. Three patterns explain this situation.

First, owing not just to the technological, but also the institutional and managerial challenges of the task, some nations simply failed in their efforts to build the bomb (Hymans, 2012; Braut-Hegghammer, 2016). Second, a few countries have chosen a nuclear ‘hedging’ strategy, intentionally confining their efforts to developing the technological capability to build an arsenal quickly while refraining from exercising that option (Narang, 2016–17, p. 134). Third, several states have undertaken a ‘nuclear reversal’, abandoning their nuclear weapons activities before developing nuclear explosive devices (Müller and Schmidt, 2010).