# Doc---Harvard---Doubles

# 1NC

## Offcase

### 1NC---States CP

#### The 50 states, Washington, D.C., and all relevant territories should:

#### -prohibit anticompetitive business practices that are except from penalties via the state action immunity doctrine, and

#### -regulate emerging technologies.

#### States can pursue autonomous anti-trust enforcement even when conflicting with federal law.

Erik **Knudsen 20.** Erik G. Knudsen is a partner in the Corporate Department and Private Equity Buyouts & Investment Group. Erik focuses his practice on complex business transactions, including leveraged buyouts, strategic mergers, acquisitions, investments and joint ventures, reorganizations, growth equity and venture capital investments, and divestitures. He has led transactions in a wide variety of industries, including healthcare, internet, technology, real estate, distribution and manufacturing. "Trends In State Antitrust Enforcement: Colorado Expands Attorney General’s Authority To Challenge Transactions On Competition Grounds." JD Supra. 4-16-2020. https://www.jdsupra.com/legalnews/trends-in-state-antitrust-enforcement-42950

At the federal level, the U.S. antitrust laws—including the Sherman Act and the Clayton Act, which governs mergers and acquisitions—are enforced by the FTC and DOJ. States also have antitrust laws, which are enforced by state AGs and are often patterned after their federal analogs, but can contain important differences. States frequently collaborate with the federal antitrust agencies and/or other states on merger investigations. However, the Supreme Court has recognized that states are not required to do so, and have the right to make enforcement decisions that differ from other federal and state authorities.[[3]](https://www.jdsupra.com/legalnews/trends-in-state-antitrust-enforcement-42950/#_ftn3) States have sometimes exercised this authority in order to “fill the gap” of perceived under-enforcement at the federal level. For example, in June 2017, the California AG sued to block Valero Energy Partners LP’s acquisition of two petroleum terminals in Northern California, despite the FTC’s decision not to challenge the deal. Several months later, the parties abandoned the transaction. More broadly, in recent years, there has been a growing trend of robust and autonomous state antitrust enforcement, as illustrated by major investigations and enforcement actions by state coalitions in the healthcare, pharmaceutical, telecom, and technology sectors, among others. Consistent with this trend, Colorado AG Phil Weiser—who previously served as Deputy Assistant Attorney General in the DOJ Antitrust Division under the Obama administration—has affirmed his commitment to “protecting all Coloradans from anticompetitive consolidation and practices…whether or not the federal government acts to protect Coloradans.” In keeping with this mandate, the Amendment will bring Colorado increasingly in line with states such as California and New York that have demonstrated an appetite for aggressive, independent antitrust enforcement, even where it may depart (or conflict) with federal action.

### 1NC---Regs CP

#### The United States federal government should:

#### ban private sector business practices that are exempt from penalties via state action immunity through non-antitrust regulations

#### increase funding for startups in the United States

#### increase its spending on research and development, and;

#### ban the development of nanotechnology.

#### The counterplan PICs out of anti-trust legislation and the FTC and DOJ as enforcers---other agencies’ regulations solve

Lawrence Fullerton et al. 08. Joel M Mitnick, William V Reiss, George C Karamanos and Owen H Smith. Sidley Austin LLP. Vertical Agreements The regulation of distribution practices in 34 jurisdictions worldwide. “United States.” https://www.sidley.com/-/media/files/publications/2008/03/getting-the-deal-through--vertical-agreements-2008/files/view-united-states-chapter/fileattachment/united-states-21.pdf

5 What entity or agency is responsible for enforcing prohibitions on anticompetitive vertical restraints? Do governments or ministers have a role?

The Federal Trade Commission (FTC) and the Antitrust Division of the Department of Justice (DoJ) are the two federal agencies responsible for the enforcement of federal antitrust laws. The FTC and the DoJ have jurisdiction to investigate many of the same types of conduct, and therefore have adopted a clearance procedure pursuant to which matters are handled by whichever agency has the most expertise in a particular area.

Additionally, other agencies, such as the Securities and Exchange Commission and Federal Communications Commission, maintain oversight authority over regulated industries pursuant to various federal statutes, and therefore may review vertical restraints for anti-competitive effects.

### 1NC---FTC Trade off DA

#### FTC’s increasing enforcement in privacy now---it’s focused on algorithmic bias.

James V. Fazio 21. Special counsel in the Intellectual Property Practice Group at Sheppard, Mullin, Richter & Hampton LLP, with Liisa M. Thomas, 3/11. “What Is FTC’s Course Under Biden?” https://www.natlawreview.com/article/what-ftc-s-course-under-biden

The new acting FTC chair, Rebecca Kelly Slaughter, recently signaled that the FTC may increase enforcement and penalties in the privacy and data security realm. Slaughter pointed to several areas of focus for the FTC this year, which companies will want to keep in mind: Notifying Consumers About FTC Allegations: Slaughter referred favorably to two recent cases: (1) the Everalbum biometric settlement from earlier this year (which we wrote about at the time); and (2) the Flo Health settlement over alleged deceptive data sharing practices (which we also wrote about at the time). In drawing on these two cases, Slaughter indicated that in future cases the FTC intends to include as part of any settlement a requirement to notify customers of any FTC allegations. This, she said, would allow consumers to “vote with their feet” and help them decide whether to recommend their services to others. FTC Intent to Plead All Relevant Violations: According to Slaughter, another lesson the FTC is taking from the Flo case is to include in the cases it brings all potentially applicable violations of all relevant privacy-related laws. In the Flo case, Slaughter said the FTC should have pleaded a violation of the Health Breach Notification Rule, which requires that vendors of personal health records notify consumers of data breaches. Focus on Ed Tech and COPPA: Given the explosive growth of education technology during COVID-19, the FTC is conducting an industry sweep of the industry. Related to this, the FTC is reviewing its Children’s Online Privacy Protection Act Rule. This goes beyond the refresh the agency did of their FAQs earlier in the pandemic (which we wrote about at the time). For now, Slaughter reminds companies that parental consent is needed before collecting information online from children under the age of 13. Examination of Health Apps: The FTC will take a closer look at health apps, including telehealth and contact tracing apps, as more and more consumers are relying on such apps to manage their health during the pandemic. Overlap Between Competition and Privacy: Slaughter also indicated that it is worth looking at situations where there may be not only privacy concerns, but antitrust as well. Because the FTC has a dual mission (consumer protection and competition) she notes that it has a “structural advantage” over other regulators in that it can look at these issues, especially since -she states- “many of the largest players in digital markets are as powerful as they are because of the breadth of their access to and control over consumer data.” Racial Equality and AI/Biometrics/Geotracking: Slaughter noted that COVID-19 is exacerbating racial inequities. She pointed to the unequal access to technology, as well as algorithmic discrimination (the idea that discrimination offline becomes embedded into algorithmic system logic). The FTC intends to focus on algorithmic discrimination, as well as on the discrimination potentially embedded into facial recognition technologies. (This mirrors concerns that gave rise to the recent Portland facial recognition law, which we recently wrote about). Finally, Slaughter commented on the use of location data to identify characteristics of Black Lives Matter protesters, and said she is concerned about the misuse of location data to track Americans engaged in constitutionally protected speech. Putting it Into Practice: Companies that operate health apps, that are in the education technology space, or that use algorithms or facial recognition tools will want to keep in mind that these are areas of focus for the FTC. And for everyone, keep in mind that the FTC has indicated it will beef up privacy law penalties and will ask for more notification to injured consumers.

#### Antitrust enforcement saps up FTC resources and personnel, which are finite.

Tara L. Reinhart, et al. 21. \*\*Head of Skadden, Arps, Slate, Meagher & Flom LLP’s Antitrust/Competition Group. \*\*Steven C. Sunshine, Co-head of Skadden, Arps, Slat, Meagher & Flom LLP’s Antitrust/Competition Group. \*\*David P. Whales, antitrust lawyer with over 25 years of experience in both private and public sectors. \*\*Julia Y. York, partner at Skadden, Arps, Slat, Meagher & Flom LLP. \*\*Bre Jordan, associate at Skadden, Arps, Slat, Meagher & Flom LLP focusing on antitrust law. “Lina Khan’s Appointment as FTC Chair Reflects Biden Administration’s Aggressive Stance on Antitrust Enforcement.” 6/18/21. https://www.skadden.com/insights/publications/2021/06/lina-khans-appointment-as-ftc-chair

Second, like all antitrust enforcers, Ms. Khan and the FTC will face resource constraints. Bringing antitrust litigation is an expensive and laborious process, often requiring millions of dollars for expert fees and a large army of FTC staff attorneys and taking many months or even years to accomplish. Typically, the FTC can only litigate a handful of antitrust matters at a time. It seems likely that Congress will provide more funding to the FTC in the current environment, but even with these extra resources, the FTC will still have to pick its cases carefully and cannot challenge every deal or every instance of alleged unlawful conduct.

#### That trades off with the necessary resources for privacy enforcement.

John O. McGinnis\* and Linda Sun\*\* 20. \*George C. Dix Professor, Northwestern University, and Associate-Designate, Wilmer Pickering Hale & Dorr LLP. “Unifying Antitrust Enforcement for the Digital Age.” Northwestern Public Law Research Paper No. 20-20. https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=3669087

The FTC needs more resources to adequately address the nation’s growing privacy concerns. Currently, the FTC oversees both consumer protection—encompassing privacy—and antitrust,249 making the FTC the chief federal agency on privacy policy and enforcement250 and the nation’s de-facto privacy agency.251 The agency has long-standing experience in enforcing privacy statutes252 and also has special privacy assets, such as an internet lab capable of high-quality tech forensics to track invasions of privacy.253 The FTC, however, has failed to keep pace with the massive growth of privacy concerns—a phenomenon also driven by modern technology. Very few Americans feel conﬁdent in the privacy of their information in the digital age.254 According to a 2019 study, over 80% of Americans feel that they have little to no control over the data collected on them by companies and the government.255 To adequately address privacy concerns, the FTC needs more resources.256 The agency has been explicit that it needs more manpower to police tech companies. In requesting increased funding from Congress, FTC Director Joseph Simons said the money would allow the agency to hire additional staff and bring more privacy cases.257 A former director of the FTC’s Bureau of Consumer Protection, which houses the privacy unit, has called the FTC “woefully understaffed.”258 As of the spring of 2019, the FTC had only forty employees dedicated to privacy and data security, compared to 500 and 110 employees at comparable agencies in the UK. and Ireland, respectively.259 Without more lawyers, investigators, and technologists, the FTC will be forced to conduct privacy investigations less thoroughly, and in some cases, forgo them altogether.260 Currently, the FT C’s resources are spread thin across multiple missions, to the detriment of its privacy efforts. Removing the agency’s antitrust responsibilities would reallocate resources from the antitrust department to its privacy unit and other areas of consumer protection. Further, it would free up the scarce time of the commissioners to oversee this essential effort.261

#### Unchecked algorithmic bias risks massive inequality and extinction.

Mike Thomas 20. Quoting AI experts including MIT Physics Professors, Senior Features Writer for BuiltIn. THE FUTURE OF ARTIFICIAL INTELLIGENCE: 7 ways AI can change the world for better ... or worse, Updated: April 20, 2020, <https://builtin.com/artificial-intelligence/artificial-intelligence-future>

Klabjan also puts little stock in extreme scenarios — the type involving, say, murderous cyborgs that turn the earth into a smoldering hellscape. He’s much more concerned with machines — war robots, for instance — being fed faulty “incentives” by nefarious humans. As MIT physics professors and leading AI researcher Max Tegmark put it in a 2018 TED Talk, “The real threat from AI isn’t malice, like in silly Hollywood movies, but competence — AI accomplishing goals that just aren’t aligned with ours.” That’s Laird’s take, too. “I definitely don’t see the scenario where something wakes up and decides it wants to take over the world,” he says. “I think that’s science fiction and not the way it’s going to play out.” What Laird worries most about isn’t evil AI, per se, but “evil humans using AI as a sort of false force multiplier” for things like bank robbery and credit card fraud, among many other crimes. And so, while he’s often frustrated with the pace of progress, AI’s slow burn may actually be a blessing. “Time to understand what we’re creating and how we’re going to incorporate it into society,” Laird says, “might be exactly what we need.” But no one knows for sure. “There are several major breakthroughs that have to occur, and those could come very quickly,” Russell said during his Westminster talk. Referencing the rapid transformational effect of nuclear fission (atom splitting) by British physicist Ernest Rutherford in 1917, he added, “It’s very, very hard to predict when these conceptual breakthroughs are going to happen.” But whenever they do, if they do, he emphasized the importance of preparation. That means starting or continuing discussions about the ethical use of A.G.I. and whether it should be regulated. That means working to eliminate data bias, which has a corrupting effect on algorithms and is currently a fat fly in the AI ointment. That means working to invent and augment security measures capable of keeping the technology in check. And it means having the humility to realize that just because we can doesn’t mean we should. “Our situation with technology is complicated, but the big picture is rather simple,” Tegmark said during his TED Talk. “Most AGI researchers expect AGI within decades, and if we just bumble into this unprepared, it will probably be the biggest mistake in human history. It could enable brutal global dictatorship with unprecedented inequality, surveillance, suffering and maybe even human extinction. But if we steer carefully, we could end up in a fantastic future where everybody’s better off—the poor are richer, the rich are richer, everybody’s healthy and free to live out their dreams.”

### 1NC---Trade DA

#### The plan is perceived as a protectionist shockwave that shreds any semblance of global free trade.

Allison Murray 19. JD from the Loyola Law School, Los Angeles Law School, BS in Business Administration from the University of Redlands, Judicial Law Clerk at the U.S. Bankruptcy Courts, Winter. “Given Today's New Wave of Protectionism, is Antitrust Law the Last Hope for Preserving a Free Global Economy or Another Nail in Free Trade's Coffin?” Loyola of Los Angeles International and Comparative Law Review, Volume 42, Number 1, 42 Loy. L.A. Int'l & Comp. L. Rev. 117, Lexis.

INTRODUCTION

Trump. Le Pen. Brexit. Protectionist rhetoric has consumed the international political stage. Western countries and their leaders were once the drivers of economic globalization, relying on free-market speeches and the prospect of removing trade barriers to appeal to their constituents. 1They pointed fingers at other countries engaging in or encouraging protectionist behavior and challenged them in the court of public opinion and elsewhere to stop their antics. The "our country first, world trade after" mentality was widely politicized and vilified. Now, it seems that Western national leaders are championing the very protectionism that they once criticized. 2

Although a system of truly free world trade has never been perfected, past world leaders have eliminated most of the protectionist trade mechanisms that once ran rampant in the international economy. They did so by implementing multilateral and bilateral trade agreements. These webs of agreements have bolstered decades of support for free trade, or at least some version of it. By and large, tariff policies and other forms of protectionism were either eliminated or dramatically reduced. Now, as we have seen in the media, when a government imposes a tariff, it becomes a rather extreme political statement which sends a shockwave of significant global consequences.

Protectionism did not end when the age of overbearing tariff policies did, despite then-leaders’ best efforts to vilify it. Rather, the end of the tariff era forced nations to achieve protectionist goals through more subtle trade vehicles, like antitrust law.3 So, the recent resurgence of protectionist rhetoric should mean that these subtle trade vehicles, including antitrust law, will be relied on more heavily. It is a fear of many that antitrust law may become overused and inequitably applied to achieve and combat protectionist aims.

Notwithstanding the recent uptick in tariff threats, it is unlikely that all Western leaders will revamp or terminate the trade agreements set forth by their predecessors and bring back the kinds of tariff policies that once existed in their place. Although in the United States (“U.S.”), President Trump recently imposed tariffs on steel imports, it appears that his intent is to limit this behavior to a specific industry rather than institute a widespread policy favoring the use of tariffs generally.4 To remedy bad behavior in a specialized set of industries is not to instigate a global paradigm shift. This purpose is underscored by his use of the national security exemption, which is largely interpreted as being used for individual situations rather than general policy schemes.5 Many still hope that his course of action will be retracted and is merely a strong negotiation tactic. However, there is no doubt that Trump is far more comfortable than past leaders with subverting the status quo on trade relations.

Trump is not the only high-profile leader flirting with staunch protectionism. Western *leaders* in the E.U. appear to be growing more comfortable than their predecessors with considering similar policies. However, Western *lawmakers* themselves do not seem as persuaded by the statements of their leadership. The general sentiment among international policymakers is that there has been too much political wherewithal spent on loosening international trade barriers to take actions that could counteract that progress.6 Presidential actions taken because of dissatisfaction with current global trade relations aside, a complete overhaul of trade agreements may be too daunting and difficult a task, especially absent ample political support in legislative bodies.

Given the anticipated continuation of cooperative trade agreements and the proliferation of protectionist rhetoric as the new norm of public opinion, leaders will be forced to rely on existing avenues to meet protectionist aims. Again, we find ourselves relying squarely on antitrust law, the more subtle and widely accepted mechanism of restricting trade, to address perceived inequities. In the words of the World Trade Organization (“WTO”), “once formal trade barriers come down, other issues become more important.”7 Among the important issues lies antitrust law. Antitrust and competition laws can form a subtle trade barrier resulting in the imposition of tariff-like measures.

Antitrust law can be enforced to reach protectionist aims and to combat them. It is a tool that allows nations to achieve individual protectionist aims without undermining the future of trade between countries and the cooperative framework underpinning the relatively delicate global free trade enjoyed today. However, the perception of enforcement of antitrust laws as an abusive and solely protectionist mechanism may cause the death of even the smallest semblance of international free trade that remains in the international marketplace today.

#### Nuclear war.

Dr. Michael F. Oppenheimer 21. Clinical Professor at the Center for Global Affairs at New York University, Senior Consulting Fellow for Scenario Planning at the International Institute for Strategic Studies, Former Executive Vice President at The Futures Group, The Foreign Policy Roundtable at the Carnegie Council on Ethics and International Affairs, and The American Council on Germany, “The Turbulent Future of International Relations,” in The Future of Global Affairs: Managing Discontinuity, Disruption and Destruction, eds. Ankersen and Sidhu, p. 23-30.

Four structural forces will shape the future of International Relations: globalization (but without liberal rules, institutions, and leadership)1; multipolarity (the end of American hegemony and wider distribution of power among states and non-states2); the strengthening of distinctive, national and subnational identities, as persistent cultural differences are accentuated by the disruptive effects of Western style globalization (what Samuel Huntington called the “non-westernization of IR”3); and secular economic stagnation, a product of longer term global decline in birth rates combined with aging populations.4 These structural forces do not determine everything. Environmental events, global health challenges, internal political developments, policy mistakes, technology breakthroughs or failures, will intersect with structure to define our future. But these four structural forces will impact the way states behave, in the capacity of great powers to manage their differences, and to act collectively to settle, rather than exploit, the inevitable shocks of the next decade.

Some of these structural forces could be managed to promote prosperity and avoid war. Multipolarity (inherently more prone to conflict than other configurations of power, given coordination problems)5 plus globalization can work in a world of prosperity, convergent values, and effective conflict management. The Congress of Vienna system achieved relative peace in Europe over a hundred-year period through informal cooperation among multiple states sharing a fear of populist revolution. It ended decisively in 1914. Contemporary neoliberal institutionalists, such as John Ikenberry, accept multipolarity as our likely future, but are confident that globalization with liberal characteristics can be sustained without American hegemony, arguing that liberal values and practices have been fully accepted by states, global institutions, and private actors as imperative for growth and political legitimacy.6 Divergent values plus multipolarity can work, though at significantly lower levels of economic growth-in an autarchic world of isolated units, a world envisioned by the advocates of decoupling, including the current American president. 7 Divergent values plus globalization can be managed by hegemonic power, exemplified by the decade of the 1990s, when the Washington Consensus, imposed by American leverage exerted through the IMF and other U.S. dominated institutions, overrode national differences, but with real costs to those states undergoing “structural adjustment programs,”8 and ultimately at the cost of global growth, as states—especially in Asia—increased their savings to self insure against future financial crises.9

But all four forces operating simultaneously will produce a future of increasing internal polarization and cross border conflict, diminished economic growth and poverty alleviation, weakened global institutions and norms of behavior, and reduced collective capacity to confront emerging challenges of global warming, accelerating technology change, nuclear weapons innovation and proliferation. As in any effective scenario, this future is clearly visible to any keen observer. We have only to abolish wishful thinking and believe our own eyes.10

Secular Stagnation

This unbrave new world has been emerging for some time, as US power has declined relative to other states, especially China, global liberalism has failed to deliver on its promises, and totalitarian capitalism has proven effective in leveraging globalization for economic growth and political legitimacy while exploiting technology and the state’s coercive powers to maintain internal political control. But this new era was jumpstarted by the world financial crisis of 2007, which revealed the bankruptcy of unregulated market capitalism, weakened faith in US leadership, exacerbated economic deprivation and inequality around the world, ignited growing populism, and undermined international liberal institutions. The skewed distribution of wealth experienced in most developed countries, politically tolerated in periods of growth, became intolerable as growth rates declined. A combination of aging populations, accelerating technology, and global populism/nationalism promises to make this growth decline very difficult to reverse. What Larry Summers and other international political economists have come to call “secular stagnation” increases the likelihood that illiberal globalization, multipolarity, and rising nationalism will define our future. Summers11 has argued that the world is entering a long period of diminishing economic growth. He suggests that secular stagnation “may be the defining macroeconomic challenge of our times.” Julius Probst, in his recent assessment of Summers’ ideas, explains:

…rich countries are ageing as birth rates decline and people live longer. This has pushed down real interest rates because investors think these trends will mean they will make lower returns from investing in future, making them more willing to accept a lower return on government debt as a result.

Other factors that make investors similarly pessimistic include rising global inequality and the slowdown in productivity growth…

This decline in real interest rates matters because economists believe that to overcome an economic downturn, a central bank must drive down the real interest rate to a certain level to encourage more spending and investment… Because real interest rates are so low, Summers and his supporters believe that the rate required to reach full employment is so far into negative territory that it is effectively impossible.

…in the long run, more immigration might be a vital part of curing secular stagnation. Summers also heavily prescribes increased government spending, arguing that it might actually be more prudent than cutting back – especially if the money is spent on infrastructure, education and research and development.

Of course, governments in Europe and the US are instead trying to shut their doors to migrants. And austerity policies have taken their toll on infrastructure and public research. This looks set to ensure that the next recession will be particularly nasty when it comes… Unless governments change course radically, we could be in for a sobering period ahead.12

The rise of nationalism/populism is both cause and effect of this economic outlook. Lower growth will make every aspect of the liberal order more difficult to resuscitate post-Trump. Domestic politics will become more polarized and dysfunctional, as competition for diminishing resources intensifies. International collaboration, ad hoc or through institutions, will become politically toxic. Protectionism, in its multiple forms, will make economic recovery from “secular stagnation” a heavy lift, and the liberal hegemonic leadership and strong institutions that limited the damage of previous downturns, will be unavailable. A clear demonstration of this negative feedback loop is the economic damage being inflicted on the world by Trump’s trade war with China, which— despite the so-called phase one agreement—has predictably escalated from negotiating tactic to imbedded reality, with no end in sight. In a world already suffering from inadequate investment, the uncertainties generated by this confrontation will further curb the investments essential for future growth. Another demonstration of the intersection of structural forces is how populist-motivated controls on immigration (always a weakness in the hyper-globalization narrative) deprives developed countries of Summers’ recommended policy response to secular stagnation, which in a more open world would be a win-win for rich and poor countries alike, increasing wage rates and remittance revenues for the developing countries, replenishing the labor supply for rich countries experiencing low birth rates.

Illiberal Globalization

Economic weakness and rising nationalism (along with multipolarity) will not end globalization, but will profoundly alter its character and greatly reduce its economic and political benefits. Liberal global institutions, under American hegemony, have served multiple purposes, enabling states to improve the quality of international relations and more fully satisfy the needs of their citizens, and provide companies with the legal and institutional stability necessary to manage the inherent risks of global investment. But under present and future conditions these institutions will become the battlegrounds—and the victims—of geopolitical competition. The Trump Administration’s frontal attack on multilateralism is but the final nail in the coffin of the Bretton Woods system in trade and finance, which has been in slow but accelerating decline since the end of the Cold War. Future American leadership may embrace renewed collaboration in global trade and finance, macroeconomic management, environmental sustainability and the like, but repairing the damage requires the heroic assumption that America’s own identity has not been fundamentally altered by the Trump era (four years or eight matters here), and by the internal and global forces that enabled his rise. The fact will remain that a sizeable portion of the American electorate, and a monolithically pro- Trump Republican Party, is committed to an illiberal future. And even if the effects are transitory, the causes of weakening global collaboration are structural, not subject to the efforts of some hypothetical future US liberal leadership. It is clear that the US has lost respect among its rivals, and trust among its allies. While its economic and military capacity is still greatly superior to all others, its political dysfunction has diminished its ability to convert this wealth into effective power.13 It will furthermore operate in a future system of diffusing material power, diverging economic and political governance approaches, and rising nationalism. Trump has promoted these forces, but did not invent them, and future US Administrations will struggle to cope with them.

What will illiberal globalization look like? Consider recent events. The instruments of globalization have been weaponized by strong states in pursuit of their geopolitical objectives. This has turned the liberal argument on behalf of globalization on its head. Instead of interdependence as an unstoppable force pushing states toward collaboration and convergence around market-friendly domestic policies, states are exploiting interdependence to inflict harm on their adversaries, and even on their allies. The increasing interaction across national boundaries that globalization entails, now produces not harmonization and cooperation, but friction and escalating trade and investment disputes.14 The Trump Administration is in the lead here, but it is not alone. Trade and investment friction with China is the most obvious and damaging example, precipitated by China’s long failure to conform to the World Trade Organization (WTO) principles, now escalated by President Trump into a trade and currency war disturbingly reminiscent of the 1930s that Bretton Woods was designed to prevent. Financial sanctions against Iran, in violation of US obligations in the Joint Comprehensive Plan Of Action (JCPOA), is another example of the rule of law succumbing to geopolitical competition. Though more mercantilist in intent than geopolitical, US tariffs on steel and aluminum, and their threatened use in automotives, aimed at the EU, Canada, and Japan,15 are equally destructive of the liberal system and of future economic growth, imposed as they are by the author of that system, and will spread to others. And indeed, Japan has used export controls in its escalating conflict with South Korea16 (as did China in imposing controls on rare earth,17 and as the US has done as part of its trade war with China). Inward foreign direct investment restrictions are spreading. The vitality of the WTO is being sapped by its inability to complete the Doha Round, by the proliferation of bilateral and regional agreements, and now by the Trump Administration’s hold on appointments to WTO judicial panels. It should not surprise anyone if, during a second term, Trump formally withdrew the US from the WTO. At a minimum it will become a “dead letter regime.”18

As such measures gain traction, it will become clear to states—and to companies—that a global trading system more responsive to raw power than to law entails escalating risk and diminishing benefits. This will be the end of economic globalization, and its many benefits, as we know it. It represents nothing less than the subordination of economic globalization, a system which many thought obeyed its own logic, to an international politics of zero-sum power competition among multiple actors with divergent interests and values. The costs will be significant: Bloomberg Economics estimates that the cost in lost US GDP in 2019- dollar terms from the trade war with China has reached $134 billion to date and will rise to a total of $316 billion by the end of 2020.19 Economically, the just-in-time, maximally efficient world of global supply chains, driving down costs, incentivizing innovation, spreading investment, integrating new countries and populations into the global system, is being Balkanized. Bilateral and regional deals are proliferating, while global, nondiscriminatory trade agreements are at an end.

Economies of scale will shrink, incentivizing less investment, increasing costs and prices, compromising growth, marginalizing countries whose growth and poverty reduction depended on participation in global supply chains. A world already suffering from excess savings (in the corporate sector, among mostly Asian countries) will respond to heightened risk and uncertainty with further retrenchment. The problem is perfectly captured by Tim Boyle, CEO of Columbia Sportswear, whose supply chain runs through China, reacting to yet another ratcheting up of US tariffs on Chinese imports, most recently on consumer goods:

We move stuff around to take advantage of inexpensive labor. That’s why we’re in Bangladesh. That’s why we’re looking at Africa. We’re putting investment capital to work, to get a return for our shareholders. So, when we make a wager on investment, this is not Vegas. We have to have a reasonable expectation we can get a return. That’s predicated on the rule of law: where can we expect the laws to be enforced, and for the foreseeable future, the rules will be in place? That’s what America used to be.20

The international political effects will be equally damaging. The four structural forces act on each other to produce the more dangerous, less prosperous world projected here. Illiberal globalization represents geopolitical conflict by (at first) physically non-kinetic means. It arises from intensifying competition among powerful states with divergent interests and identities, but in its effects drives down growth and fuels increased nationalism/populism, which further contributes to conflict. Twenty-first-century protectionism represents bottom-up forces arising from economic disruption. But it is also a top-down phenomenon, representing a strategic effort by political leadership to reduce the constraints of interdependence on freedom of geopolitical action, in effect a precursor and enabler of war. This is the disturbing hypothesis of Daniel Drezner, argued in an important May 2019 piece in Reason, titled “Will Today’s Global Trade Wars Lead to World War Three,”21 which examines the pre- World War I period of heightened trade conflict, its contribution to the disaster that followed, and its parallels to the present:

Before the First World War started, powers great and small took a variety of steps to thwart the globalization of the 19th century. Each of these steps made it easier for the key combatants to conceive of a general war. We are beginning to see a similar approach to the globalization of the 21st century. One by one, the economic constraints on military aggression are eroding. And too many have forgotten—or never knew—how this played out a century ago.

…In many ways, 19th century globalization was a victim of its own success. Reduced tariffs and transport costs flooded Europe with inexpensive grains from Russia and the United States. The incomes of landowners in these countries suffered a serious hit, and the Long Depression that ran from 1873 until 1896 generated pressure on European governments to protect against cheap imports.

…The primary lesson to draw from the years before 1914 is not that economic interdependence was a weak constraint on military conflict. It is that, even in a globalized economy, governments can take protectionist actions to reduce their interdependence in anticipation of future wars. In retrospect, the 30 years of tariff hikes, trade wars, and currency conflicts that preceded 1914 were harbingers of the devastation to come. European governments did not necessarily want to ignite a war among the great powers. By reducing their interdependence, however, they made that option conceivable.

…the backlash to globalization that preceded the Great War seems to be reprised in the current moment. Indeed, there are ways in which the current moment is scarier than the pre-1914 era. Back then, the world’s hegemon, the United Kingdom, acted as a brake on economic closure. In 2019, the United States is the protectionist with its foot on the accelerator. The constraints of Sino-American interdependence—what economist Larry Summers once called “the financial balance of terror”—no longer look so binding. And there are far too many hot spots—the Korean peninsula, the South China Sea, Taiwan—where the kindling seems awfully dry.

### 1NC---T Structural

#### Interpretation---“prohibitions” are structural---otherwise, it’s a remedy

Jo Seldeslachts et al. ‘7. Professor of Industrial Organization at KU Leuven and a Senior Research Fellow at DIW Berlin, with Joseph A. Clougherty and Pedro Pita Barros. “Remedy for now but prohibit for tomorrow: the deterrence effects of merger policy tools.” https://www.ssoar.info/ssoar/bitstream/handle/document/25862/ssoar-2007-seldeslachts\_et\_al-remedy\_for\_now\_but\_prohibit.pdf;jsessionid=A244005110FDB5816E0347D9F1B75436?sequence=1

Let us now think about the differences between the two antitrust actions of prohibitions and remedies.7 In the case of a prohibition, the penalty for proposing a merger with significant anti-competitive problems involves the full prohibition of the merger: both the pro-competitive and the anti-competitive profits for merging firms are negated by the prohibition. The throwing out of the pro-competitive profits along with the anti-competitive profits is important, as this brings about the punitive measure that Posner (1970) acknowledges as being crucial for deterrence. The big difference between remedies and prohibitions is that remedies attempt to identify and eliminate the anti-competitive elements of a merger. In essence, the merging firms are able to hold on to the pro-competitive elements of the merger—so they keep (ΠPC), but the anti-competitive elements of the merger (ΠAC) are negated by the remedial action. If an antitrust authority imposes remedies, then the disincentive for firms to propose anti-competitive mergers is clearly lower. In short, prohibitions seemingly involve more deterrence than do remedies, as prohibitions represent larger punishments.

#### 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).

#### violation---plan only expands behavioral remedies---topical affs must prohibit practices

#### vote neg:

#### 1---limits---there are infinite ways behavioral remedies to anticompetitive business practices---structural prohibitions are key to topic management and neg ground

#### 2---ground---our interpretation ensures the aff has to “break up” industries---key to link uniqueness and core controversy on a topic with no disads

### 1NC---T Private-Sector

#### Interpretation: private Sector is everything but government.

US Code. 2 U.S. Code § 658 – Definitions. https://www.law.cornell.edu/uscode/text/2/658#9

The term “private sector” means all persons or entities in the United States, including individuals, partnerships, associations, corporations, and educational and nonprofit institutions, but shall not include State, local, or tribal governments.

#### Violation---the plan prohibits state licensing activities, which are part of state governments.

#### Vote neg:

#### 1---Limits---includes non-profits, state, local and tribal governments which massively explodes the topic.

#### 2----Ground---Core antitrust DAs are nullified.

### 1NC---DPA CP

#### The United States should only allow the continuation of the state action immunity doctrine under antitrust law when the president determines it is necessary to prevent condition which may pose a direct threat to the national defense or its preparedness programs.

#### It competes---the counterplan is a regulation, not a prohibition

James Broaddus 50. February 6; Judge on the Kansas City Court of Appeals, Missouri; Westlaw, “City of Meadville v. Caselman,” 240 Mo. App. 1220. https://casetext.com/case/city-of-meadville-v-caselman-1

"Under power conferred on cities of the fourth class `to regulate and license' dramshops, there is no authority to wholly prohibit or suppress. Where there is mere power in a municipality to regulate in a state, with a general policy of conducting licensed saloons, authority to prohibit is excluded. The difference between regulation and prohibition is clear and well marked. The former contemplates the continuance of the subject-matter in existence or in activity. The latter implies its entire destruction or cessation.'" (Citing text writers and cases.)

#### And maintains DPA authority---the plan eliminates it

Michael H. Cecire and Heidi M. Peters 20. Michael H. Cecire, Analyst in Intergovernmental Relations and Economic Development Policy. Heidi M. Peters, Analyst in U.S. Defense Acquisition Policy. “The Defense Production Act of 1950: History, Authorities, and Considerations for Congress” Updated March 2, 2020. https://www.everycrsreport.com/reports/R43767.html

Authorities Under Title VII of the DPA

Title VII of the DPA contains various provisions that clarify how DPA authorities should and can be used, as well as additional presidential authorities. Some significant provisions of Title VII are summarized below.

Special Preference for Small Businesses

Two provisions in the DPA direct the President to accord special preference to small businesses when issuing contracts under DPA authorities. Section 701 reiterates89 and expands upon a requirement in Section 108 of Title I directing the President to "accord a strong preference for small business concerns which are subcontractors or suppliers, and, to the maximum extent practicable, to such small business concerns located in areas of high unemployment or areas that have demonstrated a continuing pattern of economic decline, as identified by the Secretary of Labor."90

Definitions of Key Terms in the DPA

The DPA statute historically has included a section of definitions.91 Though national defense is perhaps the most important term, there are additional definitions provided both in current law and in E.O. 13603.92 Over time, the list of definitions provided in both the law and implementing executive orders has been added to and edited, most recently in 2009, when Congress added a definition for homeland security93 to place it within the context of national defense.94

Industrial Base Assessments

To appropriately use numerous authorities of the DPA, especially Title III authorities, the President may require a detailed understanding of current domestic industrial capabilities and therefore need to obtain extensive information from private industries. Under Section 705 of the DPA, the President may "by regulation, subpoena, or otherwise obtain such information from ... any person as may be necessary or appropriate, in his discretion, to the enforcement or the administration of this Act [the DPA]."95 This authority is delegated to the Secretary of Commerce in E.O. 13603.96 Though this authority has many potential implications and uses, it is most commonly associated with what the DOC's Bureau of Industry and Security calls "industrial base assessments."97 These assessments are often conducted in coordination with other federal agencies and the private sector to "monitor trends, benchmark industry performance, and raise awareness of diminishing manufacturing capabilities."98 The statute requires the President to issue regulations to insure that the authority is used only after "the scope and purpose of the investigation, inspection, or inquiry to be made have been defined by competent authority, and it is assured that no adequate and authoritative data are available from any Federal or other responsible agency."99 This regulation has been issued by DOC.100

Voluntary Agreements

Normally, voluntary agreements or plans of action between competing private industry interests could be subject to legal sanction under anti-trust statutes or contract law. Title VII of the DPA authorizes the President to "consult with representatives of industry, business, financing, agriculture, labor, and other interests in order to provide for the making by such persons, with the approval of the President, of voluntary agreements and plans of action to help provide for the national defense."101 The President must determine that a "condition exists which may pose a direct threat to the national defense or its preparedness programs"102 prior to engaging in the consultation process. Following the consultation process, the President or presidential delegate may approve and implement the agreement or plan of action.103 Parties entering into such voluntary agreements are afforded a special legal defense if their actions within that agreement would otherwise violate antitrust or contract laws.104 Historically, the National Infrastructure Advisory Council noted that the voluntary agreement authority has been used to "enable companies to cooperate in weapons manufacture, solving production problems and standardizing designs, specifications and processes," among other examples.105 It could also be used, for example, to develop a plan of action with private industry for the repair and reconstruction of major critical infrastructure systems following a domestic disaster.

The authority to establish a voluntary agreement has been delegated to the head of any federal department or agency otherwise delegated authority under any other part of E.O. 13603.106 Thus, the authority could be potentially used by a large group of federal departments and agencies. Use of these voluntary agreements is tracked by the Secretary of Homeland Security,107 who is tasked under E.O. 13603 with issuing regulations that are required by law on the "standards and procedures by which voluntary agreements and plans of action may be developed and carried out."108 The Federal Emergency Management Agency (FEMA), which at the time was an independent agency and tasked with these responsibilities under the DPA, issued regulations in 1981 to fulfill this requirement.109 FEMA is now a part of DHS, and those regulations remain in effect.

The Maritime Administration (MARAD) of the U.S. Department of Transportation manages the only currently established voluntary agreements in the federal government, the Voluntary Intermodal Sealift Agreement (commonly referred to as "VISA") and the Voluntary Tanker Agreement. These programs are maintained in partnership with the U.S. Transportation Command of DOD, and have been established to ensure that the maritime industry can respond to the rapid mobilization, deployment, and transportation requirements of DOD. Voluntary participants from the maritime industry are solicited to join the agreements annually.110

Nucleus Executive Reserve

Title VII of the DPA authorizes the President to establish a volunteer body of industry executives, the "Nucleus Executive Reserve," or more frequently called the National Defense Executive Reserve (NDER).111 The NDER would be a pool of individuals with recognized expertise from various segments of the private sector and from government (except full-time federal employees). These individuals would be brought together for training in executive positions within the federal government in the event of an emergency that requires their employment. The historic concept of the NDER has been used as a means of improving the war mobilization and productivity of industries.112

The head of any governmental department or agency may establish a unit of the NDER and train its members.113 No NDER unit is currently active, though the statute and E.O. 13603 still provide for this possibility. Units may be activated only when the Secretary of Homeland Security declares in writing that "an emergency affecting the national defense exists and that the activation of the unit is necessary to carry out the emergency program functions of the agency."114

Authorization of Appropriations, as amended by P.L. 113-72

Appropriations for the purpose of the DPA are authorized by Section 711 of Title VII.115 Prior to the P.L. 113-172, "such sums as necessary" were authorized to be appropriated. This has been replaced by a specific authorization for an appropriation of $133 million per fiscal year and each fiscal year thereafter, starting in FY2015, to carry out the provisions and purposes of the Defense Production Act.116

Table 1 shows that the annual average appropriation to the DPA Fund between FY2010 and FY2019 was $109.1 million,117 with a high of $223.5 million in FY2013 and a low of $34.3 million in FY2011. Monies in the DPA Fund are available until expended, so annual appropriations may carry over from year to year if not expended. Recently, the only regular annual appropriation for the purposes of the DPA has been made in the DOD appropriations bill, though appropriations could be made in other bills directly to the DPA Fund (or transferred from other appropriations).

Committee on Foreign Investment in the United States118

The Committee on Foreign Investment in the United States (CFIUS) is an interagency committee that serves the President in overseeing the national security implications of foreign investment in the economy. It reviews foreign investment transactions to determine if (1) they threaten to impair U.S. national security; (2) the foreign investor is controlled by a foreign government; or (3) the transaction could affect homeland security or would result in control of any critical infrastructure that could impair the national security. The President has the authority to block proposed or pending foreign investment transactions that threaten to impair the national security.

CFIUS initially was created and operated through a series of Executive Orders.119 In 1988, Congress passed the "Exon-Florio" amendment to the DPA, granting the President authority to review certain corporate mergers, acquisitions, and takeovers, and to investigate the potential impact on national security of such actions.120 This amendment codified the CFIUS review process due in large part to concerns over acquisitions of U.S. defense-related firms by Japanese investors. In 2007, amid growing concerns over the proposed foreign purchase of commercial operations of six U.S. ports, Congress passed the Foreign Investment and National Security Act of 2007 (P.L. 110-49) to create CFIUS in statute.

On August 13, 2018, President Trump signed into law new rules governing national security reviews of foreign investment, known as the Foreign Investment Risk Review Modernization Act (FIRRMA, Title XVII, P.L. 115-235).121 FIRRMA amends several aspects of the CFIUS review process under Section 721 of the DPA.122 Notably, it expands the scope of transactions that fall under CFIUS' jurisdiction. It maintains core components of the current CFIUS process for evaluating proposed or pending investments in U.S. firms, but increases the allowable time for reviews and investigations. Upon receiving written notification of a proposed acquisition, merger, or takeover of a U.S. firm by a foreign investor, the CFIUS process can proceed potentially through three steps: (1) a 45-day national security review; (2) a 45-day maximum national security investigation (with an option for a 15-day extension for "extraordinary circumstances"); and (3) a 15-day maximum Presidential determination. The President can exercise his authority to suspend or prohibit a foreign investment, subject to a CFIUS review, if he finds that (1) "credible evidence" exists that the foreign investor might take action that threatens to impair the national security; and (2) no other laws provide adequate and appropriate authority for the President to protect national security. FIRRMA shifts the filing requirement for foreign investors from voluntary to mandatory in certain cases, and provides a two-track method for reviewing certain investment transactions. Other changes mandated by FIRRMA would provide more resources for CFIUS, add new reporting requirements, and reform export controls.

Termination of the Act

Title VII of the DPA also includes a "sunset" clause for the majority of the DPA authorities. All DPA authorities in Titles I, III, and VII have a termination date, with the exception of four sections.123 As explained in Section 717 of the DPA, the sections that are exempt from termination are

* 50 U.S.C. §4514, Section 104 of the DPA that prohibits both the imposition of wage or price controls without prior congressional authorization and the mandatory compliance of any private person to assist in the production of chemical or biological warfare capabilities;
* 50 U.S.C. §4557, Section 707 of the DPA that grants persons limited immunity from liability for complying with DPA-authorized regulations;
* 50 U.S.C. §4558, Section 708 of the DPA that provides for the establishment of voluntary agreements; and
* 50 U.S.C. §4565, Section 721 of the DPA, the so-called Exon-Florio Amendment, that gives the President and CFIUS review authority over certain corporate acquisition activities.

P.L. 115-232 extended the termination date of Section 717 from September 30, 2019, to September 30, 2025. In addition, Section 717(c) provides that any termination of sections of the DPA "shall not affect the disbursement of funds under, or the carrying out of, any contract, guarantee, commitment or other obligation entered into pursuant to this Act" prior to its termination. This means, for instance, that prioritized contracts or Section 303 projects created with DPA authorities prior to September 30, 2025, would still be executed until completion even if the DPA is not reauthorized. Similarly, the statute specifies that the authority to investigate, subpoena, and otherwise collect information necessary to administer the provisions of the act, as provided by Section 705 of the DPA, will not expire until two years after the termination of the DPA.124 For a chronology of all laws reauthorizing the DPA since inception, see Table A-4.

Defense Production Act Committee

The Defense Production Act Committee (DPAC) is an interagency body originally established by the 2009 reauthorization of the DPA.125 Originally, the DPAC was created to advise the President on the effective use of the full scope of authorities of the DPA. Now, the law requires DPAC to be centrally focused on the priorities and allocations authorities of Title I of the DPA.

The statute assigns membership in the DPAC to the head of each federal agency delegated DPA authorities, as well as the Chairperson of the Council of Economic Advisors. A full list of the members of the DPAC is included in E.O. 13603.126 As stipulated in law, the Chairperson of the DPAC is to be the "head of the agency to which the President has delegated primary responsibility for government-wide coordination of the authorities in this Act."127 As currently established in E.O. 13603 delegations, the Secretary of Homeland Security is the chair-designate, but the language of the law could allow the President to appoint another Secretary with revision to the E.O.128 The Chairperson of the DPAC is also required to appoint one full-time employee of the federal government to coordinate all the activities of the DPAC. Congress has exempted the DPAC from the requirements of the Federal Advisory Committee Act.129

The DPAC has annual reporting requirements relating to the Title I priority and allocation authority, and is also required to include updated copies of Title I-related rules in its report. The annual report also contains, among other items, a "description of the contingency planning ... for events that might require the use of the priorities and allocations authorities" and "recommendations for legislative actions, as appropriate, to support the effective use" of the Title I authorities.130 The DPAC report is provided to the Senate Committee on Banking, Housing, and Urban Affairs and the House Committee on Financial Services.

Impact of Offsets Report

Offsets are industrial compensation practices that foreign governments or companies require of U.S. firms as a condition of purchase in either government-to-government or commercial sales of defense articles and/or defense services as defined by the Arms Export Control Act (22 U.S.C. §2751, et seq.) and the International Traffic in Arms Regulations (22 C.F.R. §§120-130). In the defense trade, such industrial compensation can include mandatory co-production, licensed production, subcontractor production, technology transfer, and foreign investment.

The Secretary of Commerce is required by law to prepare and to transmit to the appropriate congressional committees an annual report on the impact of offsets on defense preparedness, industrial competitiveness, employment, and trade. Specifically, the report discusses "offsets" in the government or commercial sales of defense materials.131

Considerations for Congress

Enhance Oversight

Expand Reporting or Notification Requirements

Congress may consider whether to add more extensive notification and reporting requirements on the use of all or specific authorities in the DPA. These reporting or notification requirements could be added to the existing law, or could be included in conference or committee reports accompanying germane legislation, such as appropriations bills or the National Defense Authorization Act. Additional reporting or notification requirements could involve formal notification of Congress prior to or after the use of certain authorities under specific circumstances. For example, Congress may consider whether to require the President to notify Congress (or the oversight committees) when the priorities and allocations authority is used on a contract valued above a threshold dollar amount.132 Congress might also consider expanding the existing reporting requirements of the DPAC, to include semi-annual updates on the recent use of authorities or explanations about controversial determinations made by the President. Existing requirements could also be expanded from notifying/reporting to the committees of jurisdiction to the Congress as a whole, or to include other interested committees, such as the House and Senate Armed Services Committees.

Enforce and Revise Rulemaking Requirements

Congress may consider reviewing the agencies' compliance with existing rulemaking requirements. A rulemaking requirement exists for the voluntary agreement authority in Title VII that has been completed by DHS, but it has not been updated since 1981 and may be in need of an update given changes to the authority and government reorganizations since that date.133 One of the agencies responsible for issuing a rulemaking on the use of Title I authorities has yet to do so. Congress may also consider potentially expanding regulatory requirements for other authorities included in the DPA. For example, Congress may consider whether the President should promulgate rules establishing standards and procedures for the use of all or certain Title III authorities. In addition to formalizing the executive branch's policies and procedures for using DPA authorities, these regulations could also serve an important function by offering an opportunity for private citizens and industry to comment on and understand the impact of DPA authorities on their personal interests.

Broaden Committee Oversight Jurisdiction

Since its enactment, the House Committee on Financial Services, the Senate Committee on Banking, Housing, and Urban Affairs, and their predecessors have exercised legislative oversight of the Defense Production Act. The statutory authorities granted in the various titles have been vested in the President, who has delegated some of these authorities to various agency officials through E.O. 13603. As an example of the scope of delegations, the membership of the Defense Production Act Committee (DPAC), created in 2009 and amended in 2014, includes the Secretaries of Agriculture, Commerce, Defense, Energy, Labor, Health and Human Services, Homeland Security, the Interior, Transportation, the Treasury, and State; the Attorney General; the Administrators of the National Aeronautics and Space Administration and of General Services, the Chair of the Council of Economic Advisers; and the Directors of the Central Intelligence Agency and National Intelligence.

In order to complement existing oversight, given the number of agencies that currently use or could potentially use the array of DPA authorities to support national defense missions, Congress may consider reestablishing a select committee with a purpose similar to the former Joint Committee on Defense Production.134 As an alternative to the creation of a new committee, Congress may consider formally broadening DPA oversight responsibilities to include all relevant standing committees when developing its committee oversight plan.

Should DPA oversight be broadened, Congress might consider ways to enhance inter-committee communication and coordination of its related activities. This coordination could include periodic meetings to prepare for oversight hearings or ensuring that DPA-related communications from agencies are shared appropriately. Finally, because the DPA was enacted at a time when the organization and rules of both chambers were markedly different to current practice, Congress may consider the joint referral of proposed DPA-related legislation to the appropriate oversight committees.

Amending the Defense Production Act of 1950

While the act in its current form may remain in force until September 30, 2025, the legislature could amend the DPA at any time to extend, expand, restrict, or otherwise clarify the powers it grants to the President. For example, Congress could eliminate certain authorities altogether. Likewise, Congress could expand the DPA to include new authorities to address novel threats to the national defense. For example, Congress may consider creating new authorities to address specific concerns relating to production and security of emerging technologies necessary for the national defense.

#### Key to pandemic response

J. Mark Gidley et al. 20. J. Mark Gidley chairs the White & Case Global Antitrust/Competition practice. Martin M. Toto and Sean Sigillito. “A Novel Antitrust Defense for COVID-19 Agreements: Section 708 of the Defense Production Act” <https://www.whitecase.com/sites/default/files/2020-04/novel-antitrust-defense-covid-19-agreements-section-708-defense-production-act.pdf>

There is a dire need for the assistance of private industry in developing vaccines and treatments for the SARS-CoV-2 virus, and for the manufacture and distribution of medical and other supplies to aid in the United States’ response to the COVID-19 health emergency. The Government’s recent actions indicate a desire to allow private sector companies to work together to do so quickly.

While many of the needs arising from the ongoing emergency focus specifically on medical supplies, the President’s delegation of Section 708 authority to the DHS as well as HHS potentially opens the door to voluntary agreements within broader sectors of the US economy. Under the right circumstances, and if the business combination could garner the governmental sponsor needed for the voluntary agreement, invoking the Defense Production Act’s antitrust relief provision through the enactment of voluntary agreements could allow for a more robust response to the COVID-19 pandemic.

#### Extinction

Dennis Pamlin & Stuart Armstrong 15. \*Executive Project Manager Global Risks, Global Challenges Foundation. \*\*James Martin Research Fellow, Future of Humanity Institute, Oxford Martin School, University of Oxford. February 2015, “Global Challenges: 12 Risks that threaten human civilization: The case for a new risk category,” Global Challenges Foundation, p.30-93. https://api.globalchallenges.org/static/wp-content/uploads/12-Risks-with-infinite-impact.pdf

A pandemic (from Greek πᾶν, pan, “all”, and δῆμος demos, “people”) is an epidemic of infectious disease that has spread through human populations across a large region; for instance several continents, or even worldwide. Here only worldwide events are included. A widespread endemic disease that is stable in terms of how many people become sick from it is not a pandemic. 260 84 Global Challenges – Twelve risks that threaten human civilisation – The case for a new category of risks 3.1 Current risks 3.1.4.1 Expected impact disaggregation 3.1.4.2 Probability Influenza subtypes266 Infectious diseases have been one of the greatest causes of mortality in history. Unlike many other global challenges pandemics have happened recently, as we can see where reasonably good data exist. Plotting historic epidemic fatalities on a log scale reveals that these tend to follow a power law with a small exponent: many plagues have been found to follow a power law with exponent 0.26.261 These kinds of power laws are heavy-tailed262 to a significant degree.263 In consequence most of the fatalities are accounted for by the top few events.264 If this law holds for future pandemics as well,265 then the majority of people who will die from epidemics will likely die from the single largest pandemic. Most epidemic fatalities follow a power law, with some extreme events – such as the Black Death and Spanish Flu – being even more deadly.267 There are other grounds for suspecting that such a highimpact epidemic will have a greater probability than usually assumed. All the features of an extremely devastating disease already exist in nature: essentially incurable (Ebola268), nearly always fatal (rabies269), extremely infectious (common cold270), and long incubation periods (HIV271). If a pathogen were to emerge that somehow combined these features (and influenza has demonstrated antigenic shift, the ability to combine features from different viruses272), its death toll would be extreme. Many relevant features of the world have changed considerably, making past comparisons problematic. The modern world has better sanitation and medical research, as well as national and supra-national institutions dedicated to combating diseases. Private insurers are also interested in modelling pandemic risks.273 Set against this is the fact that modern transport and dense human population allow infections to spread much more rapidly274, and there is the potential for urban slums to serve as breeding grounds for disease.275 Unlike events such as nuclear wars, pandemics would not damage the world’s infrastructure, and initial survivors would likely be resistant to the infection. And there would probably be survivors, if only in isolated locations. Hence the risk of a civilisation collapse would come from the ripple effect of the fatalities and the policy responses. These would include political and agricultural disruption as well as economic dislocation and damage to the world’s trade network (including the food trade). Extinction risk is only possible if the aftermath of the epidemic fragments and diminishes human society to the extent that recovery becomes impossible277 before humanity succumbs to other risks (such as climate change or further pandemics). Five important factors in estimating the probabilities and impacts of the challenge: 1. What the true probability distribution for pandemics is, especially at the tail. 2. The capacity of modern international health systems to deal with an extreme pandemic. 3. How fast medical research can proceed in an emergency. 4. How mobility of goods and people, as well as population density, will affect pandemic transmission. 5. Whether humans can develop novel and effective anti-pandemic solutions.

### 1NC---Capitalism Kritik

#### Antitrust is a psyop used to pacify the working class and map competition onto subjectivity

Lebow 19 [David Lebow – Lecturer on Social Studies at Harvard University and lawyer, “Trumpism and the Dialectic of Neoliberal Reason,” Perspectives on Politics 18(2):380-398, doi:10.1017/S1537592719000434]

I. Neoliberal Reason

As Michel Foucault and others have argued, neoliberalism entails far more than an economic doctrine favoring deregulated markets.4 It is a novel form of governmentality—a rationality linked to technologies of power that govern conduct, not just through direct state action but through liberty itself.5 Not isolated to the traditionally demarcated sphere of economics, neoliberal society entails a whole economic-juridical order.

The central program of neoliberal governmentality is the absolute generalization of competition as a universal behavioral norm. Whereas in liberal thought, the root principle of capitalism was exchange of equivalents, for neoliberal reason it is competition entailing inequality. The key result of market processes goes from specialization to selection. The competitive market is the exclusive site of rationality. It processes information, indicated by price, and is the only mechanism of producing knowledge, defined as what is profitably utilizable. Because consumers are free to refuse inferior goods or services, the price mechanism of the market system ensures optimal solutions and maximal satisfaction of preferences.

Liberal capitalism, as Karl Polanyi argued, required the construction of “fictitious” commodities like land and labor.6 These abstract, exchangeable factors of production had to be disembedded from concrete non-market social relations, norms, and values. Instead of merely disembedding commodities, neoliberalism intervenes to make competitive mechanisms regulate every moment and point in society. It strives to build an empire of market choice that invades every domain of life, and deposes all other social, political and solidaristic institutions and values.

Neoliberalism does not allege that markets are natural; competition must be constructed. Rather than endorsing laissez-faire overseen by a night watchman, it stipulates a strong state engaged in permanent vigilance, activity, and intervention to maintain artificial competition. It must not plan outcomes, which would upset the market’s innate rationality, and must be insulated from political disturbances. Economic interventionism leads down the road to serfdom; fascism and unlimited state power are its necessary results. A “minimum of economic interventionism” on the “mechanisms of the market” must be accompanied by “maximum legal interventionism” on the “conditions of the market.”7 Fixed, formal rules make up an economic constitution that inhibits planning, repulses political disruptions, and impartially safeguards competition. The state is the executor of the market and growth is the basis of public legitimacy. Governance depoliticizes public power, promotes ostensibly post-ideological technical problem-solving by experts, and relies on “best-practices” that dissolve the distinction between public and private organization.8

Unlimited generalization of competition yields an enterprise society in which calculations of supply/demand and cost/benefit become the model of all social relations. Neoliberal reason renders homo economicus, based on this model of the enterprise, the exhaustive figuration of human subjectivity. The center of economic thought shifts from labor and processes of production, exchange, and consumption to human capital and rational decision-making under conditions of scarcity. Capital is everything that can generate future income; wages are reconceived as income from capital. Labor is no longer comprehended as a commodity exchanged for a wage, but as a combination of human capital (the worker’s education and abilities) and the income stream it generates. This neoliberal subject is an aggregate of human capital who invests in his own income-generating abilities.

Neoliberalism replaces the invariant identity of the moral person as a rights-bearing citizen with a formally empty receptacle filled up through enterprising choices. It brushes aside models of freedom as self-rule achieved through moral autonomy or popular sovereignty.9 In the neoliberal “democracy of consumers,” individual consumers together constitute the sovereign that monopolizes the issuance of legitimate commands.10 Sovereign will is expressed not through political channels, but by choices in the “plebiscite of prices.”11 Whereas producers have particular interests like protectionism, consumers have a consensual and common interest; all favor the impartial functioning of market processes. In the neoliberal free society, consumers exercise their right to choose in complete independence.

II. From Keynesian State Capitalism to Neoliberal Deregulation

Situating the 2008 crisis in a historical account of American political and economic development clarifies its broader significance. The early twentieth-century Progressives were disdainful of what they took to be the chaos and waste of fin de siècle laissez-faire society. They strove to build a new American state that would replace the structural and rights-based formalisms of the nineteenth century with direct democracy and expert administration. It took the Great Depression and New Deal to bring into full bloom the Progressive commitment to pragmatic rationality. Thereafter, the “policy state” was authorized to pursue designated social goals and develop the means to accomplish them.12 The slew of New Deal innovations included state oversight of labor negotiations, invigorated antitrust, Keynesian countercyclical deficits to stimulate demand and increase purchasing power, an expansive public sector sheltered from the business cycle, aggressive banking regulation, and social insurance. Regulation and redistribution ensured the conditions necessary for an economic system based on capital accumulation, private property, and corporate profit to endure.

To many, the differences between the New Deal and Nazi political economies appeared less significant than their common response to monopoly capitalism. Both erased boundaries between state and society by politicizing the private sphere and authorizing public bureaucracies to rationalize crisis-prone economies. Frankfurt School member Friedrich Pollock suggested that this common “state capitalism” had solved the contradiction between the forces and relations of production, and thus overcome the economy’s crisis tendencies. It seemed to him that management had become merely technical and “nothing essential” had been “left to the laws of the market.”13 Worries abounded that the private law sphere of property and contract was necessary for individual freedom. Despite salient differences between Nazi and New Deal state capitalism, many feared that intervention into society was a waystation to domination. Unease about the specter of American despotism motivated development of mechanisms to ensure that interventionism did not devolve into arbitrary rule.14 Expertise was one justification and limitation of the policy state. Authority could be safely delegated to a new corps of public-spirited administrators because their scientific knowledge would not only make them effective, but also counsel restraint. Enduring misgivings led later to new laws of administrative process. The procedural state was legitimated by its defenders as being a substantively value-neutral and instrumentally rational machine serving goals set by society. Regulatory decision-making was shunted into the abstruse procedures of courtrooms and bureaucracies. Defenders of the state emphasized that its processes of allocating authority were neutral, impartial, and open to all. The balanced accommodation of all interest groups seeking to exercise influence would yield an equilibrium corresponding to the public interest.15

The intermeshing of state and society through interest groups, agencies, and professionalized parties marginalized the public. The sovereign public opinion that Progressives had hoped would rationalize government gave way to the rationality supposedly inherent in processes of public law, public-private negotiation, and regulated markets. The state was endowed with a diffuse legitimacy in exchange for a growing economy, broad distribution, and ongoing household capacity to consume.16 The Keynesian welfare settlement pacified the working class, protecting the market economy from more radical political pressures. Newly available, mass-produced commodities encouraged leveled-down notions of citizenship as welfare clientelism and privatistic consumption. As the state expanded and routinized, the initial politicization of private property relations through public intervention developed into depoliticized economic management by lawyers and social scientists organized by administrative and judicial processes.

#### Capitalism drives extinction and structural violence

Allinson et al 21 [Jamie Allinson is Senior Lecturer in Politics and International Relations at Edinburgh University and author of The Age of Counter-revolution. China Miéville is the author of a number of highly acclaimed and prize-winning novels including October: The History of the Russian Revolution. Richard Seymour is the author of numerous works of non-fiction, His writing appears in the New York Times, London Review of Books, Guardian, Prospect, Jacobin. Rosie Warren is an Editor at Verso and the Editor-in-Chief of Salvage. All are writing for the Salvage Collective. “The Tragedy of the Worker: Toward the Proletarocene.” Introduction. July 2021. Verso EBook. ISBN: 9781839762963 //shree]

This is the question that vexed us as we set out to write The Tragedy of the Worker. From the vantage point of the present, the history of capitalist development is, as Marx expected, the history of the development of a global working class, the proletarianisation of the majority of the world’s population. But the very same process of that development has brought us to the precipice of climate disaster. Our position, to recall Trotsky’s rationalisation of War Communism in 1920, is in the highest degree tragic.

It is now clear that we will pass what scientists have long warned will be a tipping point of global warming, accelerating the already catastrophic consequences of capitalist emissions. How do we imagine emancipation on an at best partially habitable planet? Where once communists imagined seizing the means of production, taking the unprecedented capacities of capitalist infrastructures and using them to build a world of plenty, what must we imagine after the apocalypse has befallen us? What does it mean that as capitalism has become truly global, the gravediggers it has created dig not only capitalism’s grave, but also that of much organic life on earth?

Our answers to these questions remain rooted in the politics of revolutionary communism. Our stance is not based on the fantasy of a homeostatic nature that must be defended but on the critique of the capitalist metabolism – the Stoffwechsel- that must be overthrown. Earth scientists are accustomed to speak in terms of ‘cycles’ by which substances circulate in different forms: the water cycle, the rock cycle, the nitrogen cycle, the glacial-interglacial cycle, the carbon cycle, and others. One way of registering the catastrophe of climate change is to see these cycles – most of all, but not solely, the carbon cycle – as disordered, under- or over-accumulating. But this is to ignore the more fundamental circuit of which these now form epicycles, like Ptolemy’s sub-orbits of the heavenly bodies: the circuit of capital accumulation, M-C-M′.

This circuit accumulates profit and produces death. Neither is accidental. It is for this reason that the debates that capitalist ruling classes permit among themselves on ‘adaptation’ versus ‘mitigation’ take place on false premises. What is to be mitigated is the impact of climate change on accumulation, rendered through the ideology of ‘growth’ as something that benefits everyone. What we are to adapt to are the parameters of accumulation, sacrificing just enough islands, eco-systems, indigenous – and non-indigenous – cultures to maintain its imperatives for a period of time until new thresholds must be crossed, and new life sacrificed to the pagan idol of capital. Already, capitalist petro-modernity builds a certain quantum of acceptable death into its predicates: at the very least, the 8.7 million killed by fossil fuels each year according to Harvard University are considered a price worth paying for the stupendous advantages of fossil capital. And the sky can only keep going up, as deforestation, polar melt, ocean acidification, soil de-fertilisation and more intense wildfires and storms tear the web of life into patches. If the necropolitical calculus of the Covid-19 pandemic appears crass, just wait until its premises are applied to climate catastrophe.

#### Vote neg for anti-capitalist commons---collectives should refuse commitments to the competitive principle

Rose 21 [Nick. PhD in Political Ecology from RMIT University. Executive Director of Sustain: The Australian Food Network. From the Cancer Stage of Capitalism to the Political Principle of the Common: The Social Immune Response of “Food as Commons.” Int J Health Policy Manag 2021. 3-31-21. DOI: 10.34172/ijhpm.2021.20 //shree]

Silvia Federici provides a longer historical perspective, noting that ‘commoning is the principle by which human beings have organised their existence for thousands of years;’ and that to ‘speak of the principle of the common’ is to speak ‘not only of small-scale experiments [but] of large-scale social formations that in the past were continent-wide.’87 Hence a commons-based society is neither a utopia or reducible to fringe projects, and the commons have persisted despite the many and continuing enclosures, ‘feeding the radical imagination as well as the bodies of many commoners.’87 Federici acknowledges that commons and practices of commoning are diverse, that many are susceptible to cooptation and many are consistent with the persistence of capitalism; indeed some, such as charities providing social services (including foodbanks) during the years of austerity budgets in the United Kingdom (2010-2015), reinforce and stabilise capitalism.87 What matters to Federici is the character and intentionality of the commons as anti-capitalist, as ‘a means to the creation of an egalitarian and cooperative society…no longer built on a competitive principle, but on the principle of collective solidarity [and commitments] to the creation of collective subjects [and] fostering common interests in every aspect of our lives.’87

Federici’s analysis resonates with the political thought and proposals developed by Dardot and Laval in their 2018 work, ‘On Common: Revolution in the 21st century.’11 For Dardot and Laval, the common is likewise understood as a principle of political struggle, a demand for ‘real democracy’ and a major driving force behind the emerging articulation of a political vision and programme that transcends and overcomes the straitjacket logic of neoliberal ideological hegemony and its ‘policy grammar’ which appears to foreclose all alternatives and lock us forever into a capitalist realism in which ‘it is easier to imagine the end of the world than it is to imagine the end of capitalism.’89 Eschewing Bollier’s ‘triarchy’ of a market/state/ commons coexistence, Dardot and Laval argue for a politics of the common based on an engaged citizenry that directly participates and deliberates in all decisions which impact it, and in the process not merely transforms the institutions responsible for the management of services and allocation of resources, but creates new institutions and new ways of being in the world.11

Dardot and Laval describe this form of politics as ‘instituent praxis’: the common, they argue, is ‘not produced but instituted.’11 This acknowledges the conventional understanding of Ostrom, Bollier and others of ‘the commons’ as residing in the rules – the laws – that a community establishes for the collective management and use of shared resources, but extends it much further and in a more radical direction. The essence of the commons, they argue, is not in the goods per se such as land or a forest or a seed bank ‘held in common,’ but rather in the process of their establishment as well as the ongoing negotiation that will surround their use and governance. Hence, Dardot and Laval distinguish the commons from the ‘rights’ tradition of property, arguing that ‘the commons are above all else matters of institution and government…the use of the commons is inseparable from the right of deciding and governing. The practice that institutes the commons is the practice that maintains them and keeps them alive and takes full responsibility for their conflictuality through the coproduction of rules.’90 To ‘institute’ in this context should not be misunderstood as ‘to institutionalise [or] render official;’ rather it is ‘to recreate with, or on the basis of, what already exists.’ 90 This messy, conflictual and evolving process is what Dardot and Laval insist will ultimately bring about a revolution, not in the form of a violent uprising or insurrection, but rather through the ‘reinstitution of society’ via the transformation of politics and economy from its current state of ‘representative oligarchy’ to full participatory and deliberative democracy.11 Such a vision is premised on a mass politicisation of society; in effect a return of mass popular political contestation and a turn away from the postpolitical era of the neoliberal consumer.91-92

## Innovation Adv

#### Big Tech drives AI innovation and R&D---antitrust fractures it

Nicole Hemsoth 20. Co-Founder and Co-Editor at the Next Platform. What Could Stifle American AI Innovation?. Next Platform. 5-21-2020. https://www.nextplatform.com/2020/05/21/what-could-stifle-american-ai-innovation/

There are many things the U.S. government can do, but innovating at a rapid pace in the ever-evolving world of artificial intelligence is not necessarily one of them.

Much of the work in deep learning hardware and software comes from the private sector, which various government agencies depend upon for their various directives. However, we are in an age of complicated antitrust conversations and unfortunately, many of the companies under the gun for such action are those who supply the feds with much-needed computational and algorithmic know-how and tools.

The Center for Security and Emerging Technology (CSET) issued a detailed brief this month reviewing the role of antitrust action and what it could mean for the Pentagon’s access to AI. Indeed, there are a number of other government entities that could feel the burn if some of the most prolific tech monopolies are divvied up, but the report is narrowly focused on the Pentagon specifically.

We talked with one of the authors of the report, Dakota Foster, a visiting researcher at CSET about the multi-layered question of antitrust, AI, and what governments stand to lose (and what smaller private companies and startups might gain).

One of the most interesting questions in the wake of potential antitrust action against some of the largest tech companies (Google Microsoft, etc.) is around innovation. How might it might stifled and what will the effect be on the agencies that rely on the swift pace of progress on strategically critical technology areas like AI?

“We estimate that antitrust action will likely reduce the net amount and diversity of data held by firms that are broken up and could also reduce firms’ R&D budgets,” Foster says. “However, the effect these losses will have on innovation remains unclear. Similarly, we expect firms’ computing resources to diminish with yet undetermined consequences; shared compute resources could perhaps more than compensate for any loss.”

The R&D problem of any potential antitrust action down the pike would be most keenly felt in R&D, which spurs the innovation of many of the platforms that have tricked into use in hyperscale, HPC, and enterprise settings as open source or simply inspiration. While plenty of work comes out of national lab and developer communities, few things can beat a near-limitless well of R&D funds to innovative and iterate.

Foster and colleagues argue that If “R&D spending drives innovation, firms that can spend more on R&D— presumably large ones—will generally hold an edge in innovation.” They add that a “postbreakup AI sector could be less innovative as a result. Large tech companies do in fact spend more on R&D both in absolute and relative terms. According to PricewaterhouseCoopers, in absolute terms, Amazon and Alphabet were the world’s top two corporate R&D spenders in 2018, with Samsung, Intel, Microsoft and Apple in the top ten.

“The debate over breaking up Big Tech has profound national security implications. The Pentagon maintains that the innovation and acquisition of AI technologies is critical to America’s national security. Defense Secretary Mark Esper recently called AI the most significant emerging technology for warfare, predicting that “whoever masters it first will dominate on the battlefield for many, many, many years.” Although others within and beyond the Pentagon stress the limits of AI, its potential is widely acknowledged. In order to develop and deploy new, strategically decisive AI tools, the Pentagon must rely on an AI innovation ecosystem in which large private-sector companies play a critical role. At the same time, the Department of Justice, the Federal Trade Commission, Congress, and state attorneys general have targeted many of the private sector’s largest and most innovative AI companies in ongoing antitrust probes.” – Dakota Foster, Visiting Researcher, CSET

#### No impact to Chinese tech leadership

Kai-Fu Lee and Paul Triolo 17, Kai-Fu Lee, Ph.D., is a Co-Founder, Chairman, President, Chief Executive Officer, and Managing Partner of Sinovation Ventures, Paul Triolo is a China Digital Economy Fellow at New America and the geo-technology practice head at the Eurasia Group, “China’s Artificial Intelligence Revolution: Understanding Beijing’s Structural Advantages”, <https://www.eurasiagroup.net/files/upload/China_Embraces_AI.pdf> //AP

Beijing’s AI policy priorities are clear. The “Next Generation Artificial Intelligence Development Plan,” announced by China’s State Council in July 2017, called for China to catch up on AI technology and applications by 2020, and to become a global AI innovation hub by 2030. Chinese President Xi Jinping hammered the point home in his 19th Party Congress speech in October, when he mentioned the development of advanced manufacturing and the promotion of further integration of the Internet, big data and artificial intelligence with the real-world economy. Beijing has placed huge bets on AI for a host of political and economic reasons, from improving governance capacity to improving policy development and surveillance. The plan calls for China to lead the way in developing a regulatory environment to both encourage AI development and to mitigate the potential downsides of AI. A few months after the national plan’s announcement in July, the Ministry of Science and Technology (MOST) designated Baidu to lead the autonomous vehicle platform, Tencent for medical, Alibaba for Smart Cities, and iFlyTek for speech interfaces. These plans should be taken seriously, as the Chinese government has shown a strong track record in delivering results. For example, Beijing announced in 2010 that China would become the world’s leader in adopting high-speed rail (HSR). Today it has 60% of the world’s HSR market. In 2014, the Chinese government announced the “Mass Entrepreneurship and Innovation Plan.” Today there are business 8000 incubators in China, compared to 1400 in 2014. These plans have teeth, both due to the deadlines and metrics set out at the national level, as well as the local companies that are likely to take these directions as top priorities. We can expect a similar trajectory for China’s AI policies. Historically, the Chinese government has been open-minded towards technology development. When a new technology comes out, the government will give it the benefit of doubt and let it grow, rather than stifle it with policy or endless debates. Also, the environment in China is more conducive to fast launch and iteration. There is a general belief that it is better to launch something and then get it approved later. This allows Chinese businesses to generate real data at scale, which in turn allows technology to improve over a shorter period of time, particularly once AI is introduced into the equation. For example, while in the US, truckers’ unions are petitioning the Department of Transportation to delay autonomous truck testing, in China, the Xiong’an New Area, a planned smart city development southwest of Beijing, is being designed from the ground up with full autonomy in mind. Various highway authorities are willing to develop road augmentation, special lanes, or move warehouses near highway exits, all to facilitate faster deployment of autonomous trucks. We also see major initiatives in cities, following the central government’s call to action. Shanghai, Nanjing, Wuhan, and Tianjin are but a few of the cities coming out with their own AI initiatives. As with past policies, much of the resources will be applied at the provincial and city government levels. The types of resources may include subsidies for top talent (especially overseas talent); guidance for top VC funds, with the government playing the role of limited partner (LP) but offering some of its upside to the general partners (GPs) of the funds; special programs for top AI companies and start-ups (free rent, subsidy for local hiring, housing and private school for top talents); and technical awards for companies and individuals. Finally, the US, EU, and China will also compete to be out in front on developing a regulatory regime around AI technologies and applications. The National Plan’s explicit recognition of the need for regulatory, legal, and ethical principles for AI development and use represents an uncommonly foresighted approach. Of course, the government’s approach to AI regulation, ethics, and economic adjustment will reflect Beijing’s broader model of governance and ideology. Given its preference for a state-centric approach to international issues, for example, it is possible China will launch an initiative via the UN to establish first an automation/AI-related “code of conduct,” or basic regulatory approach, followed by a special committee on the topic and eventually an oversight body operating within a UN framework. Such an initiative would put China at the forefront of developing a global approach to these issues. Beijing has attempted a similar approach on cybersecurity issues, which it argues have a global impact and require a global regulatory response.

#### Violent China rise scenario is wrong

Koh King Kee 20. President, Centre for New Inclusive Asia (CNIA). Associate Fellow, Institute of China Studies, University of Malaya. “China’s Rise Is No Threat to the Liberal International Order “ China Focus. 01-22-2020. http://www.cnfocus.com/china-s-rise-is-no-threat-to-the-liberal-international-order/

China has given the world a sterling report card for its economic reform over the last four decades. Its achievements have won admirations and applauses across the world, from men on the street to political elites. Its success stories are inspirations to leaders of the emerging economies who see in China an alternative development model, a growth path that is strikingly different from the conventional economic text. But its meteoric rise has also **stirred concerns and fears in the West**. To the advocates of Western democracy, China is a centralized authoritarian regime, the rise of which is a threat to the liberal international order. Particularly, America views China as a revisionist power that poses an imminent challenge to its global hegemony. In a radio interview last year, U.S. Secretary of State Mike Pompeo alleged that China is “buying an empire” with its Belt and Road Initiative, and America intends to “oppose them at every turn”. **Are such allegations justified** or misguided? What sets China’s political system apart from the rest of the world? China’s centralized system is rooted in its history “The Chinese tradition of order imposed by a centralized system” is “a pattern that goes back at least 3,500 years”, says Newt Gingrich, former US House Speaker in his newly published book “Trump Vs China: Facing America’s Greatest Threat”. Newt Gingrich, a harsh critic of the Communist Party of China (CPC) has no empathy for China. However, he is right in pointing out that China’s political system under CPC is rooted in thousands of years of its history, a system that is inextricably embedded in its millennial-old civilization. Centralization has been China’s mainstream political philosophy spanning from the ancient dynasties to modern days. China has remained a unified nation after Qinshihuang’s conquest of the Warring States more than 2,000 years ago despite the rise and fall of the dynasties, thanks to the centralized system. It glues the immense territory together and prevents China from falling into the fate of Europe – disintegration into small nation states. China’s centralized system of governance is run based on meritocracy – a key tenet of Confucianism, which is the **bedrock of Chinese civilization**. “When the Great Principle prevails, the world belongs to all, rulers are selected according to their wisdom and ability (⼤道之⾏也，天下为公，选贤与能),” said Confucius. In ancient China, talents were picked based on the principle of meritocracy through an open imperial examination system to serve the ruler of the day. Likewise, in present day China, leaders are selected after they have passed through tiers of ability and loyalty mill tests. Centralization and meritocracy are the foundation of Chinese polity. Despite regime change, they have remained China’s unchanged statecraft throughout its history. CCP’s consultative democracy is, in fact, a blend of centralization and meritocracy. Advantages of China’s political system Many factors have contributed to China’s startling economic rise. Free trade and globalization are unequivocally important drivers. However, many countries with a huge population or immense territory such as India, Russia and Indonesia have not been able to achieve the same economic growth as that of China, even though the same international environment and opportunities were availed to them. Many political pundits and economists have failed to recognize that what sets China apart from others in its development path is, in fact, its unique political system. China’s centralized CPC-led system has obvious advantages over electoral democracy as it allows the government to formulate long-term economic development plans for the country as opposed to focusing on short term populist policies for voters’ satisfaction. It is not uncommon for a new government to reverse development policies of the previous regime due to different ideologies in a parliamentary democracy. Meritocracy and political stability enhance government efficiency and accountability. China is well acknowledged for its high efficiency in delivering mega infrastructure projects. It builds highways, railways, bridges, dams, power plants, airports and other infrastructure projects in record time, now come to know as “China Speed”. Typically, a HSR project in China takes about 4 years to complete irrespective of its size, whilst in other countries, a similar project may take up to a decade to build. “China Speed” speeds up China’s economic growth as infrastructure is not only the prerequisite, but also the catalyst for economic development. BRI – a platform for international cooperation China’s Belt and Road Initiative (BRI) is the biggest infrastructure built out in the history of mankind. It is a mammoth transcontinental development project that aims to build connectivity across the Eurasian landmass based on the principles of mutual consultation, joint contribution and shared benefits. “China will actively promote international cooperation through the Belt and Road Initiative. In doing so, we hope to achieve policy, infrastructure, trade, financial, and people-to-people connectivity and thus build a new platform for international co-operation to create new drivers of shared development,” said President Xi Jinping at the 19th CPC National Congress. Sound infrastructures are the prerequisite for economic development. According to ADB’s estimate, Asia alone requires $26 trillion of infrastructure investment from 2016 to 2030 in order to maintain its growth momentum, eradicate poverty and respond to climate change. China is well positioned to contribute to the global infrastructure investment needs in view of its technology and expertise in building infrastructure projects, coupled with its huge pool of foreign reserves. To deepen its reform, China must move up the global value chain, migrate its low technology industries and alleviate its excess industrial capacities by opening-up new markets. BRI connects China’s landlocked northwest provinces to the world with overland highways and railways. It opens a safe passageway to the Indian Ocean through the China-Pakistan Economic Corridor. BRI is thus a **win-win transnational development project** benefiting China and the partner countries. However, in the eyes of Washington, BRI is China’s grand strategy to project its global influence and a challenge to America’s world supremacy. Washington accused China of coercive economic diplomacy by indiscriminate lending to developing countries with poor repayment ability, eventually seizing the strategic assets of the recipients when they failed to repay the loans – a scheme propagated by the West as “debt trap”. China is developing through interaction with the world China is a member of the global village. It is developing through interactions with the world. “China has been seeking development with its door open. China has **embraced the world**, learned from the world, and contributed to the world, **through positive interaction** and shared development.” China sums up its relationship with the world in “ China and the World in the New Era”, a White Paper commemorating the 70th Anniversary of the founding of the People’s Republic of China. China promotes interconnected development and **benefits from the existing international order.** It advocates **free trade and multilateralism.** When China started its reform and opening-up to the world, the West cast a mould, expecting China to grow accordingly. However, China took a path not traversed by others – a mixed economy under the centralized authoritarian system, or as CPC puts it, Socialism with Chinese Characteristics. It is a system rooted in thousands of years of its history and civilization, a development model that suits China and produces an economic miracle never seen in human history. The Belt and Road Initiative is China’s mega initiative for globalization **aiming at win-win outcome.** It is China’s offer of public goods to the world as an emerging economic superpower, a manifestation of its age-old philosophy, “When you are rich, share your wealth with the world (达则兼济天下）.” China is now the second largest economy and top trading nation in the world, contributing about 30 percent to global growth. Inevitably, the international order should reflect the new economic dynamics of the 21st century. While China’s economic achievements offer valuable lessons to the world, it has no messianic aspirations. As President Xi Jinping has categorically said, “We will not import other countries’ models, and will not export the China model.” China’s growth is being realized within the existing international order. China has **no reason to sabotage** it nor the intention to supplant America’s global preeminence. **China’s rise is no threat to the liberal international order!**

#### Pharma monopolies don’t stifle innovation

Joanna Shepherd, 18 (Professor of Law, Emory University School of Law. " Consolidation and Innovation in the Pharmaceutical Industry: The Role of Mergers and Acquisitions in the Current Innovation Ecosystem," *Journal of Health Care Law and Policy*, 8-28-18, <https://digitalcommons.law.umaryland.edu/cgi/viewcontent.cgi?article=1356&amp;context=jhclp>

Note: M&A = Mergers & Acquisitions

Despite concerns among some researchers and competition agencies that consolidation in the pharmaceutical industry reduces innovation, aggregate innovation has held strong notwithstanding dramatic increases in M&A activity. The years 2014 and 2015 generated both record numbers of new drug approvals and record pharmaceutical M&A.152 In fact, although M&A deals and new drug approvals vary slightly year-to-year, the general pattern has been increasing aggregate innovation alongside increasing consolidation.153 Although trend data is not enough to prove a causal relationship between innovation and consolidation, when considered alongside the evolving innovation ecosystem, it suggests that M&A does not stifle drug innovation. Today, most drug innovation originates outside of traditional pharmaceutical companies, in biotech companies and smaller firms, where a culture of nimble decision-making and risk-taking facilitates discovery and innovation. In the later stages of the drug development process, the biotech companies routinely partner with large pharmaceutical companies to advance through late-stage clinical trials and produce, market, and distribute the drugs. 154 In this current ecosystem, biotech and pharmaceutical firms are able to specialize in what they do best, bringing expertise and efficiencies to the innovation process. The specialization has led to an environment in which approximately three-fourths of new drugs are externally-sourced. 155 Internal R&D is no longer the primary source, or even an important source, of drug innovation.

#### Big Pharma solves disease

Sandip **Shah 19**. State Public Health Lab Director and Administrator at State Department of Health. "Opinion: Big Pharma doesn't deserve all the hate.". 11-21-2019. https://www.naplesnews.com/story/opinion/contributors/2019/11/21/opinion-big-pharma-doesnt-deserve-all-hate/4267640002/

This **scorn** is **misplaced**. It's true that the biopharmaceutical sector contains a few bad actors who price gouge and cut regulatory corners. But the majority of drug companies are **responsible** corporate citizens that **spend billions** to **invent lifesaving medicines**. If we let our **collective resentment** turn into tangible, **anti-innovation policies** – such as drug price controls – we'll end up **worse** off. American **pharmaceutical** researchers deserve credit for the **lion's share** of **medical progress**. In 2017, drug firms poured $97 billion into research and development operations in the United States. That's more than double the U.S. government's spending on scientific research. Scientists in U.S. labs are currently developing 4,500 experimental drugs – more than half of all medicines in development worldwide. Thanks to these efforts, Americans are **beating deadly diseases** in record numbers. Cancer death rates have declined close to 30% since the 1990s. Researchers credit nearly three-quarters of these **survival gains** to **groundbreaking new drugs**. Biopharmaceutical research also **revolutionized** the treatment of **HIV/AIDS**. Just 30 years ago, a diagnosis was a death sentence. In the mid-1990s, scientists developed **highly active** antiretroviral therapies. These drugs caused HIV/AIDS death rates to plummet 88%, and have averted close to 1 million premature deaths in the United States alone. Scientists have recently turned their attention to **new types** of drugs, such as **gene and immunotherapies**, that reprogram patients' own bodies to fight disease. Doctors are already using these **cutting-edge medicines** to treat **hemophilia**, **leukemia** **and blindness**. Progress like this doesn't come easy. Each new drug is the result of millions of man-hours of research and testing. It takes over a decade to turn a promising lab compound into a marketable medicine. For every experimental drug that makes it to patients, nine others fail in clinical trials. Taking this **failure rate** into consideration, it costs more than $2 billion on average to bring a **new treatment** to market.

## Federalism Adv

#### Norms fail

Edward M. Geist 16. Policy Analyst at RAND, former MacArthur Nuclear Security Fellow at Stanford, and a PhD in history from UNC. “It’s already too late to stop the AI arms race—We must manage it instead.” *Bulletin of the Atomic Scientists* 72(5): 319-20. Emory Libraries.

Norms are not enough

One goal of the campaign against autonomous weapons is to forestall state and non-state actors from weaponizing artificial intelligence by establishing a norm among AI researchers against contributing to socially undesirable uses of their work, as biotechnology researchers did at the 1975 Asilomar Conference on Recombinant DNA (Russell 2015; Grace 2015). While it is laudable to discourage artificial-intelligence practitioners from contributing to morally dubious projects, experience with other potentially dangerous emerging technologies indicates that merely establishing such norms may prove inadequate. The researchers’ open letter from last year approvingly invokes “international agreements that have successfully prohibited chemical and biological weapons,” but the USSR secretly developed a massive biological weapons program despite signing the 1972 Biological Weapons Convention (Leitenberg and Zilinskas 2012). While Western biologists demonstrated their concern about the possible hazards of genetic engineering at the 1975 Asilomar Conference, this did not prevent their Soviet counterparts from trying to create apocalyptically dangerous bioweapons using the technology (Grace 2015; Leitenberg and Zilinskas 2012). Attempts to forestall the creation of AI weapons relying primarily on the establishment of unverifiable cultural norms are liable to repeat this same lamentable pattern.

#### Experimentation approach is bad

1AC Bostrom 2 – Nick Bostrom, Professor of Philosophy at Oxford University, “Existential Risks: Analyzing Human Extinction Scenarios and Related Hazards”, Journal of Evolution and Technology, 9(1), http://www.nickbostrom.com/existential/risks.html

The special nature of the challenges posed by existential risks is illustrated by the following points: · Our approach to existential risks cannot be one of trial-and-error. There is no opportunity to learn from errors. The reactive approach – see what happens, limit damages, and learn from experience – is unworkable. Rather, we must take a proactive approach. This requires foresight to anticipate new types of threats and a willingness to take decisive preventive action and to bear the costs (moral and economic) of such actions. · We cannot necessarily rely on the institutions, moral norms, social attitudes or national security policies that developed from our experience with managing other sorts of risks. Existential risks are a different kind of beast. We might find it hard to take them as seriously as we should simply because we have never yet witnessed such disasters.[5] Our collective fear-response is likely ill calibrated to the magnitude of threat. · Reductions in existential risks are global public goods [13] and may therefore be undersupplied by the market [14]. Existential risks are a menace for everybody and may require acting on the international plane. Respect for national sovereignty is not a legitimate excuse for failing to take countermeasures against a major existential risk. · If we take into account the welfare of **future generations**, the harm done by existential risks is **multiplied** by another factor, the size of which depends on whether and how much we discount future benefits [15,16]. In view of its undeniable importance, it is surprising how little systematic work has been done in this area. Part of the explanation may be that many of the gravest risks stem (as we shall see) from anticipated future technologies that we have only recently begun to understand. Another part of the explanation may be the unavoidably interdisciplinary and speculative nature of the subject. And in part the neglect may also be attributable to an aversion against thinking seriously about a depressing topic. The point, however, is not to wallow in gloom and doom but simply to take a sober look at what could go wrong so we can create responsible strategies for improving our chances of survival. In order to do that, we need to know where to focus our efforts.

#### 1AC Work evidence says China is the alternative---that solves

Kai-Fu Lee and Paul Triolo 17, Kai-Fu Lee, Ph.D., is a Co-Founder, Chairman, President, Chief Executive Officer, and Managing Partner of Sinovation Ventures, Paul Triolo is a China Digital Economy Fellow at New America and the geo-technology practice head at the Eurasia Group, “China’s Artificial Intelligence Revolution: Understanding Beijing’s Structural Advantages”, <https://www.eurasiagroup.net/files/upload/China_Embraces_AI.pdf> //AP

Beijing’s AI policy priorities are clear. The “Next Generation Artificial Intelligence Development Plan,” announced by China’s State Council in July 2017, called for China to catch up on AI technology and applications by 2020, and to become a global AI innovation hub by 2030. Chinese President Xi Jinping hammered the point home in his 19th Party Congress speech in October, when he mentioned the development of advanced manufacturing and the promotion of further integration of the Internet, big data and artificial intelligence with the real-world economy. Beijing has placed huge bets on AI for a host of political and economic reasons, from improving governance capacity to improving policy development and surveillance. The plan calls for China to lead the way in developing a **regulatory environment** to both encourage AI development and to **mitigate the** potential **downsides of AI.** A few months after the national plan’s announcement in July, the Ministry of Science and Technology (MOST) designated Baidu to lead the autonomous vehicle platform, Tencent for medical, Alibaba for Smart Cities, and iFlyTek for speech interfaces. These plans should be taken seriously, as the Chinese government has shown a strong track record in delivering results. For example, Beijing announced in 2010 that China would become the world’s leader in adopting high-speed rail (HSR). Today it has 60% of the world’s HSR market. In 2014, the Chinese government announced the “Mass Entrepreneurship and Innovation Plan.” Today there are business 8000 incubators in China, compared to 1400 in 2014. These plans have teeth, both due to the deadlines and metrics set out at the national level, as well as the local companies that are likely to take these directions as top priorities. We can expect a similar trajectory for China’s AI policies. Historically, the Chinese government has been open-minded towards technology development. When a new technology comes out, the government will give it the benefit of doubt and let it grow, rather than stifle it with policy or endless debates. Also, the environment in China is more conducive to fast launch and iteration. There is a general belief that it is better to launch something and then get it approved later. This allows Chinese businesses to generate real data at scale, which in turn allows technology to improve over a shorter period of time, particularly once AI is introduced into the equation. For example, while in the US, truckers’ unions are petitioning the Department of Transportation to delay autonomous truck testing, in China, the Xiong’an New Area, a planned smart city development southwest of Beijing, is being designed from the ground up with full autonomy in mind. Various highway authorities are willing to develop road augmentation, special lanes, or move warehouses near highway exits, all to facilitate faster deployment of autonomous trucks. We also see major initiatives in cities, following the central government’s call to action. Shanghai, Nanjing, Wuhan, and Tianjin are but a few of the cities coming out with their own AI initiatives. As with past policies, much of the resources will be applied at the provincial and city government levels. The types of resources may include subsidies for top talent (especially overseas talent); guidance for top VC funds, with the government playing the role of limited partner (LP) but offering some of its upside to the general partners (GPs) of the funds; special programs for top AI companies and start-ups (free rent, subsidy for local hiring, housing and private school for top talents); and technical awards for companies and individuals. Finally, the US, EU, and China will also compete to be out in front on developing a regulatory regime around AI technologies and applications. The National Plan’s explicit recognition of the need for regulatory, legal, and ethical principles for AI development and use represents an **uncommonly foresighted approach.** Of course, the government’s approach to AI regulation, ethics, and economic adjustment will reflect Beijing’s broader model of **governance and ideology**. Given its preference for a **state-centric approach** to international issues, for example, it is possible China will launch an initiative via the UN to establish first an automation/AI-related “code of conduct,” or basic regulatory approach, followed by a special committee on the topic and eventually an oversight body operating within a UN framework. Such an initiative would put **China at the forefront of developing a global approach to these issues.** Beijing has attempted a similar approach on cybersecurity issues, which it argues have a global impact and require a global regulatory response.

#### Nano-weapons impact is hype

Matthew Hull, 2017. Associate Director for Entrepreneurship and Business Engagement with Virginia Tech’s National Center for Earth and Environmental Nanotechnology; PhD, civil and environmental engineering, Virginia Tech. “National Security and the Nano Factor.” Homeland Defense & Security Information Analysis Journal 20: 16-21. <https://www.hdiac.org/system/files/HDIAC%20Journal_Special%20Nanotechnology%20Issue_HDS_National%20Security%20and%20Nanotechnology_0.pdf>.

Practical Nano Security Scenarios As best we can tell, current to near-term nano security scenarios are much more limited and manageable than those that can be imagined based on the trajectories of nano- as well as other emerging and converging technologies. But it is a waiting game, and the gap between science fiction and reality has shrunk rapidly over the last decade. The tangible progress in molecular machines noted earlier is proof enough of that. For the most part though, current embodiments of nanoscale materials appear more like building blocks for increasingly sophisticated material and devices of the future, and less like the “grey goo” they were once feared to be. [16] Nevertheless, present day nano security concerns do exist, and we consider three of these below: Nano-enhanced delivery of chemical and biological agents: Chemical and biological agent attacks remain a very real threat to global and national security. The potential for nanoscale agents to be deployed to enhance the efficacy of such attacks is one practical and near-term concern. As noted earlier, researchers have already demonstrated that nanoscale particles can act as ubiquitous carriers of toxic chemicals. A NATO report on the security implications of nanotechnology noted that: “The potential for [nanotechnology] innovations in chemical and biological weapons is particularly disquieting, as NT can considerably enhance the delivery mechanisms of agents or toxic substances. The ability of nanoparticles to penetrate the human body and its cells could make biological and chemical warfare much more feasible, easier to manage and to direct against specific groups or individuals. Dr. Sean Howard, in his work on NT security implications, has even called the threat of chemical and biological warfare a ‘real nano goo.’” [17] Limited nano detection/forensic capabilities: A major security concern and unmet need lies in our limited ability to determine forensically, whether and to what extent a particular nano threat may have been deployed. Additionally, there exists a clear lack of field deployable and scalable tools capable of detecting and monitoring nanoscale threats beyond laboratories and clean-rooms. Scientific and engineering-based approaches can be taken to address these gaps. For now, capabilities suitable for enhanced detection/ mitigation of nanoscale tracking devices or nano-enabled “Trojan Horse” delivery threats, for example, remain limited. Complacency amidst a silent arms race: The number of state-sponsored nanotechnology initiatives globally signifies a clear arms race to assume a dominant position in nano-enabled science and technology. While not as visible as the nuclear threat, this race is every bit as important to national and global security. A major threat to U.S. national security on this front is the potential to become complacent and to prematurely reduce federal investments into nano and convergent technologies. The United States has established itself as a global leader in nanoscale science and engineering research, scholarship and commercialization. Nevertheless, failure to maintain strategic, long-term investments in these areas, particularly rapidly evolving infrastructure and human capital, could severely impact U.S. innovation in nano-enabled industries and many other emerging technology fields that are simultaneously enhanced by progress in nanotechnology. Attrition of U.S. intellectual and infrastructural capabilities across nanotechnology-related programs would weaken U.S. defense and security interests in the future, when strategic nanoscale science and engineering investments are expected to yield their greatest payoffs. Off Buttons and Erasers: Integrating Security Features into Nano-enabled Technologies A critical security feature of any technology is the ability to turn it off, undo it, deactivate it or otherwise separate the harm it might cause from those it might harm. Even the humble pencil has evolved to include an eraser for undoing its mistakes. But, mankind has endured a host of challenges that arise when new technologies yield unintended consequences – the persistence of consumer plastic goods has left debris scattered across the Earth’s oceans; the use of nuclear weapons and runaway reactor cores have rendered cities uninhabitable for thousands of years; and the use of CFCs in coolant systems migrated unabated to the stratosphere where they’ve depleted the earth’s ozone layer. The recent Galaxy Note 7 battery fire controversy coupled with growing use of lithium ion batteries in mobile devices underscores the importance of technology that can be turned off. At present, it is unclear how persistent nanostructures and the unique behaviors that may accompany them will be in biological and environmental systems, and that should be alarming. An unprecedented dialogue around responsible nanotechnology has yielded progress, but feasible safeguards have been limited at best. Researchers have called for more green chemistry/nanotechnology approaches to help address some of these issues, [18] but those are likely to be effective only in situations where they clearly do not compromise performance of nano-enabled materials and devices. Nano and National Security: Key Considerations for the Future Looking ahead, nanoscale science and engineering will continue to impact security both nationally and globally in significant and far-reaching ways. The following list summarizes some key opportunities for the nano defense and security community: Translate nano properties to human scale devices and systems. Much of the hype surrounding nanotechnology has been muted by a lack of real-world examples demonstrating how unique nanoscale material properties can be translated into materials and devices with performance capabilities that are vastly enhanced relative to their bulk counterparts. Perfect nanoscale power systems. Realization of some of the most exciting security and defense applications of nanotechnology requires innovative strategies to power and mobilize nano devices against ambient molecular forces that are far greater at the nanoscale than they are at the human scale. To nanomachines, molecules of air, water and biological fluids appear as impenetrable walls of infinite thickness.

#### No impact to grey goo

Jeremy Shere 16, a science writer who has written and produced for some of public radio's top nationally syndicated science programs, including Sound Medicine, Earth & Sky, and A Moment of Science. His work has appeared in Talking Points Memo, Reuters, Matter Network, The Jerusalem Report, Bloom, and Reform Judaism, among others. He is the author of Renewable: The World-Changing Power of Alternative Energy. Shere teaches journalism and magazine writing at the School of Journalism at Indiana University in Bloomington, “Grey Goo Attack”, 4/2/2016, http://indianapublicmedia.org/amomentofscience/grey-goo-attack-2/

Attack of the Killer Robots Nanotechnology scientists dream of some day creating robots the size of molecules, or even turning molecules into machines that could roam the human body and perform all sorts of useful tasks. But some nanotechnology theorists and science fiction aficionados imagine a more ominous possibility. What if one of these tiny robots were given the ability to self-replicate? All it would take is a single malfunction and the robots would consume everything in the galaxy as they multiply out of control until all that was left was a shapeless, robotic mass called “grey goo.” Worst Case Scenario Now, before you go heading for the hills with a year’s supply of water and a survival guide, understand that the death-by-robot scenario is just that—a scenario, and a pretty fanciful one to boot. First, we’re nowhere near the point of being able to create a self-replicating nano-machine. But even if such machines do one day exist, they would have a hard time taking over the universe for one simple reason: **fuel**. Even microscopic machines need an energy source. Inorganic matter such as rocks and minerals wouldn’t do the trick because they just **don’t contain stuff that the machines could break down and use for power.** But what if a mad scientist created a robot that fed on organic materials such as sunlight and living things? **Not to worry**. Natural life forms have had around four billion years of training to compete for resources; the killer robots probably **wouldn’t stand much of a chance** against such streamlined competitors. Plus, if the robots were made from organic materials, they might be **preyed on by bacteria or other predators.**

# 2NC

## States CP

#### It’s key to real world education. Non-uniform fiat zeroes solvency for the CP. 50 State action over antitrust has precedence.

Mark Totten 15. Mark Totten worked as an attorney with the [U.S. Department of Justice](https://ballotpedia.org/U.S._Department_of_Justice). He currently works as a criminal law professor at Michigan State University. He graduated from Yale University. “The Enforcers & the Great Recession” 06-22-2015. https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=2535109

In mid-October **all fifty AGs** announced a **joint investigation** of the mortgage servicing industry.219 A **fifty-state action has precedent** but is nonetheless rare. And yet the **coalition formed** with **ease**. 220 Although the Working Group had been a policy project, it provided the infrastructure for legal action. Iowa AG Tom Miller again led the effort,221 and California, Illinois, and New York joined the Executive Committee, among other leading states. 222

#### Solves tech innovation---AND propels federal action

Matt **O'Brien 19**. Business and technology reporter at Associated Press. "Big Tech faces a **new set** of foes: nearly **all 50 US states**." AP NEWS. 9-10-2019. https://apnews.com/article/business-district-of-columbia-us-news-ap-top-news-ut-state-wire-8fae76b9b37d473caff2c94a59029a57

Big tech companies have **long rebuffed** attempts by the U.S. federal government to **scrutinize** or **scale back** their market power. Now they face a scrappy **new coalition** as well: prosecutors from nearly **all 50 states**. In a rare show of **bipartisan force**, [attorneys general from **48 states**](https://apnews.com/b9d35b1e07b14f3b923c35e7778295ee) along with **Puerto Rico** and the **District of Columbia** are investigating whether **Google**’s huge online search and advertising business is engaging in monopolistic behavior. The Texas-led antitrust investigation of Google, announced Monday, follows a [separate **multistate investigation**](https://apnews.com/5d4d10e28b4841c8a3a723095d4c0d16) of **Facebook**’s market dominance that was revealed Friday. The state moves follow similar [**sweeping antitrust tech investigations**](https://apnews.com/032b65b615a1462bbe4f0d1e9f1092e0) launched by the Federal Trade Commission and the Trump administration’s Department of Justice; the Democrat-led House Judiciary Committee is conducting a similar probe. But should federal officials tire of their work, the **state-led efforts** could keep them on their toes. States have worked **closely together** on other matters, such as the fight to curb opioid abuse. But the sheer number participating in this kind of antitrust effort is **unprecedented** and gives it **more weight**, said Utah Attorney General Sean Reyes, a Republican. “It’s just an **accumulation** of public frustration, whether it’s from consumers, other players in the market, regulators, lawmakers,” Reyes said in an interview Monday. Fiona Scott Morton, a **Yale economics professor** and **former antitrust official** at the Justice Department under the Obama administration, said it’s **important** that **states** are **taking the lead** because the Trump administration is “not really enforcing antitrust law except against companies the president is upset with.” She noted the Trump administration’s unsuccessful push to use antitrust law to block AT&T’s acquisition of Time Warner, which owns CNN, a frequent target of Trump’s criticism; and [Friday’s announcement](https://apnews.com/cf37ab14d4194ba199b4b98e3b31848a) that federal antitrust enforcers would investigate automakers that worked with California on tougher emissions limits. “That’s not what consumers want,” she said. “Consumers want to be protected from anticompetitive conduct.” States **haven’t** seriously taken up antitrust enforcement — using laws originally crafted to combat railroad and oil barons in the 19th century — since a major antitrust case against Microsoft about two decades ago. Then, **state leadership** **helped** **propel federal action.**

#### Solves disruptive healthcare---opioid crisis proves

**The Chronicle 17**. The Chronicle is a newspaper and website that presents news, information, and jobs for college and university faculty and student affairs professionals. "State Attorney General’s Office Expands Drug Price Fixing Lawsuit." . 7-28-2021. https://www.chronline.com/stories/state-attorney-generals-office-expands-drug-price-fixing-lawsuit,22103

Attorneys general **across the country**, including Washington Attorney General Bob Ferguson, have filed a request to expand a **lawsuit** against **drug manufacturers** alleging price fixing to name **18 drug companies** and **15 drugs**, according to a news release from Ferguson’s office. The case is the **result** of an **antitrust investigation**. “I hold powerful interests accountable when they don’t play by the rules,” Ferguson said. “That includes drug companies that conspire to fix prices, costing potentially thousands of Washingtonians in need of medication.” The request to file an amended complaint in the case was filed in U.S. District Court for the Eastern District of Pennsylvania. The suit previously named **generic drug manufacturers** Heritage Pharmaceuticals, Inc; Aurobindo Pharma USA, Inc.; Citron Pharma, LLC; Mayne Pharma (USA), Inc.; Mylan Pharmaceuticals, Inc.; and Teva Pharmaceuticals USA, Inc. as defendants. The attorneys general are **seeking to increase** that to include Actavis Holdco U.S., Inc.; Actavis Pharma, Inc,; Ascend Laboratories, LLC; Apotex Corp.; Dr. Reddy’s Laboratories, Inc.; Emcure Pharmaceuticals, Ltd.; Glenmark Pharmaceuticals, Inc.; Lannett Company, Inc.; Par Pharmaceutical Companies, Inc.; Sandoz, Inc.; Sun Pharmaceutical Industries, Inc.; and Zydus Pharmaceuticals (USA), Inc. In 2014, the state of Connecticut began an investigation into suspicious price increases of generic pharmaceuticals. That **investigation** found evidence of **conversations** between **drug company executives** and **marketing** and sales executives discussing **price fixing**, according to the attorney general’s office.“For example, Heritage Pharmaceuticals attempted to negotiate a 200 percent price increase for a diabetes medication,” according to the news release. The companies **allegedly conspired** to increase prices for **antibiotics** and drugs treating glaucoma, epilepsy, diabetes, arthritis, high blood pressure and asthma, as well as antifungal medication and other drugs, according to the news release.

#### Inter-state disputes

1AC Sack 21 [John Sack, J.D., Duke Law School, Class of 2022, B.S. University of Michigan, 2019, 2021 https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=1196&context=djclpp\_sidebar]

The U.S. Constitution embodies a system of federalism where the federal government is sovereign in some respects, and the several states are sovereign in others.73 This system of federalism gives states the power to regulate local matters and the federal government the power to regulate issues that states are less suited to regulate.74 When costs spill over into other states, the national government becomes the appropriate body to regulate the costs and benefits of such a program.75 The Court has recognized such spillover effects, and how political actors, even government entities, can act solely in self-interest.76 Such state self-interest can directly harm consumers outside of its territorial jurisdiction.77

Parker immunity, as it stands, runs counter to longstanding ideals of national unity that harken back to the Founding era. The law has long prohibited states from imposing excessive costs on the nation as a whole, solely for the purpose of furthering its own intrastate policy interests. McCulloch v. Maryland illustrates the Court’s wariness of self-serving state action.78 In McCulloch, Chief Justice Marshall held that states may not tax the national bank, as they would be wielding power against the whole of the United States, even though the whole of the United States is not represented by each state.79 Similar to a state tax being problematic since it is the part acting on the whole, anticompetitive restraints by the states would unduly impose costs on the nation. The people of the United States, acting through Congress, christened competition and free markets through the Sherman Act.80 Just as one state could not tax the resources of the United States, one state should not be allowed to use state policy to burden the national economy. Because the potential costs to state-created monopolies are so high,81 federal policy should prohibit states from allocating those costs beyond their borders. Any state that wishes to impose monopoly costs outside of its borders to benefit itself and undermine competition should be carefully scrutinized when it does so. This scrutiny would not be fatal-in-fact for the legislation, but it should be enough for states to second-guess an attempt to enrich itself to the detriment of its sister states.

#### Fed-state disputes

1AC Kobayashi 20 [Bruce H. Kobayashi, George Mason University, Antonin Scalia Law School Professor, 10-4-2020 https://gaidigitalreport.com/2020/10/04/exemptions-and-immunities/#\_ftn92]

B. Spillover Effects and Antitrust Federalism

The current state action doctrine does not enable jurisdictional competition or promote the principles of federalism because it does not account for the spillover effects of anticompetitive state regulation. Judge Easterbrook examined the Court’s state action holdings and found that the Court’s rulings were indifferent as to whether the effects of the regulation were actually internalized by the regulating state.[91] Allowing states to enact anticompetitive legislation reduced the extent and effectiveness of competition among the states, and thereby increased the cost of exit and relocation.[92]

This nature of the spillover effect is exemplified in Parker v. Brown.[93] The state action doctrine was used to uphold a California regulation which authorized a raisin cartel. California raisin growers benefited greatly from that ability to price fix. However, over 90% of the grapes were exported outside of California—nationally and internationally—making the impact of the California raisin regulation reach beyond state lines.[94] The regulation harmed a large number of consumers outside of California while only benefiting a small number of private interest parties within the state.

State action doctrine, although meant to preserve that state’s independence, actually allows the state to reap the benefits of the anticompetitive regulation while displacing the costs onto other states.[95] Therefore, it is worth considering if the current state action doctrine should be thought of differently, in a way that fully takes into accounts issues of federalism. Judge Easterbrook proposes a state action rule which considers the spillover effect of anticompetitive state regulation. Instead of examining clear articulation and active supervision, the Court would uphold an anticompetitive state regulation as long as its anticompetitive effects are internalized by that state’s residents.[96] Aligning state action doctrine with the economics of federalism will not only maintain states’ roles in antitrust, but also ensure that state antitrust exemptions have a diminished negative impact on consumer welfare. Analyzing the anticompetitive overcharge of regulations is also more administrable than attempting to analyze the regulations under the dormant Commerce Clause.[97] Considered under Easterbrook’s approach, Parker’s California raisin prorate program would be subject to antitrust scrutiny because the regulation’s costs were not internalized.

#### States solve better than the federal government

Jennifer Huddleston 18. Former Research Fellow at the Mercatus Institute of Goerge Mason University. "What States and Cities Do Right to Promote Innovation." Mercatus Center. 10-9-2018. https://www.mercatus.org/bridge/commentary/what-states-and-cities-do-right-promote-innovation

At a federal level, the pacing problem (where technology moves faster than public policy) is rapidly accelerating as innovation outpaces most regulatory and legislative mechanisms.

The lack of federal action related to disruptive technology has allowed states to fill the gap and experiment with different governance mechanisms for new and disruptive technologies. In short, states are positioning themselves as the place to be for innovative entrepreneurs. Over the coming weeks, I will explore what state actions regarding tech policy make sense, the areas where the tradeoffs of such policies must be considered but can likely be mitigated or avoided, and the areas where state actions related to tech policy are clearly damaging or constitutionally suspect.

The federal government has been increasingly unable to act when it comes to technology. As Adam Thierer, Ryan Hagemann, and I describe in our forthcoming law review article, the use of “soft law” by government agencies has been one solution to develop a framework of policies governing technologies. However, states have also stepped up to develop regulatory frameworks that allow innovators to test (and sometimes fail with) new ideas and technologies.

#### Solves adaption and certainty

Jennifer Huddleston 18. Former Research Fellow at the Mercatus Institute of Goerge Mason University. "What States and Cities Do Right to Promote Innovation." Mercatus Center. 10-9-2018. https://www.mercatus.org/bridge/commentary/what-states-and-cities-do-right-promote-innovation

States Are Nimble

In some ways, it would be easier and more efficient to deal with a single regulatory scheme, but this approach comes with tradeoffs as well. Not only are state and local governments more connected directly to their constituents than their federal counterparts, but they also tend to be more adaptable and competitive with one another. As a result, as Matt Mitchell points out, they are less likely to be captured by special interests and more likely to be able to respond to unique situational needs. For new technologies that often must overcome existing industries seeking to keep them out and for whom their consumers are often there biggest advocates, this makes it far more likely that a compromise can be reached such that innovators have a chance to try.

With less bureaucracy to enact policies, local governments are able to more quickly react to new products and incorporate them into new or existing structures. State and local governments are also more able to allow experiments and risk and other governments can learn from the results—as opposed to a sudden, often stagnant, national policy that may or may not work.

States are often able to act more quickly with innovation promoting regulations than the federal government either through legislation or through administrative or regulatory action. For example, Pennsylvania has been able to quickly establish a framework to allow for autonomous vehicles through guidance from the state’s Department of Transportation (DoT). This particular framework has also engaged in many of the soft law techniques occurring at the federal level by acting through an administrative agency rather than waiting on legislation. Pennsylvania’s DoT guidance on autonomous vehicles signals a willingness to cooperate with innovators in a way that will provide them the necessary certainty to test and develop their products while also providing the state with reasonable information and oversight of who, what, and where.

In other states, including Virginia and Arizona, governors have issued executive orders to allow for autonomous vehicle testing. This executive action is even quicker than the regulatory process. State legislatures have also shown themselves to be fairly adept in addressing, and in many cases embracing, the forthcoming emergence of the autonomous vehicle.  Twenty-nine states have enacted some form of legislation related to the issue.

## Adv CP

#### “Do both” is antitrust duplication---collapses resources, effectiveness, and signaling

Carl W. Hittinger and Tyson Y. Herrold 19. Carl W. Hittinger (LAW ’79) is a senior partner and serves as BakerHostetler’s Antitrust and Competition Practice National Team Leader and the litigation group coordinator for the firm’s Philadelphia office. He concentrates his practice on complex commercial and civil rights trial and appellate litigation, with a particular emphasis on antitrust and unfair competition matters, including class actions. Tyson Y. Herrold is an associate in the firm’s Philadelphia office in its litigation group. His practice focuses on complex commercial litigation, particularly antitrust and unfair competition matters, as well as civil rights litigation. "Antitrust Agency Turf War Over Big Tech Investigations". Temple 10-Q. https://www2.law.temple.edu/10q/antitrust-agency-turf-war-over-big-tech-investigations/

Disputes over clearance can have tangible adverse effects on enforcement. First, some have commented that delays caused by clearance disputes can narrow the efficacy of remedial options, particularly with mergers. As Sen. Richard Blumenthal has commented, “The Big Tech companies are not waiting for the agencies to finish their cases. They are structuring their companies so that you can’t unscramble the egg.” Structural remedies are favored by Delrahim, who has commented that alternative, behavioral remedies should be used sparingly: “The division has a strong preference for structural remedies over behavioral ones. … The Antitrust Division is a law enforcer and, even where regulation is appropriate, it is not equipped to be the ongoing regulator.”

Second, disputes over clearance and, more so, duplicative investigations waste agency resources, threaten to blunt their effectiveness, and can lead to inconsistent and confusing governmental positions. In the Sept. 17 oversight hearing, Simons and Delrahim were both criticized for requesting an increase in funding: “As you both acknowledged, both of you could use, and desperately need, more resources. That being the case, it makes no sense to me that we should have duplication of effort, when that has a tendency inevitably to undermine the effectiveness of what you’re doing.” Duplicative investigations dilute the specialization that is a principal goal of the agencies’ clearance agreement and raise the risk that one agency will take legal positions that undercut the other. No doubt the DOJ’s amicus brief in the Qualcomm case influenced the U.S. Court of Appeals for the Ninth Circuit’s decision to issue a stay pending appeal.

So how will the FTC and DOJ resolve their latest turf war? Perhaps they will revisit their clearance agreement and decide to split their authority by company or the business practice being investigated, based on prior agency experience, rather than by industry as Appendix A currently does. Or maybe Congress will decide to consolidate civil antitrust enforcement jurisdiction under one agency. That seems like a long shot considering the political implications. However, during the Senate’s antitrust oversight hearing, Sen. Josh Hawley proposed “cleaning up the overlap in jurisdiction by removing it from one agency” and “clearly designating enforcement authority to one agency.” One thing is sure—the agencies should not be duplicating civil antitrust investigations. Stay tuned.

#### The US startu2p pool is drowning---only the CP keeps them alive

Penzel & Gauthier 20, 6-12-2020, Marc Penzel is the co-founder and president of Startup Genome; JF Gauthier is the co-founder and CEO of Startup Genome. "4 ways governments can support start-ups and save their economies," World Economic Forum, https://www.weforum.org/agenda/2020/06/4-ways-governments-can-support-start-ups-and-save-their-economies/

As all this shows, entrepreneurs and the companies they build are essential to revitalize our economies—which is why government leaders must take action to protect them.

The current crisis has put start-ups and start-up ecosystems everywhere in mortal danger. They are running out of cash and watching venture capital dry out. Teams working on cutting edge technology are being disbanded, and customer demand is waning, in part because COVID-19 has rendered entire industries inoperable.

Decisive policy action is needed to avoid a catastrophe; 61% of start-ups globally are counting on it. If they are not already expecting that an existing policy will vitally support their business (45%), they are expecting that one will launch very soon (16%).

Government leaders: You have spent far too much time and invested far too many resources into your start-up ecosystem to watch COVID-19 destroy it. Don’t kill your start-ups and scale-ups, instead listen carefully to their needs and act firmly.

Here are the top four policy actions they require from you today, ranked in order of priority.

Direct grants and zero-interest loans

Cash is the number one concern for start-ups right now. Grants are considered the most helpful policy instrument they could ask for (29%), followed by loans (12%).

Money is running out. A significant number of start-ups are in what we call the “red zone,” with 41% having three months or less of cash runway left. Many young start-ups live with only a few months of cash at a time - 29% were in this situation pre-pandemic - but since December, the crisis has landed 40% more in this precarious state. Even start-ups that have raised Series A, B, or later rounds are at risk, with 34% having less than six months of runway left.

#### Independently, the regs plank solves

1AC Sack 21 [John Sack, J.D., Duke Law School, Class of 2022, B.S. University of Michigan, 2019, 2021 https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=1196&context=djclpp\_sidebar]

IV. PROPOSED SOLUTIONS

The Sherman Act, and specifically Parker immunity, should be interpreted in light of the above concerns. After all, the Sherman Act is the standard-bearer for the U.S. free market system, and so our interpretation of it should evolve with our understanding of constitutional principles and economic conditions.82 Justice Burger’s concurrence in City of Lafayette elaborates on this point:

Our conceptions of the limits imposed by federalism are bound to evolve, just as our understanding of Congress’ power under the Commerce Clause has evolved. Consequently, since we find it appropriate to allow the ambit of the Sherman Act to expand with evolving perceptions of congressional power under the Commerce Clause, a similar process should occur with respect to “state action” analysis under Parker. That is, we should not treat the result in the Parker case as cast in bronze; rather, the scope of the Sherman Act’s power should parallel the developing concepts of American federalism.83

As states impose costs on each other through state-sanctioned monopolies, the Court’s understanding of federalism and the Commerce Clause counsels scrutiny of the Parker doctrine. An entirely new doctrine is not necessary to curtail Parker immunity. Rather, the issue can be resolved by applying Parker immunity in light of the American dual system of federalism and the Commerce Clause. Modern scholarship critiques the lack of concern for interstate spillovers. By that token, the modern Parker doctrine fails to account for economic efficiency and undermines political representation values meant to be protected by federalism.84 So while scholars almost universally recognize that interstate economic spillovers are problematic, there is no consensus on what remedy is most appropriate.

**[MSU’s card ends]**

A. Substantive Review of State Regulations

The first of these solutions is to add substantive review of state regulations. The current doctrine requires only procedural clearance before a court will grant state action immunity.85 Courts do not inquire if the regulation is substantively reasonable, nor do courts apply any “rule of reason” analysis present in most other antitrust cases. Justice Blackmun proposed a test that would insert a substantive barrier to claims of immunity: State-sanctioned anticompetitive activity must be declared void if its potential harms outweigh its benefits.86 His test is a modified rule of reason analysis. It assesses the justifications for anticompetitive activity in the same way courts assess justifications in equal protection cases: where “justifications are at all substantial,” then a court should not find the restraint unreasonable.87

Justice Blackmun applied his test to the regulation in Cantor. The anticompetitive practice at issue was an alleged tie of electricity service and lightbulbs offered by the Detroit Edison Company.88 In this case, the allege tie was providing, at no cost, new residential customers with lightbulbs and replacing burned-out bulbs. Detroit Edison’s rates, both for electricity and the omission of any charge for lightbulbs, had to be approved by the Michigan Public Service Commission and could not be changed without the Commission’s approval.89 Detroit Edison claimed that they had received no profit from the distribution of bulbs, and stated the intended purpose was to increase the consumption of electricity.90 On the other hand, the petitioner, a retail druggist selling light bulbs, claimed that the policy’s real purpose was to foreclose a substantial portion of the lightbulb market.91 Because the Court only addressed the applicability of Parker, the Court did not address the merits of the underlying antirust claim.92 Nevertheless, in his concurrence, Justice Blackmun applied a substantive rule of reason analysis and found the tie to be unreasonably anti-competitive and thus not entitled to immunity.93 He stated that while the tie originated as a way to allow people to use more electricity, there were other less restrictive means to achieve that same result, like a promotional lightbulb sale.94 Michigan’s interest in the tie—having lightbulbs being sold by a regulated producer—was rejected as an inadequate state objective because no evidence suggested that a competitive lightbulb market created instability or raised any other traditional concerns with competitive markets.95 In short, Justice Blackmun’s proposed test is slightly stricter than rational basis review.96

Justice Blackmun’s test offers a number of benefits that the current Parker doctrine does not account for. First, it would require states to articulate the intent behind the regulation that abrogates the freemarket scheme. In Cantor, Justice Blackmun took note of the lack of evidence that the Michigan Public Service Commission had even considered the light-bulb tie that it had endorsed for the private Detroit Edison Company to use.97 A state enacting an anti-competitive regulation or scheme should be incentivized to develop a rich legislative history in order to properly defend their scheme in court. In other words, they should have to show that deliberative process led to the challenged policy. This, in turn, would incline regulators to more critically review regulations before they are enacted.98 Second, it would allow courts to stay well within their wheelhouse of antitrust law: applying the rule of reason. Justice Blackmun’s test is consistent with the common practice of federal courts in antitrust cases, and the more specific problem of assessing state interests against federal dictates, also familiar to federal courts.99 Such a test would allow most legitimate state restraints to continue lawfully, and only those with significant competitive harms or no justification at all would be invalidated.

While such a system would address some political concerns about the doctrine, it does not go far enough to solve federalism concerns inherent in the modern Parker doctrine. Justice Blackmun’s solution does not explicitly outline what justifications he would find sufficient to allow a program to succeed, nor does he explicitly mention what costs may doom a program. Further, it only connects the state interest in the regulation to its effectiveness in achieving that objective. Few courts have engaged in any meaningful analysis as to state policy goals underlying a restraint on trade, and no analysis goes specifically to the interstate effects of such a policy.100 However, creating a solution to address federalism does not involve re-inventing the wheel, as existing doctrines and proposals can be slightly altered to best police the doctrine.

B. Dormant Commerce Clause Fills the Gap

Another proposed solution would leave the Parker doctrine unaltered but instead let the Dormant Commerce Clause handle state restraints that create spillovers. Dormant Commerce Clause analysis proceeds in two main ways. First, if a state regulation is facially discriminatory towards out-of-state commerce, or if it is not discriminatory on its face but still creates discriminatory effects, it is virtually per se invalid.101 Such regulations include mandating waste to be processed in certain in-state facilities,102 prohibiting the importation of out-of-state waste,103 and prohibiting the exportation of in-state minnows.104 Only if the regulation has a legitimate objective, and that objective cannot be achieved by non-discriminatory means, can the regulation survive.105 Such regulations are not typically challenged in Parker cases, but restraints on trade could fall into this category.106 Second, if a regulation is nondiscriminatory and its effects on interstate commerce are incidental, the regulation is valid unless the “burden imposed on such commerce is clearly excessive in relation to the putative local benefits.”107 This approach has been used to strike down a number of regulations, including Arizona fruit-labeling requirements,108 an Illinois statute requiring certain mudguards on trailer trucks,109 and an Iowa statute barring long trucks on their highways.110 However, this analysis has rather lenient results when state action merely “affects” interstate commerce but does not explicitly discriminate against it. 111 This lenient approach is not enough to appropriately police states that enact anti-competitive schemes that create interstate burdens.

#### R&D solves tech leadership---it’s key to fill-in for private sector gaps

Mandt et al 20, 8-20-2020, Rebecca Mandt, Department of Immunology and Infectious Diseases, Harvard T.H. Chan School of Public Health; Kushal Seethara, Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology; Chung Hon Michael Cheng, Institute for Data, Systems, and Society, Massachusetts Institute of Technology. "Federal R&D funding: the bedrock of national innovation," MIT Science Policy Review, https://sciencepolicyreview.org/2020/08/federal-rd-funding-the-bedrock-of-national-innovation/

America’s prosperity and success have been underwritten in no small part by its technological leadership [2]. And as America loses ground in the global race in technological innovation, this position, along with the prosperity and security America has enjoyed, are at stake [3, 4]. In an increasingly competitive global environment, federal support of scientific research—research that pays dividends decades into the future—is all-the-more fundamental to the U.S.’s current and future economic success [5].

American progress in an array of key research areas—e.g. photonics, robotics, artificial intelligence, nanotechnology—areas that would generate the yet-unimagined technologies and industries of the future decades from now, threatens to lag behind that of other countries [5]. Put another way, compared to other countries, we are not investing enough in our own country’s future, threatening economic prosperity and job creation decades down the line. The federal government’s failure to aggressively invest in scientific research is already exacting a cost: research projects in universities across the country are being shut down because of funding cuts [6]. The ramifications of these present cuts will be felt for decades to come [3].

This paper diagnoses the current problem with insufficient federal research funding and lays out the unique role of the federal government in the national scientific research enterprise. In particular, we first highlight the importance of federal funding in facilitating innovation and then outline the reasons for and results of insufficient federal research funding. The federal government sets national priorities for scientific and technological progress, addresses market failures concerning high-risk, public-good research endeavors, and “crowds in” human and capital resources to R&D, both public and private, creating a virtuous, self-reinforcing cycle of greater investment in research and innovation. We conclude that U.S. federal R&D expenditures should be greatly expanded in order to sustain the economic prosperity and social well-being of America and its people. Furthermore, we recognize the necessity of galvanizing political will through policy advocacy and public engagement to safeguard future support for federal R&D.

#### Federal R&D is crucial to medical innovation---otherwise, the market will ignore long-term investments which leaves gaps

Mandt et al 20, 8-20-2020, Rebecca Mandt, Department of Immunology and Infectious Diseases, Harvard T.H. Chan School of Public Health; Kushal Seethara, Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology; Chung Hon Michael Cheng, Institute for Data, Systems, and Society, Massachusetts Institute of Technology. "Federal R&D funding: the bedrock of national innovation," MIT Science Policy Review, https://sciencepolicyreview.org/2020/08/federal-rd-funding-the-bedrock-of-national-innovation/

Addressing Market Failures

Unlike the private sector, the federal government is uniquely suited to guide national innovation toward public priorities, such as healthcare, clean energy, and infrastructure, that market incentives ignore [24]. The government has a role in two different types of market failure. The first is a true market failure where fundamental research underlying new technologies is not funded by the private sector due to the risk-reward profile and timeline to commercial relevance. The second is that regardless of how efficient the market is, an incrementally progressing economy does not always align with pressing societal needs or generate optimal societal outcomes.

Private firms’ and industries’ goal to maximize profit from an R&D investment often results in the financing of short-term, low-risk technologies. This is especially true in areas where the foundational research is mostly complete and the bulk of the remaining work is in short-term development. It follows that U.S. industries tend to spend about 80% of their R&D investments on technological development and only 20% on foundational research, which are longer-term, riskier (although arguably cheaper) investments [8]. This trend towards “short-termism” has become increasingly predominant in industry with more and more investment going into development rather than research [25]. As less and less research is being done in the private sector, companies are increasingly relying on work done at academic institutions funded by the federal government. For example, almost 90% of high-impact research papers authored by corporations were written in collaboration with scientists at academic and government labs [26]. The amount of corporate patents that rely on work done elsewhere has also increased dramatically; almost a third of all patents filed in recent years cite federally-supported research. The patents that cite federally-supported research were also found to be of greater substance and novelty on average [27].

While the reliance of the private sector on research produced elsewhere is not problematic a priori, this model only works when federal funding is available to provide these long-term, risky investments into basic and applied research. For example, the U.S. shale gas boom relied heavily on federal funding through the scientific research performed at the Gas Research Institute and the geologic mapping technology developed at Sandia National Labs [24]. This is an example of the federal funding addressing a true market failure by derisking private sector R&D.

The market by itself, however, is often blind to environmental concerns and the long-run societal and economic impact of pressing issues like climate change. Such societal issues are the purview of the federal government, which can use federal funding and other policies to catalyze national innovation towards clean energy technologies and climate resilience. Other examples of public priorities where the government has a pivotal role include developing new antibiotics and understanding the effects of opioids [28]–[30]. Federal research funding is therefore critical both by supporting fundamental research that the private sector is not incentivized to invest in, as well as by providing leadership in targeting societally critical issues. Below, we give two case studies demonstrating these roles.

Case study 1: A canonical example of the government’s role in laying the foundation for innovative technology is the Internet. While the concept of a wireless telecommunications system was around as far back as the early 1900s when Nikola Tesla coined the term “World Wireless System,” the first working prototype of such a network was created by the Department of Defense under the Advanced Research Projects Agency (ARPA) [31]. The goal of “ARPANET,” as it was named, was to create a secure telecommunications system that could distribute information wirelessly in the case of an attack [32]. ARPANET incorporated many key innovations including the concept of “packet switching”—breaking an electronic message into smaller packages that can be transmitted to a new location and re-assembled. The initial network had host computers connected via phone lines to “interface message processors”—the predecessor to the modern-day router [32]. Over the next 20 years, ARPA-funded researchers continued to develop advanced communication protocols and to expand ARPANET into a broader “network of networks” [31, 33]. In addition to the role of ARPA, another federal agency, the National Science Foundation (NSF), was also essential in providing networking services and high-end computing power to universities across the county. These NSF-supported supercomputing centers developed many advances in web applications, including the first freely accessible web browser, which was the basis of modern browsers including Microsoft Internet Explorer and Netscape Navigator [34]. While the Internet as it is known today cannot be credited to any single organization, the role of government research in laying the foundation is undeniable. It is difficult to imagine that such an expansive project involving years of research and coordination across multiple institutes could have been undertaken without its involvement [35].

Case study 2: A good example of the mismatch of public and private objectives can be seen in the development of new antibiotics to keep ahead of rising bacterial resistance to pre-existing drugs. Antimicrobial resistance is widely recognized as one of the greatest threats of the 21st century [36]. Widespread use of antibiotics has led to the evolution of drug-resistant bacteria that no longer respond to currently used treatment methods. Thus, there is a critical need to produce new antibiotics. In spite of this, there has actually been a decrease in the number of new antibiotics being developed and approved since the 1980s, and many large pharmaceutical companies have downsized or eliminated their antibiotic discovery programs [37, 38]. This is because there are several barriers that limit the profitability of new antibiotics, often leading to a poor return on investment. Unlike drugs for chronic conditions, antibiotics are typically taken for a short period of time. New antibiotics entering the market face competition from cheaper generics, and are often reserved as drugs of last resort [39]. Even if an antibiotic is successful, there is always a danger that resistance to the new drug will emerge, so it may only be effective for a limited window of time.

Given the high risk associated with bringing any new drug to market and limited ability to recoup investments, it is understandable that this is a priority that the private sector will not address on its own. Thus, several government agencies have stepped in to fill the gap. For example, the Biomedical Advanced Research and Development Authority (BARDA) has contributed $1.1 billion since 2010, advancing nine new antibiotics to clinical development, three of which have already been approved [29]. BARDA and several other Department of Health and Human Services (HHS) agencies have also awarded grants and facilitated public-private partnerships to incentivize the development of new drug candidates [39, 40]. It is clear that without continued federal involvement, there would exist few solutions against a post-antibiotic world where millions die each year from bacterial infections that were once easily treatable [36].

#### Antitrust laws are enforced by the DOJ and FTC

DOJ and FTC 16. Antitrust Guidance for Human Resource Professionals Department of Justice Antitrust Division Federal Trade Commission. https://www.justice.gov/atr/file/903511/download

This document is intended to alert human resource (HR) professionals and others involved in hiring and compensation decisions to potential violations of the antitrust laws. The Department of Justice Antitrust Division (DOJ or Division) and Federal Trade Commission (FTC) (collectively, the federal antitrust agencies) jointly enforce the U.S. antitrust laws, which apply to competition among firms to hire employees. An agreement among competing employers to limit or fix the terms of employment for potential hires may violate the antitrust laws if the agreement constrains individual firm decisionmaking with regard to wages, salaries, or benefits; terms of employment; or even job opportunities. HR professionals often are in the best position to ensure that their companies’ hiring practices comply with the antitrust laws. In particular, HR professionals can implement safeguards to prevent inappropriate discussions or agreements with other firms seeking to hire the same employees.

#### They are alternatives not subsets.

Stephen G. Breyer 87. SCOTUS Justice since 1994. California Law Review Volume 75. Issue 3. Article 15. “Antitrust, Deregulation, and the Newly Liberated Marketplace”.

On this view, antitrust is not another form of regulation. Antitrustis an alternative to regulation and, where feasible, a better alternative.3To be more specific, the classicist first looks to the marketplace to protectthe consumer; he relies upon the antitrust laws to sustain market compe-tition. He turns to regulation only where free markets policed by anti-trust laws will not work-where he finds significant market "defects"that antitrust laws cannot cure. Only then is it worth gearing up thecumbersome, highly imperfect bureaucratic apparatus of classical regula-tion. Regulation is viewed as a substitute for competition, to be usedonly as a weapon of last resort-as a heroic cure reserved for a seriousdisease.

#### It is a jurisdictional question---antitrust authorities don’t intervene in regulatory concerns

Babette E. Boliek 11. Associate Professor of Law at Pepperdine University School of Law. J.D., Columbia University School of Law; Ph.D., Economics University of California, Davis. FCC Regulation Versus Antitrust: How Net Neutrality is Defining the Boundaries, 52 B.C.L. Rev. 1627 (2011). <http://lawdigitalcommons.bc.edu/bclr/vol52/iss5/2>

As argued in this Article, the recent Comcast decision should not be dismissed as an inconvenient hurdle to be sidestepped by reclassification; rather it marks a pivotal invitation to Congress to redefine the boundaries between the FCC and antitrust authorities. In the long wake of assorted jurisdictional tugs of war between the two regimes, and amidst a legacy of accusations of regulatory capture and administrative overreach,29 the net neutrality debate accentuates historic preferences for antitrust versus regulation, a subject which should be revisited and squarely addressed. Before that can be done, however, the rules of the road—the issue of jurisdiction—must be clearly decided.

The analysis of the relevant jurisdiction is broken into two rival camps: (1) regulatory jurisdiction and (2) antitrust jurisdiction. The first camp, regulatory jurisdiction, the more complex of the two, is further divided into two subparts of particular concern (a) legacy-based regulation and (b) “satellite jurisdiction.” The first subpart of regulatory jurisdiction, legacy-based regulation, refers to the FCC’s congressionally designated core industry. The concern with legacy-based regulation is that the FCC will engage in procedural opportunism: that is, the agency may exploit the service classification process to extend its own regulatory authority.

## Innovation Adv

#### Big Tech ensures the US won’t lose its tech lead

Dakota Foster & Zachary Arnold, 20. Dakota is pursuing a JD at Stanford Law School. She was a visiting researcher at the Center for Security and Emerging Technology and a fellow on Elizabeth Warren’s 2020 presidential campaign. Zachary is a Research Fellow at Georgetown's Center for Security and Emerging Technology (CSET). "Antitrust and Artificial Intelligence: How Breaking Up Big Tech Could Affect the Pentagon’s Access to AI." *Center for Security and Emerging Technology (CSET) Issue Briefing* (May 2020). https://www.geopolitic.ro/wp-content/uploads/2020/05/CSET-Antitrust-and-Artificial-Intelligence.pdf

Today, the private sector dominates this domain of AI innovation. Other actors, including government funders and academic researchers, play an important role—especially in basic research—but at the application stage, the private sector generally consolidates critical inputs of data, computing power, and human capital, then applies them to real-world needs. In some cases, such as with Project Maven—where Google built AI-enabled image recognition programs for the Pentagon—the Pentagon is the customer; more often, AI products and conceptual breakthroughs developed by the private sector, from autonomous vehicles to image and speech recognition platforms, are (or could be) adapted for national security use. Because most U.S. AI innovation currently occurs in the private sector, and at least some of this innovation pertains to the Pentagon, the Pentagon needs the private sector.22 Large tech companies, from Google, Apple and Amazon to slightly lower-profile giants such as IBM, Intel and Qualcomm, form the foundation of the private-sector AI innovation ecosystem.i For example, Google, Facebook, Microsoft, Apple, and Amazonii generate the most AI patents with a “significant competitive impact” worldwide, according to analysis by economic consultancy EconSight.23 The McKinsey Global Institute reports that large, digitally oriented tech companies worldwide spent $20- $30 billion on AI in 2016, 90 percent of which went toward R&D and deployment; for comparison, the Pentagon plans to spend $4 billion on AI and machine learning R&D in FY2020.24 Private-sector AI companies are especially dominant in applied research and experimental development.25 AI innovation would presumably continue in some form without Big Tech, but the data indicates that breaking up the largest tech companies would fundamentally change the broader AI innovation ecosystem. Such action would create unpredictable, but likely significant, trickle-down effects on AI applications in specific domains, including national security.

#### Big Tech ensures the U.S. has and will keep its edge in AI research over China--- scale or funding

Dakota Foster, 20. Graduate student at Oxford University and a former visiting researcher at the Center for Security and Emerging Technology, “Antitrust investigations have deep implications for AI and national security,” June 2, 2020. <https://www.brookings.edu/techstream/antitrust-investigations-have-deep-implications-for-ai-and-national-security/>

Secretary of Defense Mark Esper has argued that artificial intelligence is likely to shape the future of warfare, and the national-security community has largely backed that conclusion. The most recent National Defense Strategy, released in 2018, highlights AI’s importance, noting that the Pentagon will seek to harness “rapid application[s] of commercial breakthroughs…to gain competitive military advantages.” With defense officials arguing that U.S. military superiority may hinge on artificial intelligence capabilities, antitrust action aimed at America’s largest tech companies—and leading AI innovators—could affect the United States’ technological edge. But the effects of such action are highly uncertain. Will a less concentrated tech sector comprised of slightly smaller firms fuel innovation and create openings for a new generation of tech companies? Or will reductions to scale significantly hurt leading tech firms’ ability to leverage the traditional building blocks of AI innovation—like computing power and data—into breakthroughs? The answers to these questions aren’t clear cut but offer a way to begin thinking about how antitrust enforcement could impact artificial intelligence innovation and national security more broadly. Unlike some earlier national-security technologies, the commercial sector plays an outsize role in AI development. As a result, government access to both AI products and innovation hinges, in large part, on industry. While academia, private research labs, and AI start-ups offer important contributions to AI development, major American technology companies have traditionally led the field. Last year, Microsoft, Facebook, Amazon, Google, and Apple ranked among the ten largest recipients of U.S. artificial intelligence and machine learning (ML) patents. Changes to the composition of America’s tech sector might boost net AI innovation. From 2013-2018, 90 percent of successful Silicon Valley AI start-ups were purchased by leading tech companies. This is a potentially worrisome trend for AI innovation. After all, incumbent firms and emerging companies can have very different incentives. Entrenched tech giants may be more focused on maintaining market share than disrupting markets altogether. As Big Tech increasingly moves to acquire AI start-ups, individual firm dynamics also shift. Instead of “building for scale,” start-ups begin to “build for sale,” adopting a mentality that may be ill-suited for moonshot innovations. Would a company like DeepMind (now owned by Google parent-company Alphabet), for example, have developed AlphaGo—the ground-breaking computer program that became the first to beat a human player in Go—if the firm’s primary goal was to be acquired by a bigger player? Antitrust action could shift these incentives and spur competition, potentially opening the door for new AI innovations—and for a new wave of AI companies. With their smaller statures, some of these firms might focus on more niche AI applications, including defense-related products, as start-ups like Anduril and ShieldAI have done. Today’s tech giants have every financial incentive to cater to foreign markets and the average consumer, not to the U.S. federal government. Indeed, with its global user-base, it is hard to imagine Google tailoring its AI innovation decisions to U.S. defense needs. The same may not hold within an AI ecosystem where some companies built, for example, in the mold of Palantir (a data-analytics company with clear national-security applications) consider government their primary customer and subsequently concentrate on its demands. National-security agencies, from the Pentagon to the U.S. intelligence community, could stand to benefit from more targeted innovation—and from an industrial base better attuned to their needs. As Christian Brose points out, only a fraction of the U.S.’s billion-dollar tech “unicorns” have operated in the defense sector, leaving the U.S. military “shockingly behind the commercial world in many critical technologies.” As Silicon Valley’s largest companies consolidate AI talent and novel ideas through acquisitions, these companies gain an ever-larger say in the future of AI. This consolidation, which antitrust action could disrupt, may not favor innovation. But breaking up major tech firms also has potential pitfalls for AI innovation. With scale comes resources, and AI innovation is resource-intensive, requiring large quantities of data, diverse datastores, and vast computing power—known as “compute” in industry jargon. American tech giants’ huge revenues uniquely equip them to fund costly AI research. Google’s DeepMind, arguably the world’s leading AI-research organization, is billions of dollars in debt and lost over $500 million in 2018 alone. Google’s fortress-like balance sheet can easily absorb the costs associated with such cutting-edge research, but smaller firms likely cannot. The economics of compute offer a concrete example of this dynamic. The rapidly increasing volume of compute required for deep learning research, coupled with compute’s prohibitively expensive prices, creates significant barriers to entry and innovation for smaller AI firms. As Microsoft co-founder Paul Allen noted in 2019, the “exponentially higher” costs of compute may leave the U.S. with only “a handful of places where you can be on the cutting edge.” Even the most well-funded independent AI organizations rely on Big Tech’s compute resources. OpenAI’s billion-dollar compute partnership with Microsoft, reached after OpenAI spent millions renting compute from leading tech firms, offers one example. Changes to firms’ scale also may impact their access to data, another key resource required for AI innovation. Studies have linked the performance of deep learning models to the quantity of data fed into them. At present, tech giants have access to unprecedented volumes of data about their users. Google, for example, can harness data from Google Search, Maps, YouTube, Gmail, and other sources. If antitrust enforcement leads to divestment or broader break-ups, access to data may diminish, lessening innovation. Would reduced access to large, internal datastores hurt U.S. tech companies’ ability to innovate relative to China, whose biggest firms have largely evaded antitrust action? Big Tech executives, including Mark Zuckerberg, have argued that antitrust action could hinder U.S. competitiveness. Data access is a growing point of concern along these lines. The U.S. National Security Commission on AI has reportedly discussed the possibility of data pooling among allied countries to “offset” any data advantage held by China. However, it remains unclear just how central big data will be to the future of AI innovation (promising ML techniques like few-shot learning are not data intensive) and how well big companies can utilize their large datasets in the first place. National security and antitrust are rarely part of the same conversation. The realities of today’s AI ecosystem should challenge that dynamic. American AI innovation is concentrated in the private sector—particularly within its largest, most dominant firms. As these firms face antitrust scrutiny, policymakers and lawmakers alike need to consider the AI ecosystem that they will have a hand in creating. They will need to contemplate its competitiveness, its innovativeness, its responsiveness to defense and national-security needs, and its accessibility to government. Will its companies have the resources to access and acquire key inputs for AI innovation like compute and data? Will the sector’s composition encourage competition at every level? Or will it stifle new growth and engage in anti-innovative practices? American leadership in AI—a key national security technology—may hinge on an AI ecosystem shaped by antitrust action. It will be imperative that innovation considerations play a role in forging it.

#### China prefers peaceful rise

Paul Heer 19. Served as National Intelligence Officer for East Asia in the Office of the Director of National Intelligence from 2007 to 2015, since served as Robert E. Wilhelm Research Fellow at the Massachusetts Institute of Technology’s Center for International Studies and as Adjunct Professor at George Washington University’s Elliott School of International Affairs. 1-8-2019. "Rethinking U.S. Primacy in East Asia." National Interest. https://nationalinterest.org/blog/skeptics/rethinking-us-primacy-east-asia-40972

But this policy mantra has two fundamental problems: it mischaracterizes China’s strategic intentions in the region, and it is based on a U.S. strategic objective that is probably no longer achievable. First, China is pursuing hegemony in East Asia, but not an exclusive hostile hegemony. It is not trying to extrude the United States from the region or deny American access there. The Chinese have long recognized the utility—and the benefits to China itself—of U.S. engagement with the region, and they have indicated receptivity to peaceful coexistence and overlapping spheres of influence with the United States there. Moreover, China is not trying to impose its political or economic system on its neighbors, and it does not seek to obstruct commercial freedom of navigation in the region (because no country is more dependent on freedom of the seas than China itself). In short, Beijing wants to extend its power and influence within East Asia, but not as part of a “winner-take-all” contest. China does have unsettled and vexing sovereignty claims over Taiwan, most of the islands and other features in the East and South China Seas, and their adjacent waters. Although Beijing has demonstrated a willingness to use force in defense or pursuit of these claims, it is not looking for excuses to do so. Whether these disputes can be managed or resolved in a way that is mutually acceptable to the relevant parties and consistent with U.S. interests in the region is an open, long-term question. But that possibility should not be ruled out on the basis of—or made more difficult by—false assumptions of irreconcilable interests. On the contrary, it should be pursued on the basis of a recognition that all the parties want to avoid conflict—and that the sovereignty disputes in the region ultimately are not military problems requiring military solutions. And since Washington has never been opposed in principle to reunification between China and Taiwan as long as it is peaceful, and similarly takes no position on the ultimate sovereignty of the other disputed features, their long-term disposition need not be the litmus test of either U.S. or Chinese hegemony in the region. Of course, China would prefer not to have forward-deployed U.S. military forces in the Western Pacific that could be used against it, but Beijing has long tolerated and arguably could indefinitely tolerate an American military presence in the region—unless that presence is clearly and exclusively aimed at coercing or containing China. It is also true that Beijing disagrees with American principles of military freedom of navigation in the region; and this constitutes a significant challenge in waters where China claims territorial jurisdiction in violation of the UN Commission on the Law of the Sea. But this should not be conflated with a Chinese desire or intention to exclusively “control” all the waters within the first island chain in the Western Pacific. The Chinese almost certainly recognize that exclusive control or “domination” of the neighborhood is not achievable at any reasonable cost, and that pursuing it would be counterproductive by inviting pushback and challenges that would negate the objective. So what would Chinese “hegemony” in East Asia mean or look like? Beijing probably thinks in terms of something much like American primacy in the Western Hemisphere: a model in which China is generally recognized and acknowledged as the de facto central or primary power in the region, but has little need or incentive for militarily adventurism because the mutual benefits of economic interdependence prevail and the neighbors have no reason—and inherent disincentives—to challenge China’s vital interests or security. And as a parallel to China’s economic and diplomatic engagement in Latin America, Beijing would neither exclude nor be hostile to continued U.S. engagement in East Asia. A standard counterargument to this relatively benign scenario is that Beijing would not be content with it for long because China’s strategic ambitions will expand as its capabilities grow. This is a valid hypothesis, but it usually overlooks the greater possibility that China’s external ambitions will expand not because its inherent capabilities have grown, but because Beijing sees the need to be more assertive in response to external challenges to Chinese interests or security. Indeed, much of China’s “assertiveness” within East Asia over the past decade—when Beijing probably would prefer to focus on domestic priorities—has been a reaction to such perceived challenges. Accordingly, Beijing’s willingness to settle for a narrowly-defined, peaceable version of regional preeminence will depend heavily on whether it perceives other countries—especially the United States—as trying to deny China this option and instead obstruct Chinese interests or security in the region.

#### Disruptive healthcare innovation high now---post-dates 1AC ev by 3 years

Dignity Health, 21. California-based not-for-profit public-benefit corporation that operates hospitals and ancillary care facilities in three states. “9 examples of disruptive innovations in healthcare.” May 11, 2021. https://dhge.org/about-us/blog/disruptive-innovation-healthcare-examples

Innovation is no stranger to the healthcare sector. New therapies, medical devices, and healthcare management practices are adopted all the time. However, up until fairly recently, examples of **disruptive innovations** in healthcare were far less common. What is disruptive innovation, and what impact do these disruptions have on the healthcare industry? Disruptive innovations are those that cause radical change and often result in new leaders in the field. They overturn the usual way of doing things to such an extent that they have a ripple effect throughout the industry. The following nine examples of disruptive innovations in healthcare are centered on technology, customer-centric care, and third-party advancements.

**Technology**

Technology is the biggest driver of many disruptive innovations in healthcare since every aspect of healthcare is dependent on some form of tech. From wearables and mobile phone apps to big data and artificial intelligence (AI) use in diagnosis, any new technology could potentially shake up healthcare.

**1. Consumer devices, wearables, and apps**

In the past, a patient could get only biometric data about their pulse, heart rate, blood oxygen, and blood pressure when they went to the doctor’s office. Now, consumers take charge of their own health journey, using data gathered from their Fitbits, smartwatches, and mobile phone fitness apps. Physicians can use the data gathered from these wearables to make treatment decisions, although the vast amount of personal information collected by these apps has led to legal and ethical concerns over data privacy.

**2. AI and machine learning**

AI applications can manage patient intake and scheduling as well as billing. Chatbots answer patient questions. With natural language processing capabilities, AI can collate and analyze survey responses. AI will probably increase in use as a way to bring down healthcare costs and let doctors and staff focus on patient care. Healthcare leaders must be knowledgeable about the issues surrounding database management and patient privacy.

**3. Blockchain**

[**Blockchain**](https://dhge.org/about-us/blog/dhge-and-salesforce-producing-an-interoperable-learner-record-ilr-for-healthcare-workers-1) is a database technology that uses encryption and other security measures to store data and link it in a way that enhances security and usability. This innovation facilitates many aspects of healthcare, including patient records, supply and distribution, and research. Tech startups have entered the healthcare sector with blockchain applications that have changed how providers use medical data.

**4. IoT**

What if public health managers could gather data from wearable devices, thermometers, smartwatches, and various other consumer devices — and then use that data to discover disease clusters and provide care to patients more effectively? That’s the vision of the internet of things (IoT). Some of the complex issues surrounding IoT include patient data security and how to define smartwatches — are they consumer products or medical devices that require Food and Drug Administration (FDA) approval?

**Consumer-centered care**

Many examples of disruptive innovations in healthcare pertain to consumer-centered care. With the increasing consumerization of healthcare, the patient-healthcare provider relationship has also undergone radical change. In this arena, the combination of technology and public policy has transformed how patients access healthcare and interact with their healthcare providers.

**5. Electronic health records and big data**

Electronic health records (EHRs) have been a growing part of patient care since the adoption of the Affordable Care Act. The massive amount of EHR data goes far beyond patient health records, however, and can be used to conduct research, improve care, build AI applications, and create new business opportunities. Therefore, healthcare providers have to be aware of the issues surrounding EHR security.

## Federalism Adv

#### Federal government gets modeled, not states---yellow

Dennis 6 (Lindsay V., JD Candidate – Temple University School of Law, “Nanotechnology: Unique Science Requires Unique Solutions”, Temple Journal of Science, Technology & Environmental Law, Spring, 25 Temp. J. Sci. Tech. & Envtl. L. 87, Lexis)

Nanotechnology, a newly developing field merging science and technology, promises a future of open-ended potential. [6](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n6) Its scientific limits are unknown, and its myriad uses cross the boundaries of the technical, mechanical and medical fields. [7](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n7) Substantial research [8](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n8) has led scientists, [9](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n9) politicians [10](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n10) and academicians [11](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n11) to believe that nanotechnology has the potential to profoundly change the economy and to improve the national standard of living. [12](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n12) In addition, nanotechnology may touch every facet of human life because its products cross the boundaries of the most important industries, including electronics, biomedical and pharmaceutical  [\*89]  industries, and energy production. [13](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n13) In the future, nanotechnology could ensure longer, healthier lives with the reduction or elimination of life-threatening diseases, [14](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n14) a cleaner planet with pollution remediation and emission-free energy, [15](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n15) and the innumerable benefits of increased information technology. [16](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n16) However, certain uses, such as advanced drug delivery systems, [17](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n17) have given rise to an ethical debate similar to that surrounding cloning and stem cell research. [18](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n18) Moreover, some analysts have theorized that nanotechnology may endanger humankind with more dangerous warfare and weapons of terrorism, [19](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n19) and that nanotechnology may lead to artificial intelligence beyond human control. [20](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n20) The widespread use of nanotechnology far in the future threatens to alter the societal framework and create what has been called "gray goo." [21](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n21) Because nanotechnology has the potential to improve the products that most of us rely on in our daily lives, but also imperil society as we know it, we should research, monitor and regulate nanotechnology for the public good with trustworthy systems, and set up pervasive controls over its research, development, and deployment. In addition, its substantial impacts on existing regulations should be ascertained, and solutions incorporated into the regulatory framework. This paper addresses these concerns and provides potential solutions. Part I outlines the development of nanotechnology. Parts II and III explore the current and theoretical future applications of nanotechnology, and its potential side-effects. Then, Part IV analyzes the government's current role in monitoring nanotechnology, and the regulatory mechanisms available to manage or eliminate the negative implications of nanotechnology. Part V considers the creation of an Emerging Technologies Department as a possible solution to maximize the benefits and minimize the detrimental effects of nanotechnology. Lastly, Part VI examines certain environmental regulations to provide an example of nanotechnology's impact on existing regulatory schema.  [\*90]  Part I: Nanotechnology Defined   Nanoscience is the study of the fundamental principles of molecules and structures with at least one dimension roughly between 1 and 100 nanometers (one-billionth of a meter, or 10[su'-9']), otherwise known as the "nanoscale." [22](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n22) Called nanostructures, these are the smallest solid things possible to make. [23](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n23) Nanofabrication, or nanoscale manufacturing, is the process by which nanostructures are built. [24](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n24) Top-down nanofabrication creates nanostructures by taking a large structure and making it smaller, whereas bottom-up nanofabrication starts with individual atoms to build nanostructures. [25](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n25) Nanotechnology applies nanostructures into useful nanoscale devices. [26](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n26) The nanoscale is distinctive because it is the size scale where the properties of materials like conductivity, [27](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n27) hardness, [28](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n28) or melting point [29](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n29) are no longer similar to the properties of these same materials at the macro level. [30](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n30) Atom interactions, averaged out of existence in bulk material, give rise to unique properties. [31](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n31) In  [\*91]  nanotech research, scientists take advantage of these unique properties to develop products with applications that would not otherwise be available. [32](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n32) Although some products using nanotechnology are currently on the market, [33](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n33) nanotechnology is primarily in the research and development stage. [34](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n34) Because nanoparticles are remarkably small, tools specific to nanotechnology have been created to develop useful nanostructures and devices. [35](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n35) Two techniques exclusive to nanotechnology are self-assembly, and nanofabrication using nanotubes and nanorods. [36](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n36)  [\*92]  In self-assembly, particular atoms or molecules are put on a surface or preconstructed nanostructure, causing the molecules to align themselves into particular positions. [37](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n37) Although self-assembly is "probably the most important of the nanoscale fabrication techniques because of its generality, its ability to produce structures at different length-scales, and its low cost," [38](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n38) most nanostructures are built starting with larger molecules as components. [39](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n39) Nanotubes [40](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n40) and nanorods, [41](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n41) the first true nanomaterials engineered at the molecular level, are two examples of these building blocks. [42](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n42) They exhibit astounding physical and electrical properties. [43](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n43) Certain nanotubes have tensile strength in excess of 60 times high-grade steel while remaining light and flexible. [44](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n44) Currently, nanotubes are used in tennis rackets and golf clubs to make them lighter and stronger. [45](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n45) Part II: Nanotechnology's Uses   Researching and manipulating the properties of nanostructures are important for a number of reasons, including, most basically, to gain an understanding of how matter is constructed, and more practically, to use these unique properties to develop unique products. [46](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n46) Nanoproducts can be divided into four general categories: [47](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n47) smart materials, [48](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n48) sensors, [49](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n49) biomedical applications, [50](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n50) and optics and electronics. [51](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n51)  [\*93]  A "smart" material incorporates in its design a capability to perform several specific tasks. [52](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n52) In nanotechnology, that design is done at the molecular level. [53](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n53) Clothing, enhanced with nanotechnology, is a useful application of a smart material at the nanoscale. Certain nano-enhanced clothing contains fibers that have tiny whiskers that repel liquids, reduce static and resist stains without affecting feel. [54](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n54) Nano-enhanced rubber represents another application of a nanoscale smart material. [55](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n55) Tires using nanotech-components increase skid resistance by reducing friction, which reduces abrasion and makes the tires last longer. [56](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n56) The tires may be on the market "in the next few years" according to the National Nanotechnology Initiative (NNI). [57](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n57) Theoretically, this rubber could be used on a variety of products, ranging from tires to windshield wiper blades to athletic shoes. [58](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n58) A more complex nanotechnology smart material is a photorefractive polymer. [59](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n59) Acting as a nanoscale "barcode," these polymers could be used as information storage devices with a storage density exceeding the best available magnetic storage structures. [60](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n60) Nano-sensors may "revolutionize much of the medical care and the food packaging industries," [61](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n61) as well as the environmental field because of their ability to detect toxins and pollutants at fewer than ten molecules. [62](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n62) As the Environmental Protection Agency (EPA) recognizes: Protection of human health and ecosystems requires rapid, precise sensors capable of detecting pollutants at the molecular level. Major improvements in process control, compliance monitoring, and environmental decision-making could  [\*94]  be achieved if more accurate, less costly, more sensitive techniques were available. Nanotechnology offers the possibility of sensors enabled to be selective or specific, detect multiple analytes, and monitor their presence in real time. [63](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n63) Examples of research in sensors include the development of nano-sensors for efficient and rapid biochemical detection of pollutants; sensors capable of continuous measurement over large areas; integration of nano-enabled sensors for real-time continuous monitoring; and sensors that utilize "lab-on-a-chip" technology. [64](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n64) All fundamental life processes occur at the nanoscale, making it the ideal scale at which to fight diseases. [65](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n65) Two quintessential examples of biomedical applications of nanotechnology are advanced drug delivery systems and nano-enhanced drugs. [66](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n66) The promise of advanced drug delivery systems lies in that they direct drug molecules only to where they are needed in the body. [67](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n67) One example is focusing chemotherapy on the site of the tumor, instead of the whole body, thereby improving the drug's effectiveness while decreasing its unpleasant side-effects. [68](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n68) Other researchers are working to develop nanoparticles that target and trick cancer cells into absorbing certain nanoparticles. [69](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n69) These nanoparticles would then kill tumors from within, avoiding the destruction of healthy cells, as opposed to the indiscriminate damage caused by traditional chemotherapy. [70](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n70) Nano-enhanced suicide inhibitors [71](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n71) limit enzymatic activity by forcing naturally occurring enzymes to form bonds with the nanostructured molecule. [72](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n72) This may treat conditions such as epilepsy and depression because of the enzyme action component involved in these conditions. [73](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n73) Lastly, nanotechnology has the potential to revolutionize the electronics and optics fields. [74](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n74) For instance, nanotechnology has the potential to produce clean,  [\*95]  renewable solar power. [75](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n75) Through a process called artificial photosynthesis, solar energy is produced by using nanostructures based on molecules which capture light and separate positive and negative charges. [76](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n76) Certain Swiss watches and bathroom scales are illuminated through a nanotech procedure that transforms captured sunlight into an electrical current. [77](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n77) In the electronics field, nanostructures offer many different ways to increase memory storage by substantially reducing the size of memory bits and thereby increasing the density of magnetic memory, increasing efficiency, and decreasing cost. [78](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n78) One example is storing memory bits as magnetic nanodots, which can be reduced in size until they reach the super-paramagnetic limit, the smallest possible magnetic memory structure. [79](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n79) Advances in electronics and computing brought on by nanotechnology could allow reconfigurable, "thinking" spacecraft. [80](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n80) Some uses of nano-products already on the market include suntan lotions and skin creams, tennis balls that bounce longer, faster-burning rocket fuel additives, and new cancer treatments. [81](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n81) Solar cells in roofing tiles and siding that provide electricity for homes and facilities, and the prototypic tires, supra, may be on the market in the next few years. [82](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n82) The industry expects advanced drug delivery systems with implantable devices that automatically administer drugs and sensor drug levels, and medical diagnostic tools such as cancer-tagging mechanisms to be on the market in the next two to five years. [83](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n83) It is nearly impossible to foresee what developments to expect in nanotechnology in the decades to come. [84](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n84) Nonetheless, the book Engines of Creation presented one vision of the possibilities of advanced nanotechnology. [85](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n85) Nano-machines could be designed to construct any product, from mundane items such as a chair, to exciting items such as a rocket engine. [86](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n86) These "assemblers" could also be programmed to build copies of themselves. [87](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n87) Known as "replicators," these nano-machines could alter the world by producing an exponential quantity of themselves that are to be put to work as assemblers. [88](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n88) The development of assemblers could advance the space  [\*96]  exploration program, [89](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n89) biomedical field, [90](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n90) and even repair the damage done to the world's ecological systems. [91](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n91) Over time, production costs may sharply decrease because the assemblers will be able to construct all future products from an original blueprint at virtually no additional cost. [92](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n92) Part III: Nanotechnology's Side-Effects   With the good, however, comes the bad. The "gray goo problem," the most well-known unwanted potential consequence of the spread of nanotechnology, [93](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n93) arises when replicators and assemblers produce almost anything, and subsequently spread uncontrolled, obliterating natural organisms and replacing them with nano-enhanced organisms. [94](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n94) A more foreseeable issue is environmental contamination. [95](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n95) The EPA noted   As nanotechnology progresses from research and development to commercialization and use, it is likely that manufactured nanomaterials and nanoproducts will be released into the environment... . The unique features of manufactured nanomaterials and a lack of experience with these materials hinder the risk evaluation that is needed to inform decisions about pollution prevention, environmental clean-up and other control measures, including regulation. Beyond the usual concerns for most toxic materials ... the adequacy of current toxicity tests for chemicals needs to be assessed ... . To the extent that nanoparticles  [\*97]  ... elicit novel biological responses, these concerns need to be accounted for in toxicity testing to provide relevant information needed for risk assessment to inform decision making. [96](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n96)   In addition, nanotechnology could change the face of global warfare and terrorism. [97](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n97) Assemblers could be used to duplicate existing weapons out of superior materials, and chemical and biological weapons could be created with nano-enhanced components. [98](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n98) Modern detection systems would be inadequate to detect nano-enhanced weapons built with innocuous materials such as carbon. [99](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n99) Luckily, nanotechnology offers responses to these problems, and researchers are already tackling these issues. [100](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n100) "Labs-on-a-chip," a sensor system the size of a microchip, could be woven into soldiers' uniforms to detect toxins immediately. [101](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n101) Adding smart materials could make soldiers' uniforms resistant to certain chemical and biological agents. [102](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n102) Nanotechnology also enhances threats against citizens. Drugs and bugs (electronic surveillance devices) could be used by police states to monitor and control its citizenry. [103](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n103) Viruses could be created that target specific genetic characteristics. [104](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n104) Not only is the development of technologically advanced, devastating weaponry itself a hazardous effect of nanotechnology, but also, millions of dollars have already been spent researching potential uses of nanotechnology in the military sphere, [105](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n105) thus diverting funds from more beneficial uses such as biomedical applications and clean energy. However, these negative effects are not inevitable. By analyzing the scope of potential drawbacks accompanying these research investments, lawmakers can institute regulatory controls that could mitigate these problems.  [\*98]  Part IV: Maximizing Benefits, Minimizing Catastrophe   To minimize or eliminate the problems associated with nanotechnology, while maximizing the beneficial effects, nanotechnology research and development should be monitored and regulated by "trustworthy systems." [106](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n106) Currently, the federal government oversees a massive funding and research program with the purpose of "ensuring United States global leadership in the development and application of nanotechnology." [107](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n107) Nonetheless, as nanotechnology becomes more prevalent, more thorough regulation may be necessary. [108](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n108) Nanotechnology may greatly impact some of the largest revenue producing industries in the United States, such as the pharmaceutical and medical fields, utilities and power generation, and computer electronics. [109](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n109) Thus, it is clear that nanotechnology will likely touch every facet of human life. In addition, these powerful industries have been known to promote profits over human safety, [110](http://www.lexis.com/research/retrieve?cc=&pushme=1&tmpFBSel=all&totaldocs=&taggedDocs=&toggleValue=&numDocsChked=0&prefFBSel=0&delformat=XCITE&fpDocs=&fpNodeId=&fpCiteReq=&brand=&_m=82ab008e42cdd5d1d23cfd1d96b430bb&docnum=5&_fmtstr=FULL&_startdoc=1&wchp=dGLbVtz-zSkAb&_md5=f86737f923f2df1de12147f84a019421&focBudTerms=Nanotechnology%3A+Unique+Science+Requires+Unique+Solutions&focBudSel=all#n110) one of the reasons for their stringent regulation.  [\*99]

#### China has recently established federal ethics committees to regulate AI

Phoebe Zhang 19-2019, South China Morning Post, "China’s top AI scientist drives development of ethical guidelines," <https://www.scmp.com/news/china/science/article/2181573/chinas-top-ai-scientist-drives-development-ethical-guidelines>) CC

China is playing catch-up in the development of ethical guidelines in the field of artificial intelligence, with the establishment of an ethics committee. Chen Xiaoping – inventor of Jia Jia, the realistic humanoid “Robot Goddess”, and KeJia, an intelligent home service robot – is leading the committee, which held its first conference last year and is due to meet again in May. Chen, professor and director of the Robotics Laboratory at the University of Science and Technology of China, said AI in China had developed to a point where ethical guidelines were now necessary to address potential risks in large-scale applications. “If the technology was far off being applied there would be no need to talk about ethics research, but there is value in this research into technologies that might be applied on a large scale in the next 10 or 20 years,” he said. Beijing turns to facial recognition to combat public housing abuses Chen was appointed to establish the ethics committee by the Chinese Association for Artificial Intelligence, the country’s only state-level AI body. The complexity of the subject means the committee’s discussions include experts from AI research and industry, as well as sociology and the law. “Furthermore, we need to discuss what risks these technologies might bring, as well as what preventive measures we can take,” Chen said. The committee was looking into sectors such as data privacy, AI in medicine, self-driving vehicles, and – of particular urgency, Chen said – AI in senior care. Privacy is another area of high public concern in China, where AI and facial recognition technology are already deployed at subways, pedestrian crossings and some supermarkets. The technology has even helped police catch criminals on the run at concerts.

#### Laundry list of already implemented policies

Jia He 17, “The Next Generation AI Development Development Plan — What’s inside?”, <https://medium.com/@jiahe/the-next-generation-ai-development-plan-whats-inside-72824a9bcc3> //AP

●China will have established a number of world-leading AI talent centers for technology innovation and training, and will have created and implemented more comprehensive system of AI laws and regulations, ethical norms and policy. The plan has analyzed the advantages and weakness of China to develop AI, and has prioritized the technologies and tasks for developing technology and applications. Beyond this, China has recognized that society and technology should be taken into account together to ensure that AI could be healthily and rapidly developed in safe, secure, reliable and controllable systems. According to the plan, socio-economic impact research of AI is listed as one of the state key scientific research programs that will be released soon afterwards. The plan is equipped with six supporting actions to ensure the achievement of the goals, including rules, open and inclusive international environment and make sure the society is well prepared for the next generation of AI. The issues of employment will be taken into account for the short-term, and the issues of ethics will be taken into account for the long-term.

(1) Make the framework of laws, regulations and ethics

●Conduct research on legal issues related to the application of AI such as identifying civil liability and criminal liability, privacy and property protection, information security. Establish traceability and accountability. Clarify the legal entity of AI, as well as its related rights, obligations and responsibilities.

● Accelerate progress by studying AI laws and create relevant regulations on safety and security, especially focus on the subdivided areas with great potential for a wide application such as automatic driving and service robots. The regulations are the basis for rapid application of new technology.

● Conduct the research on behavior science and ethics issues of AI, make a decision-making framework with multi-level ethical and moral choices, and make a theoretical framework of human-machine collaboration.

● Establish moral norms and a code of conduct for R&D designers of AI products, strengthen the assessment of the potential hazards and benefits of AI, and make a solution-oriented framework for emergent and complex scenarios of AI.

● Pro-actively participate in global governance of AI, strengthen research on shared international issues including robotics alienation and safety and security regulations, deepen the international cooperation in laws & regulations, international rules and other aspects of AI, and work through global challenges together.

(2) Create incentive policies to accelerate the development of artificial intelligence ● Implement tax incentives for small and medium enterprises and start-up enterprises. For example, there are tax incentives for high-tech enterprises, R&D costs deduction for AI enterprises. ● Revise the policies of open data and data protection and put it into practice. Launch pilot projects to open public data, and the public and private sectors to fully mine the commercial value of public data, and promote the innovation of AI applications. ● Conduct policy analysis on the areas such as education, medical care, insurance and social assistance, make those policies adaptive to the rapid development of AI and could effectively deal with the social issues brought by AI. (3) Build up AI technology standards and intellectual property system. ● Strengthen the research on the framework of AI standards. ● Keep the principles of safety and security, availability, interoperability, and traceability. Gradually establish and revise the technical standards including general technology, interconnectivity, industry applications, cyber security, and privacy protection. ● Rapidly promote industry associations and alliances to develop relative standards for its specific industry such as autonomous driving or service robots. ● Encourage AI enterprises to participate in and/or lead the development of international standards. Advise enterprises to take the approach of promoting the technical standards first, then the AI products and services in overseas market. ● Strengthen the protection of intellectual property in the field of AI, improve the mechanism of technology innovation, patent protection and interactive support of standardization to turn the result of innovation into intellectual property rights.

● Build up a public patent pool of AI to promote the use and spread of new AI technologies.

(4) Build up safety & security regulation and assessment system

● Strengthen the research and assessment of the impact of AI on national security and secrecy, improve the defense system set with skilled people, technology, resources and management, and build up the AI security monitoring and warning mechanism.

● Strengthen the foresight, analysis and follow-up of the development of AI technology, take a problem-oriented approach, and accurately understand the developing trends of technology and industry.

● Enhance risk awareness, paying attention to risk assessment, prevention and control, and strengthen the prospective prevention and restraint guidance.

● Revise and make transparent AI regulation with two approaches: accountability by design and application in supervision. This is to ensure that the whole process from algorithm design to product development and application will be regulated.

● Promote the self-discipline in the AI industry and related enterprises, and improve penalty measures for abuse of data, violations of privacy, contrary to immoral behavior.

● Strengthen the cybersecurity R&D efforts of AI, and strengthen the security protection of AI products and systems network.

● Concentrate on the issues of AI design, product and system, including complexity, risk, uncertainty, interpretability, potential economic impact, build up dynamic AI R&D assessment mechanism, systematic measurement approach and criteria, cross cutting platform for AI test, and promote safety and security certification and assess the key performances of AI products and systems.

# 1NR

## FTC DA

#### Disease---Algorithmic bias enables massive health-care inequality

Trishan Panch et al. 19 – chief medical officer and co-founder at Wellframe, with Heather Mattie and Rifat Atun, December. “Artificial intelligence and algorithmic bias: implications for health systems.” J Glob Health. 2019 Dec; 9(2): 020318. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6875681/

AI is a potentially transformative tool for improving inference from data for care and population health [1]. However, while AI has demonstrated substantial potential in clinical applications [2], few large-scale deployments exist, and there are concerns [1]. First, AI is a misleading term. In practice it is more A than I. It is a defined process applied to ‘narrow inference tasks’ where large volumes of data are present and processing power is available to find associations. It is not, yet, a “general purpose” replacement for human intelligence or ingenuity. Second, whilst there are encouraging research findings in the use of AI in health care, little of this work has been applied in practice, rigorously evaluated or exposed to peer-reviewed publications, while widely publicised positive findings have been challenged [3]. Third, where AI has been used in the broader economy, concerns have emerged regarding its negative consequences in relation to ‘bias’: where AI could amplify inequities in society. For example, in the United States more African Americans have been denied loans or granted longer prison sentences compared to their Caucasian counterparts [4]. For many, the concern is not only that “algorithms are for the most part reflecting back the bias in our world” [5], but that they are doing so at potentially massive scale and without due oversight. Collectively, these shortcomings produce ‘algorithmic bias’, which at present, is not defined in the context of health systems.

We define, for the first time, algorithmic bias in the context of AI and health systems as: “the instances when the application of an algorithm compounds existing inequities in socioeconomic status, race, ethnic background, religion, gender, disability or sexual orientation to amplify them and adversely impact inequities in health systems.”

#### 1AC says it massively expands FTC power and burdens them with new enforcement responsibilities---Emory in yellow.

1AC Crane 19 [Daniel A. Crane, Frederick Paul Furth Sr. Professor of Law, University of Michigan, 60 Wm. & Mary L. Rev. 1175, 2019, Lexis]

C. Institutional and Procedural Distinctions

Antitrust preemption and constitutional review are differently situated in one significant way: Constitutional equal protection, substantive due process, and dormant commerce clause principles are privately enforceable by any party that meets the Article III standing requirements--which, in this context, means at least anyone directly affected by a regulation impairing competition. 160 Antitrust has its own private right of action standing rules, 161 as well as an additional institutional feature that might significantly limit some of the abuses associated with Lochnerizing. One proposed route for increasing the preemptive scope of federal antitrust law over anticompetitive state and local regulation is to hold the [\*1208] Parker doctrine inapplicable to the FTC. 162 This would give the FTC enhanced power to challenge anticompetitive state and local regulations. Not only would this limit the incidence of challenges to state regulation (the FTC Act is not privately enforceable and only the Commission can initiate an action under the Act), 163 but it would also put the Commission itself, rather than an Article III court, in the position of making an initial decision on the case. An Article III court could ultimately become involved, as adverse Commission decisions are appealable to any federal court of appeal in which the case could have been initially brought. 164 However, lodging the antitrust review function in the FTC would grant the Commission an initial regulatory review function and the power to make factual findings subject to "substantial evidence" review. 165

#### FTC’s on the right track, but already pushing as hard as they can

LEAH NYLEN 9/29/21. POLITICO's antitrust reporter. “Lina Khan’s big tech crackdown is drawing blowback. It may succeed anyway.” https://www.politico.com/news/2021/09/29/lina-khan-war-monopolies-514581

Despite all the friction, Khan’s admirers say the agency is finally back on the right track.

“The FTC is pushing as hard as they can right now, which is what we have needed for so long,” said Charlotte Slaiman, competition policy director for the advocacy group Public Knowledge, during POLITICO’s Tech Summit this month. She added: “I expect great things from the FTC.”

Khan knows FTC history and will avoid overstretch now.

Ben Brody 10/5/21. Senior reporter at Protocol, formerly covered tech policy at Bloomberg News. “The FTC's next privacy move is a dangerous game years in the making.” https://www.protocol.com/policy/ftc-privacy-rules?rebelltitem=1#rebelltitem1

Litigation could tie up any new rules up for years, but from the commission's perspective it may be the lesser evil as compared to drawing ire from Congress. Critics of FTC inaction trace the agency's timidity to the 1980s. At the time, many saw the FTC's attempts to regulate children's advertising as the height of nanny-state overreach, in part thanks to a campaign by advertisers. In response to "kidvid," Congress reined in the agency's regulatory powers — and in the process taught generations of FTC staff to tiptoe around lawmakers.

It's a cycle that's recurred throughout FTC's existence, and Khan, who loves the agency's history, has made clear she's well aware of it.

Her colleagues, too, seem well aware that the clock is ticking: In a speech earlier in October, Slaughter discussed online ads and pushed the idea that companies should only collect data necessary for their offerings.

#### Current enforcement is streamlined to enable focus on algorithmic bias.

Jeffrey J. Amato and Jay R. Wexler 9/28/21. “United States: FTC Ramps Up Tech Investigations, Reduces Investigators' Hurdles.” https://www.mondaq.com/unitedstates/antitrust-eu-competition-/1115450/ftc-ramps-up-tech-investigations-reduces-investigators39-hurdles

At its September 14, 2021 open meeting, the Federal Trade Commission (FTC) announced the passage of eight "omnibus" resolutions by a 3-2 party-line vote to authorize quicker investigations into prioritized issues. The resolutions allow staff attorneys to use compulsory process demands, which are usually issued as civil investigative demands or subpoenas, with approval from only one commissioner. Previously, agency staff were expected to receive approval from the full commission prior to issuing demands for information from companies. The resolutions aim to facilitate investigations into: unlawful conduct directed at veterans and service members; unlawful conduct directed at children; bias in algorithms and biometrics enabling discriminatory practices; dark patterns and deceptive online conduct that lure users into making unwanted purchases; repair restrictions that allegedly harm competitors and consumers; abuse of intellectual property; common directors and officers and common ownership; and monopolization offenses.

#### Antitrust enforcement low now

Zephyr Teachout 10/29/21. Associate professor of law at Fordham Law School. “Why Judges Let Monopolists Off the Hook.” https://www.theatlantic.com/ideas/archive/2021/10/antitrust-facebook-congress-sherman-act/620539/

Americans have gotten far too used to the idea that corporate behemoths are free to acquire any company they want, engage in predatory behavior, and bully, squeeze out, or demand kickbacks from smaller rivals. Indeed, the U.S. government’s decision to let Facebook buy an obvious rival, Instagram, looks so wrong in hindsight—especially now that leaked documents have revealed Facebook’s seeming indifference to the many problems that its products cause or exacerbate—that Americans should utterly disavow the complex legal framework that allowed the Federal Trade Commission to rationalize that decision. Over the past several decades, establishing that a company has violated antitrust law has become an extraordinarily difficult process. And when violations of the law are hard to punish, authorities will usually give them a pass—as the FTC did with Facebook’s acquisition of Instagram. (Yesterday, Facebook rebranded itself as Meta.)

#### No major new cases

Brent Kendall 10/9/21. Legal affairs reporter in the Washington bureau of The Wall Street Journal. “Justice Department Makes Quiet Push on Antitrust Enforcement.” https://www.wsj.com/articles/justice-department-makes-quiet-push-on-antitrust-enforcement-11633800598

The five-member FTC voted 3-2 along partisan lines last month to formally withdraw those guidelines. The commission’s new chairwoman, Lina Khan, is a leading progressive advocate for overhauling antitrust enforcement. She has been laying the groundwork for changes at the commission as she settles into the job, but hasn’t yet spearheaded any major new cases.

#### FTC deadlock prevents antitrust enforcement---Doesn’t interfere with privacy enforcement because there’s consensus. The plan changes this by FIAT

Eleanor Tyler 10/7/21. Legal Analyst on the Litigation team, with a focus on antitrust, at Bloomberg Law. “ANALYSIS: FTC May Be Headed Into Deadlock, Delaying Big Deals.” https://news.bloomberglaw.com/bloomberg-law-analysis/analysis-ftc-may-be-headed-into-deadlock-delaying-big-deals

The Federal Trade Commission may be about to pause, unable to act on antitrust enforcement and policy until President Biden’s nominee can be confirmed and seated.

On Oct. 8, Federal Trade Commissioner Rohit Chopra is stepping down to take up his new position as head of the Consumer Financial Protection Bureau. Because it takes a majority among the Commissioners present to conduct business, and because the remaining commissioners will be split 2-2 between Democrat and Republican appointees, the Commission may find itself sitting on its hands until an equally divided Senate can approve privacy expert Alvaro Bedoya, whom Biden nominated Sept. 20 for Chopra’s seat.

In the past, the Commission has typically managed to continue making decisions and bringing cases while short a member (or several). These aren’t normal times, however. Many actions could be easily conducted on a bipartisan basis, but decisions about antitrust policy—and, potentially, antitrust enforcement—have proven contentious. That poses a potential obstacle for deals currently under investigation at the FTC, which tend to be large deals and those with market overlap between the parties.

#### Other enforcement is all talk

JED GRAHAM 9/16/21. Writes about economic policy for Investor's Business Daily.

Khan is clearly using her bully pulpit to the utmost, trying to dissuade merger talks from reaching fruition.

But right now it's all talk. She has turned a few heads, but the S&P 500 and Big Tech leaders have kept cruising. Facebook stock is up 11% since Khan took the FTC's helm on June 15, while Apple has climbed 15% and Google stock 18%. That's despite reports that the Justice Department is preparing to file a second Google antitrust suit over its ad dominance.

The new antitrust enforcement regime may not change all that much "until they show that they can sue and win," Kovacic said.

#### FTC’s scaling back new obligations---but there’s no margin for error

Leah Nylen & Betsy Woodruff Swan 21. Staff writers at POLITICO, 7/6/21. “FTC staffers told to back out of public appearances.” https://www.politico.com/news/2021/07/06/ftc-staffers-public-appearances-498386

Less than a week into Lina Khan’s tenure as Federal Trade Commission chair, her chief of staff ordered the agency’s staff to cancel all public appearances, according to internal agency emails viewed by POLITICO.

In a June 22 email to more than two dozen of the FTC’s top staffers, Khan’s chief of staff, Jen Howard, announced a “moratorium on public events and press outreach.”

“For the time being I am putting a moratorium on staff participating in external events,” Howard wrote. The message was sent to the head of the FTC’s major offices, including those who oversee all of the agency’s economics, antitrust lawyers and consumer protection attorneys.

In a follow-up message two days later, Howard said that any staff who were scheduled for public events should cancel those appearances.

“I want to make clear that for any situations where staff are currently scheduled to do a public event and thus need to contact event organizers to withdraw their participation, the message they should convey is that they are sorry they can no longer participate due to pressing matters at the FTC,” she wrote.

An FTC spokesperson confirmed that the agency has called off all staff public appearances for the time being.

"The FTC is severely under-resourced and in the midst of a massive surge in merger filings. This is an all-hands-on-deck moment,” Howard said in a statement to POLITICO. “So the agency pushed pause on public speaking events that aren't focused on educating consumers to ensure staff time is being used to maximum benefit and productivity. The American public needs this agency solving problems, not speaking on panels."

The FTC, which enforces antitrust and consumer protection laws, has about 1,100 staffers, fewer employees than the agency had at the beginning of the Reagan administration. Only about 40 of the agency's lawyers are devoted to privacy and data security issues, the agency's former chair told Congress in 2019, in contrast to the United Kingdom, which has an agency of roughly 500 employees focused on privacy.

As recently as December, the FTC was discussing steps to deal with a possible cash shortage including freezing pay and cutting back on the number of lawsuits the agency files.

Since taking over three weeks ago, Khan has swiftly begun advancing her priorities, holding the FTC’s first open meeting in decades last week. In her opening comment, Khan pledged to provide transparency for the agency’s work and host open meetings “on a regular basis.”

#### Privacy enforcement now---resources are limited.

Andrea Vittorio 20 – Reporter, Bloomberg Tax, 12/16. “FTC’s Demand for Tech Company Data Shows ‘Underutilized’ Power.” https://news.bloombergtax.com/privacy-and-data-security/ftcs-demand-for-tech-company-data-shows-underutilized-power

The Federal Trade Commission’s orders to Amazon.com Inc., Facebook Inc., and seven other companies to turn over information on their use of consumer data shows how a little-used inquiry authority has been exercised lately to regulate the tech industry. The authority comes from Section 6(b) of the FTC Act, which allows for wide-ranging studies that don’t have a specific law enforcement purpose. The FTC has used this power to launch a handful of similar studies in recent years. There’s some skepticism over the studies’ impact, since they can take years to complete, but they can signal future agency action. Earlier this month, for example, the commission sued Facebook for alleged violations of antitrust laws after launching a similar ongoing study in February on acquisitions by large tech companies. Seeing FTC action before the study’s completion makes it an outlier amid heightened scrutiny of the tech industry, as other studies from 2019, including one on broadband privacy, are still pending. The study on tech companies’ data collection and use could reveal information that’s later used for enforcement action against some or all of the nine companies targeted in the order, according to Rory Van Loo, a law professor at Boston University. “It seems pretty clearly like the FTC is informing itself about what kinds of cases it might bring against these companies in the future,” Van Loo said. That could include pursuing any alleged consumer privacy violations as unfair or deceptive trade practices, he said. Privacy Policy The FTC has faced pressure to more regularly use its “underutilized” authority to demand data from companies, according to Justin Brookman, a former FTC official who’s now director of consumer privacy and technology policy at Consumer Reports. That’s especially true for privacy policy, where Brookman said the FTC is seen as “understaffed,” “under-resourced,” and regulating industry without a federal consumer privacy law. “So this is the FTC trying to use relatively novel tools to move the debate and inform policymakers,” he said. Brookman added that the study could lead to the FTC calling on Congress to provide more power to oversee privacy protections for consumer data. The FTC is seeking information on the tech companies’ data privacy policies and practices. The agency is also asking about the companies’ advertising and user engagement practices, and how their practices affect children and teens. The information gathered could shed light on data flows in Silicon Valley, according to Quentin Palfrey, president of the International Digital Accountability Council, a tech watchdog group. The group investigates issues such as apps sharing the data they collect with third parties and brings concerns to app platforms like Apple Inc. and Alphabet Inc.'s Google. “It’s important for the FTC to use the tools it has to get a handle on some of the unseen data flows and what the companies are doing that’s not visible to consumers,” said Palfrey, who used to work in the Obama administration and the Massachusetts attorney general’s office.

#### Most of the FTC’s limited resources are targeted toward privacy.

Jessica Rich et al. 10/3/21. Former director of the Federal Trade Commission’s (FTC) Bureau of Consumer Protection, OF Counsel at Kelley Drye, with Laura Riposo VanDruff, Alysa Z. Hutnik & William C. MacLeod. “FTC Chair Khan’s Vision for Privacy – and Some Dissents.” https://www.adlawaccess.com/2021/10/articles/ftc-chair-khans-vision-for-privacy-competition-and-big-tech-and-some-dissents/

Last week, we wrote about FTC Chair Khan’s memo describing her plans to transform the FTC’s approach to its work. This week, she followed up with a no-less-ambitious statement laying out her vision for data privacy and security, which she appended to an agency Report to Congress on Privacy and Security (“report”). Together, these documents outline a remarkably far-reaching plan to tackle today’s data privacy and security challenges. As noted in the dissents, however, some of the stated goals may exceed the bounds of the FTC’s current legal authority.

Privacy/Competition Focus on Tech

First, Khan’s statement reiterates her commitment to address privacy through a “cross-disciplinary” approach that uses the tools of competition law, not just consumer protection law, to address privacy harms. She states that “concentrated control over data has enabled dominant firms to capture markets and erect entry barriers while commercial surveillance has allowed firms to identify and thwart emerging competitive threats,” resulting in reduced privacy.

To address these concerns, as outlined further in the report, the agency intends to focus “most” of its limited resources against the “data practices of dominant digital platforms,” including through additional compliance reviews and order modifications and enforcement, “as necessary,” against, for example, Facebook, Google, Microsoft, Twitter, and Uber.

#### FTC is cash-strapped---the plan destroys other enforcement priorities.

Nicolás Rivero 21. Technology reporter at Quartz. “Biden’s antitrust crusaders can’t crusade without Congress.” 3/11/21. https://qz.com/1982437/lina-khan-and-tim-wu-need-congress-to-push-their-antitrust-agenda/

But there are clear limits to their power. The most the FTC can do is bring more antitrust cases that ask courts for more aggressive remedies, like breakups. That would allow the agency to make a point about what it considers acceptable business behavior. But many of those lawsuits would be bound to lose in front of judges who have grown far more skeptical of antitrust cases over the past four decades and far more conservative over the past four years.

A larger caseload would also require Congress to approve more funding for the cash-strapped agency, which is already struggling to pay for its current docket. “The agencies have been asked on many occasions to do a lot with relatively little…but it’s not for free,” says former FTC chair and George Washington University law professor Bill Kovacic. If the FTC wants to pursue more large cases without a bigger budget, “they’ll have to make choices, and those choices will involve backing off of other areas of enforcement.”

#### FTC resources are finite and new priorities trade off with existing work.

David McCabe 18. Tech policy reporter for Axios, 5/7/18. “Mergers are spiking, but antitrust cop funding isn't.” https://www.axios.com/antitrust-doj-ftc-funding-2f69ed8c-b486-4a08-ab57-d3535ae43b52.html

The number of corporate mergers has jumped in recent years, but funding has stagnated for the federal agencies that are supposed to make sure the deals won’t harm consumers.

Why it matters: A wave of mega-mergers touching many facets of daily life, from T-Mobile’s merger with Sprint to CVS’s purchase of Aetna, will test the Justice Department's and Federal Trade Commission’s ability to examine smaller or more novel cases, antitrust experts say.

What they’re saying: “You have finite resources in terms of people power, so if you are spending all of your time litigating big mergers … there might be some investigations where decisions might have to be made about which investigations you can pursue,” said Caroline Holland, who was a senior staffer in DOJ’s Antitrust Division under President Obama and is now a Mozilla fellow.

What's happening:

More mergers are underway now than at any point since the recession. The total number of transactions reported to the federal government in fiscal year 2017, and not including cases given expedited approval or where the agencies couldn't legally pursue an investigation, is 82% higher than the number reported in 2010 and 55% higher than the number reported in 2012.

Funding for antitrust officials who weigh the deals hasn’t kept pace. The funding for the Department of Justice’s antitrust division has fallen 10% since 2010, when adjusted for inflation. That's in line with the broader picture: not adjusting for inflation, the Department's overall budget increased just slightly in 2016 and 2017.

Funding for the FTC has fallen 5% since 2010 (adjusted for inflation).

An FTC spokesperson declined to comment on funding levels and Antitrust Division officials didn't provide a comment.

Driving the news: Merger and acquisition activity is up 36% in the United States compared to the same time last year, according to Thomson Reuters data from April.

Several deals under government review have gotten national attention, including Sinclair’s purchase of Tribune's TV stations or T-Mobile’s deal with Sprint, which stands to reduce the number of national wireless providers from four to three.

Meanwhile, the Justice Department is awaiting the ruling on its lengthy legal effort to block AT&T’s proposed $85 billion purchase of Time Warner.

Yes, but: It’s not the attention-grabbing mega-mergers that advocates worry will get less of a close look thanks to a shortage of funds. Instead, some say budget limitations are likely to matter when officials are deciding which smaller or "borderline" deals to investigate further.

“Sometimes there’s nothing there,” said Holland of the agency's early investigations. “Other times, it might be, ‘This is kind of a close call, and we’ve got three or four close calls and we need to pick one of them.’"

"It could mean settlements get accepted that otherwise wouldn’t, or deals that should be challenged aren’t," said Michael Kades of the Washington Center for Equitable Growth, an antitrust-enforcement-friendly think tank that has done extensive research on the topic, in an email.

#### Limited resources force tradeoffs in enforcement decisions.

Bernard (Barry) A. Nigro Jr. et al., 21 – Chair of Fried Frank's Global Antitrust and Competition Department, former Principal Deputy Assistant Attorney General at the DOJ, with Nathaniel L. Asker and Aleksandr B. Livshits, 1/5/21. “Managing Antitrust Risk in the Biden Administration.” Fried Frank Antitrust & Competition Law Alert. https://www.friedfrank.com/siteFiles/Publications/FFAntitrustAggressiveAntitrustEnforcement01052021.pdf

Further, despite a record number of litigated cases, the budget at the antitrust agencies is insufficient to match the rhetoric of more enforcement. The DOJ had 25% fewer full-time employees in 2019 than it had 10 years earlier9 and the FTC recently imposed a hiring freeze. With limited resources, the agencies are forced to make important tradeoffs in deciding what matters to challenge, settle, or walk away from. Indeed, Commissioner Wilson reportedly voted against bringing a lawsuit to block CoStar’s acquisition of RentPath, in part, because of limited FTC resources.10 Although the agencies will receive a modest budget increase for the current fiscal year,11 it is far short of what some think is needed.12 As antitrust enforcement has become a bipartisan issue, a significant increase in the antitrust agencies’ budgets in the future is likely.

#### It directly undermines privacy enforcement.

David Hyman 19 – Professor at Georgetown University Law Center, with William E. Kovacic, “Implementing Privacy Policy: Who Should Do What?” 29 Fordham Intell. Prop. Media & Ent. L.J. 1117 (2019). https://ir.lawnet.fordham.edu/iplj/vol29/iss4/3

The case for making an enhanced FTC the national privacy regulator is straightforward. Of all U.S. privacy implementation institutions, the FTC has unequaled capacity in the form of expert case handling and policy teams and physical resources (including the development, over the past decade, of an internet laboratory to do high-quality forensic work, and the hiring of technology experts to assist in that effort). The agency’s capacity also is the product of extensive experience in applying its UDAP authority and enforcing statutes such as the FCRA and COPPA. The FTC has a broad portfolio of policy instruments (litigation, rulemaking, consumer and business education, data collection, the preparation of reports, the convening of conferences), and it has demonstrated its ability to use all of them to good effect in the privacy domain. The FTC’s stature as an independent agency gives it additional credibility in the eyes of foreign officials, who generally distrust the vesting of privacy powers in an executive department.

Within an enhanced FTC, privacy policy implementation also would be informed by the Commission’s larger experience with consumer protection. The FTC’s privacy unit is one part of its Bureau of Consumer Protection, rather than being a self-contained bureau. This reflected the institution’s reasonable view that the effort to safeguard consumer interests in “privacy” was one dimension of “consumer protection,” rather than a wholly distinct policy realm. Our impression is that many matters that involve privacy issues also raise problems that fit within other areas of the FTC’s consumer protection program. The analysis of the “privacy” issue often benefits from perspectives developed in the course of applying the agency’s deception and unfairness authority in other cases. The intertwining of privacy issues with other consumer protection concerns in many scenarios has important implications for how the mandate of a privacy agency should be defined. In whatever setting one ultimately might place a “privacy” mandate, we would expect that the host agency would have a mandate that incorporates powers that traditionally have been associated with the FTC’s broader consumer protection program.83

The FTC’s expertise in antitrust should also help it develop and enforce privacy policy. Enforcing antitrust law has given the FTC ongoing involvement in multiple high-tech markets—as well as an understanding of how competition can motivate companies to offer better privacy protections. The FTC’s work in both consumer protection and antitrust draws upon a Bureau of Economics with over 80 PhDs in economics.84 The Bureau of Economics has developed considerable skill in sub-disciplines (including behavioral economics) with special application to privacy issues.

Of course, inputs are not the same thing as outputs. The FTC has not always achieved the full integration of perspectives that the combination of these institutional capacities would permit. And, although there are policy complementarities across the domains of antitrust, consumer protection, and privacy, this combination of functions is not an unmixed blessing. An agency with all three functions might seek to use its position as a gatekeeper with respect to one policy domain to leverage concessions from firms over which it exercises oversight in another domain.85 Such temptations have been present when the FTC has applied its antitrust powers to review mergers involving companies in the information services sector.86

Finally, there is the possibility that any one of these functions might be diminished if all three are contained in the same agency. An agency focused solely on privacy will make privacy policy its single concern. An agency responsible for antitrust, consumer protection, and privacy is likely to find itself making tradeoffs as it sets priorities for how to use its resources.

#### Aff doesn’t solve funding: The aff can’t topically fiat funding for enforcement---Expand the scope of antitrust refers exclusively to formal law not enforcement---means the plan is circumvented.

Sinisa Milosevic et al. 18. Commission for Protection of Competition, The Republic of Serbia. Dejan Trifunovic, Faculty of Economics, University of Belgrade, Belgrade, The Republic of Serbia. Jelena Popovic Markopoulos, Commission for Protection of Competition, The Republic of Serbia. “The Impact of the Competition Policy on Economic Development in the Case of Developing Countries”. Economic Horizons, May - August 2018, Volume 20, Number 2, 153 – 167. http://scindeks-clanci.ceon.rs/data/pdf/1450-863X/2018/1450-863X1802157M.pdf

The paper that analyzes the impact of the competition policy on the GDP growth in developing and developed countries in the Solow growth model framework is T. C. Ma’s (2011). The presence and scope of the competition policy is captured by the SCOPE variable that is defined in the paper by K. N. Hylton and F. Deng (2007). The overall effectiveness of the government’s application of policies, not only of the competition policy, is captured by the EFFICIENCY variable that is defined in the paper by D. Kaufmann, A. Kraay and M. Mastruzzi (2009). The results show that the SCOPE variable is not significant and the formal existence of the competition law cannot influence economic growth. The interacting variable of SCOPE x EFFICIENCY is named EFFLAW. For poor countries, the coefficient for this variable is 0.04 and is significant, whereas for rich countries the coefficient is 0.064 and is also significant. Therefore, the competition law must be complemented with the effective enforcement of this policy.

#### Scope measures what is illegal, not enforcement.

Keith N. Hylton and Fei Deng 06. Keith N. Hylton, Professor of Law, Boston University. Fei Deng, NERA Economic Consulting. “Antitrust Around the World: An Empirical Analysis of the Scope of Competition Laws and Their Effects.” Boston University School of Law. Working Paper Series, Law and Economics Working Paper no. 06-47. https://scholarship.law.bu.edu/cgi/viewcontent.cgi?article=1849&context=faculty\_scholarship

A. Measuring the Scope of Competition Law

1. Scope Index

The first charts we present show Scope Index scores. These scores are found by summing the total points within each country template, and then subtracting off the defense scores. To give an example, return to the template for New Zealand. The Scope Index score for New Zealand is found by summing the numerical values in the template shown in Table 1, and then subtracting off scores associated with defenses (and one point to reduce the merger subtotal). In the case of New Zealand, there are three defenses (merger public interest defense, efficiency defense for dominant firms, efficiency defense for restrictive trade practices). The sum of the points is 19 (after reducing the merger subtotal), and after subtracting 3, the Scope Index for New Zealand is 16. For each European Union member state, an alternative Scope Index was computed based on EU law.24

The point of the Scope Index is to measure the size of the competition law net in every country. As the score increases, so does the size of the net. Alternatively, one can think of the Scope Index for a particular country as a measure of the number of ways in which a firm could run afoul of the competition laws in that country. However, the Scope Index score does not indicate the degree to which a country invests resources into enforcing its competition laws. Continuing with the net metaphor, the Scope Index tells us the size of the competition law net without saying anything about the likelihood that the government will attempt to swing the net at any firm.

#### Even if the funding makes it out, doesn’t prevent tradeoffs

Cristiano Lima 9/16/21. Business reporter and author of The Washington Post's Technology 202 newsletter. “Why Democrats are rallying around creating a new FTC privacy bureau to police Big Tech.” https://www.washingtonpost.com/politics/2021/09/16/why-democrats-are-rallying-around-creating-new-ftc-privacy-bureau-police-big-tech/?outputType=amp

At the session, lawmakers lamented that, beyond lacking will, the FTC has lacked the resources and staffing to effectively oversee the conduct of the tech sector’s trillion-dollar behemoths. That’s long been a knock on the FTC’s track record policing the tech sector, from both Democrats and Republicans.

While the proposed funding boost may not even the odds entirely, Democrats are largely aligned behind the idea that any added firepower for regulators is a positive step.

#### Budget increase is neg uniqueness---it means the FTC can handle what it’s currently doing, not an expansion. Proves the staffing link.

Kiran Stacey 8/10/21 – Washington Correspondent for the Financial Times, 8/10/21. “Washington vs Big Tech: Lina Khan’s battle to transform US antitrust.” https://www.ft.com/content/eba8d3d7-dba7-4389-858c-5406c31b413d

Even if Khan does win some of the landmark cases she is likely to bring, some worry the FTC will not have the capacity to write new competition rules and rewrite merger guidelines at the same time. “The FTC can put together legal teams that can match the best in the bar, punch for punch, in a major case,” says Kovacic. “But the number of those teams is a couple, it is not 10.” For years the commission’s budget and staffing levels have been chipped away. It now has roughly 50 per cent of the staff it had in 1980 and is currently trying to review a record number of mergers. In the first nine months of this fiscal year, the FTC received 2,573 notifications ahead of a large merger — already 50 per cent more than were received in the whole of last year. Last week, the commission published a statement warning that it would not be able to review all mergers within 30 days of a notification being made, as required by law. Instead, the FTC said, if it had not had time to review a merger before it took place, it would reserve the right to take action even after it had been completed. “This year, the FTC has been hit by a tidal wave of merger filings that is straining the agency’s capacity to rigorously investigate deals ahead of the statutory deadlines,” the commission said in a statement. The commission is also facing an uphill battle to retain staff. Some people say they feel demoralised by the pace of change and irritated they have not yet met their new chair — something Khan’s allies say is an unfortunate result of the pandemic. “There are only so many times you can hear that your institution has failed for years before you start to doubt your place in it,” says one staff member. But a bigger problem is that companies and private law firms are gearing up for a more aggressive FTC by trying to poach its talent. “I usually have to place a couple of FTC people in any given year,” says Lauren Drake, a partner at the Washington-based recruiting firm Macrae. “So far this year I have had 10.”

#### Turf wars link---the FTC will jump in to get involved with the Aff

David A. Hyman & William E. Kovacic 20. Professor at Georgetown University Law Center; and Global Competition Professor of Law and Policy, George Washington University School of Law, Non-Executive Director of the United Kingdom’s Competition and Markets Authority, 9/1/20. “State Enforcement in a Polycentric World,” BYU Law Review, Iss. 6, https://digitalcommons.law.byu.edu/cgi/viewcontent.cgi?article=3248&context=lawreview

A. Competition Law

The Federal Trade Commission (FTC) and the Department of Justice (DOJ) have long shared regulatory authority over certain aspects of competition law. During the 1920s, there were cases where both agencies opened files to deal with the same conduct. For obvious reasons, this dynamic created repeated conflicts—so the agencies devised informal methods of consultation to avoid duplicative parallel inquiries. This “good fences make good neighbors” approach resulted in a written liaison arrangement (commonly called “clearance”) which allowed the agencies to avoid conflicts in the exercise of their concurrent regulatory power.8 A 2002 press release describes the clearance process, as well as some of the challenges that deregulation and technological chance posed to the smooth functioning of that process:

The FTC/DOJ clearance process was formally established in 1948; refinements were implemented in 1963, 1993, and 1995. The traditional methodology for allocating matters between the agencies has emphasized historical experience in addressing specific commercial sectors. As the boundaries that separate individual sectors have blurred in the face of rapid technological change, and as deregulation measures have allowed firms to diversify, this clearance methodology has begun to break down. In a growing number of important economic sectors of mutual concern to the FTC and the DOJ, the effectiveness of the experience-based allocation methodology that has anchored past clearance agreements has diminished significantly.9

The FTC and DOJ sought to resolve this dispute by negotiating and publishing a comprehensive statement that described the division of labor the two agencies intended to follow with respect to specific market sectors, and set out how future disagreements would be resolved.10 Although the DOJ ultimately abrogated the agreement under pressure from Senator Ernest Hollings, the underlying dynamics that gave rise to these problems have not changed materially in the intervening years.11 As such, it should not come as a surprise that in 2019 the FTC and DOJ negotiated a similar agreement focusing on the tech sector. Pursuant to that agreement, the FTC agreed to focus on Facebook and Amazon, and the DOJ agreed to focus on Google and Apple.12 (The irony of two competing competition agencies repeatedly negotiating over how best to divide a market does not escape us).

Roughly two months later, a turf war broke out when the DOJ asserted it would be reviewing the behavior of “social media[] and some retail services online”—a statement that was “widely interpreted by the legal community to mean Facebook and Amazon, two companies that under the earlier agreement stood to have at least some of their conduct reviewed by the FTC.”13 Such claim-jumping heightened tensions between the two agencies, which were already inflamed by the DOJ’s recent intervention in a case the FTC brought against Qualcomm.14 Such disagreements are not new: any list would include the dispute in 2008 over the appropriate standards for enforcing Section 2 of the Sherman Act,15 the FTC’s opposition in 2007 to the granting of cert in a private antitrust case against Pacific Bell where the DOJ filed an amicus brief urging the granting of cert, the DOJ’s 2005 opposition to the granting of cert in the FTC’s case against Schering-Plough, and the DOJ’s refusal to represent the FTC before the Supreme Court in Indiana Federation of Dentists—prompting the FTC to pursue the case itself.16

#### That triggers the link

Emily Birnbaum & Issie Lapowsky 20. Tech policy reporter with Protocol; and Protocol's chief correspondent, 7/29/20. “Democrats just made their case against Big Tech. Here’s what comes next.” https://www.protocol.com/big-tech-ceo-hearing-what-comes-next

The FTC's inquiries into tech giants have been complicated by simultaneous investigations of the same companies at the DOJ. The FTC and DOJ had reportedly agreed to split the workload, with the FTC overseeing Facebook and Amazon, while the DOJ took the reins on Apple and Google. But during a congressional hearing last year, Makan Delrahim, head of the DOJ's antitrust division, acknowledged "squabbles" between the two agencies over each other's jurisdictions. "It's not the best model of efficiency," Delrahim said.

In one antitrust case the FTC brought against Qualcomm, the DOJ went so far as to publicly oppose the FTC and side with Qualcomm. And despite the supposed division of labor, the DOJ is also reportedly investigating Facebook for antitrust violations, as well.

Kades calls the infighting between the DOJ and the FTC "bizarre" and unlike anything he saw during his two decades at the FTC. "You would hope they're not looking at the same thing," he said. "They're short enough on resources."

#### FTC covers all core antitrust law.

Emilia R. Rubin 19. J.D. Candidate, University of California, Hastings College of the Law. “The Heavy Burden of a Lighter Touch Framework The Inadequacy of Antitrust Laws as a Substitute for Net Neutrality.” Summer 2019. Hastings Science and Technology Journal 10.2, 229-261.

The FCC additionally justified repealing the 2015 Order by relying on the ability of both the FTC and private citizens to bring antitrust actions challenging any anticompetitive conduct in the internet sector.115 The FTC enforces three laws with respect to antitrust law: the Sherman Act, the FTC Act, and the Clayton Act. These are the three core federal antitrust laws in effect today. The Sherman Act outlaws “every contract, combination, or conspiracy in restraint of trade,” and any “monopolization, attempted monopolization, or conspiracy or combination to monopolize.” The standard for assessing business conduct under the Sherman Act is a two-pronged approach: (1) per se illegality if the conduct is considered “so harmful to competition that they are almost always illegal;” and (2) rule of reason analysis if the conduct does not fall into an established anticompetitive category articulated under law.116

#### Says antitrust rulemaking fails, our internal link is about Consumer protection.

#### FTC enforcement keeps the AI industry in line.

Ryan Calo 21. Professor of Law, University of Washington, 4/27/21. “FTC warns the AI industry: Don’t discriminate, or else.” https://theconversation.com/ftc-warns-the-ai-industry-dont-discriminate-or-else-159622

The U.S. Federal Trade Commission just fired a shot across the bow of the artificial intelligence industry. On April 19, 2021, a staff attorney at the agency, which serves as the nation’s leading consumer protection authority, wrote a blog post about biased AI algorithms that included a blunt warning: “Keep in mind that if you don’t hold yourself accountable, the FTC may do it for you.”

The post, titled “Aiming for truth, fairness, and equity in your company’s use of AI,” was notable for its tough and specific rhetoric about discriminatory AI. The author observed that the commission’s authority to prohibit unfair and deceptive practices “would include the sale or use of – for example – racially biased algorithms” and that industry exaggerations regarding the capability of AI to make fair or unbiased hiring decisions could result in “deception, discrimination – and an FTC law enforcement action.”

Bias seems to pervade the AI industry. Companies large and small are selling demonstrably biased systems, and their customers are in turn applying them in ways that disproportionately affect the vulnerable and marginalized. Examples of areas where they are being abused include health care, criminal justice and hiring.

Whatever they say or do, companies seem unable or unwilling to rid their data sets and models of the racial, gender and other biases that suffuse society. Industry efforts to address fairness and equity have come under fire as inadequate or poorly supported by leadership, sometimes collapsing entirely.

As a researcher who studies law and technology and a longtime observer of the FTC, I took particular note of the not-so-veiled threat of agency action. Agencies routinely use formal and informal policy statements to put regulated entities on notice that they are paying attention to a particular industry or issue. But such a direct threat of agency action – get your act together, or else – is relatively rare for the commission.

What the FTC can do – but hasn’t done

The FTC’s approach on discriminatory AI stands in stark contrast to, for instance, the early days of internet privacy. In the 1990s, the agency embraced a more hands-off, self-regulatory paradigm, becoming more assertive only after years of privacy and security lapses.

How much should industry or the public read into a blog post by one government attorney? In my experience, FTC staff generally don’t go rogue. If anything, that a staff attorney apparently felt empowered to use such strong rhetoric on behalf of the commission confirms a broader basis of support within the agency for policing AI.

Can a federal agency, or anyone, define what makes AI fair or equitable? Not easily. But that’s not the FTC’s charge. The agency only has to determine whether the AI industry’s business practices are unfair or deceptive – a standard the agency has almost a century of experience enforcing – or otherwise in violation of laws that Congress has asked the agency to enforce.

#### Bulusu says there’s a blurred line because the FTC has been asked to increase enforcement as a result of Bidens XO, BUT earlier says that’s not possible absent the AFF, which means it doesn’t assume the magnitude of the link---Emory in yellow.

2AC Bulusu 21 [Siri Bulusu, Reporter Bloomberg Law, 7-12-2021 https://news.bloomberglaw.com/antitrust/worker-license-rules-emerge-as-ftc-competition-oversight-priority]

The FTC has struggled to rein in licensing practices with antitrust violations partly because public entities, like state-controlled licensing boards, can claim state action immunity. Such immunity authorizes a state to carry out certain legitimate government functions, often in regulated industries that require licensing.

“Many of these state certifications don’t violate antitrust law and that’s because of this doctrine that displaces antitrust law,” said Jesse Markham, a partner at Baker & Miller PLLC’s San Francisco office. “And that’s why these certification requirements exist with impunity.”

In 2015, the Supreme Court ruled in North Carolina State Board of Dental Examiners v. FTC that the state board was operated by market participants. Without active supervision from the state, the board couldn’t claim state action immunity from federal antitrust actions.

The ruling unleashed “dozens of lawsuits"—seeking antitrust treble damages—against individual members of licensing boards, according an October 2020 statement from Reps. Mike Conaway (R-Texas), Jamie Raskin (D-Md.), and David Cicilline (D-R.I.) in support of a bill they introduced to shield board members from such suits.

Qualifying for state action immunity largely depends on whether a board is a true government actor or a private market participant. But this delineation becomes more complex if there’s a blurred line between a state agency handling its own actions or a private group acting under state guidance.

How the FTC handles that blurred line will be one issue the agency tackles as it implements the president’s order.

# 2NR

## FTC DA

#### Only the FTC has the expertise and history.

Sara Collins 21. Policy Counsel at Public Knowledge, former Policy Counsel on Future of Privacy Forum’s Education & Youth Privacy team, 10/13/21. “21st Century Snake Oil: The Consequences of Unregulated, Unproven AI.” https://techpolicy.press/21st-century-snake-oil-the-consequences-of-unregulated-unproven-ai/

There is growing evidence that assigning algorithms the responsibility to make significant decisions about people is causing harm. Much has been written about the biases algorithms can codify and steps to mitigate the damage. However, detecting bias is difficult. If we could shift the burden to companies to demonstrate that their algorithms are safe and effective, we could greatly reduce the likelihood that biased algorithms enter the market at all.

For example, facial recognition’s trouble with detecting Black faces has been well documented. But facial recognition is not just used in surveillance cameras. It is also used in online hiring platforms, student proctoring software, and even for unemployment verification. Misidentification in these contexts has grave consequences. While this problem has often been framed in terms of bias, it also demonstrates a lack of effectiveness. If your software has trouble working on almost 15% of the population, your algorithm doesn’t do what you say it does. If you have an algorithm that is designed to allocate healthcare, but Black patients have to be significantly sicker than white patients in order to get the same level of care, your algorithm doesn’t work.

Unfortunately there is no requirement that companies demonstrate an algorithm’s effectiveness before putting it to use. The Algorithmic Justice and Online Transparency Act, introduced this year, has a requirement that algorithms used by online platforms be “safe and effective,” but that would only apply to sites like Facebook or Youtube, according to the proposed bill. Congress should consider expanding such protections to all products and services.

But even if Congress does not act, that doesn’t mean nothing can be done. Fortunately, the Federal Trade Commission (FTC) has a long history of prosecuting snake oil salesmen. Under Section 5 of the FTC Act, the commission has broad authority to go after companies that engage in unfair or deceptive acts or practices. This is why the FTC just sent a warning letter to purveyors of fake coronavirus cures, and how the FTC was able to fine companies that made scam weight loss products. In each instance these companies made claims about their products that weren’t backed by evidence. This same approach should be used for algorithms.

## Adv CP

#### Only R&D can solve ABR

Mandt et al 20, 8-20-2020, Rebecca Mandt, Department of Immunology and Infectious Diseases, Harvard T.H. Chan School of Public Health; Kushal Seethara, Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology; Chung Hon Michael Cheng, Institute for Data, Systems, and Society, Massachusetts Institute of Technology. "Federal R&D funding: the bedrock of national innovation," MIT Science Policy Review, https://sciencepolicyreview.org/2020/08/federal-rd-funding-the-bedrock-of-national-innovation/

Case study 2: A good example of the mismatch of public and private objectives can be seen in the development of new antibiotics to keep ahead of rising bacterial resistance to pre-existing drugs. Antimicrobial resistance is widely recognized as one of the greatest threats of the 21st century [36]. Widespread use of antibiotics has led to the evolution of drug-resistant bacteria that no longer respond to currently used treatment methods. Thus, there is a critical need to produce new antibiotics. In spite of this, there has actually been a decrease in the number of new antibiotics being developed and approved since the 1980s, and many large pharmaceutical companies have downsized or eliminated their antibiotic discovery programs [37, 38]. This is because there are several barriers that limit the profitability of new antibiotics, often leading to a poor return on investment. Unlike drugs for chronic conditions, antibiotics are typically taken for a short period of time. New antibiotics entering the market face competition from cheaper generics, and are often reserved as drugs of last resort [39]. Even if an antibiotic is successful, there is always a danger that resistance to the new drug will emerge, so it may only be effective for a limited window of time.

Given the high risk associated with bringing any new drug to market and limited ability to recoup investments, it is understandable that this is a priority that the private sector will not address on its own. Thus, several government agencies have stepped in to fill the gap. For example, the Biomedical Advanced Research and Development Authority (BARDA) has contributed $1.1 billion since 2010, advancing nine new antibiotics to clinical development, three of which have already been approved [29]. BARDA and several other Department of Health and Human Services (HHS) agencies have also awarded grants and facilitated public-private partnerships to incentivize the development of new drug candidates [39, 40]. It is clear that without continued federal involvement, there would exist few solutions against a post-antibiotic world where millions die each year from bacterial infections that were once easily treatable [36].