# 1AC

### 1AC – Cartels Adv

#### Emerging global supply chains (GSCs) multiply the incentives and ease of cartelization – only expanding private US antitrust standing can solve global anticompetitive conduct through direct and indirect deterrence.

Gerber 18 [David J Gerber, Distinguished Professor of Law at Chicago-Kent College of Law, Illinois Institute of Technology, “Competitive harm in global supply chains: assessing current responses and identifying potential future responses,” 2018, *Journal of Antitrust Enforcement*, Vol. 6, Issue 1, pp. 5-24, https://doi.org/10.1093/jaenfo/jnx015, EA]

Global supply chains (GSC) (or ‘value chains’) contribute to many of the manufactured products used by most people in most developed countries most of the time.1 In these economic arrangements, multiple firms located in multiple jurisdictions provide components for and/or assemble and manufacture end-use products. They have developed rapidly since the 1990s, largely as a result of reduced transportation and communication costs and the increased mobility and concentration of financial resources. Together, these forces make it easier and more efficient to shift production across borders. They offer potential benefits to both producers and consumers.

Yet, GSCs also carry a potential for harm that is often beyond the reach of current legal remedies. They can shield those that produce faulty or hazardous products or artificially raise prices from legal responsibility for the harms they cause to markets, consumers, or the environment.2 This article focuses on one set of those potential harms—those caused by anti-competitive conduct, but many of the issues also arise in relation to environmental, financial, and other types of harm.

The issues are central to the evolution of markets almost everywhere. Any producers anywhere in a GSC can reduce competition and raise prices for all subsequent purchasers. As a result, such conduct may have effects in many jurisdictions. Moreover, the harmful effects from the conduct are likely to be incurred outside the jurisdiction in which the conduct is located. Where producers can be confident that they are shielded from competition law enforcement, they are more likely to engage in such conduct.

Few legal tools are available for deterring such harms, and they evolved in a very different economic context to deal with very different problems. Until very recently, there has been limited recognition within the legal community that GSCs represent a new form of economic organization that is not easily amenable to effective treatment with these tools. Legal discussions have tended to subsume the issues under existing categories, often failing to notice that these categories and the tools based on them may be inadequate and ineffective in responding to a new organizational form. As is common (and often appropriate) in legal thinking, new phenomena are subsumed within older categories until it becomes imperative to think about them as something new.

GSC harms represent a transnational problem, but little has been done on the transnational level to respond to the harms. As a result, the tools available for dealing with them remain primarily domestic (ie, usually national). Existing domestic legal tools remain, however, either limited in scope or applied in ways that render them largely ineffective. The inadequacy of the current legal framework calls for efforts to develop more effective tools, both domestic and transnational. US antitrust law may be in a position to contribute to creating such tools, but, as we shall see, efforts to realize this potential encounter major obstacles.

The article has three main goals. One is to identify the dimensions of the problem. Economists and business decision makers have been identifying the characteristics and consequences of GSCs since at least the 1990s,3 but, until very recently, these issues have been either absent from or at the margins of legal discussions. A second objective is to explore and assess experience in responding to competition harms associated with GSCs, focusing primarily on US experience with private enforcement of antitrust law. Finally, the article suggests potential transnational responses to this transnational problem.

I. GLOBAL SUPPLY CHAINS

GSCs are a feature of what I call ‘deep globalization’—ie, the cross-border interpenetration of economic functions.4 Reduced transportation and communication costs have led to the fragmentation of production processes and the distribution of economic production functions, often across political borders. This creates opportunities for firms to exploit differences in production costs in both acquiring and selling products and services.

Arrangements for exploiting these differences may be managed and organized in a variety of ways. All refer to organizing the production of goods and services in order to supply specific needs. Some are organized by a firm or firms in the destination country and ‘buyer-driven’. Others are organized by sellers (who are typically outside the destination country) and referred to as ‘supply-driven’ chains. It has become increasingly common for firms in destination countries to ‘manage’ the entire process through agreements of various kinds that may relate to the products themselves or to the characteristics of the producers and the production process.5 In these arrangements, the organizing firms often seek to avoid responsibility for conduct by their suppliers that might violate environmental and labour standards.

Although there are many variations on the theme, one common scenario is something like the following: Firm A (typically from a high income country) seeks to sell a product in a developed market such as the United States or Europe where labour and related factor costs are high. It therefore contracts with a firm (B) in a lower cost country to produce the goods there. It presses firm B to produce at the lowest possible prices. Firm B, in turn, acquires components from suppliers (firms C, D, and E) in countries with even lower costs and manufactures the product from those components. It then sells the product to Firm A for resale in the high-income market (perhaps with further elaboration).6

At any point in this chain of production, participants may engage in practices designed to raise the price they receive for their contribution to the value of the good or service being produced. Some estimate the potential losses to US consumers per year as high as several hundreds of billions of dollars, with an estimated $2 trillion dollars overcharged to consumers world-wide.7

II. POTENTIAL LEGAL TOOLS: TRANSNATIONAL LEVEL

Global supply chains have major consequences for many countries, so we might expect them to have generated legal developments on the transnational level. Yet, little attention has been paid to developing transnational legal tools for responding to their threats. There are no enforceable competition law provisions on the global level. Some regional and bilateral agreements provide for exchange of information related to competition law violations, and these could, in principle, be used to gain information and support enforcement. For example, the Mutual Legal Assistance Agreement (MLAT) between the United States and Canada enhances the countries’ exchange of information and cooperation in investigation and prosecuting cartels.8 These agreements do not require, however, that host countries provide information that may contravene their own interests. As a result, they are seldom of value in combating GSC’s harms, because officials in countries where the conduct occurs seldom have incentives to report such violations to officials in countries in which the anticompetitive harm results.

III. NATIONAL COMPETITION LAWS: PUBLIC ENFORCEMENT

The paucity of transnational tools means that domestic (ie, typically, national) legal systems provide whatever tools are available for deterring GSC harm. Here, the central issues relate to jurisdiction and to enforcement incentives: the starting point is the issue of whether a state is entitled under public international law to apply its law to conduct outside its territory and the extent to which its national laws authorize application of competition law to such conduct. The public international law issue is often overlooked, especially in the United States, but it can be important in understanding not only statutes and cases, but also options available for responding to GSC challenges.9

The effects principle and national versions of it Until the end of the Second World War, the long-established principles of territoriality and nationality were considered the sole basis of authority for a state to apply its law to conduct outside its territory. A state could not apply its law to conduct outside its territory, except to its own nationals. In 1944, however, a US court of appeals sitting for the Supreme Court enunciated what came be known as the ‘effects principle’.10 This provides generally that a state is entitled to apply its laws to conduct outside its territory where the conduct has a significant effect within its territory.11 The case involved the extraterritorial application of US antitrust law.

Despite initial resistance, primarily from the UK and other European countries, this principle has come to be generally accepted.12 Accordingly, if firms outside country X collude to raise prices on products that are destined for sale in county X, the resulting harm would in principle justify the application of country X’s law to the conduct.

Public international law is, however, only the starting point for jurisdictional analysis. Each jurisdiction incorporates and interprets the effects principle for application by its own institutions, typically enacting a statute that incorporates it in some form. For example, the relevant statute in the US specifies that US antitrust law applies to conduct that has a ‘direct, substantial and foreseeable’ effect within the United States.13 The incorporation of the effects principle in various forms and subject to various conceptual, institutional, and procedural limitations—both formal and informal—is central to dealing with GSCs.

Public enforcement of competition law for foreign-based conduct

Domestic laws typically authorize public institutions to apply domestic law to foreign conduct that has the requisite domestic effects. Public enforcement by competition authorities (CAs) provides, therefore, a potential tool for combating GSC harm. In most countries, competition law is primarily or exclusively applied by public institutions, however, and thus application of the jurisdiction’s laws to GSCs depends on the capacity and willingness of these institutions to take enforcement action.

Public enforcement cases remain uncommon (although in the United States and Europe they have been increasing in recent years).14 For example, when in 1996 the Antitrust Division of the US Department of Justice (DoJ) prosecuted ADM of Illinois and four other companies for participating in a global price-fixing cartel in the artificial sweeteners businesses, fining them over $10 million,15 it was the first completely successful conviction of a global cartel in more than four decades. Prior to this case the DoJ had attempted to prosecute only three international cartels, failing each time.16 Since then, the DoJ has successfully prosecuted and levied fines in a few major cases, including, for example, fining Hoffman-La Roche over $500 million in 1999 for its participation in global cartels for bulk vitamins and, more recently, Bridgestone Corporation of Japan over $425 million in 2014 for cartel participation.17 In part, this reluctance can be ascribed to the difficulty of prosecuting such cases. The DoJ has been described as ‘risk-averse’, as it tends to only pursue cases where there is a substantial chance of successful conviction,18 and success in such cases is far from predictable.

Several additional factors limit the potential utility of public enforcement by destination countries. First, public officials may be unlikely to learn about foreign conduct that causes GSC harms. The conduct could occur anywhere in the world, and public officials in destination countries are unlikely to learn about it through their own surveillance efforts. Victims may provide information to public officials that suggests collusion to raise prices, but this is likely only in the case of corporate purchasers whose potential losses are significant enough to justify such efforts and whose knowledge of the industry makes them aware of it. Moreover, competition officials in a source country have little incentive to provide information about domestic conduct to destination country competition officials. Although there is regular information exchange among some enforcement officials—primarily between the United States and Europe, such exchanges with smaller competition authorities are limited.

Second, even if a CA in a destination country becomes aware of such conduct, there are significant obstacles to acquiring sufficient evidence to support legal procedures against those engaged in it. Potential evidence is likely to be located on foreign territory, and foreign institutions may have little capacity or willingness to undertake investigations there or to acquire evidence from foreign witnesses and foreign institutions. Moreover, any such efforts are likely to be highly time-consuming and expensive.

Public enforcement by source countries is limited by the lack of enforcement incentives. CAs in source countries seldom have significant competition law experience. They are typically underfunded and often subject to political pressures to protect domestic firms. Often the source firms for GSCs are small and medium-sized industries that provide jobs for the economy and political support for local governments. Under these circumstances, a CA in a source country is likely to have few incentives to apply competition law to firms participating in GSCs.

IV.PRIVATE ENFORCEMENT: THE GENERAL PICTURE

Private enforcement provides another potential tool for deterring anticompetitive conduct caused in supply chains. It allows a private party to pursue litigation against those whose anticompetitive conduct has caused it harm. There are two types of private enforcement. Direct private enforcement allows an injured party to bring a claim without prior action by public authorities. This type of enforcement is common in the United States, but in most jurisdictions private enforcement is limited to ‘follow on’ (or ‘piggyback’) litigation. Here, private litigation follows public enforcement, either because the law requires it or because procedural and practical reasons dictate it.19

Private litigation may often be more useful than public enforcement for deterring competitive harm in global supply chains, primarily because firms injured by such conduct often have strong incentives to seek compensation for their losses. A firm in a destination market (eg, the United States) may lose market share and competitive position where price-increasing agreements within a SC raise the cost of the products it sells. It may, therefore, be willing to incur the risk and expense of litigation in order to seek compensation and deter similar conduct. Consumers may also be harmed, but the harm to each individual is unlikely to justify private litigation, and class actions in this context are rare.

Despite its potential value, the obstacles to pursuing private litigation are high in most jurisdictions. First, in many jurisdictions private enforcement of competition law claims is unavailable. Competition law enforcement is considered a matter for public enforcement.20 Second, even where it is available, there are often major procedural obstacles to using it. For example, procedures in civil courts often provide very limited means and opportunities to acquire evidence, and competition legislation typically depends on providing economic evidence.21 Third, the cost of private enforcement tends to discourage plaintiffs from pursuing such litigation. In GSC, situations witnesses and documents are typically located outside the destination country, and acquiring access often requires complicated and constrained strategies as well as high translation costs.22 Fourth, the risks are high. In most countries, decisions in competition law litigation tend to be especially difficult to predict. Judges typically are not accustomed to such litigation and unfamiliar with the economic arguments that are often required. Relevant legal principles may be vague, and acquiring sufficient evidence clearly to identify competition harms may be difficult, if not impossible. Finally, even where a plaintiff wins a domestic judgment against a foreign defendant, enforcing the judgment is likely to be difficult and costly in many source country jurisdictions.

V. US PRIVATE ENFORCEMENT—POTENTIAL

These obstacles to private enforcement are, however, significantly lower in the United States than in other countries. This creates the opportunity for US private enforcement to contribute to a more effective legal framework for deterring anticompetitive conduct in GSCs. US private enforcement has extensive direct deterrence capacity, and it can provide impetus and example for developing more effective tools in other jurisdictions and on the transnational level.

Direct deterrence: enforcement opportunities

US private enforcement can itself play a direct role in deterring harmful GSC conduct. The procedural tools supporting it are well developed and supported, and there is extensive experience with using them. Procedural rules encourage private enforcement. For example, US law triples compensation awards for harm due to antitrust infringements (‘treble damages’), thereby greatly increasing the incentive to bring private suits.23 Similarly, punitive damages may also be awarded for violation of the antitrust laws. Moreover, procedural rules provide litigants with means for acquiring data from other litigants and introducing this data into evidence in litigation.24 This greatly increases the capacity of plaintiffs to search for and acquire evidence of anticompetitive conduct and to analyse its effects. Finally, these tools are routinely used, and thus there is extensive experience in using them. Private cases represent the majority of US antitrust cases.25

In addition, the United States has both the political and economic leverage to induce compliance with its laws. Economic leverage comes from the size of its market. GSCs often target the US market, and many are organized and controlled by US firms.26 This means that a firm located outside the United States may have strong incentives to comply with US administrative requests and court judgments. Even though a US judgment may not be easily enforced abroad, a foreign firm may have assets in the United States that would be subject to claims arising from litigation. Moreover, US purchasers may avoid buying from firms that may be subject to such legal liability. The political leverage of the US government further increases the likelihood that sanctions imposed by US courts will be taken seriously by source country firms and officials. US institutions are often in a position to put pressure on foreign governments and officials to support US claims.

Indirect support: information and experience

US private enforcement experience can also provide valuable indirect support for dealing with anticompetitive conduct in GSCs.27 The extensive use of private enforcement tools represents a valuable source of data and experience for other countries that may wish to develop such tools. US case reports provide detailed information about the way these tools are used in specific cases, and these records are often easily accessible. These tools have not yet been widely used in GSC contexts, but if they were used more extensively in such cases, the experience could be a particularly valuable source of information for other countries that wish to develop private enforcement capacity to deal with these issues.

As a source of impetus

The United States could also provide important impetus for other countries to develop more effective tools to deal with the competition law issues associated with GSCs. Many members of the US antitrust community are in a position to encourage, instruct, and cajole others to be aware of the problem and to take steps to deal with it. US officials, practitioners, and academics play major roles in virtually all important international and many regional competition law meetings and organizations. Moreover, US institutions provide extensive opportunities for study of antitrust law in the United States, and they often offer significant support to competition authorities in many parts of the world.28

The capacity to play these roles effectively depends on many factors, but principally on the dynamics and characteristics of US law itself. To the extent that US courts and legislators provide clear and accessible guidelines for evaluating the potential for competitive harm from GSCs, this is likely to increase not only its potential for direct deterrence, but also its capacity to support deterrence by others.

VI. POTENTIAL UNREALIZED: THE OBSTACLES

US antitrust law has not realized its potential for playing these roles. Three major obstacles impede it. First, it relies on an outdated and exceptionally opaque statute. Second, US cases in the area often send widely divergent and often conflicting messages about the statute’s content, reflecting not only the opacity of the statute, but also the lack of a widely shared understanding of the problems, objectives and issues of transnational competition law enforcement. And third, courts and commentators often fail to recognize the specific characteristics of GSCs. As a result, they often apply principles and reasoning developed for use in the US domestic context to foreign contexts for which they were not designed and may not be appropriate.

The FTAIA

The FTAIA is itself a major obstacle to realizing the potential of US private enforcement. Enacted in 1982, it provides authority for US institutions to apply US antitrust law to private conduct outside US territory.29 It incorporates the effects principle of public international law and interprets it for use in US law.30 There is widespread agreement that the statute is exceptionally opaque, and its opacity hampers both US enforcement and the potential influence of US law in other countries.31

The FTAIA’s relationship to other antitrust legislation creates one level of difficulty. The statute represents an exception to the coverage of the basic antitrust statute, the Sherman act.32 If the FTAIA applies to conduct, the Sherman Act does not apply. Moreover, the FTAIA contains exceptions to its general provisions.33 As a result, interpreting the statute typically involves dealing with double negatives—ie exceptions to exceptions.

The statute’s structure increases the difficulty of using it. It establishes three basic categories of commerce—domestic, import, and foreign—and bases conclusions regarding the legality of foreign conduct on whether the conduct falls within one or more of those categories. The basic idea is that conduct in domestic commerce is subject to US antitrust law; conduct wholly in foreign commerce is not subject to it unless it has a ‘direct, substantial, and reasonably foreseeable effect’ in the United States; and conduct in or affecting import commerce may be subject to US law. The boundaries of these categories remain highly contested, however, despite more than three decades of extensive litigation.34

These categories are used in conjunction with two main operative provisions— each of which has also generated controversy and uncertainty. The first incorporates the effects principle of public international law and interprets it for application of the US antitrust laws. It exempts from the antitrust laws anticompetitive conduct outside US territory unless such conduct causes a ‘direct, substantial, and reasonably foreseeable effect’ within the United States. This language has been interpreted in a large number of cases, but the opinions have not clarified the meaning of the terms. The second requires that the conduct ‘give rise to a claim’ under the Sherman Act. Again, there have been many interpretations of this provision, but the cases have exacerbated rather than reduced uncertainty.

The history behind the statute reveals some of the factors that shaped it and that have contributed to the confusion surrounding it.35 When the United States articulated and supported the effects principle after the Second World War, many outside the United States viewed its claim to expanded jurisdiction as a vehicle through which it sought to impose its form of economic organization on other countries. For decades, several major European countries (particularly the UK) protested the validity of the effects principle under international law.36

This led US courts to develop the so-called ‘comity’ principle, according to which US courts would refrain from applying US law in situations where the US interest in such application was less than the interest of the states in which the conduct occurred. These responses to foreign concerns about US jurisdictional assertions did not implicate the authority itself, but rather the use of that authority. By the late 1970s, the courts had produced long lists of factors to be considered in applying the law extraterritorially.37 There was, however, much criticism among US commentators and judges about the viability of this effort.38

The confusion and uncertainty created by this comity approach encouraged Congress to pass the FTAIA and shaped its content. The basic objective was to clarify and limit the scope of the effects principle as incorporated in US antitrust law while assuring that the law could not be used by others to interfere with the activities of US businesses overseas.39 The statute also represents an attempt by Congress to reduce the potential for applying US law to foreign conduct and thereby to reduce criticism and resistance to US law. Defining the scope of the effects principle was seen as preferable to the failed efforts to achieve this end by relying on judicial use of the amorphous comity principle. The statute dramatically changed analysis of the issue and moved toward a potentially more effective solution. Unfortunately, however, it has not provided the clarity needed to make the solution effective.

The amorphous case law

The courts have increased rather than decreased the uncertainty and confusion created by the statute itself. They have not developed principles that give coherent shape to the case law. Courts have wandered in many directions—without any apparent shared sense of the issues and problems involved in applying US competition law to foreign anticompetitive conduct. I mention here only a few examples.

‘Direct’ and ‘substantial’ effects

The statute’s reference to ‘direct’ effect has elicited numerous interpretations. Many courts use the concept of ‘proximate cause’ drawn from the law of torts to interpret ‘direct’, and in so doing they import from tort law extensive and still highly contested discussions of what ‘proximate cause’ means. For example, the Seventh Circuit has adopted the traditional tort-based approach to proximate causation, requiring only that a ‘reasonably proximate causal nexus’ exist between the anticompetitive conduct and the effect on domestic trade.40 Other courts use other and often inconsistent approaches to interpret ‘direct’. For example, the Ninth Circuit requires that a plaintiff show that the domestic injury (the ‘effect’) ‘follow as an immediate consequence of the defendant’s actions.’ This focuses on a single factor—the ‘spatial and temporal separation between the defendant’s conduct and the relevant effect’.41 In contrast, The qualifier ‘substantial’ has also been interpreted in various ways. The Ninth Circuit has developed a stringent test, requiring a plaintiff to show both injury to a specific firm and injury to the market and competition in general.42 Other courts merely consider the amount of injury to firms and the harm of the anticompetitive foreign conduct as factors in determining whether the effect was substantial. The Fifth Circuit found a ‘substantial’ effect to the market as a whole where only one firm was injured because that one firm held a substantial amount of the market share.43

The ‘arising under’ language

The arising under language has proven similarly opaque. Interpretations of its function and meaning vary widely. Some courts conflate it with the effects test and treat it as a test of the reach of US law.44 Others refer to it as an element of standing to sue.45 There is also a major debate as to whether it should be seen as an element of the claim itself—a substantive law issue—or an issue of who can sue—a procedural issue.46

Misapplication of domestic cases: missing the transnational

A third factor limiting both the direct enforcement effect and the potential guidance effect of US private enforcement is a tendency among US judges, officials, and legal scholars to use domestic doctrines and rules in the transnational context without asking whether the policy basis for the domestic doctrine is served by applying it in the transnational context. As we shall see below, application of domestic rules without considering their likely consequences in international contexts may produce results inconsistent with or even directly opposed to the initial policy basis for the rules.

VII. THE MOTOROLA-MOBILITY CASE: SHOWCASING THE OBSTACLES

The 2015 Motorola-Mobility case of the Seventh Circuit highlights the obstacles.47 It is a major case that has drawn much attention in relation to the shaping of GSCs.48 This fact not only underscores the potential for constructive influence of the US private enforcement regime in the evolution of GSCs, but it also reflects many of the factors that we have identified as obstacles to realizing that potential. The US Supreme Court declined to review the case,49 and it may therefore remain an important component of US law relating to extraterritoriality, in general, and GSCs, in particular.50

The opinion

The basic fact pattern is typical of global supply chains. The plaintiff, Motorola-Mobility, Inc., is a large US electronics manufacturer. It incorporates LCD screens in many of its products, purchasing most in Asia through a global supply chain. In this case, a small percentage of the component sales were made directly to the US parent (ca 1 per cent), but most were made to its wholly owned foreign subsidiaries. These units then sold some of the products to the parent and others to buyers outside the United States. On discovering that some suppliers that were part of the supply chain had agreed among themselves to increase the prices they charged for such screens, Motorola filed suit in US court for compensation for the losses incurred as a result of the agreements.

The appeals court upheld the lower court ruling that the plaintiff was not entitled to sue. At issue was the harm caused to the parent company as a result of purchases it made through its overseas subsidiaries. The opinion by Judge Posner did not treat that portion of the FTAIA that specifically deals with the extraterritorial reach of the statute (the effects principle). A criminal proceeding on the same basic facts had found that the effects of the foreign conduct on US commerce were ‘direct, substantial and reasonably foreseeable’ and, therefore, that the statute did apply to the conduct. Judge Posner accepted this finding.

The opinion focused instead on the issue of the plaintiff’s standing to sue. It analysed the issue by reference to the statute’s ‘arising under’ language. In Judge Posner’s view, the effect of the cartel agreements on US commerce occurred outside the United States and therefore did not ‘arise under’ US law. Accordingly, the plaintiff was barred from bringing suit in the United States because the losses were suffered by Motorola’s foreign subsidiaries rather than Motorola itself. In reaching this conclusion, the Court rejected the plaintiff’s argument that the harm was suffered by the parent, because the foreign subsidiaries were completely owned and controlled by the parent and functionally part of the parent. According the opinion, this claim was a ‘fatal flaw’ in the plaintiff’s case. Judge Posner apparently did not consider total ownership and control of the subsidiaries as a sound basis for identifying them as functionally part of the parent.

He buttressed the denial of standing by referring to a US domestic antitrust law doctrine referred to as the indirect purchaser rule, which denies indirect purchasers the right to sue for harm suffered as a result of antitrust violations. This so-called ‘Illinois Brick’ rule was specifically crafted to achieve policy objectives—specifically, to increase enforcement of the antitrust laws by increasing the incentives for private actions.51 By assuring that at least the direct seller suffered sufficient harm to justify litigation, it sought to provide this incentive. The rule has been heavily criticized, and numerous states have contravened it in their own antitrust laws.52

Obstacles to a constructive role for US private enforcement

The opinion reflects some of the obstacles that impede US law from performing a constructive role in shaping responses to GSC-based harms. It applies the statute in ways that provide little guidance for future cases, uses the confused case law in ways that further contribute to the confusion, and inappropriately applies domestic doctrine to a transnational context.

Struggling with the statute

The Court struggles to make sense of the statute. First, it turns the ‘arising under’ language into a test of standing to sue, despite the fact that the statutory language has been understood to refer to other issues and that the legislative history does not support that interpretation. Second, it uses this language to define, in effect, the extraterritorial reach of the US antitrust laws in private enforcement cases. And third, the opinion applies the statute formalistically despite the fact that it is being applied to new circumstances that call for careful analysis of the consequences of its application. In particular, it claims that the Motorola’s wholly owned subsidiaries were not functionally part of Motorola, although they were completely owned and controlled by Motorola and, therefore, functioned as part of it.

Confused by the confused case law?

The opinion also reflects the confusion of the case law. Judge Posner injects issues from earlier cases that have little if any relevance to the case at hand and are likely to exacerbate the uncertainty and inconsistency of the case law. For example, the opinion inserts language about ‘comity’ from earlier cases, but uses it in ways that are misleading in relation to the cases from which the language is taken and which tend to obfuscate the issues relating to GSCs.

Missing the transnational: applying domestic doctrine to transborder contexts

The opinion’s ‘domestic blinders’ represent a third obstacle to the development of antitrust law relating to GSCs. The Court applies domestic rules to the transnational context without accounting for the changed context in which they are being applied. The result is an outcome that directly contravenes the policy on which the domestic rules were based.

Judge Posner’s application of the ‘indirect purchaser rule’ provides a particularly poignant example.53 According to this rule, only direct purchasers may sue for damages for harm caused by anticompetitive conduct. The rule was established in the Illinois Brick decision and based on ‘the longstanding policy of encouraging vigorous private enforcement of antitrust laws’. According to Illinois Brick, this policy called for ‘concentrating the full recovery for the overcharge in the direct purchasers’.54 Otherwise, there was a risk that ‘those who violate the antitrust laws by price fixing ... would retain the fruits of their illegality because no one was available who would bring suit against them’.55 The policy behind the rule was to encourage private enforcement.

In the GSC context, the application of the indirect-purchaser doctrine has precisely the opposite effect. It discourages private enforcement, because it all but precludes recovery by the victims of anticompetitive conduct. Except in unlikely cases, it virtually ensures that foreign cartels will ‘retain the fruits of their illegality’. Barring parent companies from bringing suit where they make purchases through their wholly owned foreign subsidiaries means that price-fixing within the supply chain will escape liability for such purchases, because the subsidiaries are unlikely to have a remedy under foreign antitrust laws. Judge acknowledges that ‘foreign antitrust laws rarely authorize private damages actions’, but ignores the consequences of this fact.56

#### Now is key – the pandemic spurs potential cartel behavior.

Ivanov 20 [Alexey Ivanov, Director, BRICS Competition Law and Policy Centre, “Roundtable: Combating Cross Border Cartels (Thursday, 22 October 2020),” 10/22/20, *United Nations Conference on Trade and Development*, https://unctad.org/system/files/information-document/tdrbpconf9\_d11\_Cross\_Border\_Cartels\_en.pdf, Accessed: 08/30/21, EA]

Cross-border cartels are the most harmful type of anticompetitive practices whereby their detection and investigation require a high degree of cooperation amongst competition authorities. The UN Set on Competition recommends that States should improve and effectively enforce appropriate legislation and implement procedures for the control of restrictive business practices (RBPs), including those concerning anticompetitive agreements (cartels) among enterprises. In this regard, the UN Set also calls for the improvement of procedures to obtain information from enterprises, necessary for the effective control of RBPs, including cartels.

The current pandemic is likely to result in higher levels of concentration in various sectors due to disruptions and shortages of global supply chains, which could be conducive to cartelisation, especially at the cross‐border level. Therefore, this issue is timely to discuss, especially with a specific focus on developing countries. As it is known, cross‐border cartels have caused tremendous damage to economies especially in emerging markets as they limit the benefits from international trade and access to global supply chains.1 The effects on developing countries are particularly salient since they rely heavily on imports of goods from industries involved in international price fixing conspiracies.

#### Cartels eviscerate competition – kills innovation and productivity – only broadly reading the FTAIA solves.

Leonardo 17 [Lizl Leonardo, J.D., magna cum laude and with a Certificate of Business Law from DePaul University College of Law, “A Proposal to the Seventh and Ninth Circuit Split: Expand the Reach of the U.S. Antitrust Laws to Extraterritorial Conduct that Impacts U.S. Commerce,” 2017, *DePaul Law Review*, Vol. 66, Issue 1, https://via.library.depaul.edu/cgi/viewcontent.cgi?article=4008&context=law-review, EA]

In today’s global economy, it is difficult to distinguish and separate foreign from domestic effects.379 Global supply chains have made it easier for products to move rapidly and with ease. The United States, holding twenty-one percent of the worldwide Gross Domestic Product (GDP), is most susceptible to cartel targeting.380 With twenty-nine percent market share, it is the largest consumer in the world.381 Any impact of collusion in the international market is intertwined with a harm to customers in the United States.382 Measures must be taken to ensure that markets remain open and competitive; no company should able to dominate and restrict the supply of products sold. With a rigid rule in place, formation of domestic and international cartels would decline, further strengthening competition.383 After all, the protection of consumers through the preservation of deterrence is one of the main focuses of antitrust laws.384

Courts, as well as scholars, have commented that cartel deterrence should be the primary concern over international comity issues in analyzing the FTAIA.385 In United States v. Nippon Paper Indus. Co., 386 the First Circuit concluded that principles of comity should not “shield” a defendant from any intentional wrongdoings, especially if a substantial effect occurred in U.S. markets.387 Otherwise, because cartel members are more likely to engage in anticompetitive conduct, a decision that is based more heavily on the international comity principle would make company transactions, domestic and abroad, confusing and ultimately increase the burden on consumers.388

Cartels, more often than not, operate in secrecy. Members can coordinate and collude to fix prices outside of U.S. jurisdiction, making it much more difficult for the U.S. government to detect and prosecute them.389 To achieve deterrence, a rule that will dissuade companies from engaging in anticompetitive conduct from the very beginning will allow antitrust enforcement to be more manageable.390 A cartel will most likely weigh the potential damages engaging in anticompetitive activities with the potential benefits of those anticompetitive activities.391 A study conducted in the United Kingdom showed that labor productivity declined when industries are characterized by collusion or when competition is low.392 The study showed, however, that once a strict antitrust law was enforced, the gap declined, if not disappeared.393

The presence of competition drives productivity by incentivizing companies to be more efficient.394 Studies have revealed that competition boosts product innovation and creativity, all while firms strive to reduce their costs, by encouraging them to produce higher-quality and more diverse goods and services at more competitive prices.395 Consumers will gain more access to markets they had not previously been exposed to as a result of commercial competition.396

Cartels limit the presence of competition in the economy.397 Once producers work together to protect their own interests, to the detriment of consumers, competition is eliminated.398 Cartel members either agree on a fixed price at which to sell certain products or restrict the quantity of output of the product released into the market.399 By deliberately restricting the output released into the market, without a natural shift in the consumers’ demand, the supply decreases, thereby increasing the price of the product.400 When most of the producers in an industry are part of a cartel, consumers will have no means to find a substitute, and they will have no choice but to accept the inflated price.401 For example, when AU Optronics and other defendants colluded to artificially set the price of the LCD panels, Motorola and other plaintiffs had no choice but to subsequently increase the price of their own products that used these LCD panels.402 Without the cartel-priced LCD panels, Motorola’s foreign subsidiaries would have been able to buy them at the market price and charge U.S. consumers less than they ultimately did.403

Extending the reach of the FTAIA to foreign conduct with an impact on U.S. commerce makes economic sense.404 Judge Higginbotham’s dissent in Den Norske was correct: Emphasizing the role of deterrence protects market efficiency.405 He argued that a broad interpretation of the FTAIA would aid the DOJ’s efforts in curtailing international cartels.406 A cartel’s overall profitability is favorably impacted by anticompetitive conduct, and this may lead cartel members to either further restrict the output or increase the price of the product.407 A decrease in competition could potentially move market share away from these efficient producers.408 Thus, a consistent application of the Ninth Circuit ruling across all U.S. jurisdictions will limit both this unacceptable behavior and the foreign companies’ incentive to form cartels. Foreign companies will be deterred from price-fixing knowing that they could be liable for anticompetitive conspiracies, even for transactions that occurred outside of the United States.409 Studies have already shown that antitrust enforcement increases productivity growth.410 In fact, a study has concluded that the price of products tends to drop approximately twenty to forty percent after cartels are broken up.411 The price-fixing issue is not only prevalent in the manufacturing industry, but also in the industries at issue in Hui Hsiung and Motorola. 412 Studies show that increased competition also benefits the agricultural, telecommunications, transport, and professional services industries.413 Moreover, even though competition usually starts at a domestic level, a ruling against cartel formation will positively affect the competitiveness of the domestic products as they compete in the international community.414 Companies typically acquire their production inputs from local markets and industries.415 If these industries lack competition, product prices in these markets may not be priced competitively, which affects the finished products’ competitiveness with foreign rivals.416

#### Scenario 1 is graphene.

#### Graphene is key to new tech but is vulnerable to cartelization.

Lele 19 [Ajey Lele, Senior Fellow at the Institute for Defence Studies and Analyses, “Disruptive Technologies for the Militaries and Security,” 2019, Springer, pp. 84-85, EA]

Graphene is a new material that is expected to be more solid than steel and a better conductor than copper. As its name indicates, graphene is extracted from graphite, the material used in pencils. Like graphite, graphene is entirely composed of carbon atoms and 1 mm of graphite contains some three million layers of graphene. Whereas graphite is a three-dimensional crystalline arrangement, graphene is a two-dimensional crystal only an atom thick. Graphene conducts electricity better than copper. It is 200 times stronger than steel but six times lighter. It is almost perfectly transparent since it only absorbs 2% of light. It impermeable to gases, even those as light as hydrogen or helium, and if that were not enough, chemical components can be added to its surface to alter its properties. The isolation of graphene has successfully been demonstrated in laboratory, and the scientists have 2010 Nobel Prize for Physics for this success.

Being transparent as well as a good conductor, graphene could replace the electrodes in the indium used in touch screens. Since it is light, graphene could be integrated into composite materials to eliminate the impact of lightning on aircraft fuselages. It is also waterproof and would be perfect to use in hydrogen reservoirs. The major challenge for the ICT industry is to find alternatives for information processing and storage beyond the limits of existing CMOS. There are good indications that graphene is a prime candidate for ‘Beyond CMOS’ components and is, despite its revolutionary nature, complementary to conventional CMOS technologies. Presently, further research and experimentation are underway on this subject to make this idea feasible for usage in industrial sectors like electronics, energy, health and construction. Typically, it takes about 40 years for a new material to move from an academic laboratory into consumer product. However, in the case of graphene, within 10 years, it has jumped from the laboratory into the industrial laboratory and now pilot products are also available. As per report published by Badische Anilin und Soda Fabrik (BASF), the future of the graphene market could be worth $1.5 bn in 2015 and $7.5 bn in 2025 [11].

It is important to make a note about the present status of graphite over here because that is what forms the raw material for graphene. In the Indian context, material science has not yet identified graphite as a strategic material. However, graphite has been named a ‘supply critical mineral’ and a ‘strategic mineral’ by the USA and the European Union. As is the case with various other materials, China has a tight grip on the worldwide graphite supply, controlling over 70% of it.

In the past, China has been found limiting graphite exports with quotas causing graphite prices to rise. Additionally, owing to environmental concerns, China has recently ordered restrictions on any further graphite mines in two of its largest graphite producing regions [12]. This lack provides an opportunity and opens up a door for others to enter the market in a big way.

The major challenge with graphene is to deal with issues concerning its high flammability potential. Actually, this volatility in terms of combustion restrains its ability to be commercialized at a large-scale level. To get over this problem, researchers have developed a method aimed at converting graphene oxide into a non-flammable and paper-like graphene membrane that is safe for mass production purposes [13].

Graphene has several end-user industries such as aerospace, automotive, energy, coatings, pharmaceuticals, electronics, 3D printing, chemical and others. Swelling in demand of electronics trades is likely to drive the graphene market growth. Graphene is a cost-effective alternative to conventional silicon-based devices due to its attributes. It also has energy harvesting properties [14].

While further testing is necessary to determine the efficacy range of the various applications of this material, there are still various observed characteristics that point towards a promising future. In recent years, the graphite prices have already started showing a steep rise. Any major technical breakthrough related to graphene will put more pressure on the graphite pricing policy. Hence, it is important to ensure that no manipulation and cartelization of graphite business take place.

#### Graphene key to space elevators – gets off the rock and solves warming.

Williams 21 [Matthew S. Williams, citing Adrian Nixon, a Chartered Chemist, member of the Royal Society of Chemistry, a Strategic Advisory Board member of the international space transportation association StellarModal, and board member of the International Space Elevator Consortium ISEC (ISEC); author, a writer for Universe Today, and the curator of their Guide to Space section, “The Technologies That Could Finally Make Space Elevators a Reality,” 10/23/21, *Interesting Engineering*, https://interestingengineering.com/tech-that-can-make-space-elevators-a-reality, EA]

Like the Stanford Torus, the O'Neill Cylinder, and the Generation Ship, the Space Elevator is one of those ideas that keep popping up! Just when you think scientists and engineers have given up on it, there's a new round of theoretical studies that assert how it could be done. You might say that the Space Elevator is an idea that's too good to let go of.

Considering the benefits involved, this should come as no surprise. Granted, the cost in terms of money, resources, and time would be considerable, as are the engineering and logistical challenges involved. But for the one-time price of creating this megastructure, we would be able to realize space-based solar power, habitats in orbit, cities on the Moon and Mars, and more!

It would be no exaggeration at all to say that a Space Elevator would allow humanity to "build a road to space" (as Jeff Bezos says) or become "an interplanetary species" (as Elon Musk says). Basically, any and all plans for harnessing the resources of space, saving Earth from climate change, and settling all across the Solar System could be much easier to realize.

In a previous article, we took a look at the history of the concept, the many studies that have been conducted, and the handful of attempts that have been made. However, there have been considerable developments in recent years that merit attention all on their own. And the exciting thing is, they just might lead to a Space Elevator in our lifetime.

A brief history

Like most revolutionary ideas for space exploration that have stood the test of time, the Space Elevator can be traced to Russian/Soviet rocket scientist Konstantin Tsiolkovsky (1857-1935). Known as one of the "founding fathers" of rocketry and astronautics, Tsiolkovsky is credited with the formulation of the "Rocket Equation" and the basic design from which most modern rockets are derived.

Other proposals made by Tsiolkovsky included rockets with steering thrusters, multistage boosters, rotating pinwheel space stations (which would simulate gravity), airlocks, and closed-cycle systems to provide food and oxygen for space habitats. In addition, he also conceived of a structure that reached all the way to geostationary orbit (GSO), or an altitude of 22,236 mi (35,786 km).

However, Tsiolkovsky's version of the idea called for a compression structure, which was inspired by his visit to Paris in 1895, where he witnessed the Eiffel Tower for the first time. Tsiolkovsky himself noted that this was an unrealistic idea since no known material was strong enough to support its own weight when standing so tall.

In 1959, Soviet engineer Yuri Artsutanov proposed a more practical version of the idea (what he called an "Electric Train to the Cosmos") by suggesting that a station be deployed in GSO and a tension structure be deployed downward. This "tether" would connect the station to the surface and allow for payloads to be lifted into orbit using very little energy compared to conventional rockets.

This same concept was proposed by four American engineers in 1966, who independently came to the same conclusions regarding a suspension structure. Their version of the reinvented concept was known as a "Sky-Hook," which popularized the idea among aerospace engineers and scientists in the United States.

In all cases, the design called for a megastructure consisting of a base (or "Anchor") attached to a mobile platform at sea or a stationary one on land. A suspended cable (or Tether) would connect the base to a Counterweight in space, which could be a captured asteroid or a spaceport positioned beyond GSO (or a combination thereof).

Delivering payloads and people to and from space would be a series of Climbers (or cable cars), the design of which would vary based on the number of cars deployed on the tether and the design of the tether itself. These cars would be powered by means of solar panels, nuclear reactors, and wireless or direct energy transfer.

Alas, the same problem that stumped Tsiolkovsky would go on to stump proponents of suspension elevators for decades. No known material was ever strong enough to support an object in orbit.

The trouble with tethers

Until very recently, every theoretical study concerning Space Elevators always hit a wall when it came to the question of what material would be used to make the tether. In all cases, the tensile strength-to-weight ratio was never high enough to ensure that the structure wouldn't break under the strains placed on it by Earth's gravity and its rotation.

As Arthur C. Clarke summarized in his address to the 30th International Astronautical Congress (IAC) in 1979, titled "The Space Elevator: 'Thought Experiment, or Key to the Universe?'":

"How close are we to achieving this with known materials? Not very. The best steel wire could manage only a miserable 31 mi (50 km) or so of vertical suspension before it snapped under its own weight. The trouble with metals is that, though they are strong, they are also heavy; we want something that is both strong and light. This suggests that we should look at modern synthetic and composite materials. Kevlar... for example, could sustain a vertical length of 124 mi (200 km) before snapping - impressive, but still totally inadequate compared with the 3100 (5000) needed."

Based on various assessments, the material involved would need to have a strength of at least 100 gigapascals (GPa) to withstand the stresses involved. For comparison, A36 structural steel has a tensile strength of around 550 MPa, or roughly 1/180th the strength required. Throughout the latter half of the 20th century, no known material (natural or synthetic) was up to the task.

When he proposed his "Electric Train," Artsutanov theorized that the cable could be built from known synthetic materials, but which had only been produced in tiny quantities so far. The initial cable, he said, would measure one millimeter at the Earth's surface and extend to an altitude of 31,068 mi (50,000 km) (around 8,700 mi or 14,000 km beyond GSO).

This extra length would provide the additional mass needed to keep the whole system under tension. From there, Artsutanov proposed using the initial cable to multiply itself until 1000 cables were clustered together. He also proposed that the cable thickness be tapered, where it was thinner at ground level and thickest at GSO to make sure the stress remained constant.

In their "Sky-Hook" proposal, Isaacs et al. also proposed that the tether's thickness would need to be thinnest at the Earth (one five-hundredth of a centimeter) at taper outwards. They also briefly considered a number of materials — including quartz, graphite, beryllium, and even diamond — but determined that none were strong enough.

With the development of carbon nanotubes in the 1990s, there was revitalized interest in the concept. This led David Smitherman of the NASA Advanced Concepts Office (ACO) to propose that these materials could make a space elevator feasible. He presented these findings at the Advanced Space Infrastructure Workshop held at the Marshall Space Flight Center in June of 1999.

These were also published as a report in 2000 titled "Space Elevators: An Advanced Earth-Space Infrastructure for the New Millennium." According to Smitherman, the lightest and strongest materials that were readily available were graphite-epoxy composites, but carbon nanotubes (allowing for mass production) would be far better suited:

"If the space elevator was assumed to be a tapered, solid un1iform structure using the strongest composite materials available today (Spectra or PBO graphite-epoxy), the diameter at GEO would be 1.24 mi (2 km) and would taper down to 1 mm at the Earth's surface. The mass of the tethered structure would total approximately 60×10¹² tons. If carbon nanotubes can be made into continuous structural members, then the diameter at GEO would potentially be as small as 0.26 mm, 0.15 mm at the Earth's surface; and the total tether mass would be only 9.2 tons."

However, this was based on conservative estimates of the tensile strength required, which he claimed was roughly 62.5 GPa. Furthermore, his assessment of the strength of carbon nanotubes was rather optimistic, saying, "the actual strength of a carbon nanotube rope may be much higher than that."

This optimistic assessment was repeated by Bradley C. Edwards, who performed a feasibility study in 2000 with support from the NASA Institute for Advanced Concepts (NIAC). In his final report, titled "The Space Elevator," he offered the following assessment:

"[Carbon nanotubes] have the promise of being the strongest material yet discovered. This strength, combined with the material's low density, makes it critically important when considering the design of a space elevator. The tensile strength of carbon nanotubes has been theorized and simulated to be 130 GPa compared to steel at <5 GPa and Kevlar at 3.6 GPa. The density of the carbon nanotubes (1300 kg/m³) is also lower than either steel (7900 kg/m³) or Kevlar (1440 kg/m³)."

In 2003, Edwards followed up on this paper with the NIAC Phase II Final Report. Once again, he expressed optimism that a Space Elevator could be built using then-available technology and stressed that everything hinged on finding a suitable material for the tether and that carbon nanotubes were the best candidate.

Alas, when these reports were published, mass production was the major stumbling block for carbon nanotubes. Simply put, these structures are "grown," not machine-produced, and are limited in length. The current record for single-tube growth still stands at just under 20 inches (50 cm) and 5.5 inches (14 cm) for "forests" of them.

What's more, of those tubes that have been produced, their tensile strength has not measured up to theoretical or simulated results. Even worse, the hexagonal covalent bonds that give carbon nanotubes their high tensile strength also make them prone to fraying when placed under extreme stress.

The efforts to realize a Space Elevator effectively stalled at this point, roughly one year before graphene was isolated for the first time.

New materials

Because of the issue with carbon nanotubes, proponents of Space Elevators tended to move in one of two directions after 2003. On the one hand, some accepted that the material challenges would not be solved anytime soon and refocused their efforts on proposing elevators for other celestial bodies — the most notable being the Lunar Space Elevator.

Others placed their hopes on supermaterials that (until recently) were still in the theoretical stage. In recent years, many of these materials have moved from the theoretical to the production phase. Examples include nanodiamond filament and (more importantly) graphene.

Graphene is an allotrope of carbon consisting of single layers of atoms arranged in a honeycomb lattice nanostructure. The name is derived from "graphite," a crystalline form of carbon with its atoms arranged in a hexagonal structure, with the suffix -ene to indicate that the material contains numerous bonds.

The study of graphene grew from experiments with graphite oxide in the mid-19th century. By the mid-20th century, scientists began to theorize about the existence of graphene as a single-layer structure of graphite. Since the early 2000s, scientists have learned a great deal about this material's properties and potential applications.

One such individual is Adrian Nixon, a Chartered Chemist, member of the Royal Society of Chemistry, a Strategic Advisory Board member of the international space transportation association StellarModal, and board member of the International Space Elevator Consortium ISEC (ISEC).

Nixon is also the founder and a board member of Nixene Publishing and the editor of its flagship publication — the Nixene Journal. This journal is an affiliate member of the University of Manchester's Graphene Engineering Innovation Centre (GEIC) — an engineering center that specializes in the rapid development and scaling-up of graphene and other 2D materials.

In March of 2021, Adrian and his colleagues were commissioned by the Foundation for the Future (a bipartisan political action committee) to create a report¹ on the state of graphene for the U.S. Government and policymakers.

As Nixon told Interesting Engineering, graphene was considered an impossible material until a few years ago. In 2004, however, researchers at the University of Manchester isolated graphene for the first time. This led to the field of graphene and 2D materials becoming a reality and for the University of Manchester to become one of the key centers for research.

"The National Graphene Institute (NGI) does the basic scientific research, the Graphene Engineering Innovation Centre (GEIC) does the applied research and turns the science into technology and then helps bridge 'the valley of death' for taking the technology and helping it scale up to become industrially commercial," said Nixon.

Over time, new techniques emerged that can produce single-crystal graphene in sheets centimeters in scale, not just microns. Much of the credit for this goes to Alfonso Reina and his colleagues from MIT, who demonstrated how graphene could be produced using the chemical vapor deposition (CVD) method in 2009.

Since then, the CVD method, which is relatively low-cost and scalable, has developed from a batch process to a continuous industrial process. However, it was not until about a decade later that graphene was considered a possible tether material for a space elevator.

In 2021, Adrian Nixon, Debbie Nelson, and Rob Whieldon had the opportunity to brief NASA on the potential of graphene at the Commercial Space Lecture Series — a weekly teleconference meeting where NASA and representatives from the commercial space community come together to discuss mutual concerns, challenges, and possibilities.

The presentation, titled "Impossible to Industrial in 17 years," showed how graphene had progressed from theory, to the point where it could be mass-produced, in a little over a decade and a half. As they indicated, the techniques for the industrial manufacturing of graphene had increased in both scale and speed².

At present, it has reached the point where kilometer-scale continuous graphene fibers can be produced. And researchers at MIT have developed a continuous roll-to-roll technique that can create large sheets of graphene at a rate of around 6.5 feet (2 meters) per minute. What's more, when made as single-crystal sheets, graphene has a tensile strength of around 130 GPa, or 236 times as strong as steel.

¹Nixon, A., Whieldon, R., and Nelson, D., "Graphene: Manufacturing, Applications and Economic Impact." 1st ed. Manchester: Nixene Publishing (2021).

²Nixon, A. "The graphene and graphite landscape: Indications of unexplored territory." Nixene Journal, Vol. 5, No. 10, 8-19 (2021).

A new vision for space

As noted in a previous article, the potential benefits of a space elevator are numerous and profound. According to a study conducted by the University of Colorado, the cost of sending payloads to space using a Space Elevator could be as little as $113 per lb ($250 per kg). This is five to ten times cheaper than what it costs to send payloads and crews to space today, using modern reusable rockets.

It's also seventy-four times cheaper than what it cost to go to space between 1970 and 2000, using conventional rockets and launch systems. But these benefits increase exponentially when you consider the types of payloads this will allow for, not to mention the environmental benefits of a system that does not rely on chemical propellants.

The overall architecture the ISEC is envisioning (called the "Galactic Harbor") goes beyond the creation of a single Space Elevator, though. According to their 2020 ISEC position paper, titled "Space Elevators are the Transportation Story of 21st Century," their plan is to create a family of six elevators built in pairs in three locations around the planet.

This would include two-elevator Galactic Harbor installations in the Atlantic Ocean, Indian Ocean, and the Pacific Ocean. This architecture also entails the cooperative use of rockets and space elevators to create a space transportation infrastructure that would enable interplanetary travel by the second half of the century.

The details of this architecture were spelled out by Dr. Swan and his colleagues in a 2020 ISEC position paper titled "Space Elevators are the Transportation Story of 21st Century." Among the benefits they cite, a Space Elevator would:

• Enable endless opportunities for commercial enterprises, research, and travel

• Move 170,000 MTs of cargo a year to Geostationary Earth Orbit (GEO) and beyond

• Enable the creation of space stations at GEO, Lagrange Points, and beyond

• Allow for rapid transit to orbit (7.76 km/sec) routinely, safely, and robustly

• Allow fast transit to Mars (minimum of 61 days to 400+ days)

• Allow missions to launch for Mars every day (not just every 26 months)

• Create no rocket exhaust or contribute to global warming

• Not add any additional space debris

The environmentally-friendly aspect of this architecture is paramount. By relying on electricity alone — which can be provided by solar, induction, nuclear, or combination thereof — the Galactic Harbor would be able to place payloads in orbit that would otherwise require dozens (or hundreds) of rocket launches.

With the growth of the commercial space sector and renewed interest in space exploration, countries like the U.S., China, India, and others are hoping to drastically increase the number of launches per year they conduct. Meanwhile, visionaries like Elon Musk and Jeff Bezos are proposing major projects (building a city on Mars, habitats in space, etc.) that would require thousands of launches per year.

A single rocket launch can release up to 300 tons of carbon dioxide into the upper atmosphere, where it can remain for years. While this falls considerably short of passenger flights, which deposited a total of 900 million metric tons into the atmosphere in 2018 alone, scaling up the number of launches conducted every year will increase humanity's carbon footprint considerably.

Other "green" aspects of this technology are the way it will practical creation of technology like space-based solar arrays. For some time, scientists have considered this to be one of the most promising means to combat global warming. By being able to lift heavy payloads to orbit for pennies on the dollar and without depositing tons of carbon in the atmosphere, Space Elevators could also help solve the climate crisis.

As for the cost of manufacturing such a megastructure, that may be the most encouraging news of all. Dr. Swan, Nixon, and colleagues estimate it can be done for a very reasonable $18 billion, less than what NASA currently spends annually. What's more, their projections indicate that production could begin before the end of the next decade. Said Dr. Nixon:

"If we push the manufacturing cost assumption down to one cent per square meter, then we come in at $3.6 billion for the manufacture of the tether. Now we have a long way to go to get there, but the experts see the future, the need for space elevators, and the [demand for] transportation infrastructure. As such, this leaves you with $14.4 billion for the rest of the Space Elevator segments."

"One key is that the material prices are falling, and the technology is accelerating towards real production techniques for industrial uses," added Dr. Swan. "This external (from SE) demand is pushing the tether production technologies. We, the SE people, love what is going on and see the material being ready for us in time for an operational date of about 2037."

#### Space solves coop, resources, and inevitable ex risks.

Green 21 [Brian Patrick Green, director of technology ethics at the Markkula Center for Applied Ethics, Santa Clara University, “Space Ethics,” 2021, Rowman, pp. 5, EA]

Space activities are also a key way of promoting international cooperation and global awareness. While the international competition of the “space race” fueled one nation all the way to the Moon, shortly afterward, the Apollo-Soyuz program announced a thawing of this competition and commenced a period of cooperation between the United States of America and the Union of Soviet Socialist Republics. Currently the International Space Station continues this cross-national cooperation in space, with five space agencies (representing Canada, the European Space Agency nations, Japan, Russia, and the United States) participating. In addition to cooperation in space exploration itself, the perspective given from space has itself helped to produce some feelings of unity on Earth, with the famous “Blue Marble” and “Earthrise” pictures showing Earth’s oneness and scientific discoveries supported by space science, such as those related to climate change, helping to promote international cooperation to address these problems.

Gaining access to new critical resources may be another reason to go into space. Earth is a finite planet, and certain elements on Earth are very rare in the planetary crust, particularly platinum group metals that are very dense and siderophilic (iron-loving) and so have tended to sink toward the core over the natural history of the planet. However, asteroids and other objects in space (for example, planets, comets, and moons) can sometimes have these elements in abundance and in more available locations, making them potentially excellent sources for these valuable materials. Now-defunct asteroid-mining startup Planetary Resources once estimated that one “platinum-rich 500 meter wide asteroid contains . . . 1.5 times the known world-reserves of platinum group metals (ruthenium, rhodium, palladium, osmium, iridium, and platinum).” 7 In addition to returning elements to a resource-hungry Earth, further exploration and development of space will require access to resources that are not purely sourced from Earth. In particular, it will be necessary to gain access to water, which is relatively rare in the inner solar system and which would be far too costly to transport in any significant amounts from the Earth’s surface.

Another reason that humans may want to explore space would be to create a “backup Earth” to hedge against global catastrophic and existential risks (risks that may cause widespread disaster or human extinction, respectively) on our home planet. 8 Earth has always been a dangerous place for humans, with asteroid impacts, supervolcanic eruptions, pandemic disease, and other natural hazards threatening civilization. Now, in addition to these natural threats, human-made hazards such as nuclear weapons, climate change, biotechnology, nanotechnology, and artificial intelligence may threaten not only the viability of technological civilization but perhaps the survival of human life itself. A serious global-scale catastrophe could set back civilization many decades or centuries, and the worst disasters could cause human extinction. In one scenario, in which 100 percent of humanity dies, all of human effort for all of history would be for nothing. However, were the same global catastrophe to happen to Earth, yet humans were a multiplanetary species with just one self-sustaining settlement off-Earth, it would not result in the end of human civilization or human extinction. Instead while the same unimaginable fate would befall the Earth (certainly no mere triviality, with perhaps the deaths of 99.999 percent of all humans and possibly the destruction of the ecosphere and everything in it), at least all of human and planetory history would not be for nothing. Human life and culture would go on elsewhere, as well as other Earth species. This is a dire fate, but less terrible than the first.

#### Climate change causes extinction through tipping points and nuclear war – death spirals make resilience impossible

Beard 21 [S.J. Beard, Lauren Holt, Asaf Tzachor, Luke Kemp, Shahar Avin, Phil Torres, and Haydn Belfield, \* Centre for the Study of Existential Risk, “Assessing climate change’s contribution to global catastrophic risk,” 2021, *Futures*, Vol. 127, https://doi.org/10.1016/j.futures.2020.102673, EA – Table 1 & Fig. 2 Omitted]

3.1. Climate change and planetary boundaries

While most of the impacts of climate change so far have fallen within the range of what was experienced during the Holocene, the rate of change is faster than in the Holocene and we are now beginning to see climate change push beyond these boundaries. In the latest edition of the planetary boundaries’ framework, climate change is placed in the zone of increasing risk, implying that while this boundary has been breached, there remains some potential for normal functioning and recovery (Steffen et al., 2015). It thus lies between what the authors identify as the ‘safe zone’ and other ‘high risk’ transgressions, such as disruption to the biochemical flows of nitrogen and phosphorus and loss of biosphere integrity.

As part of their discussion of BRIHN Baum and Handoh (2014) note that climate change is the planetary boundary for which the risk to humanity has received most meaningful consideration and they suggest that this attention is deserved. Yet little research attention has been paid to climate change’s extreme or catastrophic effects. Kareiva and Carranza (2018) argue that, despite currently falling outside of the area of high risk, climate change has the clear potential to push humanity across a threshold of irreversible loss by “changing major ocean circulation patterns, causing massive sea-level rise, and increasing the frequency and severity of extreme events… that displace people, and ruin economies.” Even if humanity was resilient to each of these individual impacts, a global catastrophe could occur if these impacts were to occur rapidly and simultaneously.

One scenario that has received comparatively more attention is that of the global climate crossing a tipping point that would trigger environmental feedback loops (such as declining albedo from melting ice or the release of methane from clathrates) and cascading effects (such a shifting rainfall patterns that trigger desertification and soil erosion). After this point, anthropogenic activity may cease to be the main driver of climate change, making it accelerate and become harder to stop (King et al., 2015).

Other scenarios can be discerned from the numerous historical cases in which the modest, usually regional, climatic changes experienced during the Holocene have been implicated in the collapse of previous societies, including the Anasazi, the Tiwanaku, the Akkadians, the Western Roman Empire, the lowland Maya, and dozens of others (Diamond, 2005, Fagan, 2008). These provide a precedent for how a changing climate can trigger or contribute to societal breakdown. At present, our understanding of this phenomena is limited, and the IPCC has labelled its findings as “low confidence” due to a lack of understanding of cause and effect and restrictions in historical data (Klein et al., 2014). Further study and cooperation between archaeologists, historians, climate scientists and global catastrophic risk scholars could overcome some of these limitations by identifying how the impacts of climate change translate into social transformation and collapse, and hence what the impacts of more rapid and extreme climatic changes might be. There is also the potential for larger studies into how global climate variations have coincided with collapse and violence at the regional level (Zhang, Chiyung, Chusheng, Yuanqing, & Fung, 2005; Zhang et al., 2006). However, these need to be interpreted and generalized with care given the differences between pre-industrial and modern societies.

Societies also have a long history of adapting to, and recovering from, climate change induced collapses (McAnany and Yoffee, 2009). However, there are two reasons to be sceptical that such resilience can be easily extrapolated into the future. First, the relatively stable context of the Holocene, with well-functioning, resilient ecosystems, has greatly assisted recovery, while anthropogenic climate change is more rapid, pervasive, global, and severe. Large-scale states did not emerge until the onset of the Holocene (Richerson, Boyd, & Bettinger, 2001), and societies have since remained in a surprisingly narrow climatic niche of roughly 15 mean annual average temperature (Xu, Kohler, Lenton, Svenning, & Scheffer, 2020). A return to agrarian or hunter-gatherer lifestyles could thus have more devastating and long-lasting effects in a world of rapid climate change and ecological disruption (Gowdy, 2020).7 Second, modern human societies may have developed hidden fragilities that amplify the shocks posed by climate change (Mannheim 2020) and the complex, tightly-coupled and interdependent nature of our socio-economic systems makes it more likely that the failure of a few key states or industries due to climate change could cascade into a global collapse (Kemp, 2019).

A third set of plausible scenarios stem from climate change’s broader environmental impacts. Apart from being a planetary boundary of its own, Steffen et al. (2015) point out that climate change is intimately connected with other planetary boundaries (see Table 1). Climate change is thus identified by the authors as one of two ‘core’ boundaries with the potential “to drive the Earth system into a new state should they be substantially and persistently transgressed.” This transformative potential was elaborated on in subsequent work exploring how the world could be pushed towards a ‘Hothouse Earth’ state, even with anthropogenic temperature rises as low as 2 °C (Steffen et al., 2018).

The connection between climate change and biosphere integrity (the survival of complex adaptive ecosystems supporting diverse forms of life) is particularly strong. The IPCC is highly confident that climate change is adversely impacting terrestrial ecosystems, contributing to desertification and land degradation in many areas and changing the range, abundance and seasonality of many plant and animal species (Arneth et al., 2019). Similarly, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) has reported that climate change is restricting the range of nearly half the world’s threatened mammal species and a quarter of threatened birds, with marine, coastal, and arctic ecosystems worst affected (Diaz et al., 2019). According to one estimate, climate change could cause 15–37 % of all species to become ‘committed to extinction’ by mid-century (Thomas et al., 2004).

Disruption to biosphere integrity can have profound economic and social repercussions, ranging from loss of ecosystem services and natural resources to the destruction of traditional knowledge and livelihoods. For instance, desertification, which threatens a quarter of Earth’s land area and a fifth of the population, is already estimated to cost developing nations 4–8 % of their GDP (United Nations, 2011). Many other rapid regime shifts involving loss of biosphere integrity have been observed, including shifts in arid vegetation, freshwater eutrophication, and the collapse of fish populations (Amano et al. 2020). There is a theoretical possibility of still more profound regime shifts at the global level (Rocha, Peterson, Bodin, & Levin, 2018). However, the contribution of loss of biosphere integrity to GCR is yet to be assessed. Kareiva and Carranza (2018) argue that it is unlikely to threaten human civilization, due both to a lack of plausible mechanisms for this threat and the fact that “local and regional biodiversity is often staying the same because species from elsewhere replace local losses.” However, in their classification of GCRs, Avin et al. (2018) suggest the potential for ecological collapse to threaten the safety boundaries of multiple critical systems with diverse spread mechanisms at a range of scales, from the biogeochemical and anatomical to the ecological and sociotechnological. Note that both these studies were conducted for largely conceptual purposes and should not be taken as rigorous analyses of this risk, this topic warrants further investigation.

3.2. Classifying climate change’s contributions to global catastrophic risk

Climate change’s contribution to GCR goes well beyond its impact on the earth system. Taking Avin et al.’s list of critical systems, we note that previous studies have mostly focused on the effects of climate change on physical and biogeochemical systems (e.g. global temperature and sea-level rise) or the lower-level critical systems that are most directly related to human health and survival (e.g. Heath Stress). However, these represent a very limited assessment of risk as it only accounts for climate change as a direct hazard/ threat and our "ontological" vulnerabilities to it. A more comprehensive risk assessment must consider the higher-order critical systems threatened by climate change passively (through a lack of alternatives) and actively (through intentional design).

The probability of a global catastrophe is higher when sociotechnological and environmental systems are tightly coupled, creating a potential for reinforcing feedback loops. If environmental change produces social changes that perpetuate further environmental change, then this could actively work against our efforts at adaptation. When this change has the potential to produce significant harm, via human vulnerabilities and exposure, we describe such loops as ‘global systems death spirals.’ These spirals could produce self-perpetuating catastrophes, whereby the energy and resources required to reverse or adapt to collapse are beyond the means of dwindling human societies. Feedback loops like this could thus create tipping points beyond which returning to anything like present conditions would become extremely difficult. Global systems would shift to very different states in which the prospects for humanity would likely be bleaker.

In the rest of this section, we explore just one potential spiral, between an ecological system (the biosphere) and two sociotechnological systems (the human food and global political systems). We explore each system and its interactions. Fig. 2 illustrates our model of this spiral.

3.2.1. The human food system

Climate change’s impact on biosphere integrity (discussed in the previous section) could harm the human food system due to loss of ecosystem services, disruption of the cycles of water, nitrogen and phosphates, and changes in the dynamics of plant and animal health (B´elanger & Pilling, 2019). Crossing this planetary boundary is already having severe implications for global food security, including loss of soil fertility and insect-mediated pollination (Diaz et al., 2019).

Systems for the production and allocation of food are already enduring significant stress. The sources of stress include climate change, soil erosion, water scarcity, and phosphorus depletion. The natural resource base, arable land and freshwater upon which food production rely are being degraded. While global food productivity and production has increased dramatically over the past century to meet rising demand from an expanding global population and rising standard of living, these constraints and risks are increasing the vulnerability of our global food supply to rapid and global disruptions that could constitute global catastrophes (Baum, Denkenberger, Pearce, Robock, & Winkler, 2015).

Climate change will further reduce food security in at least three interconnected ways. First, it will affect growing conditions, including direct threats to agricultural yields from heat, humidity, and precipitation in many regions; although initially improving conditions in some (Lott, Christidis, & Stott, 2013). Second, it will increase the range of agricultural pests and diseases (Harvell et al., 2002). Third, it will increase the occurrence of extreme weather events that impair the integrity of food production and distribution networks, from production to harvest, post-harvest, transport, storage, and distribution, thereby increasing our vulnerability and exposure to supply shocks (Bailey et al., 2015). The IPCC estimates, with medium confidence, that at around 2 °C of global warming the risk from permafrost degradation and food supply instabilities will be ‘very high’, while at around 3 °C of global warming the risk from vegetation loss, wildfire damage, and dryland water scarcity will also be very high (Arneth et al., 2019). Very few studies have considered the impacts of 4 °C of global warming or more; however, the IPCC highlighted one study finding that any potential agricultural gains from climate change will be lost by this point and there could be a decrease of 19 % in maize yields and 68 % in bean yields in Africa, an 8 % reduction in yields in South Asia, and a substantial negative impact on fisheries by 2050 (Porter et al., 2014). Furthermore, multiple extreme weather events could disrupt food distribution networks (Bailey and Wellesley, 2017).

While there are opportunities to adapt, disruption to the entire global food system cannot be resolved via food aid alone. Indeed, there is the potential for isolationist or heavy-handed responses that would do more harm than good. Given the high degree of interconnectivity and feedback within the global food system, our initial research suggests that any one of these climate change effects could trigger scenarios that would critically undermine the global food system’s ability to meet the minimum nutrition for well-being; making food security for all an unachievable goal, let alone rise to the challenge of continuing to grow (A. Tzachor, 2019, 2020); this would constitute what Kuhlemann (2019) terms a ‘threshold of significance.’

3.2.2. The global political system

Disrupting the global food system can create and exacerbate conflict and state failure (Brinkman & Hendrix, 2011). However, once again, this needs to be seen against the backdrop of a global political system under stress, with climate change as a significant contributing factor. Climate change influences political systems in many ways, from being a locus of activism and a stimulus for reform to driving rising inequality and population displacement (Arneth et al., 2019; Diffenbaugh & Burke, 2019). This is not a new phenomenon, changes in the climate are believed to have contributed to conflict between people and states throughout human history, driven by resource scarcity, population displacement, and inequality (Lee, 2009; Mach et al., 2019). As part of a comprehensive risk assessment of climate change, King et al. (2015) conducted an extensive literature review on climate change and conflict and used this to inform a series of international wargaming exercises. These found that climate change is expected to increase international conflict while highlighting the role that population displacement, state failure, and water and food insecurity would play in this (see also Mach et al., 2019; Natalini, Jones, & Bravo, 2015).

Quantitative studies of the impact of climate change on violence and conflict have provided more mixed results. A survey of empirical studies by Detges (2017) found that there may be multiple differing trends: extreme weather events appear to have more significant effects on violence than do long-term climate trends, while levels of small-scale conflict and interpersonal violence appear to be more affected than large-scale conflicts and international war. Empirical studies also highlight how climate change’s impact on conflict is predominantly as a risk multiplier and intensifier. Thus, climate change may contribute more by increasing our vulnerability to other conflict-inducing factors, such as loss of livelihood, forced migration, environmental change, and food insecurity, than by acting as a direct cause of conflict (Abel, Brottrager, Cuaresma, & Muttarak, 2019; Hsiang, Burke, & Miguel, 2013; Schubert et al., 2008).8

Of particular relevance to GCR is the effect of climate change on the risk of nuclear war (Parthemore, Femia, & Werrell, 2018). However, to our knowledge, this has never been rigorously assessed, although the potential is certainly there. One recent model of the risk of nuclear war highlighted how varied, and common, incidents with the potential to trigger a nuclear exchange are (Baum, de Neufville, & Barrett, 2018). It outlined 14 different causal pathways to an exchange, including the escalation of conventional wars and international crises, human error, and the emergence of new non-state actors. For all but two of these, they identify historical examples of potentially precipitating incidents, with 60 incidents in total (i.e. a little less than one a year). This suggests that the absence of nuclear war was less due to a lack of potential causes, tan the global political system’s ability to defuse them. Thus, the real significance of climate change may be its capacity to undermine this system: the combination of social, political, and environmental disruption, a lingering sense of global injustice, and rising food, water, and energy insecurity could increase the probability that crises escalate or that false alarms are mistaken for genuine emergencies. This topic needs further research.

3.3. The emergence of a global systems death spiral

Yet, we should not conclude that a nuclear exchange is the only, or even most likely, scenario in which political instability might produce a global catastrophe. Conflict and political instability, even of moderate severity, are themselves two of the most significant drivers of biodiversity loss due to breakdowns in monitoring, governance, and (public and private) property rights (Baynham-Herd, Amano, Sutherland, & Donald, 2018). This closes a potentially reinforcing feedback loop between loss of biosphere integrity, food insecurity and political breakdown.

The mechanisms by which these cascading failures might spread include many of the natural, anthropogenic, and replicator effects identified by Avin et al. (2018), making them harder to contain. At the natural level, climate change involves changes to the global atmospheric and biogeochemical systems and poses other naturally spreading harms, like global ecological collapse. At the anthropogenic level, the global interconnectedness of sociotechnological systems means that while small shocks are easier to recover from, larger shocks can be harder to contain and control. Finally, biological and informational replication can also spread the negative impacts of climate change, from vector-borne diseases and invasive species to climate fatalism and dangerous geoengineering technologies.

Given these numerous spread mechanisms, critical system failures could precipitate global catastrophes. Furthermore, the spiral we have explored is unlikely to be the only set of interlinked systemic disruptions that climate change could initiate (other death spirals could involve bio-insecurity and disease), nor are these the only causal connections between these three systems. Until we understand the nature of such death spirals better, we must act cautiously. We now turn to consider what this would mean.

#### Low-cost graphene key to water desalination – solves shortages.

Goldin 14 [Ian Goldin, Professor of Globalisation and Development at the University of Oxford, and Director of the Oxford Martin School, University of Oxford, “Innovation: Managing Risk, Not Avoiding It,” 2014, *Annual Report of the Government Chief Scientific Adviser*, http://eprints.lse.ac.uk/64539/1/14-1190b-innovation-managing-risk-evidence.pdf, EA]

Recently discovered properties of absorption at the nano-scale also offer substantial applied value. The low-cost nanocarbon graphene can be used as a filter to remove salt from saltwater, sifting out the salt ions while letting the water molecules pass through. This method could be used to desalinate seawater, and improve the prospects for recycling, a key to overcoming global water shortages in an era where already 780 million people do not have access to clean, safe drinking water.

#### Otherwise goes nuclear by 2022.

Jamail 19 [Dahr Jamail, Recipient of the Martha Gellhorn Award for Journalism and 2018 Izzy Award for Outstanding Achievement in Independent Media, Contributing Writer, Board of Advisers Member and Former Staff Reporter at Truthout, “The World Is on the Brink of Widespread Water Wars,” 02/11/19, *Truthout*, https://truthout.org/articles/the-world-is-on-the-brink-of-widespread-water-wars/]

Given the Arctic realities and the looming Blue Ocean Event (once the Arctic loses its summer sea ice, at which point global climate and weather patterns become profoundly destabilized) possibly as soon as 2022, things are really going to amplify.

Likely we will look back on January 2019 as when it was moderate and “easy” compared to the challenging heat and drought on the way.

Mark’s words should be a call to attention, and a call to action. The plight of farmers in Australia illustrates a larger reality: As planetary temperatures continue to increase and rainfall patterns shift due to human-caused climate disruption, our ability to grow crops and have enough drinking water will become increasingly challenged, and the outlook is only going to worsen.

We Have Been Warned

The most recent United Nations Intergovernmental Panel on Climate Change report warned of increasingly intense droughts and mass water shortages around large swaths of the globe.

But even more conservative organizations have been sounding the alarm. “Water insecurity could multiply the risk of conflict,” warns one of the World Bank’s reports on the issue. “Food price spikes caused by droughts can inflame latent conflicts and drive migration. Where economic growth is impacted by rainfall, episodes of droughts and floods have generated waves of migration and spikes in violence within countries.”

Meanwhile, a study published in the journal Global Environmental Change, looked at how “hydro-political issues” — including tensions and potential conflicts — could play out in countries expected to experience water shortages coupled with high populations and pre-existing geopolitical tensions.

The study warned that these factors could combine to increase the likelihood of water-related tensions — potentially escalating into armed conflict in cross-boundary river basins in places around the world by 74.9 to 95 percent. This means that in some places conflict is practically guaranteed.

These areas include regions situated around primary rivers in Asia and North Africa. Noted rivers include the Tigris and Euphrates, the Indus, the Nile, and the Ganges-Brahmaputra.

Consider the fact that 11 countries share the Nile River basin: Egypt, Burundi, Kenya, Eritrea, Ethiopia, Uganda, Rwanda, Sudan, South Sudan, Tanzania and the Democratic Republic of Congo. All told, more than 300 million people already live in these countries, — a number that is projected to double in the coming decades, while the amount of available water will continue to shrink due to climate change.

For those in the US thinking these potential conflicts will only occur in distant lands — think again. The study also warned of a very high chance of these “hydro-political interactions” in portions of the southwestern US and northern Mexico, around the Colorado River.

India and Pakistan

Potential tensions are particularly worrisome in India and Pakistan, which are already rivals when it comes to water resources. For now, these two countries have an agreement, albeit a strained one, over the Indus River and the sharing of its water, by way of the 1960 Indus Water Treaty.

However, water claims have been central to their ongoing, burning dispute over the Kashmir region, a flashpoint area there for more than 60 years and counting.

The aforementioned treaty is now more strained than ever, as Pakistan accuses India of limiting its water supply and violating the treaty by placing dams over various rivers that flow from Kashmir into Pakistan.

In fact, a 2018 report from the International Monetary Fund ranked Pakistan third among countries facing severe water shortages, This is largely due to the rapid melting of glaciers in the Himalaya that are the source of much of the water for the Indus.

To provide an idea of how quickly water resources are diminishing in both countries, statistics from Pakistan’s Islamabad Chamber of Commerce and Industry from 2018 show that water availability (per capita in cubic meters per year) shrank from 5,260 in 1951, to 940 in 2015, and are projected to shrink to 860 by just 2025.

In India, the crisis is hardly better. According to that country’s Ministry of Statistics (2016) and the Indian Ministry of Water Resources (2010), the per capita available water in cubic meters per year was 5,177 in 1951, and 1,474 in 2015, and is projected to shrink to 1,341 in 2025.

Both of these countries are nuclear powers. Given the dire projections of water availability as climate change progresses, nightmare scenarios of water wars that could spark nuclear exchanges are now becoming possible.

#### Scenario 2 is REEs.

#### Rare earth metals (REMs) for renewables are at risk of cartelization – it’s make or break.

Chakarvarty 18 [Ugranath Chakarvarty, mechanical engineer; Independent Energy and Development Consultant; UNCTAD Empretec Facilitator, “Renewable Energy Materials Supply Implications,” 2018, *IAEE Energy Forum*, https://www.iaee.org/en/publications/newsletterdl.aspx?id=455, EA]

A key feature of renewables is the usage of rare earth metals. These metals are critical to the renewable energy technology manufacturing value chain. The name “rare earth” is a consequence of seeming scarcity in 18th century in an ore first discovered near Ytterby, Sweden. However it is the availability of economically extractable concentrations that makes them rare.

Like the oil embargo in the 1970s, there is high risk of other embargos driven by changes in development models, innovation and discovery of resource availability. Even if the cartelization of these critical materials is not as influential as the OPEC phenomenon, the ambitious renewable energy use resulting from many nations pursuing renewable technologies, raises the need for caution on the part of consumers of these materials. For example, the materials used for renewable energy technologies are common to other sectors such as consumer products and defense. This poses a potential for competition as well. Rare earth materials such as dysprosium, neodymium, terbium, europium and yttrium are often critical components of renewable energy hardware. Therefore, in order to maintain a conflict-free sustainable development of global renewable energy it is essential to ensure that the OPEC phenomenon does not repeat in the form of cartelization of these rare earth metals. Application of rare earths in almost all modern technologies today, including the next generation of power generation, makes them a critical parameter when considering global renewable energy development.

In terms of all minerals and metals utilized in the solar value chain, the adjacent listing indicates those which are considered critical in nature, i.e., ones which face supply risk issues.

In fact the use of critical materials is not limited to solar, but also other forms of clean technologies like wind, vehicles, lighting and phosphors. The use of neodymium and dysprosium is essential to make powerful generators used in wind technologies. Neodymium and dysprosium also find use in making motors for vehicles. In order to make Li-ion batteries for plug-in-hybrid electric vehicles, lithium and cobalt are a critical material requirement. Hybrid electric vehicle using NiMH batteries make use of rare earths such as cerium, lanthanum, neodymium and praseodymium. In order to make fuel cells, critical materials such as yttrium, platinum, palladium and some other platinum group materials are required as catalysts and separators. Lighting (solid state and fluorescent) use rare earths such as yttrium, cerium, lanthanum, europium and terbium as part of the phosphors.

Reserves and Production scenario

Historically, Brazil and India were the primary sources of the world’s rare earths found in placer sand deposits until 1948. After the discovery of monazite in large veins of earth in South Africa around the 1950s, it emerged as the dominant supplier of world’s rare earths. The U.S. became a leading source from 1960s to 1980s after the Mountain Mine began processing in California. From 1990s onwards, China became the dominant source of the world’s rare earth materials with a share of over 90 percent.

It is worth looking at the major countries with reserves of rare earths as well as the production trends in order to address the security of supplies for renewable energy technology deployment. In many cases countries with large production capacities hold high reserves while some countries have low production and high reserves. This points towards possibility of large producers of rare earths exhausting their domestic reserves while those holding on to lower production but having large reserves holding greater dominance in the future.

As of 2016, rare earths found their use in diverse applications as follows: catalysts, 55%; metallurgical applications and alloys, 15%; ceramics and glass, 10%; polishing, 10%; and other, 10%.

Conclusion

Ongoing and increased exploitation of metals resources that cater to renewable energy futures shall inevitably reduce the global proven reserves of these materials. This increased critical metal use is the bedrock of modern technologies owing to its uses in a wide range of applications. The rare earths and critical metals which are essential to make solar PV and wind power have a potential of become supply constrained as economically viable concentrations of elements such as neodymium, dysprosium, indium, selenium, tellurium, terbium and gallium are found in only a handful of countries. This could shape a new geopolitics of critical metals and rare earths without which renewable energy technologies cannot be developed. This has consequently resulted in a wide consensus of the potential for the cartelization of producers of these essential metals, as was the case with OPEC.

#### Renewables solve smart cities and critical infrastructure security.

Konstantinou 21 [Charalambos Konstantinou, Senior Member, IEEE, “Towards a Secure and Resilient All-Renewable Energy Grid for Smart Cities,” 2021, *arXiv*, https://arxiv.org/pdf/2101.10570.pdf, EA]

Electric energy systems constitute the backbone of critical infrastructure. National security and economic vitality rely on a safe, secure, and resilient power system. The American electric grid, once considered a marvel of 20th century engineering, has become obsolete in the face of 21st century threats. Our energy grid has numerous shortcomings and can no longer deliver (cyber) secure and (disaster) resilient electric power to businesses and households, leading to an urgent and enormous threat to our society and economy. Vertical power systems with rigid transmission and distribution system control hierarchy have failed repeatedly during extreme threats. Recent studies by the Federal Energy Regulatory Commission (FERC) found that knocking out as 9 of the 55,000 power substations could result in U.S. coast-to-coast blackouts lasting 18 months or more [1]. For example, the Hurricane Michael resulted in 1.7 million power outages along the U.S. Gulf and Atlantic coasts [2]. During June – September 2007, heat waves and forest fires occurred in Greece causing extensive damages to the medium-voltage distribution network and knocking out power in many areas of the country [3]. Recovery from such disasters also costs tens of billions of dollars including time, manpower, and lost economic productivity, and deepen social inequalities. These failures have taught utilities, regulators, and stakeholders that faults cascade across national and continental electric grids, and exacerbating a local phenomenon into a socioeconomic catastrophe. Traditional power systems are prone to such cascading power outages that last long periods of time and are complex and time-consuming to recover – in other words, not secure and resilient. Continuing to operate the electric energy system critical infrastructure using the traditional model is a well-recognized security and resiliency threat and the main barrier for the development of future smart cities.

The integration of photovoltaic (PV) solar systems and wind farms together with other renewable energy sources (RES) into the electric grid, as shown in Fig. 1, helps towards improving security and reliability of the power system during normal operations and enhancing resiliency during and after extreme events. In the first quarter of 2018, solar accounted for 55% of all new generating capacity brought online in the U.S. [4], and Florida alone is expected to add over 8.6 GW of solar generation by 2025. The inclusion of such distributed resources in the form of solar PV, battery-based storage, and demand resources can increase the resiliency to catastrophic events once research efforts would be able to address open system design questions. Examples include how to strategically locate and operate these resources to sustain smart cities infrastructure by guaranteeing continuity or rapid restoration of power to vital loads following large-scale disturbances by formation of adhoc self-contained microgrids in outage situations. In addition, as more and more RES are integrated into power systems, it is projected that offshore oil and gas platforms will be re-used at end-of-life stage for the production of renewable energy (e.g., offshore wind, wave and tidal energy, ocean current energy, ocean-based solar energy, deep-water source cooling, etc.). To thwart the existing problems, a transformational development approach needs to be established, able to develop and build a secure and resilient electric grid for future smart cities. Such development will lead to an electric energy system immune to extreme phenomena while supporting the integration of RES and reducing the dependency on oil drilling into power systems, such as those at the North Sea as well as the Gulf of Mexico and its coastal zone.

#### Smart cities solve sustainable development goals

İkizer 22 [İhsan İkizer, Faculty of Economics, Administrative and Social Sciences, Nişantaşı University, “Smart Cities, Citizen Welfare, and the Implementation of Sustainable Development Goals | Do Smart City Solutions Contribute to the Achievement of the Sustainable Development Goals?: Case of Istanbul,” 2022, IGI Global, EA]

Sustainable development has been an indispensable concept in many disciplines ranging from economics to public administration nearly in the last thirty years. As the years pass, the destructive effects of climate change and environmental degradation are being felt more than ever, and especially policy makers realize that it is not a conceptual or theoretical issue far from the practical life, but a bitter reality. Many important steps have been taken till now in order to ensure that our economic development does not endanger the needs of the future generations, and it does not harm social and cultural development of communities. Among these steps, maybe the most significant one is the Sustainable Development Goals (SDGs), which were adopted by the Heads of States and Governments in the United Nations (UN) in 2015. Although there is no mandatory mechanism that enforces the implementation of the SDGs, the central governments have pledged to achieve them, and some of them have presented their national reviews that indicate their progress.

The problems that are referred in the 17 SDGs have not been caused by just one country, or different levels of governments, or business community, or consumers. Multiple actors in multiple countries have carried the stones that have led to the gigantic challenges that we face today. Therefore, the solution, or in other words the achievement of these 17 SDGs requires joint and coordinated action of the entire world, which means local, regional, national and global partnership among all stake holders, i.e. statutory bodies, NGOs, business community and science community. Partnerships organised at different levels are expected to ensure the participation of people, who are also responsible actors as consumers. After all, these goals have been set for the peace and prosperity of people of this generation and next generations, and awareness among people about the SDGs is a key factor to the success.

Among these actors, local governments emerge as extremely eminent actors for two reasons: more than half of the world population live in cities, and they are the closest statutory bodies to people. It is not realistic to expect full achievement of the SDGs without the active engagement of local governments, as nearly two third of the 169 targets of the SDGs fall directly under the realm of local governments (Sustainable Development Goals and Habitat III: Opportunities for a successful New Urban Agenda, 2015). Although, it is central governments that have designed the SDGs, and monitoring the progress of countries is conducted by the representatives of central governments at ‘High-level Political Forum on Sustainable Development (HLPF)’, local governments are expected to be active actors in the implementation of the SDGs, next to central governments, together with other stake holders.

In order for local governments to be effective actors in this challenging task, principles of good governance as well as translation of the SDGs and the targets into local context seem to be essential. Different cities with different size, development level, needs and features naturally have different strategies to achieve the localised SDGs. However, smart city technologies emerge as significant tools to be integrated into localised strategies for accelerating the achievement of the SDGs, especially the SDG 11, which is on sustainable cities and communities. The need for more effective and efficient use of information and communication technologies in cities has been better comprehended during the Covid-19 pandemic. Today, in many large urban areas, local governments use these technologies in various fields from transportation to waste management, in order to make their cities smarter, healthier and more sustainable. Istanbul, the largest city in Turkey, and a city that is bigger than more than 130 countries in the world, with a population of around 16 million, is among the cities where smart city technologies are being increasingly used day by day. In this chapter, the case of Istanbul will be analysed in terms of its smart city applications, and the contribution of these applications to the SDGs will be analysed. The chapter will start by setting the context of the SDGs and the concept of smart city, which will be followed by the discussion on the positive correlation between smart city technologies and sustainable development. The final part will concretize the discussion on the link between these two concepts through the case of Istanbul.

#### SDGs are leverage points that solve extinction BUT failure causes cascading risks that cumulatively outweigh any single risk, causing extinction

Cernev 20 [Tom Cernev and Richard Fenner “The importance of achieving foundational Sustainable Development Goals in reducing global risk,” 2020, *Futures*, Vol. 115, https://doi.org/10.1016/j.futures.2019.102492]

4. Risks from failure to meet the SDGs

4.1. Cascading failures

Fig. 3 demonstrates that cascade failures can be transmitted through the complex inter-relationships that link the Sustainable Development Goals. Randers, Rockstrom, Stoknes, Goluke, Collste, Cornell, Donges et al. (2018) have suggested that where meeting some SDGs impact negatively on others, this may lead to “crisis and conflict accelerators” and “threat multipliers” resulting in conflicts, instability and migrations. Ecosystem stresses are likely to disproportionately affect the security and social cohesion of fragile and poor communities, amplifying latent tensions which lead to political instabilities that spread far beyond their regions. The resulting “bad fate of the poor will end up affecting the whole global system"(Mastrojeni, 2018). Such possibilities are likely to go beyond incremental damage and lead to runaway collapse.

The World Economic Forums’ Global Risks Report for 2018 shows the top five global risks in terms of likelihood and impact have changed from being economic and social in 2008 to environmental and technological in 2018, and are closely aligned with many SDGs (World Economic Forum, 2018). The report notes “that we are much less competent when it comes to dealing with complex risks in systems characterised by feedback loops, tipping points and opaque cause-and-effect relationships that can make intervention problematic”. The most likely risks expected to have the greatest impact currently include extreme weather events natural disasters, cyber attacks, data fraud or theft, failure of climate change mitigation and water crises.

These are represented in Fig. 3 by the following exogenous variables. “Climate change” drives the need for Climate Action (SDG 13), “Cyber threat” may adversely impact technology implementation and advancement which will disrupt Sustainable Cities and Communities (SDG 11); Decent Work and Economic Growth (SDG 8) and the rate of introduction of Affordable and Clean Energy (SDG 7), with reductions in these goals having direct consequences in also reducing progress in the other goals which they are closely linked to. “Data Fraud or Threat” has the capacity to inhibit innovation and Industrial Performance (SDG 9), reducing competitiveness (and having the potential to erode societal confidence in governance processes). “Water Crises” (linked with climate change) have a direct impact on Human Health and Well Being (SDG 3) as well as reducing access to Clean Water and Sanitation (SDG 6) and reducing agricultural production which increases Hunger (SDG 2). The causal loop diagram also highlights “Conflict” as a variable (driven by multiple environmental-socio-economic factors) which together with regions most impacted by climate degradation will lead to an increase in migrant refugees enhancing the spread of disease and global pandemic risk, thus impacting directly on Human Health and Well Being (SDG 3)

4.2. Existential and catastrophic risk

The level and consequences of these risks may be severe. Existential Risks (ER) have a wide scope, with extreme danger, and are “a risk that threatens the premature extinction of humanity or the permanent and drastic destruction of its potential for desirable future development” (Farquhar et al., 2017,) essentially being an event or scenario that is “transgenerational in scope and terminal in intensity” (Baum & Handoh, 2014). With a smaller scope, and lower level of severity, global catastrophic risk is defined as a scenario or event that results in at least 10 million fatalities, or $10 trillion in damages (Bostrom & Ćirković, 2008). Global Catastrophic Risk (GCR) events are those which are global, but they are durable in that humanity is able to recover from them (Bostrom & Ćirković, 2008; Cotton-Barratt, Farquhar, Halstead, Schubert, & Snyder-Beattie, 2016) but which still have a long-term impact (Turchin & Denkenberger, 2018b).

Achieving the Sustainable Development Goals can be considered to be a means of reducing the long-term global catastrophic and existential risks for humanity. Conversely if the targets represented across the SDGs remain unachieved there is the potential for these forms of risk to develop. This association combined with the likely emergence of new challenges over the next decades (Cook, Inayatullah, Burgman, Sutherland, & Wintle, 2014) means that it is of great value to identify points within the systems representations of the Sustainable Development Goals that could both lead to global catastrophic risk and existential risk, and conversely that could act as prevention, or leverage points in order to avoid such outcomes. This identification in turn enables sensible policy responses to be constructed (Sutherland & Woodroof, 2009).

Whilst existential threats are unlikely, there is extensive peril in global catastrophic risks. Despite being lesser in severity than existential risks, they increase the likelihood of human extinction (Turchin & Denkenberger, 2018a) through chain reactions (Turchin & Denkenberger, 2018a), and inhibiting humanity’s response to other risks (Farquhar et al., 2017). It is necessary to consider risks that may seem small, as when acting together, they can have extensive consequences (Tonn, 2009). Furthermore, the high adaptability potential of humans, and society, means that for humanity to become extinct, it is most likely that there would be a series of events that culminate in extinction as opposed to one large scale event (Tonn & MacGregor, 2009; Tonn, 2009).

Whilst the prospect of existential risk, or global catastrophic risk can seem distant, the Stern Review on the Economics of Climate Change estimated the risk of extinction for humanity as 0.1 % annually, which accumulates to provide the risk of extinction over the next century as 9.5 % (Cotton-Barratt et al., 2016). With respect to identifying these risks, it is known that in particular, “positive feedback loops… represent the gravest existential risks” (Kareiva & Carranza, 2018), with pollution also having the potential to pose an existential risk.

#### Grid security is an impact filter.

Denkenberger 21 [David Denkenberger, Anders Sandberg, Ross John Tieman, and Joshua M. Pearce, \* assistant professor of mechanical engineering at University of Alaska Fairbanks, “Long-term cost-effectiveness of interventions for loss of electricity/industry compared to artificial general intelligence safety,” 2021, *European Journal of Futures Research*, Vol. 9, Issue 1, https://doi.org/10.1186/s40309-021-00178-z, EA]

Civilization relies on a network of highly interdependent critical infrastructure (CI) to provide basic necessities (water, food, shelter, basic goods), as well as complex items (computers, cars, space shuttles) and services (the internet, cloud computing, global supply chains), henceforth referred to as industry. Electricity and the electrical infrastructure that distributes it plays an important role within industry, providing a convenient means to distribute energy able to be converted into various forms of useful work. Electricity is one component of industry albeit a critical one. Industry provides the means to sustain advanced civilization structures and the citizens that inhabit them. These structures play a critical role in realizing various futures by allowing humanity to discover and utilize new resources, adapt to various environments, and resist natural stressors.

Though industry is capable of resisting small stressors, a sufficiently large event can precipitate cascading failure of CI systems, resulting in a collapse of industry. If one does not temporally discount the value of future people, the long-term future (thousands, millions, or even billions of years) could contain an astronomically large amount of value [18]. Events capable of curtailing the potential of civilization (existential risks, such as human extinction or an unrecoverable collapse) would prevent such futures from being achieved, implying reducing the likelihood of such events is of the utmost importance [100]. Reducing the prevalence of existential risks factors; events, systemic structures, or biases which increase the likelihood of extinction but do not cause extinction by themselves is also highly valuable. Complete collapse or degraded function of industry would drastically reduce humanity’s capacity to coordinate and deploy technology to prevent existential risks, representing an existential risk factor. Consequently, interventions preventing loss of industry, reducing the magnitude of impacts, or increasing speed of recovery could be extremely valuable.

Existential risk research is, by nature, future focused, requiring the investigation of events that have not yet occurred. Futures studies methodologies are often applied to uncover salient trends or events, and explore potential causal structures [54, 123]. Probabilistic modeling techniques can then be used to determine the likelihood of such events occurring, including adequate treatment of uncertainty [101]. The cost-effectiveness modeling approach outlined in this paper is an example of this, attempting to assess the marginal utility of losing industry interventions on improving the long-term future. This approach could guide future efforts to assess the relative cost-effectiveness of interventions for different risks, existential or otherwise. More practically, this research can inform prioritization efforts of industrialized countries by providing estimates of the cost of global industrial collapse, and the utility of resilience interventions. This is relevant to the European Union which has a highly industrialized economy, providing $2.3 Trillion USD of the $13.7 Trillion USD global total of value add manufacturing [122]. The EU has shifted toward a more proactive foresight approach about natural and man-made disasters, noting the importance of rare high-impact events, systemic risks, and converging trends requiring better data and forecasting to drive a more ambitious crisis management system [47]. Still, it is clear that most academic and institutional emphasis has been on “ordinary” rather than extreme disasters, and risks from industry to the public and environment rather than widespread failures of industrial services causing harm.

The integrated nature of the electric grid, which is based on centralized generation makes the entire system vulnerable to disruption.1 There are a number of anthropogenic and natural catastrophes that could result in regional-scale electrical grid failure, which would be expected to halt the majority of industries and machines in that area. A high-altitude electromagnetic pulse (HEMP) caused by a nuclear weapon could disable electricity over part of a continent [16, 48, 66, 93]. This could destroy the majority of electrical grid infrastructure, and as fossil fuel extraction and industry is reliant on electricity [49], industry would be disabled. Similarly, solar storms have destroyed electrical transformers connected to long transmission lines in the past [117]. The Carrington event in 1859 damaged telegraph lines, which was the only electrical infrastructure in existence at the time. It also caused Aurora Borealis that was visible in Cuba and Jamaica [70]. This could potentially disable electrical systems at high latitudes, which could represent 10% of electricity/industry globally. Though solar storms may last less than the 12 h that would be required to expose the entire earth with direct line of sight, the earth’s magnetic field lines redirect the storm to affect the opposite side of the earth [117].

Lastly, both physical [6, 8, 69, 89, 111] and cyber attacks [3, 63, 90, 96, 118, 128, 130] could also compromise electric grids. Physical attacks include traditional acts of terrorism such as bombing or sabotage [130] in addition to EMP attacks. Significant actors could scale up physical attacks, for example by using drones. A scenario could include terrorist groups hindering individual power plants [126], while a large adversary could undertake a similar operation physically to all plants and electrical grids in a region.

Unfortunately, the traditional power grid infrastructure is simply incapable of withstanding intentional physical attacks [91]. Damage to the electric grid resulting in physical attack could be long lasting, as most traditional power plants operate with large transformers that are difficult to move and source. Custom rebuilt transformers require time for replacement ranging from months and even up to years [91]. For example, a relatively mild 2013 sniper attack on California’s Pacific Gas and Electric (PG&E) substation, which injured no one directly, was able to disable 17 transformers supplying power to Silicon Valley. Repairs and improvements cost PG&E roughly $100 million and lasted about a month [10, 102]. A coordinated attack with relatively simple technology (e.g., guns) could cause a regional electricity disruption.

However, a high-tech attack could be even further widespread. The Pentagon reports spending roughly $100 million to repair cyber-related damages to the electric grid in 2009 [57]. There is also evidence that a computer virus caused an electrical outage in the Ukraine [56]. Unlike simplistic physical attacks, cyber attackers are capable of penetrating critical electric infrastructure from remote regions of the world, needing only communication pathways (e.g., the Internet or infected memory sticks) to install malware into the control systems of the electric power grid. For example, Stuxnet was a computer worm that destroyed Iranian centrifuges [73] to disable their nuclear industry. Many efforts are underway to harden the grid from such attacks [51, 63]. The U.S. Department of Homeland Security responded to ~ 200 cyber incidents in 2012 and 41% involved the electrical grid [103]. Nations routinely have made attempts to map current critical infrastructure for future navigation and control of the U.S. electrical system [57].

The electric grid in general is growing increasingly dependent upon the Internet and other network connections for data communication and monitoring systems [17, 112, 118, 127, 135]. Although this conveniently allows electrical suppliers management of systems, it increases the susceptibility of the grid to cyber-attack, through denial of webpage services to consumers, disruption to supervisory control and data acquisition (SCADA) operating systems, or sustained widespread power outages [3, 72, 118, 120]. Thus global or regional loss of the Internet could have similar implications.

#### Independently, cyberattacks trigger nuclear retaliation.

Klare 19 [Michael T. Klare, professor emeritus of peace and world security studies at Hampshire College, “Cyber Battles, Nuclear Outcomes? Dangerous New Pathways to Escalation,” November 2019, *Arms Control Today*, https://www.armscontrol.org/act/2019-11/features/cyber-battles-nuclear-outcomes-dangerous-new-pathways-escalation, EA – ability edited]

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

The danger here is that economic attacks of this sort, if undertaken during a period of tension and crisis, could lead to an escalating series of tit-for-tat attacks against ever more vital elements of an adversary’s critical infrastructure, producing widespread chaos and harm and eventually leading one side to initiate kinetic attacks on critical military targets, risking the slippery slope to nuclear conflict. For example, a Russian cyberattack on the U.S. power grid could trigger U.S. attacks on Russian energy and financial systems, causing widespread disorder in both countries and generating an impulse for even more devastating attacks. At some point, such attacks “could lead to major conflict and possibly nuclear war.”14

### 1AC – Plan

#### The United States Federal Government should substantially increase prohibitions on anticompetitive business practices by the private sector by at least expanding the extraterritorial private right of action of its core antitrust laws.

### 1AC – Uncertainty Adv

#### The circuit split over whether the FTAIA reaches price-fixed components creates massive uncertainty that broadly chills manufacturing.

Leonardo 17 [Lizl Leonardo, J.D., magna cum laude and with a Certificate of Business Law from DePaul University College of Law, “A Proposal to the Seventh and Ninth Circuit Split: Expand the Reach of the U.S. Antitrust Laws to Extraterritorial Conduct that Impacts U.S. Commerce,” 2017, *DePaul Law Review*, Vol. 66, Issue 1, https://via.library.depaul.edu/cgi/viewcontent.cgi?article=4008&context=law-review, EA]

The FTAIA was enacted to “clarify” the Sherman Act’s application to transactions that affect U.S. commerce, yet the circuit courts have not come to a consensus as to how it must be consistently interpreted.198 Similarly, despite the circuit splits that have overwhelmed the judicial system, the U.S. Supreme Court has only interpreted the FTAIA once, in Empagran. 199 The Court at that time, however, did not answer the critical question embodied in Hui Hsiung and Motorola: whether the FTAIA applies to transactions made outside of the United States but eventually have an impact upon U.S. competition, commerce, and consumers.200

The indistinguishable facts of Hui Hsiung and Motorola and the irreconcilable rulings call for a consistent rule across the circuit courts and intervention by the U.S. Supreme Court.201 Both cases involved the price-fixing of LCD panels by foreign entities, whose manufactured products eventually reached the United States.202 Yet, the Seventh and Ninth Circuits disagreed on what constitutes “import trade” or “import commerce.”203 The Seventh Circuit held that in order to be liable, a defendant must be engaged as an importer, who directly sells goods into the United States.204 Accordingly, it ruled that the one percent of LCDs sold directly to Motorola were too attenuated to become “import trade” under the Sherman Act;205 the remaining forty-two percent of LCDs, which Motorola’s foreign subsidiaries bought from the defendants, were too “remote” under FTAIA.206 In complete contrast, the Ninth Circuit held that any conduct consummated within an import market qualifies as either “import trade” or “import commerce.”207 This meant that the defendants did not have to import any goods themselves, but only needed to have engaged in conduct within the import business to satisfy both the Sherman Act and the FTAIA.208 Accordingly, the Ninth Circuit held that the defendants, although not the per se importers of the LCD panels, were liable under either the Sherman Act or the FTAIA for engaging in business that affected the finished products that were sold into the United States.209

These two contrasting rulings have placed not only the defendants—but also other foreign companies doing business with the United States—in a precarious position.210 These two cases represent the frequently recurring question of how to interpret the FTAIA.211 Foreign companies that do business, directly or indirectly, want clear guidance on how their business practices could be subjected to U.S. antitrust laws.212 No company will want to risk breaking the law in one jurisdiction, yet be absolved in the other.213 A clear ruling across all federal courts will be beneficial to international antitrust enforcement and the domestic economy, especially with the continuous expansion of global supply chains.214

A “supply chain” is defined as “a network between a company and its suppliers to produce and distribute a specific product, and the supply chain represents the steps it takes to get the product or service to the customer.”215 It essentially “encompasses each step from the supplier to the final consumer.”216 Establishing global supply chains across the world has become a strategy of companies in today’s globalized economy.217 Global supply chains have played an important role in the end-to-end production of goods sought by consumers across the world.218 In today’s globalized economy, companies use this practice to source, manufacture, transport, and distribute products internationally.219 For example, televisions are manufactured in China using displays from Taiwan and Korea.220 These televisions eventually find their way into various countries, including the United States.221 Due to this multi-step process, many businesses that utilize global supply chains become victims of anticompetitive activity by foreign cartels.222 In fact, price-fixing conspiracies have cost consumers more than $1 trillion over the last twenty-five years.223 Needless to say, the United States, holding a huge market share of these products, should protect these supply chains to some degree through the enactment and execution of an understandable U.S. antitrust law.224

The manufacturing industry, in particular, contributes more than $1.8 trillion annually to the U.S. economy and “employs nearly twelve million ~~men and women~~.”225 The goods sold by foreign intermediaries eventually find their way into the United States, some of which may be used to further domestic manufacturing.226 For example, in 2014, approximately $2.8 trillion of goods were imported into the United States.227 This amount has more than doubled in the last fifteen years.228 Most of these imports act as intermediate inputs on productivity used for other businesses in the United States.229 For example, in 2006, over ten percent of intermediate inputs accounted for imported intermediaries used by private industries.230 Without a doubt, the question presented in these two cases is of tremendous economic significance to U.S. manufacturers and the United States as a whole. The harm of the price-fixing conspiracy from these two cases alone has affected well over $23.5 billion in sales of LCD panels imported into the United States, either as raw materials or as components of finished products.231 Manufacturers have had to absorb the artificially high costs of the LCD panels as they incorporate the component LCD panels into finished products, and they ultimately pass those artificially inflated costs on to U.S. consumers.232 Price-sensitive consumers, in return, may have refused to purchase these more expensive products, altering the demand-supply market and impacting the companies’ bottom lines.

The lack of an established rule—highlighted by the circuit split in interpreting the FTAIA—has effectively made it burdensome for companies to develop transactions for goods intended for eventual import into the United States. This issue does not apply only to the manufacturing industry.233 Companies engaging in transactions with the United States, whether directly or indirectly, need to know the possible effects of their decisions.234 Given that corporations engage in multitudinous transactions, it is highly important and necessary for companies to know precisely how these transactions could create financial and legal risks/consequences.235 The costs associated with the uncertainty create a burden to producers, causing them to increase product prices to offset the risks.236 These higher prices could then be passed on to U.S. consumers, which would negatively impact the U.S. economy.237

#### Manufacturing capacity prevents weaponized interdependence that makes the US vulnerable to supply chain coercion.

Helberg 20 [Jacob Helberg, senior advisor at the Stanford University program on geopolitics and technology, an adjunct fellow at the Center for Strategic and International Studies, “In the New Cold War, Deindustrialization Means Disarmament,” 08/12/20, *Foreign Policy*, https://foreignpolicy.com/2020/08/12/china-industry-manufacturing-cold-war/, EA]

In 2011, then-President Barack Obama attended an intimate dinner in Silicon Valley. At one point, he turned to the man on his left. What would it take, Obama asked Steve Jobs, for Apple to manufacture its iPhones in the United States instead of China? Jobs was unequivocal: “Those jobs aren’t coming back.” Jobs’s prognostication has become almost an article of faith among policymakers and corporate leaders throughout the United States. Yet China’s recent weaponization of supply chains and information networks exposes the grave dangers of the American deindustrialization that Jobs accepted as inevitable.

Since March alone, China has threatened to withhold medical equipment from the United States and Europe during the coronavirus pandemic; launched the biggest cyberattack against Australia in the country’s history; hacked U.S. firms to acquire secrets related to the coronavirus vaccine; and engaged in massive disinformation campaigns on a global scale. China even hacked the Vatican. These incidents reflect the power China wields through its control of supply chains and information hardware. They show the peril of ceding control of vast swaths of the world’s manufacturing to a regime that builds at home, and exports abroad, a model of governance that is fundamentally in conflict with American values and democracies everywhere. And they pale in comparison to what China will have the capacity to do as its confrontation with the United States sharpens.

In this new cold war, a deindustrialized United States is a disarmed United States—a country that is precariously vulnerable to coercion, espionage, and foreign interference. Preserving American preeminence will require reconstituting a national manufacturing arrangement that is both safe and reliable—particularly in critical high-tech sectors. If the United States is to secure its supply chains and information networks against Chinese attacks, it needs to reindustrialize. The question today is not whether America’s manufacturing jobs can return, but whether America can afford not to bring them back.

America’s superpower might was made on the factory floor. The nation’s vast industrial capacity carried it to victory in World War II and gave it a commanding advantage over the Soviet Union. As recently as the early 2000s, iMacs—a symbol of American high-tech dominance—were still made in Elk Grove, California. But since the 1970s, more than 7 million American manufacturing jobs have evaporated—over a third of the country’s entire manufacturing workforce. In the first decade of the 21st century, more than 66,000 manufacturing facilities closed down or moved overseas. America’s share of the world’s printed circuit board production has dropped 70 percent since 2000; China accounts for around half of global production today. The high-tech industry is hardly exempt: As of 2015, Chinese factories produced 28 percent of the world’s cars, 41 percent of ships, more than 60 percent of TVs, and a staggering 90 percent of the world’s mobile phones. Indeed, Apple’s Elk Grove plant is now an AppleCare call center.

At the same time, a new Silicon Curtain has begun to descend. As FBI Director Christopher Wray recently pointed out, China does not seek a world where its companies lead alongside other global companies but one where its companies exploit a domestic monopoly at home to drive other companies out of business everywhere else. In the energy sector, China’s vast web of state subsidies supporting its domestic solar-electric industry dropped world prices of solar panels by 80 percent between 2008 and 2013. A report by the U.S. Senate Foreign Relations Committee echoed this trend in more cutting-edge technologies: “Foreign technology platforms are restricted from operating in China, allowing Chinese platforms that offer similar services to thrive and expand into new markets.” The report also highlighted examples of Chinese “national champions” expanding internationally thanks to unfair government support and subsidies, noting, “Huawei’s price was so low that, absent the subsidies the company had been provided, Huawei would have been unable to even produce the necessary network parts.” Beijing’s “Made in China 2025” initiative outlines in blunt terms China’s ambitions for dominance in artificial intelligence, robotics, aerospace equipment, and biopharmaceuticals—high-tech industries that represent the future of the global economy.

The United States’ industrial overdependence on China poses two profound national security threats. The first is about access to the supply of critical goods. As I warned in June, U.S.-China relations are now more volatile than at any time since Tiananmen, and it is an open question whether decoupling will be slow and soft or hard and fast. As the bilateral relationship further deteriorates, American companies face a growing risk of experiencing sudden delays or disruptions to their supply chains, either as an overt retaliation by the Chinese Communist Party (CCP) to U.S. policies or in the form of gray-zone tactics to kneecap U.S. companies and promote Chinese alternatives to fill the void in the global supply for key goods.

This risk, once deemed far-fetched, recently came to life when Arm, a U.K.-based chip designer, recently appeared to have suddenly lost control of its China-based joint-venture subsidiary, Arm China. As Business Insider reported, “Arm fired Allen Wu, the head of Arm China, but Wu refused to acknowledge the decision and has continued overseeing operations of the business unit, according to Bloomberg. Arm China also reportedly won’t let members of the UK parent entity onto its premises.” It has been seven years since the Alliance for American Manufacturing released a list of critical military hardware, with both offensive and defensive applications, that are susceptible to supply chain interference. American missiles depend on Chinese propellant; American night-vision goggles depend on Chinese metal.

During the pandemic, the Chinese government is also believed to have given preferential treatment to its domestic semiconductor companies, allowing Yangtze Memory Technologies to continue operating, all the while requiring all foreign-based chip makers, such as Samsung, to completely halt their operations. This is what political scientists have dubbed “weaponized interdependence”—exploiting control of critical nodes in the global economy to exert geopolitical leverage over one’s competitors.

The second risk of U.S. industrial dependence on China is about the integrity of powerful dual-use commercial technology products: civilian goods such as information platforms, social network technology, facial recognition systems, cellphones, and computers that also have powerful military or intelligence implications. These products are increasingly becoming a “perfect weapon” for U.S. adversaries such as Russia and China that continuously seek asymmetric ways to weaken the United States. The Senate Foreign Relations Committee report noted, “the suites of new and emergent digital technologies … —including 5G infrastructure, social media, block-chain, digital surveillance, and genomics and biotechnology—are all widely acknowledged as being on the cutting edge of this new competition.” China’s command over critical nodes of the world’s supply chains provides it with vast strategic leverage over the integrity of critical hardware products.

A 2018 Bloomberg investigation reported that Chinese operatives had inserted a miniscule microchip into the servers of Supermicro, a company whose systems are used by institutions ranging from major banks to the Pentagon. Though all parties involved denied that such a breach occurred, even the possibility of such a hardware hack sent shudders through Silicon Valley and the U.S. national security apparatus. Even if disputed, the report laid bare the dangers of outsourcing American manufacturing to an American adversary.

Public concerns over the integrity of Chinese-built technology systems recently reached a boiling point in the software world, with the U.S. government calling on ByteDance, a Beijing-based global technology company, to divest from TikTok, its U.S. subsidiary. In some cases, senior government officials, ranging from President Donald Trump to Senate Democratic Leader Chuck Schumer, went as far as floating the possibility of a complete suspension of the app.

The public’s justified concerns trace back to China’s civil-military fusion doctrine, which blurs the line between the CCP and China’s private sector. Under China’s 2017 National Intelligence Law, the CCP could compel an individual engineering employee at TikTok based in China to provide the party with intelligence assistance and keep that assistance entirely confidential, without any of TikTok’s U.S.-based executives even being aware.

In effect, this means companies based in China could be subject to a dual reporting and corporate governance structure—their company’s executives on the one hand, and, on the other, a shadow governance structure reporting to officials from the Chinese Communist Party. China-based companies must effectively answer to two masters. Arm’s U.K.-based executives learned this the hard way. But the principles were spelled out in broad daylight by Chinese President Xi Jinping himself when he compared the relationship between Chinese citizens and the CPP to “stars revolving around the revered moon.” “Listen to what they say,” the Taiwan-based analyst Ben Thompson cautioned.

The United States’ slow drift toward deindustrialization is not a threat to Democrats or a threat to Republicans—it’s a threat to the United States. Addressing it will require an American solution that transcends party lines. It will require an extensive collaborative effort between the government and private sector to take inventory of the products salient to national security—determining which high-tech and vital goods must be produced domestically, which can safely be sourced from allies and friendly democracies, and which can still be imported from the global market, including from authoritarian states like China. Carrying out this strategy and operationalizing it will take time and substantial resources. Still, a few elements for such a strategy are worth highlighting.

Before the creation of the Strategic Petroleum Reserve in the 1970s, the United States was vulnerable to geopolitical blackmail by OPEC nations. Eventually, public investments in expanding the country’s domestic alternative sources of energy helped move the country toward energy independence. Similarly, the United States must define and reconstitute a “minimum viable industrial capacity,” based on the production capacity it needs not simply to meet a national emergency but to wage a long-term competition. A potential initial area of focus for such an effort could be the production of semiconductors and microchips, given that high-performing chips are indispensable to make headway on nearly every other front—AI development, robotics, computers, cellphones, and more. Currently, Taiwan—which China dubs a renegade province—is home to Taiwan Semiconductor Manufacturing Company, which accounts for half the global supply of computer chips used in everything from F-35 fighter jets to Apple devices. The United States cannot afford to ignore China’s plans to eventually seize control of Taiwan and the consequences this would entail for the entire U.S. technology industry.

Reconstituting America’s domestic production capacity will be contingent on procuring a reliable, abundant supply of key natural resources at a low cost, building up a large talent pool of skilled industrial workers, and making substantial investments in fostering hotbeds of innovation.

For starters, the goal of reopening factories won’t be economically sustainable if the United States can’t ensure cost-effective access to natural resources and raw materials those factories need to produce finished, manufactured products. China has made acquiring premium access to resources such as zinc, cobalt, and titanium a national priority. By making investments and loans worth hundreds of billions of dollars across the developing world—particularly in Africa—it has established a model of trading technology and infrastructure for resources. In one such case, China struck a deal with a Congolese mining consortium, Sicomines, to secure access to critical minerals for electronics like copper and cobalt in exchange for investing in essential infrastructure projects like hospitals and highways.

#### China rise isn’t inevitable – selective decoupling avoids conflict from a declining China.

Beckley 20 [Michael Beckley and Hal Brands, \* Associate Professor of Political Science at Tufts University, \*\* Henry A. Kissinger Distinguished Professor of Global Affairs at the Johns Hopkins University School of Advanced International Studies, “Competition With China Could Be Short and Sharp,” 12/17/20, *Foreign Affairs*, https://www.foreignaffairs.com/articles/united-states/2020-12-17/competition-china-could-be-short-and-sharp, EA]

In foreign policy circles, it has become conventional wisdom that the United States and China are running a “superpower marathon” that may last a century. But the sharpest phase of that competition will be a decadelong sprint. The Sino-American contest for supremacy won’t be settled anytime soon. Yet history and China’s recent trajectory suggest that the moment of maximum danger is just a few years away.

China has entered a particularly perilous period as a rising power: it has gained the capability to disrupt the existing order, but its window to act may be narrowing. The balance of power has been shifting in Beijing’s favor in important areas of U.S.-Chinese competition, such as the Taiwan Strait and the struggle over global telecommunications networks. Yet China is also facing a pronounced economic slowdown and a growing international backlash.

The good news for the United States is that over the long term, competition with China may prove more manageable than many pessimists believe. Americans may one day look back on China the way they now view the Soviet Union—as a dangerous rival whose evident strengths concealed stagnation and vulnerability. The bad news is that over the next five to ten years, the pace of Sino-American rivalry will be torrid, and the prospect of war frighteningly real, as Beijing becomes tempted to lunge for geopolitical gain. The United States still needs a long-term strategy for protracted competition. But first it needs a near-term strategy for navigating the danger zone.

RED FLAGS

Much debate on Washington’s China policy focuses on the dangers China will pose as a peer competitor later this century. Yet the United States actually faces a more pressing and volatile threat: an already powerful but insecure China beset by slowing growth and intensifying hostility abroad.

China has the money and muscle to challenge the United States in key areas. Thanks to decades of rapid growth, China boasts the world’s largest economy (measured by purchasing power parity), trade surplus, financial reserves, navy by number of ships, and conventional missile force. Chinese investments span the globe, and Beijing is pushing for primacy in such strategic technologies as 5G telecommunications and artificial intelligence (AI). Add in four years of disarray in the U.S.-led world order under President Donald Trump, and it is hardly surprising that Beijing is testing the status quo from the South China Sea to the border with India.

Yet China’s window of opportunity may be closing fast. Since 2007, China’s annual economic growth rate has dropped by more than half, and productivity has declined by ten percent. Meanwhile, debt has ballooned eightfold and is on pace to total 335 percent of GDP by the end of 2020. China has little hope of reversing these trends, because it will lose 200 million working-age adults and gain 300 million senior citizens over the next 30 years. And as economic growth falls, the dangers of social and political unrest rise. Chinese leaders know this: President Xi Jinping has given multiple speeches warning about the possibility of a Soviet-style collapse, and Chinese elites are moving their money and children abroad.

Meanwhile, global anti-China sentiment has soared to levels not seen since the 1989 Tiananmen Square massacre. Nearly a dozen countries have suspended or canceled participation in Belt and Road Initiative (BRI) projects. Another 16 countries, including eight of the world’s ten largest economies, have banned or severely restricted use of Huawei products in their 5G networks. India has been turning hard against China since a clash on their shared border killed 20 soldiers in June. Japan has ramped up military spending, turned amphibious ships into aircraft carriers, and strung missile launchers along the Ryukyu Islands near Taiwan. The European Union has labeled China a “systemic rival”; and the United Kingdom, France, and Germany are sending naval patrols to counter Beijing’s expansion in the South China Sea and Indian Ocean. On multiple fronts, China is facing the blowback created by its own behavior.

HISTORY RHYMES

Many people assume that rising revisionists pose the greatest danger to international security. But historically, the most desperate dashes have come from powers that had been on the ascent but grew worried that their time was running short.

World War I is a classic example. Germany’s rising power formed the strategic backdrop to that conflict, but German fears of decline triggered the ultimate decision for war. Russia’s growing military power and mobility menaced Germany’s eastern flank; new French conscription laws were changing the balance in the West; and a tightening Franco-Russian-British entente was leaving Germany surrounded. German leaders ran such catastrophic risks in the July crisis for fear that geopolitical greatness would elude them if they did not act quickly.

The same logic explains imperial Japan’s fatal gamble in 1941, after the U.S. oil embargo and naval rearmament presented Tokyo with a closing window of opportunity to dominate the Asia-Pacific. In the 1970s, Soviet global expansion peaked as Moscow’s military buildup matured and the slowing of the Soviet economy created an impetus to lock in geopolitical gains.

Given that China is currently facing both a grim economic forecast and a tightening strategic encirclement, the next few years may prove particularly turbulent. The United States obviously needs a long-term strategy to compete with China. But it also needs to blunt a potential surge of Chinese aggression and expansion this decade.

The early Cold War offers a useful parallel. At that time, American leaders understood that winning the long-term struggle against the Soviet Union required not losing crucial battles in the short term. The Marshall Plan, unveiled in 1947, was meant to prevent economic collapse in Western Europe, because such a breakdown might allow Moscow to extend its political hegemony over the entire continent. The creation of NATO and rearmament during the Korean War forged a military shield that allowed the West to thrive. Strategic urgency was the prelude to strategic patience: the United States could exploit its lasting economic and political advantages only if it closed off more immediate vulnerabilities.

Today, the United States again needs a danger-zone strategy, which should be based on three principles. First, focus on denying China near-term successes that would radically alter the long-term balance of power. The most pressing dangers are a Chinese conquest of Taiwan and Chinese preeminence in 5G telecommunications networks. Second, rely on tools and partnerships available now or in the near future rather than assets that require years to develop. Third, focus on selectively degrading Chinese power rather than changing Chinese behavior. Seduction and coercion are out; targeted attrition is in. Such an approach entails greater risk. But the United States must act assertively now to prevent more destabilizing spirals of hostility later.

TAIWAN AND TECH

Washington’s first priority must be shoring up Taiwan. If China absorbed Taiwan, it would gain access to the island’s world-class technology, acquire an “unsinkable aircraft carrier” to project military power into the western Pacific, and gain the ability to blockade Japan and the Philippines. China also would fracture U.S. alliances in East Asia and eliminate the world’s only ethnically Chinese democracy. Taiwan is the fulcrum of power in East Asia: controlled by Taipei, the island is a fortification against Chinese aggression; controlled by Beijing, Taiwan could become a base for continued Chinese territorial expansion.

China has spent decades trying to buy reunification by forging economic links with Taiwan. But Taiwan’s people have become more determined than ever to maintain their de facto independence. Consequently, China is brandishing its military option. Over the past three months, its air and naval patrols have presented a show of force in the Taiwan Strait more provocative than any in the last twenty-five years. An invasion or coercive campaign may not be imminent, but its likelihood is rising.

Taiwan is a natural fortress, but Taiwanese and U.S. forces currently are ill equipped to defend it, because they rely on limited quantities of advanced aircraft and ships tethered to large bases—forces China can neutralize with a surprise air and missile attack. Some American policymakers and pundits are calling on Washington to formally guarantee Taiwan’s security, but such a pledge would amount to cheap talk if not backed by a stronger defense.

Washington should instead deploy hordes of missile launchers and armed drones near, and possibly on, Taiwan. These forces would function as high-tech minefields, capable of inflicting severe attrition on a Chinese invasion or blockade force. China needs to control the seas and skies around Taiwan to achieve its objective, while the United States just needs to deny China that control. If necessary, the United States should cut funding for costly power-projection platforms, such as aircraft carriers, to fund the rapid deployment of loitering cruise missiles and smart mines near Taiwan.

The United States also needs to help Taiwan retool its military to fight asymmetrically. Taiwan plans to acquire enormous arsenals of missile launchers and drones; prepare its army to deploy tens of thousands of troops to any beach at a moment’s notice; and reconstitute a million-strong reserve force trained for guerrilla warfare. The Pentagon can hasten this transition by subsidizing Taiwanese investments in asymmetric capabilities, donating ammunition, and expanding joint training on air and coastal defense and antisubmarine and mine warfare.

Finally, the United States should enlist other countries in Taiwan’s defense. Japan might be willing to block China’s northern approaches to Taiwan in a war; India might allow the U.S. Navy to use the Andaman and Nicobar Islands to choke off Beijing’s energy imports; European allies could impose severe economic and financial sanctions on China in case of an attack on Taiwan. The United States should try to convince partners to commit publicly to taking these types of actions. Even if such measures are not decisive militarily, they could deter China by raising the possibility that China might have to fight a multifront war to conquer Taiwan.

The United States must simultaneously work to prevent China from creating an extensive technological sphere of influence. China stands to reap enormous intelligence benefits, economic gains, and strategic leverage if Chinese companies install 5G telecommunications networks around the world. Similarly, the diffusion of Chinese-made surveillance technology could entrench autocrats and cause lasting harm to global prospects for democracy. Over the past two years, a number of advanced democracies have spurned Huawei, China’s main national champion. But Beijing’s Digital Silk Road remains popular where democracy is less established and China’s low-cost products are especially attractive. To check China’s technological expansion, Washington should restrict the export of technologies made in the United States and other democracies on which Chinese technology still depends. These include semiconductors, AI chips, and computer numerical control (CNC) machines. By withholding such products, the United States and its democratic allies can retard Beijing’s technological progress and buy time to offer developing countries alternatives to Chinese networks.

Additionally, the United States should limit its vulnerability by selectively decoupling from China’s economy. When Chinese state media threatened, in March 2020, to plunge the United States into “a mighty sea of coronavirus” by denying it pharmaceuticals, it underscored the coercive leverage that Beijing’s influence over supply chains brings. To preserve freedom of action in future crises, the United States should eliminate Chinese components from U.S. military platforms and munitions and secure alternative sources of critical medical supplies and rare earths. Over time, the United States could cooperate with friendly democracies to develop reliable supply chains, a move that would protect U.S. allies and partners from Chinese coercion as well.

URGENT, NOT STUPID

Incoming U.S. administrations typically take months to review policies and plan initiatives that may not produce results for years. Given the country’s deep wounds, the new policy team might be tempted to turn down the temperature with China for now, so the United States can fortify its democracy, economy, and public health for a long competition ahead. But as important as those tasks are, Washington does not have the luxury of geopolitical delay. As U.S.-Chinese relations enter the danger zone, Washington must shore up defenses against pressing perils.

The United States should, however, combine strength and caution, lest it provoke the conflict it seeks to avoid. Washington should not undertake far more drastic measures, such as a full technological embargo, across-the-board trade sanctions, or a major covert action program to foment violence within China. Nor should it dramatically ratchet up pressure on China everywhere at once. If Beijing wants to spend lavishly on white elephant projects in Pakistan or other detours along the BRI, or to invest in power-projection capabilities that will not have a strategic impact for decades, so much the better. And while it would be a mistake to allow China to link joint action on COVID-19 or climate change to U.S. restraint in geopolitical competition, the administration of President-elect Joe Biden might explore cooperation in these areas, if only as a counterpoise to sharpening rivalry in others.

Successfully navigating the danger zone will not end U.S.-Chinese competition, any more than surviving the early Cold War brought that rivalry to a close. Today, the reward for skillful statecraft will simply be a somewhat less volatile Sino-American rivalry. That rivalry may still be global in scope and extended in duration. But the possibility of war might fade as the United States shows that Beijing cannot overturn the existing order by force and Washington gradually grows more confident in its ability to outperform a slowing China. Now as before, the United States can win a long rivalry, so long as it weathers the coming crisis.

### 1AC – Illinois Brick Adv

#### Apple v. Pepper’s broad application of the Illinois Brick doctrine spills over to destabilize US-EU antitrust cooperation and broader enforcement.

Stylianou 19 [Konstantinos Stylianou, Assistant Professor, University of Leeds, School of Law, “Apple v Pepper: the unintended fallout in Europe,” 2019, *Journal of Antitrust Enforcement*, Vol. 7, Issue 3, pp. 457-465, https://doi.org/10.1093/jaenfo/jnz031, EA]

Despite the seeming insulation of one jurisdiction from the other on the issue of standing, the decision in Apple creates spill-over effects for EU competition law. These stem not so much from what the Court said, but from what the Court did not say. Specifically, the Court’s implicit rejection of indirect purchasers’ right to claim damages and the Court’s implicit designation of Apple as a reseller of apps instead of an agent of app developers foreshadow friction between the two jurisdictions and tension with EU competition law’s enforcement. I address the issues in sequence below.

Fragmentation and strategic manipulation of antitrust proceedings

The first side-effect of Apple comes as the result of the Supreme Court’s choice to uphold the rule in Illinois Brick barring indirect purchasers from pursuing antitrust damages. By doing so, the Supreme Court perpetuates the schism with the EU and complicates recovery of damages when global platforms are involved.

The case was handled as narrowly as possible to address only the very specific question of ‘whether [iPhone owners] are proper plaintiffs for this kind of antitrust suit—in particular, [the Supreme Court’s] precedents ask, whether the consumers were “direct purchasers” from Apple’.17 The Supreme Court reached a ‘straightforward conclusion’ by reading section 4 of the Clayton Act, which provides that ‘any person who shall be injured in his business or property by reason of anything forbidden in the antitrust laws may sue ... the defendant ...’ (emphasis in original) as ‘readily cover[ing] consumers who purchase goods or services at higher-than-competitive prices from an allegedly monopolistic retailer’.18

With such an emphatic reliance on the black letter of the law, one must wonder, then, why the Supreme Court did not avail of this opportunity to allow the black letter of the law to develop its full meaning, and include truly any person to sue, both direct and indirect purchasers no matter how far removed from the first-in-line actor to incur harm. There are various reasons why the Supreme Court could and should have distinguished—or even overruled—Illinois Brick and bring its practice in line with the more reasonable EU rule.

For one thing, the rationale behind Illinois Brick has lost some of its original authoritativeness. Illinois Brick aimed to prevent double (or multiple) recovery of damages for the same antitrust violation and to bypass the complexities of apportioning antitrust damage along the value chain.19 By creating a simple rule, it vested the claim for antitrust damages to the first-in-line actor to incur them. However, as the Court noted in Apple, damages claims and damages calculations are commonly complicated and often require expert testimony, but this is hardly unusual for antitrust cases.20 Therefore, there was no imperative reason to shy away from the exercise of apportioning damages, which would clear the way for indirect purchasers to be able to sue too.21 Moreover, Apple’s fear that not limiting standing to only one group of actors would open the door to ‘conflicting claims to a common fund—the amount of the alleged overcharge’22 is also unfounded because each group would have a separate legal basis to pursue damages; therefore, any stacking claims would not be duplicative.23 While the Court used this argument to suggest that developers, as well as consumers, could sue Apple—both as direct purchasers just on different grounds— there is no reason not to use the same argument to allow any other actor, even those indirectly harmed, to sue for their share of damages.

Secondly, by insisting on allowing only direct purchasers to sue for antitrust damages, the Court downplayed its own prior case-law in Ohio v American Express, where it treated platform markets as one single system and acknowledged the interdependence of the two sides.24 The Court in American Express already recognized the interdependence of the two sides due to ‘indirect network effects’25 and due to the fact that platforms ‘facilitate a single, simultaneous transaction between participants’.26 Taking this to its logical extension would support an argument by which in platform economies the interacting economic actors are intertwined in such a close fashion that the direct–indirect distinction ceases to be determinative.27

Thirdly, the Court would be in good company to dispense with the arcane rule in Illinois Brick, as it would be joining the EU, several US states, and advisory bodies that have all opted for the equal treatment of direct and indirect purchasers: in the EU, as mentioned, Article 3 of the Damages Directive allows ‘any natural or legal person who has suffered harm caused by an infringement of competition law’ to claim damages, and precedent has reiterated time and again that this includes direct and indirect victims.28 Similarly, more than 20 US states have adopted or interpreted their antitrust laws to allow indirect purchasers to sue,29 which means that for the same conduct direct purchases can claim damages under federal antitrust law and indirect purchasers can claim damages under state law (assuming the conduct is illegal under both). Recognizing the impracticality of Illinois Brick, and following the wave of state antitrust provisions to give standing to indirect purchasers, the US Antitrust Modernization Commission recommended that the rule in Illinois Brick be overruled ‘to the extent necessary to allow both direct and indirect purchasers to sue to recover for actual damages from violations of the federal antitrust laws’.30 It did so because it found that ‘[d]uplicative federal direct purchaser and state indirect purchaser litigation imposes undue burdens on the judicial system and the parties, wastes resources, increases the risk of duplicative recoveries, skews the parties’ incentives to settle, and hinders efficient global settlements.’31

The continuing misalignment of US and EU rules on standing complicates antitrust enforcement when both jurisdictions are involved. The differences do not only lie in the barring of indirect purchasers in the USA, they also encompass the unavailability of the passing-on defence in the USA. Indeed, since indirect purchasers do not have standing and all damages are vested into the direct purchaser, defendants cannot raise a passing-on defence by which a direct purchaser limits their exposure to the defendant’s alleged anticompetitive conduct by rolling over some of the costs further down the value chain. As a result, a single antitrust proceeding by which all damages in both jurisdictions are claimed is not possible.32 This is true both for court and settlement proceedings, and it is particularly problematic in markets such as online app distribution, which are inherently global, and where damages can arise in multiple jurisdictions emanating from the same conduct.

Not only that, but the fragmentation of proceedings can be used strategically to exert pressure to the side that is most sensitive to multiple proceedings.33 When damages claims can be litigated or settled under a single proceeding, the pressure is lower compared to the threat of multiple proceedings in numerous jurisdictions. For EU competition law parties, who otherwise enjoy a unified damages regime, the persistence of the Illinois Brick rule creates unnecessary complexity. Furthermore, the unavailability of the passing-on defence in the USA may skew incentives of defendants in terms of where they prefer to be sued. While it is difficult to estimate whether such incentives will mean greater or lesser involvement of EU competition law, in principle, any factor that facilitates using the law as a tool for strategizing should be unwelcomed.

#### Now is key – regulatory harmonization is around the corner which will address emerging tech and privacy governance.

Moens 9/9 [Barbara Moens, Reporter @POLITICOEurope covering trade and Belgian politics. Mark Scott, Chief Technology Correspondent at POLITICO, “Transatlantic trade deal rises from the grave to fight China,” 09/09/21, *POLITICO*, https://www.politico.eu/article/ttip-rises-from-the-grave-to-fight-china/]

Activists may have thought the politically explosive Transatlantic Trade and Investment Partnership (TTIP) negotiations between Europe and America were dead and buried.

But one of the most important elements of those talks, which collapsed in 2016, is back from the grave: regulatory alignment between Washington and Brussels.

The first meeting of the Trade and Tech Council (TTC) in Pittsburgh on September 29 is intended to build a diplomatic platform for the European Union and the United States to work together on industrial and tech standards to counter China's rise in sectors ranging from microchips and robots to artificial intelligence and the alleged antitrust abuses of Google and Amazon.

The attempt to build a common U.S.-EU front could hardly come at a more sensitive moment politically, as the American retreat from Afghanistan has blown a hole in European faith in the administration of U.S. President Joe Biden. Many in Brussels feel let down by Washington's retreat from that country, while many in the U.S. capital believe EU countries did not pull their weight during the 20-year war.

“You can not discuss the Trade and Tech Council, and transatlantic trade relations overall, without Afghanistan in the back of your mind,” said one EU trade diplomat who spoke on the condition of anonymity because the ongoing talks are private. “The trust is gone, and that has to be rebuilt one step at a time.”

The two sides may not find themselves perfectly aligned against the common Chinese foe, however.

Brussels had originally hoped to pressure the Americans into following Brussels’ regulatory line on tech and trade, building on more than a decade of digital policymaking that spanned competition enforcement to global privacy rules. But now, the big fear among European officials is that the EU could well come off second best in this process and cede power to the U.S. after Washington flexed its muscles in early-stage talks around the upcoming trade and tech summit to focus on priorities for Biden's administration.

TTIP through the back door?

The TTIP negotiations are mostly remembered for protests about hormone-treated beef and chemically-rinsed poultry but the major benefits of TTIP lay precisely in bringing together conflicting EU-U.S. regulations. At the time, Brussels described this part of TTIP as a "regulatory cooperation body" and said that it could look at sectors such as data and cybersecurity.

Washington and Brussels now want to target those regulatory benefits again. “That sounds extremely boring and technical, but there’s a lot of money in having different standards. So this has the support from business from both sides,” former EU trade chief Cecilia Malmström told POLITICO earlier this year. Ten working groups — on everything from global trade standards to how to deal with online platforms — are expected to hammer out how such joint transatlantic policymaking could work in practice.

This time around, it’s not just car seatbelts or pharmaceuticals. The discussions focus on critical emerging technologies like artificial intelligence, semiconductors and data governance.

#### Aligning AI governance with the EU stops a laundry list of existential threats.

Garcia 21 [Denise Garcia, professor at Northeastern University; vice-chair of the International Committee for Robot Arms Control, “Stop the emerging AI cold war,” 05/11/21, *Nature*, Vol. 593, https://www.nature.com/articles/d41586-021-01244-z, EA]

A race to militarize artificial intelligence is gearing up. Two years ago, the US Congress created the National Security Commission on Artificial Intelligence (NSCAI). This March, it recommended that the United States must accelerate artificial-intelligence (AI) technologies to preserve national security and remain competitive with China and Russia.

This will undermine the United States’ ability to lead emerging global norms on AI. In April, the European Commission published the first international legal framework for making AI secure and ethical; in January, the European Parliament issued guidelines stating that military AI should not replace human decisions and oversight. By contrast, the NSCAI recommendations advocate “the integration of AI-enabled technologies into every facet of war-fighting”.

Enhancing AI war-fighting capacity will decrease security in a world where the biggest threats are instability — political, social, economic and planetary. The NSCAI should heed the research community. Some 4,500 AI and robotics researchers have declared that AI should not make the decision to take a human life — aligning with the European Parliament guidelines and the European Union regulation.

The NSCAI resurrected disastrous ideas from the cold war and framed its report in terms of winning a competition for AI-enabled warfare. During the cold war, the drive to stay ahead in the technological race led to the accumulation of 70,000 nuclear weapons and today’s global arsenal of 13,100 warheads. This brought extortionate costs: US$70 billion is spent annually to maintain nuclear weapons globally. Other threats demand similar investments: in 2019, climate-induced natural disasters displaced 25 million people, and decentralized conflicts forced 8.6 million to move. Still more threats affect infrastructure, such as the ransomware attack on 8 May that shut down a 8,850-kilometre US fuel pipeline.

The NSCAI does not prioritize international cooperation to create new regulations. Indeed, it speaks against a global ban on autonomous weapons, saying that other countries cannot be trusted to comply. But an AI-militarization race would be profoundly destabilizing. Unlike nuclear arms, AI is already ubiquitous in civilian spheres, so the dual-use risks of, say, flying drones or computer night vision are much higher.

Since 2014, I have been an observer and adviser at United Nations meetings, and I testified in 2017 as part of the International Panel on the Regulation of Autonomous Weapons. In my view, rather than focusing on counting weapons or on particular weapons systems, policies should specify human intention and human–machine interaction, obligating countries to maintain human control over military force. Other agreements could mitigate malicious uses of AI, such as using facial recognition to oppress citizens or biased data to guide decisions about employment or incarceration. The world’s people need protection from cyberattacks to infrastructure — such as those on US hospitals in 2020 or those that hit national electrical grids.

The NSCAI report calls for international standards for AI-enabled and autonomous weapons systems, arguing that if these systems are properly tested and designed, humans can use them to make the decision to kill, consistent with international humanitarian law. This is misleading: it’s difficult to make machine learning’s ‘black box’ nature fully interpretable, or to ensure that AI systems perform as expected after deployment. These systems learn from their environment, and the real world is never as simple as the laboratory.

The NSCAI argues that the United States should seek commitments from Russia and China against autonomous nuclear weapons, even as it argues against treaties regulating other autonomous and AI weapons. Instead, the United States should negotiate decreases in nuclear arsenals and establish standards to keep humans in meaningful control.

The NSCAI is too dismissive by discounting cooperation. The Chemical Weapons Convention, the Biological Weapons Convention, the UN Sustainable Development Goals and the 1987 Montreal Protocol are examples of accountability on which all the major powers worked together. The United States and Russia established the International Space Station by cooperating closely.

Most nations want governance that controls the use of AI in war. In June 2020, the Global Partnership on Artificial Intelligence was created by the Group of Seven industrialized countries (G7) and called for human-centric development and use of AI. The partnership brings scientific and research communities together with industry and government to facilitate international cooperation. This is the path that the United States should take — with scientists, researchers and industry alike.

The relentless pursuit of militarization does not protect us. It diverts resources and attention from nearer existential threats, such as extreme weather events. With the world reeling from COVID-19 — the shock of the century — now is not the moment to hasten towards worldwide confrontation. In 2019 alone, climate disasters displaced almost one million people in the United States. China, too, is extremely vulnerable to global warming. This common ground could pave the way to cooperation, including stopping the emerging AI cold war. This is no time to embark on an exorbitant and ineffective race.

#### Strengthening cartel responses creates regulatory harmonization and deters expatriation.

Leonardo 17 [Lizl Leonardo, J.D., magna cum laude and with a Certificate of Business Law from DePaul University College of Law, “A Proposal to the Seventh and Ninth Circuit Split: Expand the Reach of the U.S. Antitrust Laws to Extraterritorial Conduct that Impacts U.S. Commerce,” 2017, *DePaul Law Review*, Vol. 66, Issue 1, https://via.library.depaul.edu/cgi/viewcontent.cgi?article=4008&context=law-review, EA – Typo Corrected]

A U.S. Supreme Court ruling in favor of the ~~Seventh~~ [Ninth] Circuit will also prevent companies from potentially leaving the United States to avoid compliance with antitrust laws.417 Domestic companies with foreign subsidiaries that seek to increase their market share by colluding to fix the prices of products will be deterred from engaging in illegal conduct, but they will also be incentivized to keep their businesses in the country.418 Mere knowledge that companies can be liable in the United States for engaging in illegal, extraterritorial conduct that indirectly affects U.S. consumers could in itself discourage the companies from pursuing such conduct.419 Likewise, without the benefit of being exculpated from any extraterritorial conduct, companies will rather stay in the United States than incur expensive costs of moving overseas. This is a win-win situation; prices of products remain controlled by the natural forces of supply and demand, and small and local companies are able to compete with the bigger and international companies. On the contrary, a ruling that limits the extraterritorial reach of the FTAIA to non-import commerce, similar to what the Seventh Circuit held, will encourage companies to move their operations overseas and strategically only deal with the United States in instances they are certain will not subject them to either the Sherman Act or FTAIA.420

Arguably, ruling in favor of the Ninth Circuit could hurt companies that trade with the United States indirectly. These companies have legitimate reasons for incorporating as “foreign subsidiaries,” and subjecting them to U.S. jurisdiction would in effect deplete some of these purposes.421 Although domestic legal remedies are available in some foreign countries, as mentioned above, they are unlikely to deter price-fixing by international cartels.422

Moreover, having a more consistent approach in cases like this will strengthen and harmonize the partnership across nations. Needless to say, the cooperation between these countries can play a significant role in attaining this objective. Bilateral agreements between the countries have proven that, though challenging, implementing this stricter rule is not impossible.423 International trade rules, such as the General Agreement on Tariffs and Trade (GATT), World Trade Organization (WTO), Organization for Economic Cooperation and Development (OECD), and agreements between countries, imply the general acceptance of this proposal.424 The rapid growth in globalization has forced governments to institute and enforce policies that both protect domestic products from multinational firms and encourage the domestic firms to compete internationally, in furtherance of international trade.425

One of the partnerships the European Union (EU) and the U.S. governments are currently working on is called the Transatlantic Trade and Investment Partnership (T-TIP).426 Its aim is to further develop the strong relationship nations have and leverage that relationship to boost economic growth and international competitiveness.427 The agreement purports to provide greater transparency around trade and investment regulation while ensuring the quality of the products.428 As part of the agreement, the governments seek to eliminate all tariffs, other duties, and charges on trade in various products between the United States and the European Union.429

The proponents of T-TIP point out that the elimination of tariffs and quotas will, among other things, entail lower costs of import to each of the regions, put products from one area “on equal footing” with the products from another, create more jobs, lower the unemployment rate, increase competitiveness, and improve the overall growth of members of the agreement.430 Although the agreement seems ambitious at this time, it intends to link two of the world’s larg est economies to generate a third of the world’s GDP.431 Critics argue, however, that the deregulation of several national laws—possibly resulting in lower consumer standards, as well as compromised laws covering intellectual property, food safety, privacy and data collection, and democratic legitimacy—are all steps in the wrong direction.432

Having an established rule that foreign companies’ non-import trade conduct can be subjected to U.S. antitrust laws, as long as the conduct had an “immediate consequence” on U.S. commerce, could mitigate the risks associated with the opening of U.S. and EU markets. Foreign companies that will be encouraged to invest in the United States as a result of T-TIP will have an understanding of the laws and the possible repercussions of any business transaction in which they take part. These companies do not need to determine if and how any of their strategic decisions can be subjected to either the Seventh or Ninth Circuit rulings before securing deals or signing agreements. The certainty will provide companies with notice and understanding of how the law affects their decisions, thereby making their investments less risky. In return, investments could become safer, eventually having a favorable impact on the continued development of the world economy.

### 1AC – Solvency Core

#### Overturning *Motorola* restores deterrence.

Meriwether 15 [Ellen Meriwether, litigation partner at Cafferty Clobes Meriwether & Sprengel LLP and concentrates her practice in antitrust class action litigation, “Motorola Mobility and the FTAIA: If Not Here, Then Where?,” 2015, *Antitrust*, Vol. 29, No. 2, https://www.caffertyclobes.com/wp-content/uploads/2019/07/Spring15-MeriwetherC.pdf, EA]

Elimination of Private Enforcement Under Federal Law

The Seventh Circuit repeatedly stated that Motorola must seek its remedies abroad, under the laws of the country in which its subsidiaries are incorporated. 105 Yet only a few Asian countries even allow for recovery of private antitrust damages, and these countries generally disallow class actions and require plaintiffs to pay all court costs. 106 Moreover, in Motorola’s case, the evidence suggests that none of the injury arising from panels shipped into the United States was suffered overseas; rather, the inflated prices paid by the purchasers abroad were passed through to the United States and ultimately paid by U.S. consumers. 107 It is not likely that foreign purchasers, even if they have private rights of action in their home countries, can recover without proving actual damages. 108

The ease with which the Seventh Circuit dismisses concerns about the elimination of private enforcement may suggest an underlying assumption that criminal prosecution and fines here and abroad are sufficient to deter global cartel conduct. Yet successfully conducted global cartels have been highly profitable, 109 and criminal fines, when issued at all, are small in comparison to profits earned by members of global cartels. 110 The Sherman Act attempts to address this issue by imposing treble damages on violators, but in most other countries private actions lack this deterrent force. 111Thus, the consequence of the panel decision is to remove any deterrent effect of private actions from the cost-benefit calculus of cartel members.

Given the dearth of effective private damages remedies in many foreign jurisdictions and the inability of government enforcement to adequately deter global cartel activity, private plaintiffs may be expected to argue (1) that the application of the FTAIA in Motorola II should not be accepted by other courts outside the Seventh Circuit, and (2) that the bar to indirect purchaser claims under federal antitrust law should be changed (presumably by the Supreme Court) to allow indirect purchasers to assert damages claims as the DOJ proposed.

#### Only the plan can overturn Illinois Brick – key to treble damages.

Ryu 16 [Jae Hyung Ryu, B.A., Yale University, New Haven, Connecticut. J.D. Candidate (2017), Washington University School of Law, St. Louis, “Deterring Foreign Component Cartels in the Age of Globalized Supply Chains,” 2016, *Wake Forest Journal of Business and Intellectual Property Law*, Vol. 17, No. 1, http://ipjournal.law.wfu.edu/files/2017/01/Ryu-V-17-I1.pdf, EA]

Moreover, the Supreme Court’s action is necessary due to a potential conflict with the indirect purchaser doctrine outlined in Illinois Brick. 178 The indirect purchaser doctrine stipulates that only the “overcharged direct purchaser, and not others in the chain of manufacture or distribution, is the [injured] party” in the antitrust context.179 Part V will explain that the concerns posed by the indirect purchaser doctrine should not bar the antitrust laws from being applied to the importation of finished products incorporating price-fixed components.180 Nevertheless, because the indirect purchaser doctrine remains the law, the Supreme Court should reexamine the validity of the doctrine in the context of today’s age of globalized supply chains. 181 Moreover, as a commentator warned, the blanket application of the indirect purchaser doctrine will render the Sherman Act powerless to achieve the deterrence goal.182 It is notable that the Illinois Brick Court created a caveat in its indirect purchaser doctrine holding, leaving room for abandoning or modifying the doctrine if the “effectiveness of the antitrust treble-damages action would be substantially reduced by” the doctrine. 183 The prevalence of globalized supply chains and amounting voices arguing that U.S. antitrust laws would be powerless to mitigate anticompetitive harms outside its borders should supply sufficient grounds for the Supreme Court to revisit Illinois Brick and examine if that caveat rings truer today.

# 2AC

## Cartels

### AT: Space Col Turn

#### Private sector prices in safety.

Sharma 21 [Maanas Sharma, Editor-in-Chief of the Journal of Interdisciplinary Public Policy, “The privatized frontier: the ethical implications and role of private companies in space exploration,” 09/07/21, *The Space Review*, https://www.thespacereview.com/article/4238/1, EA]

The most obvious ethical concern is the loss of human life. Critics contend that companies must answer to their shareholders and justify their profits. This contributes to a larger overall psyche that prioritizes cost and speed above all else, resulting in significantly increased risks.[4] However, the possible increase in mishaps is largely overstated. Companies recognize the need for safety aboard their expeditions themselves.[5] After all, the potential backlash from a mishap could destroy the company’s reputation and significantly harm their prospects. According to Dr. Nayef Al-Rodhan, Head of the Geneva Centre for Security Policy’s Geopolitics and Global Futures Programme, “because there were no alternatives to government space programs, accidents were seen to some degree as par for the course… By comparison, private companies actually have a far more difficult set of issues to face in the case of a mishap. In a worst case scenario, a private company could make an easy scapegoat.” [6]

#### Space independently brings immeasurable expected value – outweighs.

Baum 16 – Executive Director of the Global Catastrophic Risk Institute [Seth D. Baum, “The Ethics of Outer Space: A Consequentialist Perspective,” 2016, Springer, pp. 115-116, EA]

Space colonization is notable because it may be able to bring utterly immense increases in intrinsic value. Early colonies might start small, given that other planets and moons have inhospitable environments. However, it may be possible to build large indoor colonies or create more hospitable outdoor environments (i.e., terraforming). Even just on other planets and moons in the Solar System, space colonies could multiply the total area available for human habitation. And there are many more planets around other stars, as ongoing research on exoplanets is now learning. One recent study estimates 22 % of Sun-like stars have Earth-like exoplanets (Petigura et al. 2013), implying billions to tens of billions of potentially habitable planets across the galaxy.

Opportunities at any given star may also be quite a bit greater than those available only on planets. Earth only receives about one two-billionth of the Sun’s radiation. To collect all the Sun’s radiation, humanity would need a Dyson swarm (named after Dyson 1960), which is a series of structures that surrounds a star, collecting its radiation to power a civilization. A Dyson swarm around the Sun could potentially enable a civilization a billion times larger than is possible on Earth. Likewise, Dyson swarms around one billion stars would bring humanity approximately 1018 (one billion–billion) times more energy per unit time.

Space colonies could also increase the amount of time available for human civilization. Earth will remain habitable for a few billion more years (O’Malley-James et al. 2014). Stars will continue shining for about 1014 more years (Adams 2008). That gives us an additional 105 times more energy, for a total of 1023 times more energy than is available on Earth. After the stars fade, other energy sources may be available. And even if our current universe eventually becomes uninhabitable, it may be possible to move to other universes (Kaku 2005). The physics here is speculative, but it cannot be ruled out, and hence there is a nonzero chance of a literally infinite opportunity for space colonization (Baum 2010a).

Whether the opportunity is infinite or merely, say, 1023 times larger than what can be done on Earth, the opportunity is clearly immense. As long as space colonization is an improvement (Sect. 8.3.1), then it would seem that the consequentialist should prioritize space colonization. The sooner space colonization begins, the more of its immense opportunity can be gained. Indeed, Ćirković (2002) estimates 5 × 1046 human lifetimes are lost for every century in which space colonization is delayed.

## Uncertainty

## Illinois Brick

## T-Subsets

#### C/I – core antitrust laws are the big three + their amendments and court interpretations.

FTC 13 [Federal Trade Commission; first saved on the Wayback Machine’s Internet Archive on December 14, 2013; “The Antitrust Laws,” https://www.ftc.gov/tips-advice/competition-guidance/guide-antitrust-laws/antitrust-laws]

Congress passed the first antitrust law, the Sherman Act, in 1890 as a "comprehensive charter of economic liberty aimed at preserving free and unfettered competition as the rule of trade." In 1914, Congress passed two additional antitrust laws: the Federal Trade Commission Act, which created the FTC, and the Clayton Act. With some revisions, these are the three core federal antitrust laws still in effect today.

The antitrust laws proscribe unlawful mergers and business practices in general terms, leaving courts to decide which ones are illegal based on the facts of each case. Courts have applied the antitrust laws to changing markets, from a time of horse and buggies to the present digital age. Yet for over 100 years, the antitrust laws have had the same basic objective: to protect the process of competition for the benefit of consumers, making sure there are strong incentives for businesses to operate efficiently, keep prices down, and keep quality up.

Here is an overview of the three core federal antitrust laws.

The Sherman Act outlaws "every contract, combination, or conspiracy in restraint of trade," and any "monopolization, attempted monopolization, or conspiracy or combination to monopolize." Long ago, the Supreme Court decided that the Sherman Act does not prohibit every restraint of trade, only those that are unreasonable. For instance, in some sense, an agreement between two individuals to form a partnership restrains trade, but may not do so unreasonably, and thus may be lawful under the antitrust laws. On the other hand, certain acts are considered so harmful to competition that they are almost always illegal. These include plain arrangements among competing individuals or businesses to fix prices, divide markets, or rig bids. These acts are "per se" violations of the Sherman Act; in other words, no defense or justification is allowed.

The penalties for violating the Sherman Act can be severe. Although most enforcement actions are civil, the Sherman Act is also a criminal law, and individuals and businesses that violate it may be prosecuted by the Department of Justice. Criminal prosecutions are typically limited to intentional and clear violations such as when competitors fix prices or rig bids. The Sherman Act imposes criminal penalties of up to $100 million for a corporation and $1 million for an individual, along with up to 10 years in prison. Under federal law, the maximum fine may be increased to twice the amount the conspirators gained from the illegal acts or twice the money lost by the victims of the crime, if either of those amounts is over $100 million.

The Federal Trade Commission Act bans "unfair methods of competition" and "unfair or deceptive acts or practices." The Supreme Court has said that all violations of the Sherman Act also violate the FTC Act. Thus, although the FTC does not technically enforce the Sherman Act, it can bring cases under the FTC Act against the same kinds of activities that violate the Sherman Act. The FTC Act also reaches other practices that harm competition, but that may not fit neatly into categories of conduct formally prohibited by the Sherman Act. Only the FTC brings cases under the FTC Act.

The Clayton Act addresses specific practices that the Sherman Act does not clearly prohibit, such as mergers and interlocking directorates (that is, the same person making business decisions for competing companies). Section 7 of the Clayton Act prohibits mergers and acquisitions where the effect "may be substantially to lessen competition, or to tend to create a monopoly." As amended by the Robinson-Patman Act of 1936, the Clayton Act also bans certain discriminatory prices, services, and allowances in dealings between merchants. The Clayton Act was amended again in 1976 by the Hart-Scott-Rodino Antitrust Improvements Act to require companies planning large mergers or acquisitions to notify the government of their plans in advance. The Clayton Act also authorizes private parties to sue for triple damages when they have been harmed by conduct that violates either the Sherman or Clayton Act and to obtain a court order prohibiting the anticompetitive practice in the future.

## Memo CP

#### Advantage 2 – corporate lawyers watch the courts.

Goldstein 15 [David M. Goldstein, Robert Reznick, and Shannon Leong, \* San Francisco partner in Orrick, Herrington & Sutcliffe’s Antitrust and Competition group, “Recent Developments in the Extraterriorial Application of the U.S. Antitrust Laws,” 2015, *Orrick*, https://fbjgk.com/wp-content/uploads/2021/02/2015-06-04-Recent-Developments-in-the-Extraterritorial-Application-of-the-US-Antitrust-Laws-JCA-Journal.pdf, EA]

Antitrust lawyers in the United States have been watching these and other FTAIA for several years to see whether the courts would reach complete agreement on critical FTAIA issues. They did not, and in two important cases, petitions have been filed asking the U.S. Supreme Court to resolve some of the disputed issues.

#### Even if agencies believe the CP, courts don’t.

Bona 21 [Jarod M. Bona is the founder and CEO of Bona Law PC, an antitrust boutique law firm. He graduated cum laude from Harvard Law School in 2001, then clerked on the United States Court of Appeals for the Eight Circuit for Judge James B. Loken in Minneapolis, Minnesota. He then practiced law for a dozen years at DLA Piper and Gibson, Dunn & Crutcher, before founding Bona Law PC, “Five U.S. Antitrust Law Tips for Foreign Companies”, January 16, 2021, https://www.theantitrustattorney.com/five-u-s-antitrust-tips-foreign-companies/] IanM

Just because your company isn’t based in the United States **doesn’t** mean it can **ignore** US antitrust law. In this interconnected world, there is a good chance that if you produce something, the United States is a market that matters to your company.

For that reason, I offer five points below that attorneys and business leaders for non-U.S. companies should understand about US antitrust law.

But maybe you aren’t from a foreign company? Does that mean you can click away? No. Keep reading. Most of the insights below matter to anyone within the web of US antitrust law.

1. Two federaland many state **agencies** enforce antitrust laws in the United States

The United States government has two separate antitrust agencies—the [Federal Trade Commission](https://www.theantitrustattorney.com/category/ftc/) (FTC) and the [Antitrust Division of the Department of Justice](https://www.theantitrustattorney.com/category/department-of-justice/) (DOJ). The FTC is an independent federal agency controlled by several Commissioners, while the Antitrust Division of the DOJ is part of the Executive Branch, under the President.

Both of them enforce federal antitrust laws (among other laws). Their jurisdictions technically overlaps, but they tend to have informal agreements between each other for one or the other to handle certain industries or subjects. If you are part of a major industry, your antitrust lawyer may be able to tell you whether the DOJ or FTC is likely to oversee competition issues in your field.

The Antitrust Division of the DOJ is the only one of the two to enforce the [criminal antitrust laws](https://www.theantitrustattorney.com/category/criminal-antitrust-issues/), so if you are entangled in a cartel investigation, you will likely hear from them. By the way, if you want to learn about antitrust cartels, read my friend Bob Connolly’s excellent blog [Cartel Capers](http://cartelcapers.com/).

Both the DOJ and FTC review [mergers and acquisitions](https://www.theantitrustattorney.com/category/mergers-acquisitions/) (including [joint ventures](https://www.theantitrustattorney.com/both-during-and-after-covid-19-crisis-antitrust-law-wont-block-pro-competitive-joint-ventures/)), once again informally divided by subject. If you have a significant transaction in the United States, make sure you determine whether you must prepare [a Hart-Scott-Rodino Act filing](https://www.bonalaw.com/what-are-the-requirements-of-an-hsr-antitrust-filing-for-a-merge.html) with the US antitrust agencies.  And, in the meantime, [read this article about how to avoid ten minefields in your HSR filing to the antitrust agencies](https://www.theantitrustattorney.com/considering-a-merger-or-acquisition-avoid-these-10-minefields-in-your-hsr-filing-to-the-antitrust-agencies/). And [this article about private equity companies, small transactions, and HSR rules](https://www.theantitrustattorney.com/give-and-take-of-proposed-hsr-rules-private-equity-companies-and-small-transactions/).

Besides the federal antitrust laws, the Attorney Generals of the many states can enforce their own state antitrust laws. Many of these laws pattern or mimic the federal antitrust laws, [but some of them have important differences, like the Cartwright Act in California.](https://www.theantitrustattorney.com/files/2014/01/Executive_Counsel_Jan2011.pdf)

This federal/state distinction is particularly an issue when it comes to resale price maintenance agreements.

You should also know that the position of State Attorney General is often a stepping-stone to running for Governor. And you will often see politically ambitious attorney generals leading (or more accurately following) antitrust pursuits once a federal antitrust agency has announced an antitrust investigation. So if you are ensnared in a federal investigation, be ready for some state antitrust activity as well. If this is your situation, [read our article about what I call an antitrust blizzard](https://www.theantitrustattorney.com/avoid-antitrust-blizzard/).

3. The Federal Courts ultimately decide antitrust cases

The federal antitrust **agencies** **play** a significant **role** in US antitrust enforcement. But **compared** to the [EU](https://www.theantitrustattorney.com/category/european-union/) and other international jurisdictions, the courts in the US are much more important. In most jurisdictions, the antitrust agency is the center of the antitrust and competition universe. But in the United States, the federal court decides everything.

If a US antitrust agency wants to pursue a claim, it must ultimately either file a claim in court or have its claim upheld in court, perhaps after administrative proceedings in the case of the FTC. The latter may not necessarily differ from other jurisdictions, [but if you come from Europe or elsewhere](https://www.theantitrustattorney.com/2017/04/03/know-whether-company-abusing-dominant-position-european-union/), it might surprise you how relatively little the courts defer to the antitrust agencies.

Sure, there is some deference and if [an appellate court](https://www.bonalaw.com/appellate-litigation.html) is reviewing an FTC administrative ruling, they will formally defer on the facts to a certain extent. But the courts are **independent** and they make the decisions. And the federal judges—with **lifetime** appointments—have no trouble concluding that a **federal** antitrust agency (or any other agency, for that matter) is wrong.

#### Leonardo says we solve otherwise-inevitable expatriation – causes totalitarianism.

Bone 20 [Jeff Bone, Assistant Professor of Legal Studies, Haub School of Business, Saint Joseph's University, “Antitrust Reform: Implications of Prospective Threats by Digital Platforms to Relocate Abroad,” 2020, *Belmont Law Review*, Vol. 8, Issue 1, https://ssrn.com/abstract=3574303]

Instead of choosing one jurisdiction, perhaps these digital platforms could spread themselves across several nations, in a strategic move, to demonstrate that they can come and go as they please. Further, they can deploy their activities worldwide and choose where to report profit.79 In this way, it is possible that these corporations have reached a sphere of dominance and control where they have become, in effect, transnational and ungovernable by any one particular state.80 It has been predicted that increasing concentration of corporate power may result in tyrannical organizations that are beyond domestic regulatory control.81 In order to govern their activities, new international rules will have to be developed and targeted at these fluid multinational business structures. This is essential as the world transitions away from the post-Cold War Neoliberal order towards a “Geoeconomic Order.”82 In this new era, the rise of economic power becomes the dominant force in geopolitics.83

In this sense, one commentator has written of the need for the “modern law” to give way to the “post-modern law” in order to adjust to a new normal.84 One noted historian has even envisaged the progression towards a dystopian world order, where transnational corporations align with multinational military forces, such as NATO, to form a “supranational nexus” that rivals the power of any particular state, or alliance of states which seek to regulate them.85

#### Outweighs extinction

Farquahar 17 [Sebastian Farquhar, John Halstead, Owen Cotton-Barratt, Stefan Schubert, Haydn Belfield, and Andrew Snyder-Beattie, \* DPhil student in Computer Science at the University of Oxford, \*\* professor of environmental economics and chair of the Department of Resource Economics and Development at the University of New Hampshire, \*\*\* DPhil in mathematics from the University of Oxford, \*\*\*\* Ph.D. in philosophy from Lund University, \*\*\*\*\* Associate Fellow at the Leverhulme Centre for the Future of Intelligence, \*\*\*\*\*\* Director of Research at the Future of Humanity Institute, Global Priorities Project 2017, “Existential Risk: Diplomacy and Governance,” 01/23/17, https://www.fhi.ox.ac.uk/wp-content/uploads/Existential-Risks-2017-01-23.pdf, Accessed: 08/03/20, EA]

During the twentieth century, citizens of several nations lived for a time under extremely brutal and oppressive regimes.47 Between them, these states killed more than one hundred million people, and sought total control over their citizens. Previous totalitarian states have not been particularly durable chiefly due to the problem of ensuring orderly transition between leaders, and to external competition from other more liberal and successful states. However, there is a non-negligible chance that the world will come to be dominated by one or a handful of totalitarian states. If this were to happen, external competition would no longer threaten the durability of such states to the same extent. Moreover, improvements in certain forms of technology may make it easier for totalitarian states to maintain control, for example by making surveillance much easier. Global totalitarianism could exacerbate other existential risks by reducing the quality of governance. In addition, a long future under a particularly brutal global totalitarian state could arguably be worse than complete extinction.

## Japan DA

#### Uniqueness outweighs link.

Kim **’20** [Tong-hyung; 2020; Seoul-based reporter for the Associated Press; The Diplomat, “Leaders of America’s Asian Allies Call President-Elect Biden,” https://thediplomat.com/2020/11/leaders-of-americas-asian-allies-call-president-elect-biden/]

Japanese Prime Minister Suga Yoshihide said he and Biden during their call reaffirmed the importance of their countries’ alliances and agreed to further deepen it in face of China’s growing influence and North Korea’s nuclear threat.

“We had a very meaningful telephone conversation as I will work with President-elect Biden to push forward measures to strengthen the Japan-U.S. alliance,” Suga told reporters after speaking to Biden on the phone for about 15 minutes.

Biden’s office said the leaders “spoke about their shared commitment to tackle climate change, strengthen democracy around the world, and reinforce the U.S.-Japan alliance as the cornerstone of a prosperous and secure Indo-Pacific region.”

Suga said he told Biden that Japan wants to pursue the “Free and Open Indo-Pacific,” a vision that it has been promoting with the United States to include “like-minded” countries in the region, including Australia, India, and Southeast Asian countries that share concerns about China.

China has built and militarized man-made islands in the South China Sea and is pressing its claim to virtually all of the sea’s key fisheries and waterways. Japan is concerned about China’s claim to the Japanese-controlled Senkaku Islands, called Diaoyu in China, in the East China Sea.

China has denied it is expansionist and said it is only defending its territorial rights.

Suga said Biden gave him reassurance that Washington is committed to protecting Japan’s territorial rights to the Senkakus under the bilateral security pact in case of military clash.

#### EU Thumps

Ryu 16 [Jae Hyung Ryu, B.A., Yale University, New Haven, Connecticut. J.D. Candidate (2017), Washington University School of Law, St. Louis, “Deterring Foreign Component Cartels in the Age of Globalized Supply Chains,” 2016, *Wake Forest Journal of Business and Intellectual Property Law*, Vol. 17, No. 1, http://ipjournal.law.wfu.edu/files/2017/01/Ryu-V-17-I1.pdf, EA]

Yet, the European counterpart is already expansively employing its antitrust laws in the context of import commerce. In 2010, the European Commission, facing the same cartel faced by the Motorola court, fined the LCD manufacturer cartel for fixing prices.147 These panels were manufactured and incorporated into televisions, computer monitors, and notebooks in Asia.148

#### Countries won’t backlash

---no retaliation---every historical example of the US applying antitrust abroad caused the foreign state to embrace competition and enforcement of international cartels

First 19 [Harry First is the Charles L. Denison Professor of Law, New York University School of Law and Darren Bush is the Leonard B. Rosenberg Professor of Law, University of Houston Law Center, “Antitrust Analysis of NOPEC Legislation”, Volume 32, Issue 1, Article 4 of Loyola Consumer Law Review, https://lawecommons.luc.edu/cgi/viewcontent.cgi?article=2044&context=lclr] IanM

In the past, **foreign countries** have **not always** been **happy** about the **U**nited **S**tates **applying** its **antitrust laws** to **cartels formed** or operated in their **countries**. Early efforts to resist that enforcement, however, have largely given way to foreign countries embracing competition, engaging in law enforcement against international cartels, **and** even **accepting** the **imprisonment** of their **nationals** in **U.S. jails**. While asymmetric **retaliation** from foreign countries outside the competition law system is certainly **possible**, there is no history of such retaliation against U.S. antitrust enforcement, even in the context of the private litigation brought directly against OPEC and state-owned oil companies. Consequently, concerns with **retaliation** as a **result of antitrust action** by the United States are misplaced.

#### Cred theory’s wrong – calculations are situation-specific and depend on national interests

Stephen M. Walt, 1-6-2015, "The Credibility Addiction," Foreign Policy. https://foreignpolicy.com/2015/01/06/the-credibility-addiction-us-iraq-afghanistan-unwinnable-war/. Walt is a professor of international affairs at Harvard. Accessed 11-12-2020.

Unfortunately, this obsession with credibility was misplaced. For one thing, a state’s “reputation” for being tough or reliable didn’t work the way most foreign-policy elites thought it did. American leaders kept worrying that other states would question the United States’ resolve and capability if it ever abandoned an unimportant ally, or lost some minor scrap in the developing world. But as careful research by Ted Hopf, Jonathan Mercer, and Daryl Press has shown, states do not judge the credibility of commitments in one place by looking at how a country acted somewhere far away, especially when the two situations are quite different. In fact, when the United States did lose, or when it chose to cut its losses and liquidate some unpromising position, dominos barely fell and its core strategic relations remained unaffected. In other words, how the United States responds to a challenge in Southeast Asia or sub-Saharan Africa tells you nothing about how it would or should respond somewhere else, and other states understood this all along. When trying to figure out what the United States is going to do, other states do not start by asking what the United States did in some conflict on the other side of the world. Instead, they ask whether it is in America’s interest to act in the situation at hand. And guess what? This implies that U.S. commitments are most credible when the American interest is obvious to all.

#### No link – reassurances and bargaining solves

Glaser, 15 -- George Washington University international affairs and political science professor

[Charles, fellow in the Kissinger Institute at the Woodrow Wilson International Center for Scholars., "A U.S.-China Grand Bargain?: The Hard Choice between Military Competition and Accommodation," International Security, 39.4, 2015, Project Muse, accessed 6-4-20]

Although a decision by the United States to end its commitment to Taiwan would certainly send political shock waves across the region, these concerns are overstated. There are similarities between the U.S. commitments to Taiwan and Japan, but also clear differences. U.S. security interests in Japan are much greater; as a result, the alliance involves much stronger political commitments and the deep integration of U.S. and Japanese military capabilities. In addition, the United States has a clear rationale for ending its commitment to Taiwan that does not apply to Japan: the U.S. commitment to Taiwan strains the U.S.-China relationship and increases the probability of war in ways that the U.S. commitment to Japan does not. Japan should appreciate these differences and therefore recognize that the ending of the U.S. commitment to Taiwan would not indicate a coming diminution of the U.S. commitment to Japan. U.S. leaders could work to make sure that their Japanese counterparts fully appreciate these differences.

In addition, the United States could take other actions that would starkly distinguish its policies toward Japan from its policies toward Taiwan, which should help to offset doubts that accommodation on Taiwan might create. Most obviously, the United States could increase the size and improve the quality of the forces it commits to Japan's protection. Other policies could include further deepening U.S.-Japan joint military planning and continuing high-level discussions of the requirements for extending deterrence to Japan. Growth in Chinese conventional and nuclear forces has increased the importance of these interactions; ending the U.S. commitment to Taiwan would make them still more valuable.98

Finally, as China's power continues to grow, Japan's need for U.S. security guarantees will also grow. Doubts about U.S. reliability are therefore likely to convince Japan to work harder to strengthen the U.S.-Japan alliance, not to abandon it or to bandwagon with China.99

## Cap K

#### Capitalism solves extinction through environmental collapse – reject evidence that ignores synergistic deployment of adaptative tech – the public won’t transition to Communism but WILL channel political energies into innovative solutions that turn the K.

Bailey ’18 [Ronald; March 12; B.A. in Economics from the University of Virginia, member of the Society of Environmental Journalists and the American Society for Bioethics and Humanities, citing a compilation of interdisciplinary research; Reason, “Climate Change Problems Will Be Solved Through Economic Growth,” <https://reason.com/2018/03/12/climate-change-problems-will-be-solved-t>; RP]

"It is, I promise, worse than you think," David Wallace-Wells wrote in an infamously apocalyptic 2017 New York Magazine article. "Indeed, absent a significant adjustment to how billions of humans conduct their lives, parts of the Earth will likely become close to uninhabitable, and other parts horrifically inhospitable, as soon as the end of this century." The "it" is man-made climate change. Temperatures will become scalding, crops will wither, and rising seas will inundate coastal cities, Wallace-Wells warns. But toward the end of his screed, he somewhat dismissively observes that "by and large, the scientists have an enormous confidence in the ingenuity of humans….Now we've found a way to engineer our own doomsday, and surely we will find a way to engineer our way out of it, one way or another." Over at Scientific American, John Horgan considers some eco-modernist views on how humanity will indeed go about engineering our way out of the problems that climate change may pose. In an essay called "Should We Chill Out About Global Warming?," Horgan reports the more dynamic and positive analyses of two eco-modernist thinkers, Harvard psychologist Steven Pinker and science journalist Will Boisvert. In an essay for The Breakthrough Journal, Pinker notes that such optimism "is commonly dismissed as the 'faith that technology will save us.' In fact, it is a skepticism that the status quo will doom us—that knowledge and behavior will remain frozen in their current state for perpetuity. Indeed, a naive faith in stasis has repeatedly led to prophecies of environmental doomsdays that never happened." In his new book, Enlightenment Now, Pinker points out that "as the world gets richer and more tech-savvy, it dematerializes, decarbonizes, and densifies, sparing land and species." Economic growth and technological progress are the solutions not only to climate change but to most of the problems that bedevil humanity. Boisvert, meanwhile, tackles and rebuts the apocalyptic prophecies made by eco-pessimists like Wallace-Wells, specifically with regard to food production and availabilty, water supplies, heat waves, and rising seas. "No, this isn't a denialist screed," Boisvert writes. "Human greenhouse emissions will warm the planet, raise the seas and derange the weather, and the resulting heat, flood and drought will be cataclysmic. Cataclysmic—but not apocalyptic. While the climate upheaval will be large, the consequences for human well-being will be small. Looked at in the broader context of economic development, climate change will barely slow our progress in the effort to raise living standards." Boisvert proceeds to show how a series of technologies—drought-resistant crops, cheap desalination, widespread adoption of air-conditioning, modern construction techniques—will ameliorate and overcome the problems caused by rising temperatures. He is entirely correct when he notes, "The most inexorable feature of climate-change modeling isn't the advance of the sea but the steady economic growth that will make life better despite global warming." Horgan, Pinker, and Boisvert are all essentially endorsing what I have called "the progress solution" to climate change. As I wrote in 2009, "It is surely not unreasonable to argue that if one wants to help future generations deal with climate change, the best policies would be those that encourage rapid economic growth. This would endow future generations with the wealth and superior technologies that could be used to handle whatever comes at them including climate change." Six years later I added that that "richer is more climate-friendly, especially for developing countries. Why? Because faster growth means higher incomes, which correlate with lower population growth. Greater wealth also means higher agricultural productivity, freeing up land for forests to grow as well as speedier progress toward developing and deploying cheaper non–fossil fuel energy technologies. These trends can act synergistically to ameliorate man-made climate change." Horgan concludes, "Greens fear that optimism will foster complacency and hence undermine activism. But I find the essays of Pinker and Boisvert inspiring, not enervating….These days, despair is a bigger problem than optimism." Counseling despair has always been wrong when human ingenuity is left free to solve problems, and that will prove to be the case with climate change as well.

#### Only private sector solves spacecol

Diakovska & Aliieva 20 [Halyna Diakovska and Olga Aliieva, Ph.D.s in Philosophy, Associate Professors, Donbass State Pedagogical University, “Consequentialism and Commercial Space Exploration,” 2020, *Philosophy and Cosmology*, Vol. 24, pp. 5-24, https://doi.org/10.29202/phil-cosm/24/1, EA]

The experience of the USA showed that leadership in space exploration, which is maintained solely through public funding, could be erroneous. Since 1984, the share of public funding has gradually decreased in space telecommunications, commercial space transportation, remote sensing, etc., while the share of participation of non-state enterprises has increased rapidly. A legal and regulatory framework has been modified to stimulate space commercialization. The stages of space law development are discussed in the research of Valentyn Halunko (Halunko, 2019), Larysa Soroka (Soroka & Kurkova, 2019), etc. Larysa Soroka and Kseniia Kurkova explored the specifics of the legal regulation of the use and development of artificial intelligence for the space area (Soroka & Kurkova, 2019).

As a result of changing the legal framework and attracting private investors to the space market, the US did not lose its leadership in space exploration, but rather secured it. Private investment along with government funding have significantly reduced the risk of business projects in the space industry. The quality and effectiveness of space exploration programs have increased.

In 2018, Springer published an eloquent book The Rise of Private Actors in the Space Sector. Alessandra Vernile, the author of the book, explores a broad set of topics that reveal the role of private actors in space exploration (Vernile, 2018). The book covers the following topics: “Innovative Public Procurement and Support Schemes,” “New Target Markets for Private Actors,” etc. In the “Selected Success Stories,” Vernile provides examples of successful private actors in space exploration (Vernile, 2018).

The current level of competition, which has developed on the space market, allows us to state the following fact. Private space companies have been able to compete with entire states in launching spacecraft, transporting cargo to orbital stations, and exploring space objects. The issue of mining on space objects, the creation of space settlements and the intensive development of the space tourism market are on the agenda.

In the 21st century, the creation of non-governmental commercial organizations specializing in the field of commercial space exploration, is regarded as an ordinary activity. They are established as parts of the universities around projects funded by private investors. For example, Astropreneurship & Space Industry Club based on the MIT community (Astropreneurship, 2019).

Large-scale research in the field of commercial space exploration, as well as the practical results achieved, led to the formation of a new paradigm called “New Space” ecosystem. The articles of Deganit Paikowsky’s (Paikowsky, 2017), Clelia Iacomino (Iacomino & Ciccarelli, 2018) et al. reveal its key meanings and the opportunities it offers in the space sector. The “New Space” ecosystem is a new vision for commercial space exploration. It is the formation of a cosmic worldview, in which the near space with all the wealth of its resources and capabilities, becomes a part of the global economy and the sustainable development of the society. The “New Space” ecosystem offers the following ways for commercial space exploration (Iacomino & Ciccarelli, 2018):

1. Innovative public procurement and support schemes, which significantly expand the role of commercial actors in space exploration.

2. Attracting new entrants in the space sector. First of all, these are companies working in the domain of Information and communications technology, artificial intelligence, etc. that are expanding their research in space markets. They offer innovative business models and new solutions to space commercialization.

3. Innovative industrial approaches based on new processes, methods, and industrial organization for the development and production of space systems or launchers.

4. Disruptive market solutions, which significantly reduce commercial space exploration prices, increase labor productivity, provide new types of services, etc.

5. Substantial private investment from different sources and involving different funding mechanisms. For instance, these are private fortunes, venture capital firms, business angels, private equity companies, or banks, etc.

6. Involvement of an increasing number of space-faring nations investing in the acquisition of turnkey space capabilities or even in the development of a domestic space industrial base. This expands the space markets and makes it more competitive.

The analysis of the research and advances in commercial space exploration allows us to draw the following conclusions:

1. In fact, the space market has already been created. It is currently undergoing continuous development that will integrate the resources and capabilities of the near space into the global economy over the next decade.

2. A new paradigm, denoted by the term “New Space” ecosystem, is at the heart of the created space market. The “New Space” ecosystem is a step towards the formation of cosmic thinking, in which outer space, with its resources and capabilities, is considered as a sphere of human activities.

3. Space market regulates space law, which is constantly evolving. The space law develops within the bounds of international law. In essence, the space market is integrated into the international legal field and is governed by its laws.

#### Only the private sector solves asteroid deflection – avoids extinction.

Nelson 18 [Peter Lothian Nelson and Walter E. Block, \*\* Harold E. Wirth Endowed Chair and Professor of Economics, College of Business, Loyola University New Orleans, “Space Capitalism: How Humans will Colonize Planets, Moons, and Asteroids,” 2018, Springer, pp. 106-108, EA]

What of the danger of a comet impacting with the third planet from the Sun? The movie Armageddon depicted just that scenario. In it, our heroes saved the Earth, of course. But which occurrence is more likely? That this protection could be achieved by government, or the private sector of the economy? Most neo-classical economists would choose the former, due to the so-called public goods “market failure.”28 This is the “free-rider” challenge: each entrepreneur will presumably wait for someone else to undertake the costs of an action that will benefit all (saving the Earth from the comet in this case) and no one will actually do it.29 This “let George do it” philosophy presumably creates a “market failure.” But mainstream economists cannot hide behind this mischievous doctrine, since precisely the same phenomenon will afflict nations in the present scenario. In other words, the United States will wait for China, Russia, Europe, Japan, Israel, to deal with the comet,30 while that expectation will afflict all the others with inaction. That is, China, Russia, etc., each country capable of dealing with such an eventuality, will attempt to “free ride” on the efforts of anyone foolish enough to undertake it. As in the case of Buridan’s Ass (Rothbard 2010) that perished from a similar inaction, so will the human population.

Such a scenario is unlikely in the extreme. There are all sorts of reasons to expect that the “externality will become internalized.” That is, that private firms, more likely than the state apparatus, will prove flexible enough to overcome this impasse. Private railroad companies, not governments, created standard gauge, so that cargo no longer had to be loaded and unloaded each time it passed onto the property of a different firm. This benefitted all of them, and yet, somehow,31 they could overcome the tendency toward inaction. In like manner, the railroad firms also got together32 and created the now-familiar time zones. Not only did they themselves gain by being better able to coordinate with each other, but these vast benefits “spilled over” into society as a whole. We cannot rule out of consideration such cooperation on the part of governments on praxeological grounds,33 but it seems more probable that space companies could sort out a comet aimed at the Earth than a bunch of statist politicians and bureaucrats.

#### Cap solves war.

Wright 20 [Walker Wright, Johns Hopkins University, AAP Government Department, Graduate Student, “Commerce and Gentle Mores: Assessing the Empirical Validity of Doux Commerce,” 2020, Thesis, http://jhir.library.jhu.edu/handle/1774.2/63839, EA]

Yet, when Enlightenment thinkers put forth the doux commerce theory, data to test these assumptions were lacking. More than two centuries later, we have various strands of empirical social science that can help determine whether these pro-commerce thinkers were correct. As this thesis has shown, the doux commerce theorists were right: commercial societies are more peaceful, less corrupt, more trusting and trustworthy, more cooperative, and more fair and tolerant in their treatment of others. In several cases, the relationship between markets and these attributes were shown to be causal. In other cases, there was merely a positive relationship with the Big Six (very rarely was there no relationship or a negative one). As Brennan notes, “This kind of empirical work is not the final word. It does not decisively prove that market societies foster better motivations than [non-market] societies. However, it is better than hypothesizing from the armchair, as philosophers are apt to do.”323

The empirical validity of doux commerce has several important implications. First, it is a point in favor of liberalism as a political philosophy. Doux commerce was part of a larger discussion regarding liberal society. Empirical backing for doux commerce is in part empirical backing for liberalism. Second, economic liberalism is a necessary, though not sufficient, part of liberalism. Commerce continues to be maligned even today based on prejudices against markets that go back millennia. Producing peaceful cooperation among diverse peoples requires economic freedom as much as it does political freedom. These two work in tandem.324 Finally, beyond any political validation, a proposed mechanism for reducing conflict and increasing peaceful cooperation has been shown to actually work. This should be a cause for celebration. And it should motivate policymakers to establish institutions and policies that allow commerce to flourish.325 Then citizens can be partakers of Montesquieu’s “gentle mores.”

#### Alt spurs nuclear transition wars – reactionaries seize weapons and crush movements – means it doesn’t solve either.

Milne 17 (Drew Milne works at Cambridge in comparative drama, poetry and critical theory, with an emphasis on modernism and its legacies in contemporary writing, especially Samuel Beckett, and aspects of Renaissance drama, such as Shakespeare in performance. Current research projects include studies of: ecological poetics and politics; performance and performance criticism; modernist poetics; Shakespeare in performance; Marxist literary theory; contemporary poetry and poetics; and recent British drama. "NUCLEAR THEORY DEGREE ZERO, WITH TWO CHEERS FOR DERRIDA," https://www.tandfonline.com/doi/full/10.1080/0969725X.2017.1387358)

In Marxist circles, an “accelerationist” is someone who thinks that the collapse of capitalism will be hastened by allowing reactionary forces to speed up capitalism’s self-destruction. There are occasions when such an argument has validity: nothing about the form of the argument makes it inherently or structurally wrong. There are revolutionary moments when allowing capitalism to collapse in order to rebuild a socialist society is a better path than propping up a failing capitalist regime.The judgement is political rather than philosophical. In most contexts, however, the accelerationist argument, especially as a political principle, is deeply dangerous. It would be better, for example, to preserve a failing US capitalist regime while building social forces to take it over, than to allow the nuclear weapons of the United States to fall into the hands of a suicidal military rearguard or some counter-revolutionary terrorist organisation. Preserving the possibility of human life might involve propping up collapsing capitalist institutions, not least the nuclear safety inspectorate, rather than allowing humanity to be swallowed up by some death spiral of presidential dictators in fear of being toppled. These are critical judgements that could arise at any moment, with real risks that poor judgements will hasten a nuclear confrontation that leads to mutually assured annihilation. The formal shape of an accelerationist argument needs to be understood strategically and politically if it is to address nuclear questions. The accelerationist view that the deepening of capitalism could hasten its self-destructive tendencies and lead to its collapse is not inherently suicidal, but consideration of what the collapse of capitalism might mean for the global stock of nuclear weapons and nuclear power stations indicates dangers. Amid the collapse of capitalism, securing the safety of nuclear resources is a fundamental priority, and preparing a decelerationist strategy is an essential political position for any radical formation serious about nuclear safety.Against the horizon of nuclear crisis, we rely on workers to know how to manage and decommission nuclear weapons, silos and power stations.This requires “good” science and ongoing struggles to control the decision making around weapons and energy systems. Concrete consideration of what happens to ageing nuclear systems in an imploding political system has been tested in the fall of the Soviet Union. Imagine the retrenchment of reactionary forces around nuclear installations threatening suicidal political terrorism on a global scale. The risks of a collapsing capitalist system taking the world down with it are clear. Chernobyl and Fukushima, moreover, stand as metonyms of the risks involved in systems that were apparently functional and yet spiralled out of control even in what might be called peacetime. The risks of the US or the Chinese nuclear androids imploding involve different decisions. Again, the need is for nuanced political judgements and strategies, involving scientific expertise along with solidarity between scientists, workers and new social formations.

#### Pursuit of antimarket purity dooms alternative to irrelevancy – alienates potential allies and assumes non-market economics wouldn’t oppress.

**Nelson, 6** [Julie, Global Development and Environment @ Tufts, *Economics for Humans* p. 37-40]

Problems with the Market-Critic Prescriptions

At the end of the last chapter, I brought up evidence of poverty and corporate abuses that raise questions about the adequacy of the probusiness, free-market prescription for curing social ills. Do the prescriptions of the market critics for “small is beautiful/’“government to the rescue,” or “separate spheres” solutions give us grounds for more hope?

The “small is beautiful” prescription contains, of course, some truth. It is true that acting ethically is a more complicated process the larger and more complex the level of organization involved. Likewise, the “government to the rescue” advocates make some good points. It is easier for any one company to do the right thing if there is public pressure on all companies to do the right thing, and a government regulation can be a good tool for applying such pressure. On an even larger scale, international public agreements may be the only hope for addressing global climate change issues. These are far too big for any one nation, let alone one company, to take on. And there is some truth in the “separate spheres” view. There are some social welfare problems for which private, market solutions don’t work. Care for people who are poor and ill or otherwise needy cannot be provided on a purely market basis. The funds have to come from somewhere other than the “consumers” of the services. Public or private nonprofit allocations of money are necessary.

But while the values held in high regard by market critics are praiseworthy, and the prescriptions contain partial truths, I find the prescribed solutions lacking when held up to criteria of realism and effectiveness. Sometimes the proposed solutions could cause real damage.

A first problem is that these views tend to assume not only that the market sphere is driven exclusively by self-interest, but that self-interest is exclusive to the market sphere. They often seem to assume that if an organization is small, or nonprofit, or governmental, then non-self-interested motivations can be trusted to take over. We should consider the evidence on this.

Families, for example, are very small nonprofit organizations, presumably governed by interests of love and intimacy (as in the Victorian image).The newspaper reminds us daily, however, that families can also be characterized by domination and abuse, even violence. Sometimes being in a small-scale organization just means being under the thumb of a small-scale oppressor.

Community organizing is a great way to bring a group together to work on issues of social concern and to create opportunities for activism. Community organizing was very effective in South Boston in the 1970s, for instance, when big community demonstrations were organized to fight racial integration of the local public schools. Sometimes community groups carry out agendas of racism. And it is not uncommon for community activists motivated by not-in-my-backyard sentiments to try to push undesirable projects off on some other community. Communities, like individuals, can act in purely self-interested ways.

Nonprofit and religious organizations can bring people together to work for goals other than profit.The Boston diocese of the Catholic Church, for example, is legally not allowed to be motivated by profit. It was the maintenance of its own institutional hierarchies and reputation that motivated it to quietly move priests who sexually abused children from one parish to another, thereby supplying the abusers with fresh victims. Nonprofit institutions—even those ostensibly concerned with maintaining moral and spiritual values—are not immune to evil.

In an era of suspicious elections, campaign finance fiascos, and powerful lobbyists, one has to be naive in the extreme to believe that governments can be trusted to automatically or naturally work for the common good.

Appeals to small communities, nonprofits, or governments to take over economic activities “in the public interest” seem to me to bring in a deus ex machina solution.Yes, it would be nice if it worked. But how do we know that those selfish motivations critics assume drive the market are not also going to show up in families, community organizations, nonprofits, and the state?

A second problem with these views is that they largely pull the rug out from under their own noble drives. Because money and power are associated with greed and oppression, money and power are treated as inherently morally suspect. People who possess these, such as corporate executives who might be willing to engage in ethical discussion (if given the chance), are labeled as the evil “them,” separated by a large gulf from the moral “us.” Thus, potential allies and power bases are eliminated. This aversion to money and power has, I believe, been especially damaging to the sectors of the economy in which hands-on care is provided to children, the sick, and the elderly. Remember this poster: “It will be a great day when the schools have all the money they need and the air force has to hold a bake sale to buy a bomber”? How true. But the antimoney ideology reinforces exactly the bake-sale, nickel-and-dime mentality for human services that that poster decried. The damage this attitude has inflicted on caring work will be taken up further when I look at issues of money and motivations in chapter 4. A third problem is that, even if the prescriptions given by market critics were viable once put in place, there would still remain the problem of getting there. The massive promarket tide now flooding the **Un**ited States and global institutions presents an intimidating reality check. The “small is beautiful” view tells us that we must have a massive economic restructuring— the thorough destruction of large corporations as a form of economic organization—before we can really be human in our economic lives. This would require a gargantuan change— larger, perhaps, than the Industrial Revolution and the rise and fall of Communism combined. If, on the other hand, we hope to be rescued by the rise of powerful, purely public-spirited interventionist governments, the current political climate makes it look like we may be waiting a very long time. Every step toward wresting control away from those with money and power will, market critics correctly perceive, be resisted by those with money and power.

Some people enjoy tilting at the economic machine—or at windmills, like Don Quixote in his hopeless crusades. In fact, I admire the spirit of people who keep to their praiseworthy, treasured values against all odds. But what if the futures envisioned by market critics, visions that tend to seesaw between the utopian and apocalyptic, are not the only options? What if the proposed solutions are unsatisfactory because the market critics have, unfortunately, combined good values with erroneous “facts” about what an economy is?

#### The alt’s movements get destroyed by the state.

**DeBoer ’16** [Fredrik; March 15th; Ph.D. from Purdue University; Fredrikdeboer, “c’mon, guys,” http://fredrikdeboer.com/2016/03/15/cmon-guys/]

I could be wrong about the short-term dangers, and the stakes are incredibly high. But in the end we’re left with the same old question: what tactics will actually work to secure a better world?

In a sharp, sober piece about the meaning of left-wing political violence in the 1970s, Tim Barker writes “If you can’t acknowledge radical violence, radicals are reduced to mere victims of repression, rather than political actors who made definite tactical choices under given political circumstances.” The problem, as Barker goes on to imply, is those tactical choices: in today’s America they will essentially never break on the side of armed opposition against the state. The government knows everything about you, I’m sorry to say, your movements and your associations and the books you read and the things you buy and what you’re saying to the people you communicate with. That’s simply on the level of information before we even get to the state’s incredible capacity to inflict violence.

Look, the world has changed. The relative military capacity of regular people compared to establishment governments has changed, especially in fully developed, technology-enabled countries like the United States. The Czar had his armies, yes, but the Czar’s armies depended on manpower above and beyond everything else. The fighting was still mostly different groups of people with rifles shooting at each other. If tomorrow you could rally as many people as the Bolsheviks had at their revolutionary peak, you’re still left in a world of F-15s, drones, and cluster bombs. And that’s to say nothing of the fact that establishment governments in the developed world can rely on the numbing agents of capitalist luxuries and the American dream to damper revolutionary enthusiasm even among the many millions who have been marginalized and impoverished. This just isn’t 1950s Cuba, guys. It’s just not. In a very real way, modern technology effectively lowers the odds of armed political revolution in a country like the United States to zero, and so much the worse for us.

This isn’t fatalism. It doesn’t mean there’s no hope. It means that there is little alternative to organization, to changing minds through committed political action and using the available nonviolent means to create change: a concert of grassroots organizing, labor tactics, and partisan politics. Those things aren’t exactly likely to work, either, but they’re a hell of a lot more plausible than us dweebs taking the Pentagon. Bernie Sanders isn’t really a socialist, but he’s a social democrat that moves the conversation to the left, and if people are dedicated and committed to organizing, the local, state, and national candidates he inspires will move it further to the left still. You got any better suggestions?

Listen, commie nerds. My people. I love you guys. I really do. And I want to build a better world. Not incrementally, either, but with the kind of sweeping and transformative change that is required to fix a world of such deep injustice. But seriously: none of us are ever going to take to the barricades. And it’s a good thing, too, because we’d probably find a way to shoot in the wrong direction. I can’t dribble a basketball without falling down. American socialism is largely made up of bookish dreamers. I love those people but they’re not for fighting. And even if you have a particular talent for combat, you’re looking at fighting the combined forces of Google, Goldman Sachs, and the defense industry. Violence is hard. Soldiering is hard. In an era of the NSA and military robots, it’s really, really hard. “Should we condone revolutionary violence?” is dorm room, pass-the-bong conversation fodder, of precisely the moral and intellectual weight of “should we torture a guy if we know there’s a bomb and we know he knows where it is and we know we can stop it if we do?” It’s built on absurd hypotheticals, propped up by the power of anxious machismo, and undertaken to no practical political end. It’s understandable. I get it, I really do. But it’s got nothing to do with us. The only way forward is the grubby, unsexy work of building coalitions and asking people to climb on board.

# 1AR

## T-Subsets

#### C/I – “private sector” includes subsets.

JCS 19 [Joint Chiefs of Staff; 11-4-2019, Interorganizational Documents, “Joint Guide for Interagency Doctrine,” https://www.jcs.mil/Portals/36/Documents/Doctrine/Interorganizational\_Documents/jg\_ia.pdf?ver=2020-02-03-151039-500]

Private Sector. The private sector is another umbrella term that may be applied to any or all of the nonpublic or commercial individuals and businesses, specified nonprofit organizations, most of academia and other scholastic institutions, contractors, and selected NGOs. The National Infrastructure Protection Plan provides the framework for partnership between government and the private sector to protect critical infrastructure and key resources. Information sharing and analysis centers, sector coordinating councils, and state and local fusion centers enable information sharing and security efforts for the various sectors of our nation’s critical infrastructure.

#### “the” private sector not a homogenous mass.

Walker 16 [Katharina Walker is Advisor for vocational skills development and Helvetas’ youth focal person. Sonja Hofstetter joined Swisscontact in Cambodia in July 2016. She is the Quality Assurance Manager and Deputy Team Leader of the Skills Development Programme. “ Study on Agricultural Technical and Vocational Education and Training (ATVET) in Developing Countries” Federal Department of Foreign Affairs FDFA, Swiss Agency for Development and Cooperation SDC, Global Programme Food Security, 25.1.2016, https://www.shareweb.ch/site/Agriculture-and-Food-Security/focusareas/Documents/ras\_capex\_ATVET\_Study\_2016.pdf , date accessed 7/19/21]

In many developing countries, the private sector1 [Begin FN 1] 1 The private sector is not perceived as a homogenous mass even though the terminology might suggest this to be the case. In this study, the term “private sector” is used to circumscribe the various actors such as small and medium sized companies, large companies, sectorial associations, business associations, chambers of commerce, etc. [End FN 1] faces challenges in finding adequately skilled employees. This also holds true for sectors linked to agriculture, e.g. processing, distribution, marketing, etc. The development of ATVET from a purely productivity-oriented approach to provide broader and more specialised skills sets along agricultural value chains is likely to raise the interest of private sector actors. This incentive can result in a stronger and more sustainable financial and conceptual engagement of employers in ATVET.