### 1AC---Plan

#### Plan: The United States Federal Government should reduce appropriation of outer space by private entities that engage in anti-competitive business practices in accordance with the higher ethical principles of the outer space treaty.

Top of Form

#### Antitrust is uniquely compatible with the Outer Space Treaty, or OST---the plan generates momentum for international harmonization.

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Equality and Free Access

Secondly, it could be argued that the principle of “equality” and “free access” as enshrined within article I of the OST would seem to preclude monopolies insofar as equal access to celestial bodies must be maintained while, in theory, monopolization would potentially bar such equal access:

(...) Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies (...) (42). (emphasis added)

The main concern raised by the above-cited paragraph is to determine to what extent the article I applies to space resources on the celestial bodies in question. Since celestial bodies are not defined, as previously stated, and since there is no mention of space “resources” within the OST, national law or doctrine can be used to answer the question. The only national legislations mentioning space resources are the ones in favor of the commercialization, as listed supra (43). Secondary sources, or doctrine, reflect divergent views expressed by scholars at the international level (44). This situation illustrates how national law is filling the legal void previously referred to. Nevertheless, which void does it precisely try to fill? The term “appropriation” appears in article II of the OST, alongside with the term “celestial body” which, in article I appears next to “free access”, “equality” and “benefit”. By association, it can be inferred that the States in favor of space commerce do not object to the idea of the extension of these principles to space resources. In this case, as space resources regulation seems to emanate from the national level, national antitrust measures constitute, (at the first stage) an adequate legal response, in parallel, to contain and monitor the risk of monopolization or other anti-competitive behavior in space (an international level field). Such measures could indeed be included within current and future national space legislation and enforce fair competition based on the OST principles. This could in turn generate enough momentum and critical mass to trigger an international framework and intensify harmonization efforts (at the second stage), especially with regards to the commercialization of the space sector.

#### Universal application of U.S. antitrust law has direct and indirect causal mechanisms that encourage conformity.

David Gerber 12, Distinguished Professor, Law, Chicago-Kent College of Law, Illinois Institute of Technology. President, American Society of Comparative Law, "US Antitrust Law: Models and Lens," in Global Competition: Law, Markets, and Globalization, Chapter 5, 2012, pg. 151-158. edited for OCR errors.

US law and US antitrust experience have played central roles in the development of competition law virtually everywhere, and they are central to global competition law development. The US system is often referred to as a ‘model,’ and this model role has shaped the dynamics of global competition law development. Many foreign officials and commentators assume that they should or must follow it.50 Others have been skeptical that it is appropriate for their own circumstances.

I hear use the term ‘model’ in a broad sense to refer to an identifiable set of legal principles and institutions to which others commonly refer. In this sense, US antitrust law is a model, because it is commonly referred to as such. As we shall see, a model can have many functions, and can be used in a variety of ways. As we investigate the role played by US antitrust, it is important to emphasize that its roles are typically based on perceptions and images rather than extensive knowledge of the US system. The term does not necessarily imply a positive assessment of the identified characteristics.

1. Distinguishing among roles

The US model plays several roles and performs several functions. Distinctions among them are seldom clearly drawn, but failure to make them can distort analysis of the dynamics of global competition law today as well as assessment of future policies. At a basic level, the US model is important because it is a common point of reference for virtually all who participate in the global competition law arena. Some have studied US antitrust formally, but most have merely picked up pieces of information about it. All have at least some idea of some of its features. This dimension of the US role often goes unnoticed, but it frames assessments of the US system and anchors assumptions about the directions of global competition law. It is important to identify such cognitive factors, because many are unaware of them, and thus their influence can easily be underestimated.

The US model’s role as a common reference point is associated with its role as a heuristic—a cognitive device for thinking about complicated issues. Basic images of US antitrust law often orient discussions of competition law issues and supply a language for those discussions. Discussions of global competition law often contain comments such as ‘we’re moving toward a US system’ or ‘this is like the US model.’ In this way, the US model simplifies and structures complex information and facilitates discussion of competition law issues among participants who may share few other points of reference.

Use of US antitrust as a shared point of reference easily blends into a related use in which it serves as a standard of comparison and a criterion for evaluating competition law systems. Comments such as ‘country X’s system is still immature or undeveloped in comparison to the US antitrust system’ are common. The assumption here is that the US system is not only a point of reference, but it also represents a better or more mature system that others should emulate.

The US model also plays more specifically normative roles. It is often used as a source of authority for claims about what competition law should be. In this use, a proponent of a particular viewpoint or decision in a foreign system seeks to strengthen [their] ~~her~~ argument by showing that [they are] ~~she is~~ advocating a position from US law. US antitrust law here represents a form of normative ‘authority’ that can be used to support claims in other antitrust systems. Similarity to the US system in and of itself supports such claims. No further argument is required. The low cost of arguments based on this type of authority makes them particularly attractive for use by those with limited resources and those for whom lack of experience or other constraints make more sophisticated analysis difficult.

Finally, US experience also serves as a source of data. Here the focus is on the evolution of the US model rather than on the model itself. The long history of US antitrust law makes it a valuable source of antitrust experience. Th ere is an unparalleled depth of judicial opinions spanning more than a century, and many contain far more material about the practices involved than is available in other systems. In addition, there is a rich body of scholarly writing about antitrust law, and it includes a wide variety of theoretical perspectives. Importantly, the material is available in English, and it is thus far more accessible than are other rich sources of competition law experience such as German experience in the twentieth century.

2. Evolution of the model’s functions

These functions are intertwined, and their relative importance has changed over time, generally paralleling the changing role of the US in global economic and political affairs in the twentieth century. As noted in chapter two, reviews of the US antitrust system prior to the Second World War tended to be negative, and they appear to have often been based on very little actual knowledge of the system. Comments often focused on the then ‘radical’ practice of prohibiting certain conduct that was deemed anticompetitive. European economic thinking and political realities made such a prohibition seem unwarranted and unrealistic. Moreover, the US prohibition system was portrayed as harmful, because it forced fi rms to merge rather than cooperate, thus intensifying the concentration of industry, a spectre that haunted Europe during the early decades of the twentieth century.

In the aftermath of the Second World War, European views changed dramatically. The US was now in a dominant position in the market-oriented part of the world, and it promoted antitrust as a tool for fostering democracy and peace and for generating wealth. Many forgot that there had been a different model of competition law in Europe in the 1920s, and they came to identify competition law with its US variant. Over the next forty years, the US model was effectively imposed on transnational markets, because its courts and institutions applied or threatened to apply US antitrust law anywhere, and US hegemony generally blunted resistance to its imposition. This meant that scholars, lawyers and officials involved with competition law throughout the world had little choice but to learn at least something about US antitrust law and to respect its potential impact.

The fall of the Soviet Union and the successes of the US economy in the 1990s opened another chapter in the evolution of this model role. The return of global markets and their new prominence brought renewed attention to competition law, and much of the attention underscored the model role of US antitrust law. US officials, lawyers and economists have taken leading roles in the internationalizing networks that have formed during this period. They have promulgated US antitrust thinking, touting it as an important factor in building economic progress and political stability in countries previously operating on non-market principles. Officials in the many new competition law systems have needed technical assistance, and the US has been willing and able to provide it. All of this reinforces the image of US antitrust as the ‘leader’ in the field.

3. Influences and incentives

Why have others sought to know, use and follow the US antitrust model? Isolating these factors allows us to assess their impact on current dynamics as well as on future strategies. One factor is the status of US antitrust as the oldest and best-established antitrust system in the world. This ‘father’ image itself tends to confer status and authority on it. A decision maker outside the US, particularly one with a little developed competition law, can often support a position or claim by identifying it as a borrowing from the world’s oldest and most ‘mature’ system. The claim is thereby sanctioned by time and experience. A more refined version of this claim is that the long history of US antitrust does not by itself justify its authority, but that US antitrust has undergone a long process of trial-and-error learning that has revealed mistakes and produced a better system. US writers are fond of using this latter version of the claim, and often fervently believe that US experiences in the 1950s and 1960s show the follies of older and less economically based versions of competition law.

US economic successes, particularly in the 1990s and early 2000s, created another set of incentives to follow the US model. For many, the soaring US economy of the period appeared to confirm the superiority of US economic policy. Antitrust is part of that economic policy package and thus derives status and authority from its success. Ideological factors have sometimes enhanced this attractiveness and augmented the authority it provides. US antitrust is a symbol of ‘US-style capitalism’ with its resistance to government interference with business, and thus those who support this view of the relationship between government and markets have tended to welcome and support the introduction of US antitrust principles and practices into their own systems. For almost two decades prior to the financial crisis that began in 2008, governments virtually everywhere sought to emulate at least portions of this policy package.

US antitrust law is often also seen as a surrogate for an international standard. Discussions of economic globalization often seek international standards, and this has been particularly prominent in discussions of competition law. A competition law decision maker can expect support for a claim to the extent that it represents ‘what the others are doing,’ i.e. an international standard. Although there is no international standard, many assume that US power will require that US antitrust law serve that function.

US economic and political power sometimes also directly supports the influence of US antitrust law. These issues are seldom discussed, but their influence can be extensive. One form of power is governmental. The US government has actively sought to influence the development of foreign systems. Sometimes this is overt and well-publicized, as, for example, during the early 1990s when the US government pressured the government of Japan to increase enforcement of its antitrust laws, thereby hoping to increase the access of US fi rms to the Japanese market. More commonly, pressure is exerted in the context of aid and technical assistance programs, where a country can expect to gain US support and/or assistance by conforming its conduct to the wishes of the US authorities.

Private power and influence play somewhat similar, less obvious, but potentially more pervasive roles. Here there is no direct use of governmental power. Instead, the power is ‘soft’—i.e., the capacity to induce others without coercion to make decisions that correspond to the interests of the private parties involved.51 One forum for this exercise of soft power is the international competition law conferences that have become increasingly common since the mid-1990s. These conferences provide fora where lawyers, economists and public officials present their views and experiences make contacts and often seek to influence each other. In these contexts, US officials and lawyers have played leading roles. They often host the most prestigious of these conferences, and they are often featured speakers.52 As a group, their prominence is based on many factors, including their experience in international competition law matters, the richness of US scholarship, and the practical importance of US antitrust enforcement throughout the world. US lawyers and economists also benefit from the weight and influence of the institutions with which they are associated. Especially since the 1990s, very large international law firms have formed, primarily to provide services to large, internationally-structured business firms. These firms often commit significant resources to influencing foreign decision makers to favor the interests of their clients. This creates incentives for lawyers, officials and economists from other countries to seek contacts with them for their own benefit, e.g., through the potential for client referrals and so on. Large multinational corporations represent a potentially significant source of income for lawyers and consultants in the competition law fi eld. Th ese factors can also influence the literature of antitrust.

E. US Antitrust Experience as a Lens: A Leader’s Perspective

US antitrust experience is also the lens through which members of the US antitrust community and many of those associated with it view transnational competition law issues and assess foreign antitrust laws. It is common for members of this community to assume that the US antitrust system is generally superior to others and that others should follow it, perhaps shorn of some of its inconsistencies and weaknesses (such as vestiges of classical-era case law thinking). The unique evolution of the US system and its relations with other competition law systems combine to shape these US attitudes. The lens they have shaped is the source of US confidence in competition law convergence as a strategy and the generally negative US views on multilateral commitment. We look briefly at the characteristics of this lens and the images it has shaped.

A key feature of the lens is its narrow focus. There have been few incentives in US antitrust experience to look at competition law broadly, i.e., to view US antitrust as just one competition law among many. US antitrust law officials, scholars and lawyers have seldom had occasion to look carefully at foreign competition law experiences or to learn from them. There is, for example, very little in-depth comparative law writing in the antitrust field and what there is typically suggests that US antitrust law should instruct others. The general tenor of US writing that deals with foreign systems is to point out their inadequacies in relation to US antitrust learning.

Related to this is a general tendency of the lens to exclude or marginalize political and social factors in considering antitrust law and its influence. US antitrust law is made by courts. In contrast to virtually all other competition law regimes, legislative influences have been minimal in its history, and thus there has been no vehicle for direct political influence. As a result, the US antitrust community pays primary attention to court decisions, which are generally less concerned with issues of political support.

Using this lens, members of the US antitrust community generally view the basic principles and approaches of US antitrust law with satisfaction, or at least as preferable to its alternatives. Few would consider it unblemished, but most consider it to be basically ‘right.’ The rapid victory of this economics-based conception of antitrust has imbued members of the US antitrust community with confidence that current US antitrust thinking provides the ‘right answers’ to basic antitrust questions. There is little in US experience that generates questions as to whether what is ‘right’ in the US is also ‘right for the rest of the world. It is a universalizing view of US antitrust law. When it is combined with the power and influence of the US it can easily appear to others as arrogance, whereas from within the US antitrust community it is just a ‘better way’ developed through hard won experience.

Confidence in the ‘superiority’ of US antitrust law is not new. It has long been common within the US antitrust community. US antitrust law was the first prominent antitrust system, and this long-ago accustomed member of the US antitrust community to seeing their system as the ‘father’ of modern competition law and to having it seen as such by others. This father image has tended to generate and support the impression that others do and should look to the US system for leadership.

Th is self-image was strengthened in the aftermath of the Second World War. Th e US promoted antitrust as part of its ‘mission’ to help democratize countries such as Germany and Japan and to spread market principles and democracy. Th is led many to forget that there had been a different model of competition law in Europe prior to the war. US antitrust law became the model for antitrust law. The missionary tenor of this message has had a lasting, if altered and reduced impact.

Th e reformulation of US antitrust philosophy that began in the 1970s strengthened the perception in the US antitrust community that US antitrust thinking had found the right answers to basic antitrust questions. It urged that an economics-based antitrust law was superior to earlier conceptions of antitrust law in which issues such as fairness and bigness had influenced decisions. In this image, US antitrust law has learned from its mistakes and now provides a convincing and analytically consistent basis for antitrust. This understanding of US antitrust experience leads many in US antitrust law to scorn forms of competition law in other countries that resemble those earlier US ‘mistakes.’ A common refrain is that ‘we did that, and we know that it doesn’t work.’ When this lens is applied internationally, it readily leads to the conclusion that foreign systems that are concerned with issues such as fairness that have been discredited in the US domestic context deserve limited respect.

The 1990s again spotlighted the leadership role of US antitrust. The US was prominent in providing technical assistance based on US experience, and since then US officials and lawyers have generally been in the forefront of discussions of transnational competition law in many areas of the world. All this reinforces the image of the US as the most prominent antitrust system, i.e., the ‘leader’ in the field.

Finally, the image that US law is ‘the right way’ to do antitrust gives members of the US antitrust community something to ‘sell.’ US lawyers, economists and officials (many of whom expect to return soon to private practice) have incentives to promote the superiority of the US approach.53 Where others adapt the US system, they will undoubtedly turn to the US for guidance and advice.

US antitrust law and experience have long been at the center of discussions about competition law. For those outside, US antitrust law has often been a point of reference for thinking about their own decisions. For those within US antitrust, US experience has been a lens for viewing and evaluating the decisions of others and thinking about the future of competition law on both national and transnational levels. The centrality of these roles makes US antitrust experience unique and exceptionally important. It can be of great value to others and to global competition law development, but it can also obstruct and distort that development.

There are two basic ways of looking at the relevance of US experience for other countries and for global competition law development. One is to see US experience as an evolutionary process that has produced a universally valid ‘best’ approach. Here the claim is that the US has experimented with competition law longer than have other systems; that ‘trial and error’ experience has led to the rejection of approaches that have been shown to be ineffective; and that this has led to a superior system that should be copied by others. In this view, US experience is relevant to all countries and should be the model for global competition law development. A second view asks whether US experience is specifically relevant to the development of competition law in other countries and for global development. Does US experience in setting goals and creating and maintaining institutions relate specifically to the problems and issues faced in developing competition law on a global level? Here the answer is that US experience can be of great value, but that it must be used with careful attention to its uniqueness.

#### Exemptions collapse Rule of the Road – those are necessary to a thriving space industry.

Larsen 18, Paul B. "Minimum International Norms for Managing Space Traffic, Space Debris, and Near Earth Object Impacts." J. Air L. & Com. 83 (2018): 739. (taught air and space law for more than 40 years respectively at Southern Methodist University and at Georgetown University. He is co-author of Lyall and Larsen, Space Law a Treatise (2ne edition Routledge 2017) and of Larsen, Sweeney and Gillick, Aviation Law.)//Miller

D. NON-GOVERNMENTAL ORGANIZATIONS AS MODELS FOR MINIMUM SPACE NORMS Space industry operators are concerned that national and international government-established operating norms may be too restrictive and may kill off the inventive start-up space business initiatives now appearing in the marketplace. No one state or non-governmental entity can appropriate or assert sovereignty over outer space. The Outer Space Treaty Article IX requires states to pay due regard to the corresponding activities of other states.218 But that requirement does not give one state regulatory authority over the business authorities of other states. Article IX merely requires appropriate international consultations.219 Individual space businesses need room to experiment.220 At the same time, they are concerned about the intense competition and the need for some basic safety and traffic rules. Another complication is that the competing space businesses are of different nationalities, and the space businesses authorized by one state may receive inadequate protection from their authorizing state against competing businesses authorized by another state. The nations have to coordinate in order to establish order and basic operating rules for non-sovereign outer space by voluntary agreement. Several operators have sought to join together in associations for their own protection and coordination. A good example is the Space Data Association, in which large space operators like Intelsat, SES, and Euelsat have joined with large manufacturers such as Airbus, and even some space agencies like NASA and the German DLR, to pool information about traffic in outer space.221 They have formed subcommittees on urgent issues such as safety, procedural developments, and interference with radio frequencies.222 However, the large number of small satellite operators have tended to form their own association representing New Space. It is recognized that industry standardsetting organizations, such as the International Standardization Organization (ISO),223 and the new space standardization organization, CONFERS,224 have important roles for setting product standards for the space industry. However, the norms needed for management of space traffic, space debris, and NEOs require minimum government coordination among the states to establish international uniformity. Several industry observers call for some kind of international policing of outer space.225 The private associations can only depend on the goodwill of their competitors in obeying and complying with association rules. Private associations have no inherent police powers for enforcement other than legal action for breach of contract.226 Enforcement of contracts may depend on national laws and on national courts that may favor domestic business over foreign business. Furthermore, associations may be restricted by national antitrust and anti-monopoly laws. Conflicting with the idea of operators working in unison for their common good is the proposition that space operators are basically in business for individual profit. Thus, an individual business may not be willing to sacrifice its profit motives for the sake of public safety. That becomes the nub of the question of whether to leave safety in outer space to be resolved by the non governmental entities: each of the operators will always be motivated by self-interest. A neutral policing authority would therefore be more acceptable to direct traffic than competing business operators. Importantly, the individual national governmental authorities do not have exclusive policing authority in outer space. The only effective solution is to establish international minimum operating norms for space debris generation, space traffic, and planetary defense. It appears that, for space business to succeed, international norms with adequate input from business operators will be the best solution for these urgent public safety problems for space business to succeed. Standards and norms are commercial necessities. They enable businesses to satisfy a larger market demand for their products and services. Some technical standards and norms can be established by the commercial interests without government involvement, but others require minimum governmental regulation and oversight. Space traffic norms will benefit business enterprises, but they require international coordination and policing to assure uniformity. Reduction and elimination of space debris is another activity that requires international coordination combined with national enforcement. Planetary defense against threatening NEOs is yet another area beyond the ability of commercial enterprises to control. These three space activities requiring minimum government safety norms will help businesses prosper and allow space exploration to continue.

#### The international community wants to expand legal frameworks in space to include more norms and rules of the road, but the US has consistently created international deadlock the aff is key to harmonize space law.

Steer 20 – (Dr. Cassandra, CERL Senior Non-Resident Fellow, 1/8, “Why Outer Space Matters for National and International Security,” [accessed 9/24/21], <https://www.law.upenn.edu/live/files/10053-why-outer-space-matters-for-national-and>, see)

Developing International Space Law for 21st Century Security Issues One of the greatest challenges to modernizing the legal frameworks that govern conduct in space is the lack of political will surrounding the negotiation of new treaties or other binding norms since the end of the Cold War. Since then, COPUOS has been ineffective in advancing international space law, partly because it is bound by consensus decision-making and States can block any advances 80023for any number of political reasons. Its ineffectiveness can also be attributed to the fact that geopolitical conditions have shifted in favor of a single nation, the United States, since the end of the Cold War. This means that even if there is an international desire to move towards more treaties or firmer rules on behavior in outer space, they are unlikely to take place unless the United States wishes to see such developments. Because all nations are so dependent on space and because military tensions in space are on the rise, there is pressure on the United States to determine the kind of leadership it wishes to demonstrate. The leadership could be either nationalistic or internationalist and for the benefit of all. International efforts to create a clear legal regime with respect to responsible behavior in outer space have been stymied over recent years. Despite the nearly annual reiteration of the resolution on the Prevention of an Arms Race in Outer Space (PAROS) by the UN General Assembly,78 and despite the call by the UN Group of Government Experts to develop Transparency and Confidence Building Measures (TCBMs),79 there has been little success. The proposal for a Treaty on the Prevention of the Placement of Weapons in Outer Space by Russia and China has been before the Conference for Disarmament in various iterations over the years.80 Because of the requirement of consensus voting and resistance by the United States and some of its allies, the proposal has not succeeded. The arguments against the passage of this treaty are that it is impossible to define what constitutes a “weapon” in space and that it is nearly impossible to verify whether a particular technology is for benign or threatening purposes. Thanks to commercial services tracking the movement of space objects we can gain a fair amount of situational awareness of objects moving through space. However, experts are often left guessing as to the exact purpose of some of those objects. Even with a high level of international compliance with the Registration Convention, it is still nearly impossible to verify that what is being launched aligns with what is being registered. For example, when North Korea began successfully launching objects into orbit in 2015, it duly registered those launches with the UN Office of Outer Space Affairs (UNOOSA). At the time, South Korea objected because it was highly likely that North Korea was developing missile technology in breach of the moratoriums against it (missile technology and rocket launch technology are the same). UNOOSA’s stance was that it had no way of verifying and no powers to intervene, and indeed, it quickly became apparent that North Korea had been developing a conventional weapons capability under the guise of a peaceful space program.81 While verification may be a problem, the United States has not counter-proposed an alternative treaty or mechanism for arms control in space. It appears that the United States simply does not want to be bound by any treaty that might limit its own technological advances and behavior in space.82 In July 2019, the UN hosted a meeting for the Group of Government Experts on further effective measures for the prevention of an arms race in outer space.83 No publication has been released to date on the results of this meeting. It appears, however, that U.S. representatives pushed back against the development of an arms control treaty for space. Representatives of the U.S. Department of State stated openly at a recent international conference that they were instrumental in pushing back against talks on whether any kind of arms control treaty for space could be developed.84 Even the attempted negotiations for a non-binding International Code of Conduct (ICoC) reached a stalemate in 2015. The ICoC was a European initiative that was intended to be a nonbinding document with clear statements of responsible behavior in space and the limits of unacceptable behavior.85 At first, the United States and many of its key allies were in support of the ICoC; however, many developing nations were highly critical of the process, which they considered to be Western-centric, once again ignoring their interests and concerns for equity.86 When the UN hosted a meeting in 2015 to focus on the content of the draft ICoC, the critiques were almost all procedural except for the United States’ important objection that there was no clear statement about the use of force in space in the case of self-defense.87 But the ICoC was never intended to be a document that regulated or managed questions of force or military activities in space. The vision was that it could curb irresponsible behavior concerning space debris, access to and use of space, and long-term accountability. Moreover, the right to use force in self-defense is guaranteed in Article 51 of the UN Charter so long as the customary law conditions of necessity and proportionality are fulfilled. Given that Article III of the OST reinforces the application of the UN Charter to all activities in outer space, the presence or lack of a statement regarding the use of force in a non-binding document has no impact on the legal norms that apply. The roadblock faced by the ICoC process created a great sense of disappointment internationally and highlighted what appears to be a general international deadlock in terms of moving forward on space governance for the 21st century. At a time when concerns for the inevitability of a space-based conflict are increasing, it is important to consider whether and how the international rule of law can play a role in conflict prevention. It may be that the role of international non-binding norms is even more important than binding ones. Although the ICoC reached a standstill, there are other non-binding instruments that have proven to be very successful like the Debris Mitigation Guidelines mentioned above. There is also some hope with the recent adoption by consensus of the COPUOS Guidelines on the Long-Term Sustainability of Outer Space Activities. These guidelines encourage States to voluntarily adopt updated national legislation and regulations relevant to the peaceful exploration and use of space, share information about space activities to improve safety of operations, observe measures of caution, promote and facilitate international cooperation, and raise awareness of space activities, among others.88 But there is nothing in those guidelines with respect to weaponization, and it is likely that militaries will not respond to such guidelines if they feel in any way limited in their actions.

### 1AC---Adv---Space Law

#### International space law isn’t equipped for the privatization of space BUT US-led space antitrust checks its erosion AND allows for international harmonization

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11. Discussion

Traditionally, international space law, as opposed to national space law, is not equipped to deal directly with the private sector. However, antitrust has the tools to do so. The broader range of space antitrust might help delve further down into the elusive and transnational commercial law, which is likely to accelerate in the near future and multiply interest around the commodification of the space market. As suggested throughout this paper, space concentration, leading to monopolies, is a likely outcome of the further development of space commerce. To mitigate the risks of monopolization, collusive and of other anti-competitive behavior, especially when considering the particular nature of space resources, to be exchanged on the emerging space-based market – including the complex and specialized services attendant thereto – special ethical and legal safeguards must be put in place to incentivize competition while containing the risks of fragmentation mentioned previously.

This is important to enable a healthy expansion of the ecosystem. Our emphasis on the market forces at play is rooted in the assumption that through the observation of the current trends of commercialization and of the growing number of non-traditional actors (either public or private) stemming from old and from new space-faring nations, it is easier to anticipate risk and to provide supporting regulatory proposals.

Our suggested approach toward an adaptive and polycentric governance model attempts to resolve some of these challenges, by allowing for a bottom-up framework that fosters commercialization, to surface organically, from the players, with minimal outside intervention. Our goal is to prevent the risk of privatization and commercialization that might gradually erode the ethical principles of international space law. To use the analogy of the carrot and the stick in striking a balance between regulatory intervention and free initiative, we prefer the carrot approach. Incentivizing the private sector to compete around ethically balanced markets has the potential to unlock new and unforeseen forces of antitrust in space to channel the fragmentation of forces in a sustainable manner while ensuring the respect of the conventional set of ethical principles to which many corporations already subscribe to in the context of their corporate compliance programs. Here we would an additional layer of space law higher ethical principles (such as enumerated supra) and investigate into further incentivizing soft law implementations. These higher principles are rooted in system interconnectivity and complexity, and have direct consequences on life, planetary protection, environmental aspects, intergenerational equity, etc. In approaching these issues through the angle of antitrust, we argue that antitrust is bound to evolve and to adapt, both in Space and on Earth. Furthermore, a broad space antitrust scope might also benefit from polycentric governance when concrete self-determination claims would manifest, such as Elon Musk’s self-governing principles on Mars. Any future space colonies (or settlements) would either rely on their own resources or would depend on the import and the export of resources, and therefore, on resource commodification. It then follows that having an ethical space antitrust regime well in place appears as a foreseeable necessity. An ethical space antitrust should also consider non-market factors such as the potential new rights granted to specific resources and regulate accordingly (e.g. the equivalent in space of legal rights to natural resources, etc.). Without such an ethical regime framework harnessing uncoordinated competitive forces, one possible outcome would be the dystopia described by Andy Weir’ Artemis economy on the Moon based on “soft landing grams” credits directly applied to one’s consumption of oxygen. A bleak perspective. Finally, antitrust is an adequate response to space property and resources, as property law is, at its basis, domestic law and so is competition law. They can evolve in parallel in the space sector and merge into an international framework, adapted to the international space law forum. There is no internationally harmonized antitrust framework as of this writing, except non-binding UN guidelines. Perhaps, a “space antitrust” would help bridge that gap and contribute to reducing growing issues such as “forum shopping,” fragmentation and “conflict of laws.”

12. Limitations and further research

While this paper is at the exploratory level, further research is necessary in determining the scope of antitrust in space, property and commodities and how ethics can play a role specifically, at the implementation level. Case studies should be conducted with a clear methodology. Moreover, the research must include other financial aspects such as spacebased assets and securities, notably the Space Assets Protocol of the UNIDROIT Cape Town Convention. Finally, more work must be done in terms of international/transnational recommendations for antitrust, as there is no internationally harmonized antitrust governance or regime and it remains heavily politicized – or not enough, depending on the school of thought (Teachout, 2020, p. 212).

13. Conclusion

This paper explored a roadmap into managing fragmentation triggered by the accelerated development of the outer space ecosystem and the rise in non-traditional space actors, be they public or private. International space law no longer suffices to cope with all the new actors, and therefore, transnational alternates are recommended. This paper recommends a transformed antitrust regime, adapted to space, based on the corpus juris spatialis ethics. This could help preventing the risk of space law erosion while privatization and commercialization of space are trending and potentially leading to the commodification of the space market and ecosystem, while space lawyers are still debating internationally as per the principle of non-appropriation and as per what a “space object” should consist of and what property rights could be applicable in space. An interdisciplinary approach could prove very helpful to address this problem. For instance, E. Ostrom’s work on classifying the goods into four categories from an economic standpoint might help space lawyers into classifying space goods once and for all and this could serve as a catalyst for polycentric space governance, governed inter alia, by competing forces. However, these competing forces should rather be seen as the dark matter in a space ecosystem, enabling sustainable synergies and interactions, with intergenerational equity in mind. This would be essential to avoid unregulated speculation based on space commodities, which could prove to be more detrimental in such an extreme environment as space. For instance, speculation benefits from climate change impact on crops and other commodities on Earth. We are all too familiar with the consequences. Imagine what space weather-based speculation could do in space. It could obliterate entire economies at once. One could argue that either space antitrust monitors the space commoditization closely, either space derivatives should be significantly regulated.

#### Space law erosion causes space wars.

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Interregional Academy of Personnel Management, “Private International Space Law. Philosophical and Legal Factors of Approval by the World Community,” 2019, Philosophy and Cosmology, Volume 22, p. 21-22

Consequences of the lack of legal rules of conduct for individuals in space

As the authors have shown above, public international law well regulates the exploration and use of outer space by States. However, more and more private companies and individuals are making real or virtual use of comic space and space bodies. So far, private companies are working closely with the relevant national structures. For example, SpaceX works closely with NASA. It works for profit, but according to public international and national space laws of the United States. Accordingly, while significant problems in this area do not arise. However, after the withdrawal of the orbit of the Earth by the SpaceX company of about 12000 satellites that will give away “free” Internet traffic of all comers, problems without doubt arises. First of all, it will be connected with the protection of intellectual property rights and counter-terrorism. The such States, such as China and Russia, will be categorically against all available Internet because they profess the theory and practice of the state-controlled Internet. In other words, the activities of a private company that will operate under soft (softlaw) space law will conflict with the national laws of sovereign States. Consequently, in the context of private companies and individuals, when using space, they enjoy soft law and act in accordance with a constitutional principle of English law: “Everything which is not forbidden is allowed”.

Even more, there is a violation of the principle of justice and sometimes common sense about the virtual use of cosmic bodies. For example, Dennis M. Hope, the formal owner of the Moon since 1980. In 2015, two private companies, Moonestates and Moonlife Ltd, merged and merged is bring together the community of over 6 million space enthusiasts that have purchased land on the Moon (https://www.moonestates.com/about-us/). MoonEstates.com, and Moonlife Ltd view the “legalities” of selling extraterrestrial property and are quite legally valid in the U.S.A. legislative field (<https://www.moonestates.com/about-us/space-law/>).

From our point of view, it is unacceptable that individuals and organizations that do not enjoy any legitimacy from society should (albeit virtually) use or dispose of space objects as their property. This is a direct road to the future confrontation for the natural resources of space. The worst consequence of which can be real space wars. Philosophy of War and Peace, as well as its influence on the formation of the foundations of national and planetary security strategies, are considered in the study Philosophy of War and Peace: in Search of New European Security Strategy [Bazaluk & Svyrydenko, 2017]. Private international space law, adopted by the international community through the legalization in the UN, has the right to regulate the activities of individuals about comic objects. Consequently, the lack of legal rules of conduct for individuals in space leads to two main types of incidents:

1. Not the settlement of the right of private ownership of space bodies, will not lead to the fair capture of space bodies by persons who do not have the right to do so, and the redistribution of such objects will objectively lead to space wars.

2. Not controlled by the right of private companies to use the near-earth space will lead to a threat to the life and health of the inhabitants of the Earth, negative environmental consequences and legal conflicts, both interstate and private.

#### They go nuclear---AND erode nuclear deterrence.

Dr. Robert Farley 22, Assistant Professor of Security and Diplomacy at the Patterson School at the University of Kentucky, Ph.D. in Political Science from the University of Washington, B.A. from the University of Oregon, “Does A Space War Mean A Nuclear War?,” 1945, 1/9/2022, https://www.19fortyfive.com/2022/01/does-a-space-war-mean-a-nuclear-war/

The recent Russian anti-satellite test didn’t tell the world anything new, but it did reaffirm the peril posed by warfare in space. Debris from explosions could make some earth orbits remarkably risky to use for both civilian and military purposes. But the test also highlighted a less visible danger; attacks on nuclear command and control satellites could rapidly produce an extremely dangerous escalatory situation in a war between nuclear powers. James Acton and Thomas Macdonald drew attention to this problem in a recent article at Inside Defense. As Acton and MacDonald point out, nuclear command and control satellites are the connective tissue of nuclear deterrence, assuring countries that they’re not being attacked and that they’ll be able to respond quickly if they are.

For a long time, these strategic early-warning satellites were akin to a center of gravity in ICBM warfare. Nuclear deterrence requires awareness that an attack is underway. Attacks on the monitoring system could easily be read as an attempt to blind an opponent in preparation for general war, and could themselves incur nuclear retaliation. Thus, the nuclear command and control satellites are critical to the maintenance of nuclear deterrence. They make it possible to distribute an order from the chief of government to the nuclear delivery systems themselves. Consequently, their destruction might lead to hesitation or delay in performing a nuclear launch order.

It was only later that the relevance of satellites for conventional warfare became clear. Satellites could reconnoiter enemy positions and, more importantly, provide communications for friendly forces. Indeed, the expansion of the role of satellites in conventional warfare has complicated the prospect of space warfare. States have a clear reason for targeting enemy satellites which support conventional warfare, as those satellites enable the most lethal part of the kill chain, the communications and recon networks that link targets with shooters. Thus, we now have a situation in which space military assets have both nuclear and conventional roles. In a conflict confusion and misperception could rapidly become lethal. If one combatant views an attack against nuclear command and control as a prelude to a general nuclear attack, it might choose to pre-empt.

Nuclear powers have dealt with problems in this general category for a good long while; would a conventional attack against tactical nuclear staging areas represent an escalation, for example? Would the use of ballistic missiles that can carry either conventional or nuclear weapons trigger a nuclear response? Do attacks against air defense networks that have both strategic and tactical responsibilities run the risk of triggering a nuclear response? There’s also the danger that damage to communications networks designated for conventional combat could force traffic onto the nuclear control systems, further confusing the issue.

No one has ever fought a nuclear war, and no two nuclear powers have engaged in a prolonged, high-intensity conventional conflict. Now that conventional systems have become implicated in space technologies for reconnaissance, targeting, and communications, leaders will have to make very difficult, very careful decisions on what enemy capabilities they want to disrupt. Acton and MacDonald propose a straightforward ban on attacks against nuclear satellite infrastructure, which would also require agreement to keep nuclear and conventional communications networks separate. This is the little ask; countries should plan to fight more carefully. The big ask is for a multilateral ban to prevent future anti-satellite weapons tests in space. This would reduce the danger that debris could close off, temporarily or permanently, human access to certain locations in earth orbit. But given that countries use satellites for the conduct of conventional military operations, it’s a lot to ask for warfighters to consider critical military infrastructure off-limits in any particular conflict.

#### Antitrust harmonization prevents extinction from resource depletion, human rights abuse, and war

Geoffrey A. Manne 13, Lecturer in Law at Lewis & Clark Law School, Executive Director of the International Center for Law & Economics, JD from the University of Chicago Law School, Former Olin Fellow at the University of Virginia School of Law, and Dr. Seth Weinberger, PhD and MA in Political Science from Duke University, MA in National Security Studies from Georgetown University, AB from the University of Chicago, Associate Professor in the Department of Politics and Government at the University of Puget Sound, “International Signals: The Political Dimension of International Competition Law”, The Antitrust Bulletin, Volume 57, Number 3, Last Revised 7/18/2013, p. 497-503

A. The international political environment

At the root of international political theory is the fundamental maxim that relations between sovereign nations in the absence of mitigating factors is characterized by intense competition, mutual distrust, the inability to make credible commitments, and war.20

[FOOTNOTE] 20 Political scientists characterize the international system as “anarchic.” In the absence of world government (or other mitigating force), competition between states is largely unregulated by external laws or enforcement. The world is characterized by mistrust, the inability to contract, and the ultimate reliance on a state’s own devices. See THOMAS HOBBES, LEVIATHAN 80 (Edwin Curley ed., 1994) (in the state of nature “the condition of man . . . is a condition of war of everyone against everyone”). In fuller terms:

There is no authoritative allocator of resources: we cannot talk about a ‘world society’ making decisions about economic outcomes. No consistent and enforceable set of comprehensive rules exists. If actors are to improve their welfare through coordinating their policies, they must do so through bargaining rather than by invoking central direction. In world politics, uncertainty is rife, making agreements is difficult, and no secure barriers prevent military and security questions from impinging on economic affairs.

ROBERT O. KEOHANE, AFTER HEGEMONY: COOPERATION AND DISCORD IN THE WORLD POLITICAL ECONOMY 18 (1984). Efficiency-enhancing gains from trade are difficult to appropriate because trade itself (and any other form of exchange or agreement between nations) is characterized by the absence of credible commitments to future behavior. And underlying the problem is the ever-present threat of the use of force. See, e.g., Kenneth N. Waltz, Anarchic Orders and Balances of Power, in NEOREALISM AND ITS CRITICS 98, 98 (Robert O. Keohane ed. 1986) (“The state among states . . . conducts its affairs in the brooding shadow of violence . . . . Among states, the state of nature is a state of war.”). Although this dire characterization of the international environment is, of course, a stylized approximation of the real world—there are always overlying constraints on sovereign behavior in the form of norms, reputational effects, and customary international law, HEDLEY BULL, THE ANARCHICAL SOCIETY: A STUDY OF ORDER IN WORLD POLITICS (1977)—it is a useful and widely accepted heuristic for crafting a theory of international politics. [END FOOTNOTE]

As one commentator notes, “Nations dwell in perpetual anarchy, for no central authority imposes limits on the pursuit of sovereign interests.”21 And states are “unitary actors who, at a minimum, seek their own preservation and, at a maximum, drive for universal domination.”22 As a result, states operating on the international stage are unable to judge the sincerity of each others’ stated intentions when those intentions are contrary to this manifest interest. Because of self-help rules, states are forced in the main to assess their own security environment by assessing the capabilities of competitors, downplaying their motives. Given that the nature of the competition can implicate the fundamental survival of one (or more) of the actors, actions taken by one state to improve its own security must necessarily decrease the security of its competitor; in the absence of mitigation, security is a zero-sum game.23 In a world where cooperation is exceedingly difficult (because there is no authority to enforce agreements, nor any basis for assessing the reliability of another state’s commitments), international relations are characterized by a continuous race to the bottom, a mindless arms race rather than the opportunity to realize gains from cooperation.

It is obvious that not all relations between states are characterized by the security dilemma, however. Canada, for example, shares an unprotected border with the most powerful nation in the world without degenerating into a destructive and costly arms race. By some mechanism, then, Canada must be able reliably to judge U.S. intentions, even absent the apparent ability by the United States credibly to bind itself to a nonaggressive policy toward Canada. The key to mitigating the pressures of the security dilemma is the ability to distinguish a state with aggressive and expansionist tendencies from a benign one.24 States can be distinguished by their fundamental type. They can be classified as “revisionist,” that is, they seek to subvert the dominant order, or they can be classified as “status quo,” that is, they seek to support it.25 But, as noted, a state’s ability to judge another’s intentions (as opposed simply to counting its armaments) is extremely tenuous and comes at great cost. In fact, political science offers few well-understood mechanisms for judging a state’s propensity for aggression.

At the same time, hegemonic states have an abiding interest in spreading and maintaining their dominant worldview.26 Not only is it imperative that dominant states receive credible signals about other states’ intentions, but it is also important that dominant states attempt to inculcate their norms within other states that, over time, might mount credible challenges to the dominant states’ security.27 The spread of hegemony through internalization of norms occurs for three reasons. First, states with similar institutions and sympathetic domestic norms are simply better and more reliable trading partners, and it is in the hegemon’s economic interest to instill its norms.28 Second, states with defensive military postures and that adhere to the status quo present significantly less security risk to dominant states.29 And finally, the hegemon has a normative interest in the spread of its culture, its worldview, and its norms.30 This conception of the playing field upon which states interact leads to the conclusion that, entirely apart from the immediate and substantial economic benefits to a state from well-ordered interactions with other states, hegemonic states also have a national security and a normative interest in the information to be gleaned from the fact that these interactions are, in fact, well ordered.

In the absence of centralized enforcement, privately held and nonverifiable information as to a state’s fundamental type is the critical problem in assessing motives.31

[FOOTNOTE] 31 See KEOHANE, supra note 20, at 31 (“Order in world politics is typically created by a single dominant power [or hegemon].”). States are consequently classified as one of two types, “revisionist” or “status quo,” based on their acceptance and adherence to the political norms, institutions, and rules created by the hegemon. Status quo states are those that try to improve their condition from within the framework of the accepted world order. Revisionist states, by contrast, seek to gain position both by working outside that order and by working to subvert the hegemonic order itself. For instance, the existing world order is generally accepted to be that created by the United States after World War II. It comprises a liberal international economic order, the use of multilateral institutions (such as the United Nations and the WTO), negotiation for dispute resolution rather than the threat of violence, and the promotion of liberal democratic moral norms. See, e.g., Schweller, supra note 24, at 85; HANS J. MORGENTHAU, POLITICS AMONG NATIONS: THE STRUGGLE FOR POWER AND PEACE 32 (1948). Trade disputes between status quo states (like tariff disputes between the United States and Europe) are resolved through peaceful negotiation rather than the threat of war. Although status quo states do not entirely eschew the use of violence, they typically seek international authorization and legitimization before employing military force, as in the multilateral operations in Iraq, Kosovo, and Afghanistan. Revisionist states, on the other hand, such as North Korea, Iran, and China, will more readily use military force as a bargaining tool and are more reluctant fully to participate in transparent military, economic, and political negotiations. [END FOOTNOTE]

States wishing to escape the pressures of the security dilemma and engage in cooperative behavior need a means of conveying their preferences to others in a credible manner. There are, in general, two means by which such information can be transmitted: states can either bind themselves in such a way that they are unable to deviate from a stated behavior (known as “hands tying” in Schelling),32 or they can signal their intention to engage in a specified course of action by incurring costs sufficiently large that they discourage the misrepresentation of preference.33

International institutions can play a crucial role in facilitating the transmission of this information.34 In particular, international agreements over the terms of trade, even without binding supranational enforcement authority, provide a means for states to bind themselves to a desirable course of behavior in the short run and, more importantly, to signal their acquiescence to the ruling world order in the long run. Because compliance with treaty obligations often requires signatories to alter their domestic laws to reflect the terms of the treaty, the costs of compliance can be substantial. In the short run, to the extent that states enforce their domestic laws they can bind themselves to a certain course of behavior. In the long run, a state’s willingness to incur the substantial costs of changing its laws, both the transaction costs inherent in changing domestic laws and the even more substantial costs in domestic political capital, signals a willingness to engage other states on the terms set by the reigning international power. Moreover, there may be unintended effects, as changes in domestic laws result in a new set of domestic incentives to which actors respond, and new windows of opportunity may open up through which policy entrepreneurs can push for the internalization of new norms.35 Competition laws in particular are susceptible to this mode of analysis.

Most nations have adopted competition laws as a way to actualize (as well as to symbolize) a degree of commitment to the competitive process and to the prevention of abusive business practices . . . . The introduction of competition laws and policies has also gone hand in hand with economic deregulation, regulatory reform, and the end of command and control economies.36

The surest way to remove the threat of war, increase wealth, conserve resources, and protect human rights is through fundamental agreement between all states (or at least effective agreement between verifiably status quo states) under a normative umbrella that promotes all of those values. This normative convergence can be effected through the stepwise internalization of the sorts of economic and democratic values inherent in international economic liberalization, perhaps most notably through the adoption of principled international antitrust standards.37

#### Rules of the road check Russian and Chinese ASATs--- cause Taiwan war, AND deck cred among allies.

Dr. Brian G. Chow 20, Independent Policy Analyst, Spent 25 years as a Senior Physical Scientist Specializing in Space and National Security, Ph.D in Physics from Case Western University, MBA and Ph.D in Finance from the University of Michigan, “Space Traffic Management in the New Space Age,” Strategic Studies Quarterly, Winter 2020, p. 76-78

* Modified for ableist language

The Necessity for Space Traffic Management

In 2018, the Long Term Sustainability (LTS) Working Group of the Committee on the Peaceful Uses of Outer Space (COPUOS) tried to establish voluntary “measures for the safe conduct of proximity space operations.”15 Russia blocked adding these RPO measures to the 21 guidelines developed by the working group over the prior eight years.16 Finally, in June 2019, Russia endorsed the 21 guidelines, but RPO rules were not included. While these guidelines will help avoid accidental collisions of functional satellites with space debris, they will not prevent satellites from being deliberately threatened or disabled by robotic spacecraft.

Even if Russia and China agreed to reconsider RPO measures, there is another problem. COPUOS has long focused only on guidelines for commercial safety, not military security. Taking advantage of this tradition, Russia and China could steer RPO guidelines toward helping commercial operators avoid accidental collisions but leaving the option of using proximity operations to threaten critical US military satellites. This threat could be a powerful instrument for executing their asymmetric strategies to counterbalance the more superior US military capabilities in space. For example, in its 2019 document China Military Power, the US Defense Intelligence Agency states, “PLA [People’s Liberation Army] writings emphasize the necessity of ‘destroying, damaging, and interfering with the enemy’s reconnaissance . . . and communications satellites,’ suggesting that such systems, as well as navigation and early warning satellites, could be among the targets of attacks designed to ‘~~blind and deafen~~ [disorient] the enemy.’ ”17

Such an attack would be most damaging if it is the fateful opening of a war in space or on Earth. China could pre-position and maintain multiple dual-use robotic spacecraft arbitrarily close to our critical satellites. Even more worrying is that this threat will grow. Sometime in the latter half of the 2020s, China will have the capability to pre-position dozens of cheap RPO small satellites (smallsats18) close to dozens of our satellites, such as the Global Positioning System (GPS). Although these spacecraft are slow-moving, they will be able to legally pre-position during peacetime and get unreasonably close. After “legitimately” setting up this threatening posture, China would have an advantage in a crisis, such as one involving Taiwan. If the US intervenes, China could disable critical satellites so quickly that we would not have enough time to defend them. The disabling could severely degrade US war-fighting capabilities. Furthermore, knowing an intervention could fail, the US might decide not to intervene in the first place and would risk its credibility among allies.19 The US could prevent such a threat scenario and outcome by creating and enforcing a more comprehensive STM regime that provides timely warning and prevention.

Already, “rumors have been circulating for years that the Chinese Communist Party (CCP) has developed small satellites with robotic arms that could be used as anti-satellite weapons.” The rumors indicate that “some of the smaller satellites are lighter than 22 pounds, yet have a triple-eye sensor to gauge the shapes of targets and can adjust their speed and rotation, allowing them to grab objects within a distance of six inches, using a single robotic arm.”20 Considering their significant research and development in RPOs and smallsats,21 China as well as Russia can likely deploy a few attackers in the first half of the 2020s and then, in the second half of the decade, dozens of inexpensive smallsats capable of RPOs to mount a simultaneous proximity attack. These proximity ASATs would have a cost ratio (e.g., millions each for ASATs versus hundreds of millions each for a victim’s satellites) highly favorable to the attacker. It would be even more favorable to the attacker if one includes the high cost to the victim of losing the services provided until its satellite capability is fully replaced. Constellations of even dozens of satellites could still be vulnerable. For example, the 32 GPS III satellites, which will replace the current GPS by 2025, cost about half a billion dollars each.22 Dozens of cheap, robotic ASATs could defeat most of these 32 satellites, degrading or eliminating a critical service needed in peacetime and wartime.

#### Chinese ASAT attacks go nuclear.

Lee Billings 15, Editor at Scientific American covering space and physics, Citing Michael Krepon, an arms-control expert and co-founder of the Stimson Center, and James Clapper, Director of National Intelligence, The Scientific American, August 10, 2015, “War in Space May Be Closer Than Ever”, http://www.scientificamerican.com/article/war-in-space-may-be-closer-than-ever/

The world’s most worrisome military flashpoint is arguably not in the Strait of Taiwan, the Korean Peninsula, Iran, Israel, Kashmir or Ukraine. In fact, it cannot be located on any map of Earth, even though it is very easy to find. To see it, just look up into a clear sky, to the no-man’s-land of Earth orbit, where a conflict is unfolding that is an arms race in all but name.

The emptiness of outer space might be the last place you’d expect militaries to vie over contested territory, except that outer space isn’t so empty anymore. About 1,300 active satellites wreathe the globe in a crowded nest of orbits, providing worldwide communications, GPS navigation, weather forecasting and planetary surveillance. For militaries that rely on some of those satellites for modern warfare, space has become the ultimate high ground, with the U.S. as the undisputed king of the hill. Now, as China and Russia aggressively seek to challenge U.S. superiority in space with ambitious military space programs of their own, the power struggle risks sparking a conflict that could ~~cripple~~ [destroy] the entire planet’s space-based infrastructure. And though it might begin in space, such a conflict could easily ignite full-blown war on Earth.

The long-simmering tensions are now approaching a boiling point due to several events, including recent and ongoing tests of possible anti-satellite weapons by China and Russia, as well as last month’s failure of tension-easing talks at the United Nations.

Testifying before Congress earlier this year, Director of National Intelligence James Clapper echoed the concerns held by many senior government officials about the growing threat to U.S. satellites, saying that China and Russia are both “developing capabilities to deny access in a conflict,” such as those that might erupt over China’s military activities in the South China Sea or Russia’s in Ukraine. China in particular, Clapper said, has demonstrated “the need to interfere with, damage and destroy” U.S. satellites, referring to a series of Chinese anti-satellite missile tests that began in 2007.

There are many ways to disable or destroy satellites beyond provocatively blowing them up with missiles. A spacecraft could simply approach a satellite and spray paint over its optics, or manually snap off its communications antennas, or destabilize its orbit. Lasers can be used to temporarily disable or permanently damage a satellite’s components, particularly its delicate sensors, and radio or microwaves can jam or hijack transmissions to or from ground controllers.

In response to these possible threats, the Obama administration has budgeted at least $5 billion to be spent over the next five years to enhance both the defensive and offensive capabilities of the U.S. military space program. The U.S. is also attempting to tackle the problem through diplomacy, although with minimal success; in late July at the United Nations, long-awaited discussions stalled on a European Union-drafted code of conduct for spacefaring nations due to opposition from Russia, China and several other countries including Brazil, India, South Africa and Iran. The failure has placed diplomatic solutions for the growing threat in limbo, likely leading to years of further debate within the UN’s General Assembly.

“The bottom line is the United States does not want conflict in outer space,” says Frank Rose, assistant secretary of state for arms control, verification and compliance, who has led American diplomatic efforts to prevent a space arms race. The U.S., he says, is willing to work with Russia and China to keep space secure. “But let me make it very clear: we will defend our space assets if attacked.”

Offensive space weapons tested

The prospect of war in space is not new. Fearing Soviet nuclear weapons launched from orbit, the U.S. began testing anti-satellite weaponry in the late 1950s. It even tested nuclear bombs in space before orbital weapons of mass destruction were banned through the United Nations’ Outer Space Treaty of 1967. After the ban, space-based surveillance became a crucial component of the Cold War, with satellites serving as one part of elaborate early-warning systems on alert for the deployment or launch of ground-based nuclear weapons. Throughout most of the Cold War, the U.S.S.R. developed and tested “space mines,” self-detonating spacecraft that could seek and destroy U.S. spy satellites by peppering them with shrapnel. In the 1980s, the militarization of space peaked with the Reagan administration’s multibillion-dollar Strategic Defense Initiative, dubbed Star Wars, to develop orbital countermeasures against Soviet intercontinental ballistic missiles. And in 1985, the U.S. Air Force staged a clear demonstration of its formidable capabilities, when an F-15 fighter jet launched a missile that took out a failing U.S. satellite in low-Earth orbit.

Through it all, no full-blown arms race or direct conflicts erupted. According to Michael Krepon, an arms-control expert and co-founder of the Stimson Center think tank in Washington, D.C., that was because both the U.S. and U.S.S.R. realized how vulnerable their satellites were—particularly the ones in “geosynchronous” orbits of about 35,000 kilometers or more. Such satellites effectively hover over one spot on the planet, making them sitting ducks. But because any hostile action against those satellites could easily escalate to a full nuclear exchange on Earth, both superpowers backed down. “Neither one of us signed a treaty about this,” Krepon says. “We just independently came to the conclusion that our security would be worse off if we went after those satellites, because if one of us did it, then the other guy would, too.”

Today, the situation is much more complicated. Low- and high-Earth orbits have become hotbeds of scientific and commercial activity, filled with hundreds upon hundreds of satellites from about 60 different nations. Despite their largely peaceful purposes, each and every satellite is at risk, in part because not all members of the growing club of military space powers are willing to play by the same rules—and they don’t have to, because the rules remain as yet unwritten.

Space junk is the greatest threat. Satellites race through space at very high velocities, so the quickest, dirtiest way to kill one is to simply launch something into space to get in its way. Even the impact of an object as small and low-tech as a marble can disable or entirely destroy a billion-dollar satellite. And if a nation uses such a “kinetic” method to destroy an adversary’s satellite, it can easily create even more dangerous debris, potentially cascading into a chain reaction that transforms Earth orbit into a demolition derby.

In 2007 the risks from debris skyrocketed when China launched a missile that destroyed one of its own weather satellites in low-Earth orbit. That test generated a swarm of long-lived shrapnel that constitutes nearly one-sixth of all the radar-trackable debris in orbit. The U.S. responded in kind in 2008, repurposing a ship-launched anti-ballistic missile to shoot down a malfunctioning U.S. military satellite shortly before it tumbled into the atmosphere. That test produced dangerous junk too, though in smaller amounts, and the debris was shorter-lived because it was generated at a much lower altitude.

More recently, China has launched what many experts say are additional tests of ground-based anti-satellite kinetic weapons. None of these subsequent launches have destroyed satellites, but Krepon and other experts say this is because the Chinese are now merely testing to miss, rather than to hit, with the same hostile capability as an end result. The latest test occurred on July 23 of last year. Chinese officials insist the tests’ only purpose is peaceful missile defense and scientific experimentation. But one test in May 2013 sent a missile soaring as high as 30,000 kilometers above Earth, approaching the safe haven of strategic geosynchronous satellites.

#### Taiwan conflict causes global nuke war.

Joseph Gerson 21, Executive Director of the Campaign for Peace, Disarmament and Common Security and Vice-President of the International Peace Bureau, “Taiwan: The Most Dangerous Flashpoint in the U.S.-China Cold War”, Mass Peace Action, 7/19/2021, https://masspeaceaction.org/taiwan-the-most-dangerous-flashpoint-in-the-u-s-chinese-cold-war/

Preventing accidents or miscalculations (political as well as military) that could trigger armed conflict and escalate to nuclear war must now become an urgent priority. Taiwan is the most dangerous flashpoint for great power and potentially nuclear war, followed by the South China/West Philippine and Baltic Seas. With the contradictory forces of popular Chinese backing for Taiwan’s reunification and growing support for Taiwanese national independence, as well as the inevitable tensions between rising and decline powers, a nervous sailor who pulls a trigger or a Taiwanese political leader who makes a reckless statement could ignite a nuclear World War.

### 1AC---Adv---Noble Antitrust

#### The plan creates a testing ground for “noble competition,” creating proof of concept and spilling over broadly.

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Noble competition: ethics and beyond

The competition law issues raised by consortium DLTs, their increasing consolidation and concentration, such as collusion or other anti-competitive behavior, is addressed through antitrust law. However, in the space sector, this might prove more difficult since antitrust falls under national law, while space falls under international law, if not under transnational law given the increasing commercialization of the sector (lex mercatoria spatialis19). For this reason, the authors recommend the adoption of a new discipline, “space antitrust”, based on the corpus juris spatialis higher principles and ethics, such as benefit sharing, equality, due regard, non-interference, and equitable distribution through competition law mechanisms.20 The difficulty in implementing antitrust as is in the space sector, meaning national law, is that there can be attribution of jurisdiction issues if the parties entering a dispute do not originate from the same launching state. Space is an international law arena, which complexifies the equation. If, however, the parties do originate from within the same launching state, theoretically their national antitrust legislation could apply. The problem would result in such cases differing in outer space each time a dispute is being settled by other national legislation, and thus, a heterogeneous mosaic of jurisprudence could increase fragmentation. Furthermore, national antitrust does not take into account higher ethical principles of outer space (e.g., equality of access, freedom of exploration and exploitation, non-discrimination, due regard, non-interference, benefit sharing, duty to assist, cooperation and mutual understanding). Antitrust, as is, takes into account the interest of the consumer (i.e., low prices) and prevention of artificial monopolies.

In contrast with artificial monopolies, natural monopolies are allowed as long as they enable economies of scale, or simply do not have any competitors. They can also be subsidized by the state on markets that incur high fixed costs and strong externalities, such as in the case of United Launch Alliance (ULA), a joint venture between Boeing and Lockheed Martin, on the defense launching market. However, a New Space entrant, Space Exploration Technologies (SpaceX), proved through several antitrust lawsuits, which ended up in settlement, that ULA’s natural monopoly did not enable economies of scale. On the contrary, ULA charged the U.S. Department of Defense (DOD) excessively and abused its dominant position. This illustrates how, albeit initially perceived legitimacy of a monopoly can, in fact, subsequently, hide a different reality. Space being “hard”, it is likely that other incumbent actors rely on state-aid and seek to secure a monopolistic status. It is to be expected due to the harsh and peculiar circumstances of the sector. However, it is also expected that such monopolies shift from natural to artificial and that antitrust lawsuits will be waiting around the corner. It is not in the interest of the space ecosystem to rely on lawfare to settle these issues, rather it is preferable to act ex ante with a noble space antitrust framework.

A number of legal scholars21 have revisited Adam Smith’s classical writings and have suggested an alternative reinterpretation that attempts to bypass some of the non-desirable outcomes resulting from some of the toxic effects of competition, to be defined below, which is based on a zero-sum game that does not benefit society at large when exclusively focused on lowering prices, impeding thus its advancement. The rationale is based on the fact that lowering the prices is not always in the interests of the final consumer, but to deter, through cross-subsidization, competitors from entering a market. Furthermore, this might have a detrimental impact on quality. These same scholars have called for a noble competition model, which focuses on a constructive and collective “race to the top”, instead of a classical “race to the bottom”. One basic criticism that can be levelled at the classic competition model is that today’s competition is in fact an antithesis to competition since increasingly highly concentrated markets kill it and impose oligopolistic market dynamics, which are themselves subject to monopolization. Regulators can intervene in these cases thanks to antitrust law, and break, in theory, these monoliths.

Nevertheless, as scholars rightfully note,22 the worst effect of antitrust law is that it is a double-edge sword. In fact, in an ever-escalating competitive environment, some industries would envisage lessening their drastically competitive behavior and opt for more sustainable strategizing. This would, according to competition law, translate as concerted practice and collusion and is therefore forbidden. In Adam Smith’s thinking, everything in the regulator’s power must be done to protect competition per se, which, according to competition advocates, is the best way to reach efficiency and low prices for consumers. There are two problems with this rationale. First, low prices are not destined, in fact, to benefitting the end customer, but rather to sink competitors, regardless of the high impact on quality. And second, the regulator’s role as envisaged by the Chicago School23 would mean, in fact, the lack of regulation. In other words, for competition to succeed at its best, deregulation must be increased. However, by the same token, since there is no competition law within space law, space law largely relies on the pursuit of ethical principles, and space law in its current state can be considered a legal laboratory par excellence to test “noble competition”. While noble competition is not yet precisely defined by literature, it is however destined to be beneficial to society at large, given that space law consists of principles, such as benefit sharing, within both the Outer Space Treaty (OST) of 1967 24 and the Space Benefits Declaration of 1996.25 In essence, while ethical competition precedes noble competition on Stucke’s and Ezrachi’s model, it is evident that fair competition does not reach far enough at this point, and the principles underpinning noble competition can help preclude some of the toxic effects of competition in space. In their Competition Continuum model (see Table 1), on the one hand, toxic competition refers to a highly competitive environment where there is no win-win situation, especially where stakeholders are motivated only by self-interest, which results in a zero-sum world and basically no benefit sharing nor cooperation. On the other hand, ethical competition takes a step towards transforming the competitive environment into a positive-sum setting, where there can be more than one winner owing to principles such as due regard and other ethical principles as mentioned previously throughout this paper. Adding a layer of purpose to that and noble competition can be attained and lead to sustainability.

Stucke and Ezraki, the main proponents of noble competition doctrine, argue that the competition law ideology must go further than mere ethics to shape the future of society constructively and sustainably. For them, noble competition justifies the fact that the current market dynamics based entirely on a competitive environment prove in reality to be toxic, effectively leading society into the race to be bottom logic mentioned above, in an unsustainable zero-sum world.27 For these scholars, on the contrary, to successfully achieve that race to the top, space must be used as an arena to test new models of thinking, such as noble competition. Since the authors has already postulated that space antitrust, building on space law ethics, could become a valuable solution, extending its mission even further towards the noble end of the spectrum as shown in Table 1. This can be the next great big challenge of space law, to protect itself against creeping concentration, jurisdiction blurring, and commodification.

With space resource commodification and space market infrastructure commoditization beckoning, at the same pace as society is advancing in the direction of an “algocracy”,28 it is not only important to anticipate “algolaw” measures,29 but to channel the commercial forces constructively and sustainably by promoting a race to the top through means of a noble space antitrust and its social mission, for which the next steps lay defining its implementation. Since ethical principles within space law include, inter alia, equality of access, freedom of exploration and exploitation, non-discrimination, due regard, non-interference, benefit sharing, duty to assist, cooperation and mutual understanding, one may ask why bother to introduce competition in all this and not just stick with a duty to cooperate and collaborate. This would not be advised as it restrains market opportunity and freedom, and space is becoming a sphere of business. Therefore, there is a need to strike a balance between healthy competition and sustainability. Noble competition can do that, according to the scholars introducing that concept through policy in the public interest.

Discussion

The space ecosystem is undergoing an interesting transition. Some argue that New Space should be replaced with “Fast Space”30 as the culture is leaning towards entrepreneurialism as nurtured within the spirit of Silicon Valley, advocating for minimum viable products (MVPs) and prototypes, fast iteration, and risk taking. This entrepreneurialism not only brings with it the further privatization of the space ecosystem, with a growing commercialization rationale, but also a lex mercatoria spatialis rooted in dematerialized systems and loopholes, such as this paper has listed, most of which are to be encoded through cyber technology. These means will prove elusive in terms of attribution and jurisdiction, but the privatization of space will also generate a certain privatization of law31; contractual law and international private law as such will play an increasing role in the space sector.

Nonetheless, this transition foreshadows the growing number of legal conflicts in terms of competition law between actors who are highly competing for the same markets. Today, the space sector has become an arena of such competitive conflicts as exemplified between SpaceX and Amazon Web Services (AWS) and/or Blue Origin, with a new case almost monthly over issues of orbits, launching contracts, launching pads, and patents, among others. While heavily regulated on Earth, national competition law is not problematic in space yet since the majority of cases today involve actors from the same jurisdiction. However, the situation might become very complex when several jurisdictions are to be involved. There is no international competition law as of yet, but only international non-binding guidelines whose role is rather mitigated. States seek to protect their national champions,32 and therefore international aerospace antitrust cases are found to be arbitrary, negotiated in terms of geopolitical interests and trade war. If this extrapolates to the future space infrastructure, its sustainability might become problematic and conflict with the OST higher principles, invalidating them. For this reason, it is important to determine a new space antitrust framework, based on ethics and beyond nobleness, to ensure the intergenerational sustainability of the space ecosystem.

Furthermore, with regard to intergenerational benefit sharing of the common resources in outer space, such new space antitrust framework might prove relevant to prevent monopolization and unchecked speculation based on such resources and emerging futures indexes in the space sector based on space resources and their commoditization. For example, paradoxically, a few decades ago, antitrust was used in a case to deregulate the financial market by opening the doors to international competition. Indeed, the financial “Big Bang” in the United Kingdom, in the 1980s, which ushered in major financial deregulation, was based on an antitrust settlement involving the London Stock Exchange.33 This deregulation followed through subsequently in Asia and in the United States in 2000, with serious financial consequences. This asserts the fact proper antitrust regulation is needed to keep the economy in balance, especially in the space economy, to avoid potentially erratic consequences since the space market is still fragile and in its infancy. For this reason, space antitrust must take into account the challenges of new space index initiatives and assess the pros and cons of deregulation on the long run.

Lastly, as scholars argue that the Chicago School deprived antitrust from its broader initial scope and restricted it only to the economic requirement of lowering prices for the sole benefit of the consumer instead of a larger role of promoting more socio-economic sustainability,34 it is timely to advocate for an ethical purpose of antitrust and the space sector as a testing ground. Moreover, this transformation should happen multilaterally to secure an international scope since space is not a territorial domain, and therefore, space antitrust must become international. Space ethics could be used as common tenets and axioms for such reasoning. Otherwise, a more conservative approach, based on national law, could also be used as a mechanism (since antitrust falls under national law). In this case, the use of the Sofia Model Guidelines35 is recommended to harmonize such national legal mechanisms or amendments to existing national legislation. Either way, the international community should be consulted on this and if consensus lags, then bilateral agreements could be investigated, especially involving the states with most antitrust cases shaking the space infrastructure and who are to be investing in the near future in a space commodities market, and who a likely to start building cyber infrastructure for commercial transactions of resources and rights (i.e., notably through tokenization). Imposing ethical boundaries before customary practice crystallizes is recommended, however, these boundaries must be adaptive and constructive for them to be successful.

#### Absent US-led noble competition, infrastructure collapse, inequality, and corporatism are inevitable.

Maurice Stucke 20, Douglas A. Blaze Distinguished Professor of Law at the University of Tennessee, Knoxville, School of Law, Specializing in Antitrust Law, J.D. from the Georgetown University Law Center, A.B. from Georgetown University; Ariel Ezrachi, Slaughter and May Professor of Competition Law and Fellow of Pembroke College at the University of Oxford, Director of the University of Oxford Centre for Competition Law and Policy, “Competition Overdose: How Free Market Mythology Transformed Us from Citizen Kings to Market Servants,” 2020, p. 362-368

Duhigg’s classmates are unhappy despite well-paying jobs, but many of us don’t have the luxury of such well-cushioned unhappiness. We are working too hard for not enough pay, no benefits or lousy ones, and no job security. For us the promise of prosperity never arrived, even though we work in a competitive economy, which we’ve been told is the pathway to prosperity. That is the rationale policy makers have offered for their efforts to increase competition, fortify the laws to protect it, and eliminate many of the regulatory restraints that they deem harmful and unnecessary.

You would be right to ask: What went wrong? How have we found ourselves at this unfortunate juncture? And what path should we have followed?

Not the mostly abandoned paths of communism and totalitarianism, which are certainly no better and indeed much worse than the one we’re on. Few among us would want to work or live in a centrally planned economy. Competition often does promote efficiency, economic growth, innovation, and material well-being, just as the competition ideologues insist. And regulations that restrict the freedom of companies can indeed be counterproductive. But we must acknowledge that the oversimplified version of the competition ideology that is being sold to us today, with its assumption that unfettered competition is always and in every circumstance superior to any other path, has not delivered as promised. Increasingly, we see its darker sides.

If looked at objectively, it becomes apparent how reductive the ideology really is, and how much potential there is for abuse. Rather than competition serving us by improving our material living standards (income, consumption, and wealth), this economic tool has become the master that we must serve, the magic elixir we must swallow whole. The economists’ warning labels have been peeled off; the possibility of overdosing from toxic competition has been dismissed outright.

The ever-ascending arrow in the chart on the left depicts the promise of competition; the downward curve of the arrow on the right is a more realistic depiction of where it has led us.

It doesn’t have to be that way, however. From the late-1940s until the mid-1970s, competition really did foster innovation, increase quality, and improve our material living standards. But it was competition that operated in an environment with regulatory protections.

Beginning in the late 1970s, such protections were gradually stripped away as the competition ideology, like kudzu, took over and smothered everything in its path—including the social, moral, and ethical values that might have mitigated its pernicious effects.

Over the past forty years lobbyists, powerful firms, and ideologues have pushed for free market solutions, unmonitored and unregulated, even for services—like prisons—that are particularly ill-suited to an ideology that puts profits and “shareholder value” ahead of all other values. Politicians and policy makers promoted competition as the panacea for nearly every societal ill, while striving both to dismantle existing regulations and to resist any new ones, all in the name of avoiding “regulatory creep”—that supposedly lethal blow to the free market. The result: The regulatory framework and safety nets that are crucial to an inclusive and stable economy are gone. With few incentives to invest in infrastructure or the more general needs of society, the competitive companies that our policy makers promised us would maximize our earning potential have delivered their benefits instead to only a tiny percentage (less than 1 percent) of our population. We, the citizens, are often left to pay the bill (recall the financial meltdown) or the side effects (from your pay slip to your social rights). With most of the benefits pocketed by these fortunate few, income inequality around the globe reached its highest level for the past half century by 2018.3 Wealth inequality (a measure of how much we have rather than how much we earn) was even worse—twice the level of income inequality.4 The $1.5 trillion in tax cuts by the Trump administration, as the United Nations noted, overwhelmingly benefited the wealthy and worsened inequality: “The consequences of neglecting poverty and promoting inequality are clear. The United States has one of the highest poverty and inequality levels among the OECD countries,” and also ranks near the bottom among wealthy countries in terms of labor markets, safety nets, and economic mobility.

The middle class, in the United States and in much of Europe, is shrinking—down to just over 50 percent in the United States and 60 percent in the European Union.6 Once-thriving manufacturing centers where workers could earn a decent living have been reduced to a state of rusting decay brought about by declines in labor’s share of profits, low-skilled workers’ wages, labor force participation, and the start-up rate of new firms (due to barriers erected by powerful incumbents).7 Yet, our elected officials continue to defend the competition ideology, to insist that it will pay off, even as our pocketbooks, health care, and social rights tell us otherwise.

What has happened is that the idealized perfect competition portrayed in the economic textbooks has been squeezed out by the bad forms of competition—monopolistic or toxic or both. Crony capitalism, in which big business and big government cozy up to each other to stifle the good forms of competition, is the order of the day. Economists who have studied the data reveal that under this system many markets have actually become more concentrated and less competitive. And while the profit margins of the most powerful companies increased, innovation may have actually declined.8

Yet the consolidation in the marketplace continues to be defended as necessary. “Unless you have scale and power in the marketplace and with the consumer, you’re just out there scrambling on your own,” an executive at AT&T Inc. said after the federal court allowed it to acquire media conglomerate Time Warner.9

The alignment between big government and big business will continue as long as money and corporate help with reelection remain top-of-mind concerns for so many government officials. This means that we can expect many governmental policies to remain skewed toward helping the wealthy and powerful under the façade of competition, and against regulation in the name of freedom. Writers and thinkers as diverse as Martin Luther King, Jr., Senator Bernie Sanders, former Secretary of Labor Robert Reich, and Robert F. Kennedy, Jr., have inveighed against this state of affairs, which they describe as socialism for the rich (meaning government policy that sees to it that most resources go to the rich, their powerful corporations, and our financial institutions) and capitalism—or as King put it, “rugged individualism”—for the poor (meaning that they are left to struggle on their own). Nobel prize–winning economist Joseph Stiglitz describes the result this way:

We haven’t achieved the minimalist state that libertarians advocate. What we’ve achieved is a state too constrained to provide the public goods—investments in infrastructure, technology, and education—that would make for a vibrant economy and too weak to engage in the redistribution that is needed to create a fair society. But we have a state that is still large enough and distorted enough that it can provide a bounty of gifts to the wealthy.10

If we continue along the current path, our infrastructure will continue to crumble. Public education at the primary and secondary school level will deteriorate even further for those in poor or low-income areas. Rising college tuition will plunge even more students and their families into serious debt.11 And in order to mount a legal defense of their merger strategies, behemoths like AT&T will continue to bleat piteously about having to scramble on their own.

#### Infrastructure disruptions ripple---extinction.

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

Global Challenges – Twelve risks that threaten human civilisation – The case for a new category of risks 89 3.1 Current risks System Collapse 3.1.5 Global Global system collapse is defined here as either an economic or societal collapse on the global scale. There is no precise definition of a system collapse. The term has been used to describe a broad range of bad economic conditions, ranging from a severe, prolonged depression with high bankruptcy rates and high unemployment, to a breakdown in normal commerce caused by hyperinflation, or even an economically-caused sharp increase in the death rate and perhaps even a decline in population. 310 Often economic collapse is accompanied by social chaos, civil unrest and sometimes a breakdown of law and order. Societal collapse usually refers to the fall or disintegration of human societies, often along with their life support systems. It broadly includes both quite abrupt societal failures typified by collapses, and more extended gradual declines of superpowers. Here only the former is included. 3.1.5.1 Expected impact The world economic and political system is made up of many actors with many objectives and many links between them. Such intricate, interconnected systems are subject to unexpected system-wide failures due to the structure of the network311 – even if each component of the network is reliable. This gives rise to systemic risk: systemic risk occurs when parts that individually may function well become vulnerable when connected as a system to a self-reinforcing joint risk that can spread from part to part (contagion), potentially affecting the entire system and possibly spilling over to related outside systems.312 Such effects have been observed in such diverse areas as ecology,313 finance314 and critical infrastructure315 (such as power grids). They are characterised by the possibility that a small internal or external disruption could cause a highly non-linear effect,316 including a cascading failure that infects the whole system,317 as in the 2008-2009 financial crisis. The possibility of collapse becomes more acute when several independent networks depend on each other, as is increasingly the case (water supply, transport, fuel and power stations are strongly coupled, for instance).318 This dependence links social and technological systems as well.319 This trend is likely to be intensified by continuing globalisation,320 while global governance and regulatory mechanisms seem inadequate to address the issue.321 This is possibly because the tension between resilience and efficiency322 can even exacerbate the problem.323 Many triggers could start such a failure cascade, such as the infrastructure damage wrought by a coronal mass ejection,324 an ongoing cyber conflict, or a milder form of some of the risks presented in the rest of the paper. Indeed the main risk factor with global systems collapse is as something which may exacerbate some of the other risks in this paper, or as a trigger. But a simple global systems collapse still poses risks on its own. The productivity of modern societies is largely dependent on the careful matching of different types of capital325 (social, technological, natural...) with each other. If this matching is disrupted, this could trigger a “social collapse” far out of proportion to the initial disruption.326 States and institutions have collapsed in the past for seemingly minor systemic reasons.327 And institutional collapses can create knock-on effects, such as the descent of formerly prosperous states to much more impoverished and destabilising entities.328 Such processes could trigger damage on a large scale if they weaken global political and economic systems to such an extent that secondary effects (such as conflict or starvation) could cause great death and suffering. 3.1.5.2 Probability disaggregation Five important factors in estimating the probabilities of various impacts: 1. Whether global system collapse will trigger subsequent collapses or fragility in other areas. 2. What the true trade-off is between efficiency and resilience. 3. Whether effective regulation and resilience can be developed. 4. Whether an external disruption will trigger a collapse. 5. Whether an internal event will trigger a collapse. 1. Increased global coordination and cooperation may allow effective regulatory responses, but it also causes the integration of many different aspects of today’s world, likely increasing systemic risk. 2. Systemic risk is only gradually becoming understood, and further research is needed, especially when it comes to actually reducing systemic risk. 3. Since systemic risk is risk in the entire system, rather than in any individual component of it, only institutions with overall views and effects can tackle it. But regulating systemic risk is a new and uncertain task. 4. Building resilience – the ability of system components to survive shocks – should reduce systemic risk. 5. Fragile systems are often built because they are more efficient than robust systems, and hence more profitable. 6. General mitigation efforts should involve features that are disconnected from the standard system, and thus should remain able to continue being of use if the main system collapses 7. A system collapse could spread to other areas, infecting previously untouched systems (as the subprime mortgage crisis affected the world financial system, economy, and ultimately its political system). 8. The system collapse may lead to increased fragility in areas that it does not directly damage, making them vulnerable to subsequent shocks. 9. A collapse that spread to government institutions would undermine the possibilities of combating the collapse. 10. A natural ecosystem collapse could be a cause or consequence of a collapse in humanity’s institutions. 11. Economic collapse is an obvious and visible way in which system collapse could cause a lot of damage. 12. In order to cause mass casualties, a system collapse would need to cause major disruptions to the world’s political and economic system. 13. If the current world system collapses, there is a risk of casualties through loss of trade, poverty, wars and increased fragility. 14. It is not obvious that the world’s institutions and systems can be put together again after a collapse; they may be stuck in a suboptimal equilibrium. 15. Power grids are often analysed as possible candidates for system collapse, and they are becoming more integrated. 16. The world’s financial systems have already caused a system collapse, and they are still growing more integrated. 17. The world’s economies are also getting integrated, spreading recessions across national boundaries. 18. The world’s political and legal systems are becoming more closely integrated as well. Any risk has not been extensively researched yet, and there remain strong obstacles (mainly at the nation state level) slowing down this form of integration. 19. The politics of the post-system collapse world will be important in formulating an effective response instead of an indifferent or counterproductive one. 20. System collapses can be triggered internally by very small events, without an apparent cause. 21. External disruptions can trigger the collapse of an already fragile system. 22. The trade-off between efficiency and resilience is a key source of fragility in a world economy built around maximising efficiency. 23. Climate change, mass movements of animals and agricultural mono-cultures are interlinking ecosystems with each other and with human institutions. 24. There is a lot of uncertainty about systemic risk, especially in the interactions between different fragilities that would not be sufficient to cause a collapse on their own.

#### Noble competition builds higher ethical values into antitrust, resulting in sustainable development and systemic resiliency, solving extinction.

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At the same time, the very foundations of competition policy are being revised in various contexts and for various purposes. The emergence of a sui generis approach to competition law in the area of the digital economy,1 discussions about the role of competition policy in remedying various societal, economic, industrial, racial, gender and other problems and challenges show that competition policy can no longer be addressed hermetically, only via the traditional toolkit of law and economics.

The main purpose of this article is to provide a legal theoretical framework explaining, justifying and conceptualising the existing reconfiguration of competition law, economics and policy. Its main purpose is not to use this legal theory to support a specific sustainability-related normative argument, but to analyse how the key arguments of the supporters and critics of a greener competition policy could be shaped and underpinned by the jurisprudential theory of legal realism. On an applied level, the article explains why the current situation in competition law is particularly susceptible to various versions of ‘competition law and …’ movements.

More specifically, this article aims to (i) examine and systematise the central arguments of the supporters and the opponents of the idea of sustainability-centred – or at least sustainability-minded – competition law; (ii) to place these arguments into a broader context of the development

of (primarily EU) competition policy; (iii) to transpose the discussion into legal-theoretical discourse and the apparatus of legal realism; and (iv) to operationalise the system by showing the mechanics of balancing. It summarises and explains its main contribution in the conclusion.

II. Competition and sustainability: pros & cons

A stylised argumentation of the proponents of a more sustainability-minded approach begins with reminding us of the dangers associated with rapid climate change, ‘a disaster in slow motion’ (Dolmans, 2020) and of humankind’s responsibility to adjust our economic and socio-cultural practices and habits accordingly. Then the scientific, political and legal sources of the UN, OECD,

EU and other international and domestic organisations and polities are analysed, with the demonstration of the topicality and the urgency of the issue and the availability of legally binding instruments for applying a more sustainability-minded approach to competition policy. Finally, advantages and shortcomings of the current case law are addressed and ways for re-interpreting

the legislative, administrative and judicial sources are offered.

One of the most comprehensive and well-argued pieces by the proponents of a more proactive sustainability-minded application of competition policy is Simon Holmes’ ‘Climate Change, Sustainability, and Competition Law’ (Holmes, 2020). The author’s central message is that competition law should become a solution rather than remain an obstacle to a more sustainable development. Holmes supports this normative plea with reference to the constitutional architecture of EU law, referring to some hierarchical primacy of sustainability and environmental protection over competition policy, as deduced from the provisions of the TFEU. Holmes notices a common tactical move of responsibility shifting, when any meaningful initiative to tackle climate change is relativised and downrated by the rhetorical arguments of the inability of such an initiative alone to achieve clearly measurable outcomes. He argues that the existing legal framework of EU law is sufficient for achieving much better results, and elaborates a conception of a purposeful reinterpretation of the provisions of its primary law. The main argument is that Article 11 TFEU stipulates that ‘[e]nvironmental protection requirements must be integrated into the definition and interpretation of the Union policies and activities, in particular with a view to promoting sustainable development’ (emphasis added by Holmes). This implies that these requirements must be also integrated into the definition and interpretation of competition policy.

Obviously, several important clarificatory questions emerge: (i) who and how should the limits of such re-interpretation of established doctrinal avenues of competition policy be defined, particularly given that unlike the issues of competition, environmental policy belongs to shared, rather than exclusive, EU competences (Article 4 TFEU); (ii) the provisions of Article 7 TFEU requiring consistency between its policies and activities may well be interpreted not as an imperative that all its policies must be consistent with each other (i.e. that competition policy must be consistent with the environmental one), but that all EU activities must be consistent with its policies – and thus no direct requirement of consistency between the policies themselves; (iii) even the former interpretation refers to a mere consistency between policies, not primacy of one over the other, and as such could be interpreted both as ‘sustainability-minded competition policy’ as well as ‘competition-minded environmental policy’. Given that the EU has many other (often conceptually conflicting) policies, expecting all of them to be consistent with each other would be very hard to achieve. This can be deduced from the wording of Article 7 TFEU, which stipulates that all EU objectives must be taken into account rather than taxonomically subordinated to each other.

However, all these counterarguments do not negate the wording of Article 11 TFEU, requiring all EU policies being defined and interpreted with environmental protection in mind. This is an important legal imperative imposing a categorical requirement of sustainability-minded definition and interpretation of EU policies, providing thereby some hierarchical primacy of the latter over all former. Evidently, this interpretation would be unenforceable in reality – Holmes, for example, acknowledges that over his long and remarkable career in competition law, this legal argument never played an important role in daily enforcement – (Holmes, 2020, p. 359), and hard to conceptualise in theory as such an approach would also imply a primacy of environmental policy over e.g. (all other) human rights. Yet such an apagogical reductio ad absurdum alone does negate the fact that formally this imperative exists and despite the questions related to its enforceability, the imperative remains legally binding. These conflicts of policies are much more common in constitutional law and legal theory, and there is rich doctrinal and practical literature addressing these dilemmas (Andriychuk, 2017).

The next powerful argument of Holmes’ paper is that (i) the term consumer welfare is much broader than its economic dimension implies, and that (ii) the methodological reduction of consumer welfare – let alone the competitive process – to the neoclassical apparatus of price theory is myopic and distortive of the very meaning of the phenomena it seeks to comprehend and steer.

Finally, Holmes offers a convincing analysis of five formal ways of incorporating sustainable development into the current competition law framework: (i) some sustainability agreements do not restrict competition (as long as competition policy is reinterpreted in an environmentally-minded way); (ii) ‘Albany’ route of finding the provisions of Article 101 TFEU inapplicable to (some) sustainability agreements; (iii) ancillary restraints; (iv) Article 101(3) TFEU; (v) standardisation agreements. The remainder of his article focuses on the elaboration of the above five avenues, looking at other pillars of competition law and offering eight practical recommendations for implementing a more sustainability-minded competition policy: (i) positive statements by competition authorities; (ii) test cases in courts; (iii) publication of legal opinions which facilitate this approach for others; (iv) revising soft-law; (v) enforcement priorities; (vi) block exemptions; (vii) changes to the law and (viii) changes to the Treaties.

A stylised argumentation of the proponents of the status quo also begins with acknowledging the dangers of climate change and the need for a more proactive approach to remedying its negative implications. They question, however, if competition policy is indeed suitable for such purposes, showing examples of why and how the rhetoric of sustainability could be used for so called ‘greenwashing’ and other forms of opportunistic, if not deceptive, misuse of the idea of sustainable development. They counter the argument of sustainability-minded competition policy with the idea that many other societal values, which either conflict directly or at least diverge substantially, are also acknowledged by the political and legal documents, and that without a proper ‘division of labour’ between different policies the goal of a sustainable development – as well as many other societal policies – would suffer immeasurable loses, and submit that a greener competition policy would eventually backfire as ‘more, not less, competition [… is] the right stimulus for inducing sustainability efforts’ (Schinkel, Treuren, 2020).

Edith Loozen offers a range of appealing arguments from the perspective of EU constitutional law (Loozen, 2019). Unlike Holmes, Loozen is rather sceptical about the ability of EU competition law to encapsulate so proactively the sustainability-driven narrative. The author begins by offering an excellent reference to earlier literature on this issue. Then Loozen analyses the provision of Article 3(3) TEU and submits that the primary objective of the EU constitutional project concerns market integration. Questions about the characteristics of the internal market are of paramount importance, but they are not – and conceptually can never be – superior over the market integration narrative as such. The paper offers an appealing substantiation of this normative proposition, analysing inter alia the main jurisprudence of the Court of Justice (hereinafter: CJ).

Loozen begins with analysing Wouters2 followed by Meca-Medina3 and OTOC and CNG. 4 These cases offer prima facie the same rationale of the non-applicability of Article 101(1) TFEU to some types of sectorial agreements. In Wouters, Article 101(1) TFEU was held inapplicable. The otherwise anticompetitive Netherlands Bar’s measures were considered to be necessary for ensuring the proper functioning of the profession. However, according to Loozen, this case does not allow for a flexible weighing of the applicability of Article 101(1) TFEU any time when the ‘legitimate objective’ outweighs the rationale of Article 101(1) TFEU.

In Meca-Medina, anti-doping rules as adopted by sports federations were considered as capable of falling within the scope of Article 101(1) TFEU, but not infringing competition in practice. In other words, unlike the Netherlands’ Bar, the IOC does not enjoy immunity from Article 101(1) TFEU, and as such Loozen concludes that the recourse to the legitimate objective rationale was needed in the first place. She finishes by discussing why the attempts of some EU Member States to impose an imperative public mandate on some of the widely supported by the public sustainability initiatives violate the EU useful effect doctrine, imposing on and expecting from the Member States a duty of sincere cooperation and/or Article 105(1) TFEU.

Another impactful paper by the sceptics is written from an economic point of view by Maarten Schinkel and Leonard Treuren (Schinkel, Treuren, 2020). Their central normative position is based on the basic principle of non-intervention as the cornerstone of competition (qua invisible hand). They

also begin by acknowledging the urgency of environmental challenges, but submit that such an all-inclusiveness of competition analysis is likely to lead to cartel greenwashing, with the overarching formula: ‘minimum sustainability benefits for maximum prices’ underpinning the very idea. The authors submit that such a shift of responsibility would slow down those governmental divisions which are directly responsible for a more proactive sustainability policy.

A number of appealing arguments are raised by Giorgio Monti (Monti, 2020). He offers a conceptual resolution to the opposite parties. He begins by analysing cases in which environmental benefits were converted into a monetary dimension and balanced against eventual economic inefficiencies. Monti then reverts to the landmark CECED case,5 analysing the changes in approaches of the Commission to the scope of the definition of ‘consumers’ in Article 101(3) TFEU. The key question being if the definition embraces only those directly involved in the purchase – or also a broader category. Only if taken in the scope of the latter, the benefits from environmental improvements would be seen as sufficient for outweighing the anti-competitiveness of the agreement. This would be in line with the Guidelines on Horizontal Agreements6, adopted two years later, prescribing the analysis of net improvements. Monti than notices that this coincided with the growing popularity of the more economic approach and, thus, the Commission was moving towards a more restrictive approach to non-economic benefits of Article 101(3) TFEU, which was reflected, inter alia, in a new edition of the Guidelines.7 This has created quite a confusing situation – where both the supporters of private sustainability initiatives and their critics had strong legal arguments underpinning the position of both sides, arguments which are counterbalanced with the equally meritorious position of the opponents (as well as the middle-position). This Hartian ‘open texture of law’ is not a legal pathology, but the only possible condition of law.

The main contribution of the paper is in its development of legal avenues, which would remedy the existing uncertainty. Monti puts forward four options for a reform. The lightest proposes a more cooperative approach of the enforcers to sustainability initiatives from the industry – an approach which would imply giving less attention to such agreements either in a form of enforcement de-prioritisation or any shape of comfort letters. Option 2 concerns a greener interpretation of Article 101(3) TFEU, focusing on refining the cost-benefit analysis – a difficulty, of course, would be the uncertainty and the burden of proof on the undertakings. Option 3 concerns deeper green alternatives, focusing on the issues, which are not always at the centre of the discussion – for example territoriality. Option 4, the greenest competition policy, implies internalising the rationale of Article 11 TFEU, and overall, a more proactive application of other non-competition law provisions of the Treaties and secondary legislation in tackling environmental problems via the competition law paradigm. Comparable examples may refer to the use of ethical standards in international trade and public procurement, GDPR, privacy and all other instances of instrumental competition enforcement of the ‘antidumping’ type.

III. The (post-) pandemic impact

A number of insightful contributions to the discussion on competition and sustainability were raised during the Commission’s consultation on ‘Competition Policy supporting the Green Deal’, which was launched in October 2020. It has generated a great deal of responses from the industry, academia, public authorities and law firms. Many submissions note that pursuing a greener competition policy is easier in the area of State aid (Bruzzone, Capozzi, 2020). Indeed, while the wording of Articles 101 & 107 TFEU both refer to actions restricting competition and declare these actions to be incompatible with the internal market, the nature of State aid – unlike the nature of the prohibition of anticompetitive agreements – concerns competition only peripherally. The main essence and the main mission of State aid control is the protection and promotion of the Internal Market, making it more homogeneous. The interest of protecting competition is used mainly as a convenient proxy (no other developed antitrust jurisdiction with a con-/federative system has its rules on State aid developed to a degree similar to the EU – as the integration of the internal market is not as an important task for any other such jurisdiction as it is for the EU).

In response to the consultation, for example, Francisco Costa-Cabral notes that we can learn from the model of how the reference to the protection of public health is being used in a competition law analysis: ‘[t]he Commission has done so by using the consequences for national health systems and for the research of new pharmaceuticals to ground novel anti- competitive behaviour and theories of harm in merger control (See Case A.37.507/F3 AstraZeneca 15.06.2005 112–132 and Case M.7275 – Novartis/GSK 28.1.2015 101–114)’ (Costa-Cabral, 2020), and this has been done despite the existence of ex ante regulation. He calls for a more proactive approach by the Commission in pursuing environmental objectives.

As far as the UK concerns, the Competition and Market Authority (hereinafter: CMA) issued in 2021 a guidance on ‘Environmental Sustainability Agreements and Competition Law’,8 outlining its vision on the key problems of the issue, focusing only on anticompetitive agreements and only on the environmental dimension of sustainable development. The central purpose of the CMA in this context is to avoid ‘unnecessary obstacles’ to sustainable development, rather than creating an atmosphere where any formally questionable environmental initiative is abandoned by the businesses as one susceptible of raising competition law concerns. Some anticompetitive agreements can indeed be exempted either individually or as part of an existing exemption category. The emphasis is placed on the subjective part of the agreement, questioning if its real intention is not a cover for a cartel. Standardisation agreements are a significant part of pro-environmental anticompetitive agreements and the guidance is focused on explaining the key criteria for the agreement being qualified as such. The document also offers a helpful ‘Framework for assessment’ flowchart.

A separate strand of literature contextualises the discussion to the (post-)pandemic crisis. Despite substantive differences between the issue of sustainability and crisis cartels, there are also some important similarities as both address situations where the economics-centred antitrust methodology interacts with broader (and for many ‘more important’) societal values.

Julian Nowag raises the issue of the resilience of competition law, looking at the pandemics as a test of the system against ad hoc emergency regulatory measures. A resilient system is expected to survive the exogenous shocks, ultimately getting out of it stronger. He argues for a need to strike a balance between some elements of the interventionist crisis-management and systematicity and certainty (Nowag, 2020).

Masako Wakui puts forward an argument for a more inductive, case-by-case approach to this highly contested issue, using market studies as the main legitimate cause for action. (Wakui, 2020: 316–318). Even such an approach is seen by the representatives of many producers as not sufficiently proactive. They would be prepared to undertake much more inclusive actions to tackle the pandemic-related challenges (Wakui, 2020). But many of such actions require coordination and/or synchronous entry to avoid the first mover disadvantage. This appears to be the real apple of discord for the entire matter.

Alison Jones emphasises that in such a situation, where multiple conflicting approaches to the issue may be chosen by the enforcers, what really matters is clear and expedient guidance about the approach chosen by the relevant agency (Jones, 2020).

Maurice Stucke and Ariel Ezrachi see the pandemic as an opportunity to recalibrate the overall societal vision about the very phenomenon of economic competition, submitting that if a major revision of competition policy is inevitable anyway, it should be done in an ethically minded manner, in a way promoting the instances of noble and discouraging toxic competition (Stucke, Ezrachi, 2020).

#### The plan inaugurates “noble space antitrust,” allowing antitrust to be applied to space while maintaining higher ethical principles.

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Space commerce is not yet regulated, as it is still in its early infancy and therefore, potential monopolistic endeavors can arise, be they natural or artificial, in which case, antitrust measures should be taken. However, such antitrust must take into account the peculiarities of the space context, as previously mentioned: (1) no direct access to air nor water unless produced/provided and, (2) the sector is regulated by international space law, which consists of ethical principles. The first peculiarity might give rise to monopolies, which should be prevented and thus sanctioned through injunctions. For doing so, competition law applied to such space-based monopolies should consider the principles of space (e.g., duty to assist, non-discrimination, non-interference, etc.iv) and thus competition law (or anti-monopoly/antitrust law) should be adapted. This article proposes that this adaptation crystallizes as a new legal sub-category named ‘‘space antitrust,’’ and since the goal of this specific sub-branch is not solely focused on lowering prices for the consumer’s welfare, but on the higher purpose of human rights and the sustainable development of the space ecosystem as a whole, this article further proposes of the terms ‘‘noble space antitrust,’’ borrowing the term ‘‘noble’’ from Stucke and Ezrachi.2,v

The argument according to which antitrust must be added in the equation of human rights and CHR in the space context might seem, prima facie, far-fetched. However, it plays a key role in ensuring that the balance does not tilt unduly in favor of corporate interests that have superior resources to allocate to litigation and lobbying efforts, to the detriment of basic human rights that are for the benefit of humankind.

Further, basic human rights, CHR, and commercial law can all be categorized as transnational law, whereas space law is both international and national, and antitrust law falls under national law. This complicated architecture of layers might seem difficult to navigate at first and this calls for clarification. The illustration given next (Fig. 1) summarizes the layering.

Figure 1 illustrates how antitrust has the potential to play a pivotal role as the perfect nexus to reconcile the *lex mercatoria*, whereby transnational CHR might clash in the future with international space law principles that aspire to protect transnational values, ethics, and human rights. Through the principle in law of extra-territoriality, domestic regulation can be applied to space activities, depending on the location of ‘‘effect.’’3 In this case, antitrust can, therefore, successfully be applied to space practice.

### 1AC---FW

#### The standard is act hedonistic util. Prefer –

#### 1] Pleasure and pain *are* intrinsic value and disvalue – everything else *regresses* – robust neuroscience.

Blum et al. 18

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**Pleasure** is not only one of the three primary reward functions but it also **defines reward.** As homeostasis explains the functions of only a limited number of rewards, the principal reason why particular stimuli, objects, events, situations, and activities are rewarding may be due to pleasure. This applies first of all to sex and to the primary homeostatic rewards of food and liquid and extends to money, taste, beauty, social encounters and nonmaterial, internally set, and intrinsic rewards. Pleasure, as the primary effect of rewards, drives the prime reward functions of learning, approach behavior, and decision making and provides the **basis for hedonic theories** of reward function. We are attracted by most rewards and exert intense efforts to obtain them, just because they are enjoyable [10].

Pleasure is a passive reaction that derives from the experience or prediction of reward and may lead to a long-lasting state of happiness. The word happiness is difficult to define. In fact, just obtaining physical pleasure may not be enough. One key to happiness involves a network of good friends. However, it is not obvious how the higher forms of satisfaction and pleasure are related to an ice cream cone, or to your team winning a sporting event. Recent multidisciplinary research, using both humans and detailed invasive brain analysis of animals has discovered some critical ways that the brain processes pleasure [14].

Pleasure as a hallmark of reward is sufficient for defining a reward, but it may not be necessary. A reward may generate positive learning and approach behavior simply because it contains substances that are essential for body function. When we are hungry, we may eat bad and unpleasant meals. A monkey who receives hundreds of small drops of water every morning in the laboratory is unlikely to feel a rush of pleasure every time it gets the 0.1 ml. Nevertheless, with these precautions in mind, we may define any stimulus, object, event, activity, or situation that has the potential to produce pleasure as a reward. In the context of reward deficiency or for disorders of addiction, homeostasis pursues pharmacological treatments: drugs to treat drug addiction, obesity, and other compulsive behaviors. The theory of allostasis suggests broader approaches - such as re-expanding the range of possible pleasures and providing opportunities to expend effort in their pursuit. [15]. It is noteworthy, the first animal studies eliciting approach behavior by electrical brain stimulation interpreted their findings as a discovery of the brain’s pleasure centers [16] which were later partly associated with midbrain dopamine neurons [17–19] despite the notorious difficulties of identifying emotions in animals.

Evolutionary theories of pleasure: The love connection BO:D

Charles Darwin and other biological scientists that have examined the biological evolution and its basic principles found various mechanisms that steer behavior and biological development. Besides their theory on natural selection, it was particularly the sexual selection process that gained significance in the latter context over the last century, especially when it comes to the question of what makes us “what we are,” i.e., human. However, the capacity to sexually select and evolve is not at all a human accomplishment alone or a sign of our uniqueness; yet, we humans, as it seems, are ingenious in fooling ourselves and others–when we are in love or desperately search for it.

It is well established that modern biological theory conjectures that **organisms are** the **result of evolutionary competition.** In fact, Richard Dawkins stresses gene survival and propagation as the basic mechanism of life [20]. Only genes that lead to the fittest phenotype will make it. It is noteworthy that the phenotype is selected based on behavior that maximizes gene propagation. To do so, the phenotype must survive and generate offspring, and be better at it than its competitors. Thus, the ultimate, distal function of rewards is to increase evolutionary fitness

by ensuring the survival of the organism and reproduction. It is agreed that learning, approach, economic decisions, and positive emotions are the proximal functions through which phenotypes obtain other necessary nutrients for survival, mating, and care for offspring.

Behavioral reward functions have evolved to help individuals to survive and propagate their genes. Apparently, people need to live well and long enough to reproduce. Most would agree that homo-sapiens do so by ingesting the substances that make their bodies function properly. For this reason, foods and drinks are rewards. Additional rewards, including those used for economic exchanges, ensure sufficient palatable food and drink supply. Mating and gene propagation is supported by powerful sexual attraction. Additional properties, like body form, augment the chance to mate and nourish and defend offspring and are therefore also rewards. Care for offspring until they can reproduce themselves helps gene propagation and is rewarding; otherwise, many believe mating is useless. According to David E Comings, as any small edge will ultimately result in evolutionary advantage [21], additional reward mechanisms like novelty seeking and exploration widen the spectrum of available rewards and thus enhance the chance for survival, reproduction, and ultimate gene propagation. These functions may help us to obtain the benefits of distant rewards that are determined by our own interests and not immediately available in the environment. Thus the distal reward function in gene propagation and evolutionary fitness defines the proximal reward functions that we see in everyday behavior. That is why foods, drinks, mates, and offspring are rewarding.

There have been theories linking pleasure as a required component of health benefits salutogenesis, (salugenesis). In essence, under these terms, pleasure is described as a state or feeling of happiness and satisfaction resulting from an experience that one enjoys. Regarding pleasure, it is a double-edged sword, on the one hand, it promotes positive feelings (like mindfulness) and even better cognition, possibly through the release of dopamine [22]. But on the other hand, pleasure simultaneously encourages addiction and other negative behaviors, i.e., motivational toxicity. It is a complex neurobiological phenomenon, relying on reward circuitry or limbic activity. It is important to realize that through the “Brain Reward Cascade” (BRC) endorphin and endogenous morphinergic mechanisms may play a role [23]. While natural rewards are essential for survival and appetitive motivation leading to beneficial biological behaviors like eating, sex, and reproduction, crucial social interactions seem to further facilitate the positive effects exerted by pleasurable experiences. Indeed, experimentation with addictive drugs is capable of directly acting on reward pathways and causing deterioration of these systems promoting hypodopaminergia [24]. Most would agree that pleasurable activities can stimulate personal growth and may help to induce healthy behavioral changes, including stress management [25]. The work of Esch and Stefano [26] concerning the link between compassion and love implicate the brain reward system, and pleasure induction suggests that social contact in general, i.e., love, attachment, and compassion, can be highly effective in stress reduction, survival, and overall health.

Understanding the role of neurotransmission and pleasurable states both positive and negative have been adequately studied over many decades [26–37], but comparative anatomical and neurobiological function between animals and homo sapiens appear to be required and seem to be in an infancy stage.

Finding happiness is different between apes and humans

As stated earlier in this expert opinion one key to happiness involves a network of good friends [38]. However, it is not entirely clear exactly how the higher forms of satisfaction and pleasure are related to a sugar rush, winning a sports event or even sky diving, all of which augment dopamine release at the reward brain site. Recent multidisciplinary research, using both humans and detailed invasive brain analysis of animals has discovered some critical ways that the brain processes pleasure.

Remarkably, there are pathways for ordinary liking and pleasure, which are limited in scope as described above in this commentary. However, there are **many brain regions**, often termed hot and cold spots, that significantly **modulate** (increase or decrease) our **pleasure or** even produce **the opposite** of pleasure— that is disgust and fear [39]. One specific region of the nucleus accumbens is organized like a computer keyboard, with particular stimulus triggers in rows— producing an increase and decrease of pleasure and disgust. Moreover, the cortex has unique roles in the cognitive evaluation of our feelings of pleasure [40]. Importantly, the interplay of these multiple triggers and the higher brain centers in the prefrontal cortex are very intricate and are just being uncovered.

Desire and reward centers

It is surprising that many different sources of pleasure activate the same circuits between the mesocorticolimbic regions (Figure 1). Reward and desire are two aspects pleasure induction and have a very widespread, large circuit. Some part of this circuit distinguishes between desire and dread. The so-called pleasure circuitry called “REWARD” involves a well-known dopamine pathway in the mesolimbic system that can influence both pleasure and motivation.

In simplest terms, the well-established mesolimbic system is a dopamine circuit for reward. It starts in the ventral tegmental area (VTA) of the midbrain and travels to the nucleus accumbens (Figure 2). It is the cornerstone target to all addictions. The VTA is encompassed with neurons using glutamate, GABA, and dopamine. The nucleus accumbens (NAc) is located within the ventral striatum and is divided into two sub-regions—the motor and limbic regions associated with its core and shell, respectively. The NAc has spiny neurons that receive dopamine from the VTA and glutamate (a dopamine driver) from the hippocampus, amygdala and medial prefrontal cortex. Subsequently, the NAc projects GABA signals to an area termed the ventral pallidum (VP). The region is a relay station in the limbic loop of the basal ganglia, critical for motivation, behavior, emotions and the “Feel Good” response. This defined system of the brain is involved in all addictions –substance, and non –substance related. In 1995, our laboratory coined the term “Reward Deficiency Syndrome” (RDS) to describe genetic and epigenetic induced hypodopaminergia in the “Brain Reward Cascade” that contribute to addiction and compulsive behaviors [3,6,41].

Furthermore, ordinary “liking” of something, or pure pleasure, is represented by small regions mainly in the limbic system (old reptilian part of the brain). These may be part of larger neural circuits. In Latin, hedus is the term for “sweet”; and in Greek, hodone is the term for “pleasure.” Thus, the word Hedonic is now referring to various subcomponents of pleasure: some associated with purely sensory and others with more complex emotions involving morals, aesthetics, and social interactions. The capacity to have pleasure is part of being healthy and may even extend life, especially if linked to optimism as a dopaminergic response [42].

Psychiatric illness often includes symptoms of an abnormal inability to experience pleasure, referred to as anhedonia. A negative feeling state is called dysphoria, which can consist of many emotions such as pain, depression, anxiety, fear, and disgust. Previously many scientists used animal research to uncover the complex mechanisms of pleasure, liking, motivation and even emotions like panic and fear, as discussed above [43]. However, as a significant amount of related research about the specific brain regions of pleasure/reward circuitry has been derived from invasive studies of animals, these cannot be directly compared with subjective states experienced by humans.

In an attempt to resolve the controversy regarding the causal contributions of mesolimbic dopamine systems to reward, we have previously evaluated the three-main competing explanatory categories: “liking,” “learning,” and “wanting” [3]. That is, dopamine may mediate (a) liking: the hedonic impact of reward, (b) learning: learned predictions about rewarding effects, or (c) wanting: the pursuit of rewards by attributing incentive salience to reward-related stimuli [44]. We have evaluated these hypotheses, especially as they relate to the RDS, and we find that the incentive salience or “wanting” hypothesis of dopaminergic functioning is supported by a majority of the scientific evidence. Various neuroimaging studies have shown that anticipated behaviors such as sex and gaming, delicious foods and drugs of abuse all affect brain regions associated with reward networks, and may not be unidirectional. Drugs of abuse enhance dopamine signaling which sensitizes mesolimbic brain mechanisms that apparently evolved explicitly to attribute incentive salience to various rewards [45].

Addictive substances are voluntarily self-administered, and they enhance (directly or indirectly) dopaminergic synaptic function in the NAc. This activation of the brain reward networks (producing the ecstatic “high” that users seek). Although these circuits were initially thought to encode a set point of hedonic tone, it is now being considered to be far more complicated in function, also encoding attention, reward expectancy, disconfirmation of reward expectancy, and incentive motivation [46]. The argument about addiction as a disease may be confused with a predisposition to substance and nonsubstance rewards relative to the extreme effect of drugs of abuse on brain neurochemistry. The former sets up an individual to be at high risk through both genetic polymorphisms in reward genes as well as harmful epigenetic insult. Some Psychologists, even with all the data, still infer that addiction is not a disease [47]. Elevated stress levels, together with polymorphisms (genetic variations) of various dopaminergic genes and the genes related to other neurotransmitters (and their genetic variants), and may have an additive effect on vulnerability to various addictions [48]. In this regard, Vanyukov, et al. [48] suggested based on review that whereas the gateway hypothesis does not specify mechanistic connections between “stages,” and does not extend to the risks for addictions the concept of common liability to addictions may be more parsimonious. The latter theory is grounded in genetic theory and supported by data identifying common sources of variation in the risk for specific addictions (e.g., RDS). This commonality has identifiable neurobiological substrate and plausible evolutionary explanations.

Over many years the controversy of dopamine involvement in especially “pleasure” has led to confusion concerning separating motivation from actual pleasure (wanting versus liking) [49]. We take the position that animal studies cannot provide real clinical information as described by self-reports in humans. As mentioned earlier and in the abstract, on November 23rd, 2017, evidence for our concerns was discovered [50]

In essence, although nonhuman primate brains are similar to our own, the disparity between other primates and those of human cognitive abilities tells us that surface similarity is not the whole story. Sousa et al. [50] small case found various differentially expressed genes, to associate with pleasure related systems. Furthermore, the dopaminergic interneurons located in the human neocortex were absent from the neocortex of nonhuman African apes. Such differences in neuronal transcriptional programs may underlie a variety of neurodevelopmental disorders.

In simpler terms, the system controls the production of dopamine, a chemical messenger that plays a significant role in pleasure and rewards. The senior author, Dr. Nenad Sestan from Yale, stated: “Humans have evolved a dopamine system that is different than the one in chimpanzees.” This may explain why the behavior of humans is so unique from that of non-human primates, even though our brains are so surprisingly similar, Sestan said: “It might also shed light on why people are vulnerable to mental disorders such as autism (possibly even addiction).” Remarkably, this research finding emerged from an extensive, multicenter collaboration to compare the brains across several species. These researchers examined 247 specimens of neural tissue from six humans, five chimpanzees, and five macaque monkeys. Moreover, these investigators analyzed which genes were turned on or off in 16 regions of the brain. While the differences among species were subtle, **there was** a **remarkable contrast in** the **neocortices**, specifically in an area of the brain that is much more developed in humans than in chimpanzees. In fact, these researchers found that a gene called tyrosine hydroxylase (TH) for the enzyme, responsible for the production of dopamine, was expressed in the neocortex of humans, but not chimpanzees. As discussed earlier, dopamine is best known for its essential role within the brain’s reward system; the very system that responds to everything from sex, to gambling, to food, and to addictive drugs. However, dopamine also assists in regulating emotional responses, memory, and movement. Notably, abnormal dopamine levels have been linked to disorders including Parkinson’s, schizophrenia and spectrum disorders such as autism and addiction or RDS.

Nora Volkow, the director of NIDA, pointed out that one alluring possibility is that the neurotransmitter dopamine plays a substantial role in humans’ ability to pursue various rewards that are perhaps months or even years away in the future. This same idea has been suggested by Dr. Robert Sapolsky, a professor of biology and neurology at Stanford University. Dr. Sapolsky cited evidence that dopamine levels rise dramatically in humans when we anticipate potential rewards that are uncertain and even far off in our futures, such as retirement or even the possible alterlife. This may explain what often motivates people to work for things that have no apparent short-term benefit [51]. In similar work, Volkow and Bale [52] proposed a model in which dopamine can favor NOW processes through phasic signaling in reward circuits or LATER processes through tonic signaling in control circuits. Specifically, they suggest that through its modulation of the orbitofrontal cortex, which processes salience attribution, dopamine also enables shilting from NOW to LATER, while its modulation of the insula, which processes interoceptive information, influences the probability of selecting NOW versus LATER actions based on an individual’s physiological state. This hypothesis further supports the concept that disruptions along these circuits contribute to diverse pathologies, including obesity and addiction or RDS.