### 1AC---Plan

#### Plan: States 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.

#### 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 Plan’s grounding in OST principles harmonizes space governance and broader applications of noble anti-trust.

**Rhimbassen 22** [Maria Rhimbassen, Research Fellow with Open Lunar & PhD Candidate in Space Law at the University of Toulouse and CNES, 2-8-2022, accessed on 4-22-2022, Openlunar, "From Toxic to Noble Competition: Implementing A New Perspective of Antitrust in Outer Space based on Ethics and Beyond - Open Lunar Foundation" <https://www.openlunar.org/library/from-toxic-to-noble-competition>] Adam

National legislation can also be approached with amendments proposals in terms of licensing requirements. State aid should hence comply with such new requirements. Prior to this, to come up with a clearly defined set of ethical standards, the creation of an interdisciplinary working group composed of a variety of stakeholders, such as the Hague International Space Resources Governance Working Group (HISRGWG) [76] is strongly recommended. There needs to be consensus on determining the exact ethical principles to be selected, the correlating parameters to be relied upon and the key performance indicators (KPI) necessary for appropriate assessments. This is reminiscent of the Massachusetts Institute of Technology (MIT)’s recent Space Sustainability Rating (SSR) [77], which measures sustainability compliance to assess resulting eligibility for incentives. The product of this kind of cross-sectoral working groups represent a high potential of productivity as in the case of the HISRGWG which crystallized into recommendations that are: adopted by the now growing Artemis Accords (e.g., with regards to the “safety zones”). These recommendations are used both as a foundational start and as a pillar of academic debatable material, for instance, by the Outer Space Institute (OSI)’s Vancouver Recommendations [78], in terms of what “benefit sharing” should entail [79]. They are also cited at the UNCOPUOS for future international guidelines, recommendations and groundwork for the new working group on the governance of space resources [80], and they inspire international non-governmental organizations such as the Moon Village Association (MVA)’s Global Expert Group on Sustainable Lunar Activities (GEGSLA) (81).

These overarching realizations are expected to lay the foundations for a substantial harmonization in terms of standardizing a new competitive dynamic. The proposed working group, which could be tentatively called “Space Antitrust Group of Experts” (SAGE) must involve antitrust experts, space lawyers, ethicists, and so forth to find the perfect common ground where antitrust and space can best prevail. Designing a roadmap with these elements in mind is already underway, following a special session at the International Astronautical Congress (IAC), held in Dubai, in October 2021, where a multidisciplinary group consisting of over a dozen academic leaders and representatives from the public sector met, on a personal capacity, and helped to design, together with the audience, a roadmap to identify clashes between the emerging transnational space commercial law and international space law in its current state, and to anticipate contention points before formulating recommendations 5 . This is only the start for a long-term initiative to further develop the foundational pillars of this new discipline (e.g., noble space antitrust). The resulting network of interdisciplinary nexuses is a most valuable asset for ensuring the perennial protection of space ethics that are enshrined within the OST while bearing in mind the growing role of the private sector. Finally, a group similar to SAGE should also include actors from the private sector, at the strategic level, because antitrust is part of competitive intelligence and not to be contained at a mere technical level. On the contrary, it can be the central pivot to a company’s business model, and therefore this kind of feedback is critical for successful implementation.

### 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

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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

#### Private appropriation results in arbitrary valuation of businesses in the space industry and monopolization, which decks innovation and causes armed conflict. Sterns and Tennen 03

P.M. Sterns, L.I. Tennen, Privateering and profiteering on the moon and other celestial bodies: Debunking the myth of property rights in space, Advances in Space Research, Volume 31, Issue 11, 2003, Pages 2433-2440, ISSN 0273-1177, https://doi.org/10.1016/S0273-1177(03)00567-2. (https://www.sciencedirect.com/science/article/pii/S0273117703005672)

If claims of private appropriation are ineffective, in contravention of the corpus juris spatialis, and contrary to the long term interests of space commercialization, than it must be asked what is the benefit of making such claims? There are two economic aspects which would be positively impacted by private appropriation of celestial bodies: the first is the increase in the net worth of the privateering company, artificially inflated by the optimistic valuation of the claimed space assets; and second is the pursuit of profit by the trade in “subsidiary rights” such as leasehold interests, mining rights, easements, and other traditionally alienable property rights. Neither of these economic considerations is directly related to the use of celestial resources, nor to the providing of a product or service uniquely available in the celestial environment. If the intent of the entrepreneur is to capitalize on these economic considerations, that intent should be clearly stated at the outset. Any other course would be disingenuous and deceptive. The private ownership of unlimited rights to celestial property would add a significant element to the cost of conducting an entrepreneurial venture. That is, the ability of all states to explore and utilize areas on or below the surface of celestial bodies, as guaranteed by the corpus juris spatialis, no longer would be a right, but a commodity available only to the highest bidder. Monopolies and other anti-competitive practices would restrict rather than enhance space commercialization. These anti-competitive effects of private appropriation arc exemplified by the activities of the Lunar Embassy itself: The cost for a piece of the moon has gone up astronomically. Before 200 1, Hope sold 17,700-acre tracts for $16, the price he now charges for one acre (The Arizona Republic, section D, p. 2). Thus, even while operating in a vacuum, the price structure of the Lunar Embassy has not been stable, but has been arbitrarily manipulated. One can only imagine the proliferation of anti-competitive practices if private appropriation were officially permitted. CONCLUSION The assertion that private entities are not subject to the non-appropriation principle, as expressed in article II of the Outer Space Treaty, is a myth, and lacks a cogent analytical foundation. Not only would so called private appropriation be in violation of the corpus juris spatialis, but the arguments which have been presented in opposition to article II lack either a legal justification, a factual predicate, or both. Moreover, the abrogation or renunciation of the non-appropriation principle would be antithetical to the interests of space commercialization. Conflicting, competing and overlapping claims would create international tensions, and potentially lead to armed conflict, both on and off this planet. The extant law of outer space, both international and domestic, provide a basic framework for the development of regulation of space commerce. Domestic licensing regimes, together with international commitments regarding authorization and supervision of private entities in space, prevention of harmful interference, and participation in consultations concerning potentially harmful interference, grant a significant measure of protection for private ventures in space. Claims of fee simple ownership of space property are unnecessary and ineffective to protect private interests from interference. Those who advocate the renunciation and abandonment of the non-appropriation principle are either seeking to increase their own bottom line by disingenuous and deceptive constructs, or lack an appropriate appreciation and respect for international processes. Perhaps most significant in this regard is the tangible benefit the corpus juris spatialis has made in maintaining outer space exclusively for peaceful purposes.

#### Uniform rules of the road check Russian and Chinese ASATs---otherwise, they crush space dominance, 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
* RPO - Rendezvous and proximity operations

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.

#### Universalizing principles under the OST creates rules of the road for sustainable space activities.

Rhimbassen 21, Maria, and Lucien Rapp. "Competitive space foresight: Incentivizing compliance through antitrust." Acta Astronautica 189 (2021): 235-240. (serves as a Research Associate at the Chaire SIRIUS and is also a PhD Candidate in space law since 2016)//Miller

The purpose of this paper is to address STM through an unconventional but pragmatic angle to help optimize efficient compliance governance. This paper proposes using antitrust mechanisms in space as a pragmatic and utilitarian tool for sustainable purposes with regards to STM within a soaring space ecosystem. In the context of accelerated space commercialization and privatization, having a new space antitrust framework at the helm of such transition might indeed prove to be a flexible yet decisive tool into shaping the future of STM and ensuring perennial protection of higher space principles which are enshrined in the Outer Space Treaty and form the essence of space law. On one hand, examples of antitrust key components include fair competition while, on the other hand, higher ethical principles of space law include non-discrimination and benefits sharing. Furthermore, in between these two extremes, security and commerce both rely, respectively on non-harmful interference and competitiveness. To navigate through all these factors, a new space antitrust framework might indeed prove strategic and beneficial to incentivizing the creation of an adaptive, polycentric and action-oriented governance mechanism with great resonance among the commercial new space players and reaffirm the importance of sustainable space traffic management before return on investment, while still making a profit in the long run. Previous article in issue Next article in issue Keywords STM Antitrust Compliance Governance Security 1. Introduction While higher ethical principles such as non-discrimination, equal access, and benefit sharing are enshrined within the magna carta (the Outer Space Treaty (OST) of 1967) [1], of the corpus juris spatialis, it becomes a challenge to ensure the perennialism of such principles given the recent acceleration of commercialization and privatization of the outer space sector. Given this transitional trend, it is important to delve into new regulatory methods to deal with the private actors contributing to the thriving new space economy and to regulate accordingly. Arguably, global outer space governance is lacking, and space law is facing fragmentation. Consequently, space traffic management (STM), including space situational awareness (SSA), faces the risk of a battle of standards of sorts. In the meantime, the Kessler effect [2] urges action since time is ticking. In that regard, it is relevant to look for regulatory alternatives and find a pragmatic and efficient approach for STM governance, since STM implies both a technical and a regulatory aspect. In this paper, we propose that such an alternative approach might be found in antitrust -- or competition law, especially given its power to intervene in the commercial sector. We also address some of the key arguments in favor or against our proposal and make some recommendations as to how antitrust might provide answers to the STM conversation. 2. Context STM is becoming a top priority in the space sector as, so far, there are no “rules of the road” on orbit. The lack of regulation and inherent legal void leaves room for either navigating through loopholes or setting customary practices, especially by the private sector seeking to protect commercial interests, regardless of ethics, public policy or international law. This might trigger a battle of standards in the realm of STM, which would rather be unacceptable as there is no place for more than one code of conduct about “rules of the road” and interoperability in that regard is essential. A battle of technical standards, downstream, might be caused, inter alia, by a battle of suppliers and services, upstream. Most strikingly, such upstream battle might be exacerbated by the fact that STM services, including SSA, are engulfed by the digital sector, including artificial intelligence (AI), algorithms (algos), big data, cloud infrastructure, and intellectual property (IP). Since cloud providers are part of the GAFAM world [3] which appeared relatively recently in antitrust hearings [4], and since IP plays a determining role in antitrust, we formulate the hypothesis that antitrust is a relevant regulatory option, when there is no global consensus in either space law or in STM standards, and when harmonization efforts need to be set in motion. 3. The decade-long problem As mentioned above, there is no global space governance in STM as of this writing. According to a recent report by the Institute for Defense Analysis (IDA), there is a danger that no international STM regime will be agreed upon within the next decade: “Issues related to lack of trust and transparency pose challenges to efforts to develop more binding and formal institutions for STM. For these and other reasons, unless some “wildcards” (an example being a significant collision event in space) come into play, or unless significant political will is exerted, there is likely to be no international agreement on an international STM regime in the next decade” [5]. At the fast pace with which the space exploration is soaring and given the growing number in both space faring nations and private actors, ten years is a long time and, therefore, it increases the risks of fragmentation despite the urgency to act (e.g., Kessler effect). As far as fragmentation concerns the private actors, a recent report by the Chatham House confirms that: “The rise in private space actors has increased the number of commercial STM providers and, with plans in the US to move responsibility for STM to civilian control, there will likely be more opportunities for international collaboration, particularly through the EU Space Surveillance and Tracking (SST) programme” [6]. In an ideal world, such collaborations would indeed solve the issue rapidly. However, the fragmentation does not stop there. International geopolitical differences cause further hurdles, as stated in the same report: “There are worldwide challenges, both political and technical, to providing STM coverage, which may lead to a lack of collaboration and gaps in understanding of activities in orbit. Existing sensors have limitations in terms of the size of objects that can be detected and the precision with which their movements can be predicted. These capability gaps represent opportunities for the EU to contribute.” These fragmentation issues might slow down the progress of collaborative efforts such as the recent UN Long Term Sustainability (LTS) guidelines [7], which lays down the foundations of behavioral sustainability in outer space. 4. The imminent need While the digital sphere of influence is skyrocketing and while regulation struggles to keep up, it is important to monitor and contain the high-tech industry which is growing out of control and if, “too big to fail”, it might overlap with the sectoral regulation of the aerospace sector. Traditionally, the outer space sector was a sanctuary for states and public actors, hence its reliance on international space law. However, due to the privatization and commercialization of the space sector, diversified non-governmental actors are growing both in size and importance. Moreover, some of these new entities are of a multinational nature. However, this multinationalism is in fact turning into an elusive transnationalism, which is more complex to deal with in legal terms. This adds to the fragmentation of international space law since it faces new challenges. For this reason, global space governance is at an impasse. Therefore, we propose the alternative of antitrust. Furthermore, as previously mentioned, the OST focuses on principles such as non-discrimination, benefit sharing, equality of access and opportunity. The International Telecommunications Union (ITU) Constitution protects fair competition of telecommunications services through “equitable distribution” [8]. Interestingly, antitrust provides protection to fair competition, more particularly, fair economic competition. The economic term here responds to the newly privatized space sector and market. Antitrust defines what an economic activity is and whether it prevents fair competition within that market. In our case, that would be space-based services, more precisely, space-based STM services. 5. Commercial aspects of STM As explained, STM is composed of both a technical and a regulatory side [9]. On the one hand, the technical aspect delves gradually more into the information age (AI, etc.) and IP plays a crucial role. On the other hand, on the regulatory part, we witness initiatives such as the recent US Space Policy Directive-3 (SPD-D) to transfer civilian and commercial STM from the Department of Defense (DOD) to a civilian governmental agency such as the Department of Commerce (DOC) [10]. If this goes on as planned, initially, it will open the possibility of further commercialization of STM and hence the growing role which will be played by the lex mercatoria. However, due to more recent policy and budget modifications, this particular scenario is on hold. Regardless, STM rules and potential related services include: Safety provisions for launches; specific regime for space between airspace and outer space; zoning (selection of orbits); right of way rules for in-orbit phases; prioritization with regard to maneuvers; security rules for human spaceflight; specific rules for GSO, LG Points, Polar Orbits; specific rules for LEO satellite constellations; debris mitigation regulations; safety rules for re-entry (i.e. descent corridors); environmental provisions (e.g. pollution of the atmosphere/troposphere); radiofrequency use and avoidance of interference, etc. [11]. These are important elements to be aware of with regards to the development of the sector and to potentially new services. As a reminder, here is a broad definition of STM, while keeping in mind that there is no single definition accepted worldwide: “… the set of technical and regulatory provisions for promoting safe access into outer space, operations in outer space and return from outer space to Earth free from physical or radiofrequency interference.” [12]. This definition once again brings us to competition, and most particularly ethical and fair competition. Firstly, let us emphasize the word “access”. While one of the OST's principles focuses on the need to protect equal access to space, anti-competitive behavior should consequently be precluded. Secondly, radiofrequency (RF) interference refers to non-harmful interference, as enshrined within the OST, but it also refers to the ITU constitutional provisions which include fair competition and non-discrimination. Therefore, both “access” and “RF interference” add up to our arguments in terms of adopting pro-competitive regulatory measures in outer space, notably in the STM sub-sector.

#### STM reverse causally solves Debris.

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

II. BENEFITS OF INTERNATIONAL NORMS A. PUBLIC SAFETY BENEFIT Commercial space operations are more vulnerable than military activities. They need regulatory protection from threatening elements, such as space debris from collision with other satellites. Moreover, uncertainties raised by NEOs threaten all commercial satellites, regardless of their nationality. As governments authorize more launches of commercial satellites, potential for damage to and interference with current space operations grows.36 These dangers are greatest for the United States, which has the most exposure in terms of space investment and technology.37 Loss of satellites from collisions can be financially ruinous. Operators need to know where other satellites and space debris are located in outer space. Operators need to have exclusive radio frequencies and orbital slots for safe navigation and control of their satellites. Space traffic management and rules of the road for outer space are now necessary for safe operations in outer space.38 Commercial operators do not have policing powers in outer space. Only states can establish and enforce STM under current rules. Only states can manage and provide exclusive radiofrequencies and orbital slots free of interferences. Only states can save operators from the growing dangers of collisions with space debris. However, states do not have exclusive sovereignty in outer space; therefore, they need to coordinate and cooperate with other states and to arrange for uniform international norms so that national regulations do not conflict with operators authorized by other nations. B. EFFICIENCY International norms are needed for efficient commercial operations in outer space. Coordinated international standards would be more efficient and less confusing than would one hundred different sets of norms set by individual national agencies. The ability to operate without interference from other operators and free from space debris will create better results for organiza tions doing business in space. States could organize efficient commercial environments in outer space by coordinating and cooperating with other states. Operators in regulated outer space would be free from having to negotiate terms with a variety of other commercial operators because there would already be an agreed-upon, worldwide standard. C. CONFLICT PREVENTION Article II of the Outer Space Treaty specifically outlaws claims of exclusive appropriation.39 Each state has an equal legal right to operate in outer space,40 so no state can be the exclusive user by excluding other states and their operators from also using celestial bodies. Nevertheless, conflicts and occasional assertions of exclusive use occur.41 Conflicts lead to delays and to possible loss of and damage to space objects. Only coordination and cooperation among states will result in establishing conflict-free environments in which operators can conduct profitable businesses. D. COMMERCIAL OPERATORS’ NEEDS FOR ORDER IN OUTER SPACE The current shift from military to commercial space enterprises has made the operators of the commercial endeavors apprehensive about heavy-handed governmental regulation.42 On the one hand, commercial space operators require “agile, transparent, and internationally coordinated rule-making to make it sustainable.”43 Too much regulation can kill the commercial revolution.44 On the other hand, the current launches and planned launches of thousands of commercial satellites threaten collisions among satellites and with space debris. Commercial operators have come to appreciate government regulation of space traffic and reduction of debris dangers.45 The collision danger led a 2018 study by the Aerospace Corporation to conclude that “[t]o facilitate the envisioned New Space activity and maintain a safe operating environment for everyone in space, the issues of establishing an effective next-step STM conjunction assessment system must be addressed as soon as possible.”46 The question is how to develop internationally-needed regulation without killing the many valuable start-up enterprises now fueling the commercial revolution. Again, the Chicago Convention shows the way. At the conference, there were active industry experts not only advising but also actually negotiating through working groups.47 Perhaps most valuable for the aviation industry was the participation and contributions of the then-general counsel for Pan-American Airlines, John Cobb Cooper.48 Through industry participation, the commercial enterprises were able to not only contribute but also guide the formation of the new Convention on International Civil Aviation. A similar infusion of active commercial guidance will be needed for a corresponding new regime establishing norms on space debris and STM, so that the many dangers that threaten commercial space operations can be avoided. E. WHERE TO BEGIN It is important to note that, while this discussion is about international space traffic norms, the actual implementation of international, uniform norms would be by the individual states. Negotiation of a separate treaty to establish international norms for space debris, space traffic, and NEO defense would very likely begin in the UN Committee on the Peaceful Use of Space (COPUOS) Legal Committee. It would be approved by the full committee then finalized by a diplomatic conference. Alternatively, the new regime could become a protocol to the Outer Space Treaty the same way the 2012 Berlin Space Protocol became a protocol to the Cape Town Convention.49 The result would be a protocol that would only become binding on parties to it. However, all the space-interested states would want to ratify as soon as possible in order to gain the advantages of the new safety norms. Consequently, traffic in outer space would become orderly, the debris problem would become less urgent, and the Kessler Syndrome prospect of foreclosure of access to outer space would disappear. III. THE SCOPE OF INTERNATIONAL TECHNICAL REGULATION OF CIVIL SPACE ACTIVITIES The following section will discuss establishment of international operating norms for STM, space debris, and NEOs. A. INTERNATIONAL NORMS FOR CIVIL STM50 Travel in outer space is highly dangerous. One danger is the tremendous speed at which space objects move.51 Available assistance is minimal, and collisions are likely to be catastrophic. There are currently no uniform norms for traffic in outer space.52 With increasing traffic and more obstacles to navigate around, indications are that travel in outer space may eventually become impossible unless uniform traffic norms are established.53 The advantage of international STM norms is that all navigable traffic would use the same uniform traffic rules. International STM is in constant need of updating. These norms would have to be administered, analyzed, and supplemented by knowledgeable experts as traffic conditions change. The result would be greater safety.54 Traffic in outer space is increasing drastically in the New Space age. There are currently more than 1,200 functional satellites in orbit.55 Estimates of satellites to be launched into orbit in the immediate future range up to 27,000 satellites.56 Most of the new launches are expected to be in low Earth orbit.57 The amount of space debris in orbit is also increasing rapidly. There is estimated to be close to 1 million debris objects in orbit, of which only approximately 23,000 are currently being tracked, although new tracking technology now being deployed will increase tracking capability four-fold.58 The point is that the totality of outer space traffic congestion is increasing rapidly. For new launches to be safely orbited, new international STM is urgently needed. Individual states supervise the traffic that they authorize,59 and while states may try to track the space objects60 launched by other states, current tracking technology still leaves some space objects untracked. For example, when the re sponsible state lacks the capability to track objects, it may simply warn space operators to avoid the general location of its existing, known space objects. Additionally, some objects are so small that they cannot be safely tracked.61

#### Debris cascades---nuke war.

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Whatever the initial cause, the result may be the same. A satellite destroyed in orbit will break apart into thousands of pieces, each traveling at over 8 km/sec. This virtual shotgun blast, with pellets traveling 20 times faster than a bullet, will quickly spread out, with each pellet now following its own orbit around the Earth. With over 300,000 other pieces of junk already there, the tipping point is crossed and a runaway series of collisions begins. A few orbits later, two of the new debris pieces strike other satellites, causing them to explode into thousands more pieces of debris. The rate of collisions increases, now with more spacecraft being destroyed. Called the "Kessler Effect", after the NASA scientist who first warned of its dangers, these debris objects, now numbering in the millions, cascade around the Earth, destroying every satellite in low Earth orbit. Without an atmosphere to slow them down, thus allowing debris pieces to bum up, most debris (perhaps numbering in the millions) will remain in space for hundreds or thousands of years. Any new satellite will be threatened by destruction as soon as it enters space, effectively rendering many Earth orbits unusable. But what about us on the ground? How will this affect us? Imagine a world that suddenly loses all of its space technology. If you are like most people, then you would probably have a few fleeting thoughts about the Apollo-era missions to the Moon, perhaps a vision of the Space Shuttle launching astronauts into space for a visit to the International Space Station (ISS), or you might fondly recall the "wow" images taken by the orbiting Hubble Space Telescope. In short, you would know that things important to science would be lost, but you would likely not assume that their loss would have any impact on your daily life. Now imagine a world that suddenly loses network and cable television, accurate weather forecasts, Global Positioning System (GPS) navigation, some cellular phone networks, on-time delivery of food and medical supplies via truck and train to stores and hospitals in virtually every community in America, as well as science useful in monitoring such things as climate change and agricultural sustainability. Add to this the [destruction] ~~crippling~~ of the US military who now depend upon spy satellites, space-based communications systems, and GPS to know where their troops and supplies are located at all times and anywhere in the world. The result is a nightmarish world, one step away from nuclear war, economic disaster, and potential mass starvation. This is the world in which we are now perilously close to living. Space satellites now touch our lives in many ways. And, unfortunately, these satellites are extremely vulnerable to risks arising from a half-century of carelessness regarding protecting the space environment around the Earth as well as from potential adversaries such as China, North Korea, and Iran. No government policy has put us at risk. It has not been the result of a conspiracy. No, we are dependent upon them simply because they offer capabilities that are simply unavailable any other way. Individuals, corporations, and governments found ways to use the unique environment of space to provide services, make money, and better defend the country. In fact, only a few space visionaries and futurists could have foreseen where the advent of rocketry and space technology would take us a mere 50 years since those first satellites orbited the Earth. It was the slow progression of capability followed by dependence that puts us at risk. The exploration and use of space began in 1957 with the launch of Sputnik 1 by the Soviet Union. The United States soon followed with Explorer 1. Since then, the nations of the world have launched over 8,000 spacecraft. Of these, several hundred are still providing information and services to the global economy and the world's governments. Over time, nations, corporations, and individuals have grown accustomed to the services these spacecraft provide and many are dependent upon them. Commercial aviation, shipping, emergency services, vehicle fleet tracking, financial transactions, and agriculture are areas of the economy that are increasingly reliant on space. Telestar 1, launched into space in the year of my birth, 1962, relayed the world's first live transatlantic news feed and showed that space satellites can be used to relay television signals, telephone calls, and data. The modern telecommunications age was born. We've come a long way since Telstar; most television networks now distribute most, if not ali, of their programming via satellite. Cable television signals are received by local providers from satellite relays before being sent to our homes and businesses using cables. With 65% of US households relying on cable television and a growing percentage using satellite dishes to receive signals from direct-to-home satellite television providers, a large number of people would be cut off from vital information in an emergency should these satellites be destroyed. And communications satellites relay more than television signals. They serve as hosts to corporate video conferences and convey business, banking, and other commercial information to and from all areas of the planet. The first successful weather satellite was TIROS. Launched in 1960, TIROS operated for only 78 days but it served as the precursor for today's much more long-lived weather satellites, which provide continuous monitoring of weather conditions around the world. Without them, providing accurate weather forecasts for virtually any place on the globe more than a day in advance would be nearly impossible. Figure !.1 shows a satellite image of Hurricane Ivan approaching the Alabama Gulf coast in 2004. Without this type of information, evacuation warnings would have to be given more generally, resulting in needless evacuations and lost economic activity (from areas that avoid landfall) and potentially increasing loss of life in areas that may be unexpectedly hit. The formerly top-secret Corona spy satellites began operation in 1959 and provided critical information about the Soviet Union's military and industrial capabilities to a nervous West in a time of unprecedented paranoia and nuclear risk. With these satellites, US military planners were able to understand and assess the real military threat posed by the Soviet Union. They used information provided by spy satellites to help avert potential military confrontations on numerous occasions. Conversely, the Soviet Union's spy satellites were able to observe the United States and its allies, with similar results. It is nearly impossible to move an army and hide it from multiple eyes in the sky. Satellite information is critical to all aspects of US intelligence and military planning. Spy satellites are used to monitor compliance with international arms treaties and to assess the military activities of countries such as China, Russia, Iran, and North Korea. Figure 1.2 shows the capability of modem unclassified space-based imaging. The capability of the classified systems is presumed to be significantly better, providing much more detail. Losing these satellites would place global militaries on high alert and have them operating, literally, in the blind. Our military would suddenly become vulnerable in other areas as well. GPS, a network of 24-32 satellites in medium-Earth orbit, was developed to provide precise position information to the military, and it is now in common use by individuals and industry. The network, which became fully operational in 1993, allows our armed forces to know their exact locations anywhere in the world. It is used to guide bombs to their targets with unprecedented accuracy, requiring that only one bomb be used to destroy a target that would have previously required perhaps hundreds of bombs to destroy in the pre-GPS world (which, incidentally, has resulted in us reducing our stockpile of non-GPS-guided munitions dramatically). It allows soldiers to navigate in the dark or in adverse weather or sandstorms. Without GPS, our military advantage over potential adversaries would be dramatically reduced or eliminated.

#### Extinction

PND 16. internally citing Zbigniew Brzezinski, Council of Foreign Relations and former national security adviser to President Carter, Toon and Robock’s 2012 study on nuclear winter in the Bulletin of Atomic Scientists, Gareth Evans’ International Commission on Nuclear Non-proliferation and Disarmament Report, Congressional EMP studies, studies on nuclear winter by Seth Baum of the Global Catastrophic Risk Institute and Martin Hellman of Stanford University, and U.S. and Russian former Defense Secretaries and former heads of nuclear missile forces, brief submitted to the United Nations General Assembly, Open-Ended Working Group on nuclear risks. A/AC.286/NGO/13. 05-03-2016. <http://www.reachingcriticalwill.org/images/documents/Disarmament-fora/OEWG/2016/Documents/NGO13.pdf> //Re-cut by Elmer

Consequences human survival 12. Even if the 'other' side does NOT launch in response the smoke from 'their' burning cities (incinerated by 'us') will still make 'our' country (and the rest of the world) uninhabitable, potentially inducing global famine lasting up to decades. Toon and Robock note in ‘Self Assured Destruction’, in the Bulletin of Atomic Scientists 68/5, 2012, that: 13. “A nuclear war between Russia and the United States, even after the arsenal reductions planned under New START, could produce a nuclear winter. Hence, an attack by either side could be suicidal, resulting in self assured destruction. Even a 'small' nuclear war between India and Pakistan, with each country detonating 50 Hiroshima-size atom bombs--only about 0.03 percent of the global nuclear arsenal's explosive power--as air bursts in urban areas, could produce so much smoke that temperatures would fall below those of the Little Ice Age of the fourteenth to nineteenth centuries, shortening the growing season around the world and threatening the global food supply. Furthermore, there would be massive ozone depletion, allowing more ultraviolet radiation to reach Earth's surface. Recent studies predict that agricultural production in parts of the United States and China would decline by about **20 percent** for four years, and by 10 percent for a decade.” 14. A conflagration involving USA/NATO forces and those of Russian federation would most likely cause the deaths of most/nearly all/all humans (and severely impact/extinguish other species) as well as destroying the delicate interwoven techno-structure on which latter-day 'civilization' has come to depend. Temperatures would drop to below those of the last ice-age for up to 30 years as a result of the lofting of up to 180 million tonnes of very black soot into the stratosphere where it would remain for decades. 15. Though human ingenuity and resilience shouldn't be underestimated, human survival itself is arguably problematic, to put it mildly, under a 2000+ warhead USA/Russian federation scenario. 16. The Joint Statement on Catastrophic Humanitarian Consequences signed October 2013 by 146 governments mentioned 'Human Survival' no less than 5 times. The most recent (December 2014) one gives it a highly prominent place. Gareth Evans’ ICNND (International Commission on Nuclear Non-proliferation and Disarmament) Report made it clear that it saw the threat posed by nuclear weapons use as one that at least threatens what we now call 'civilization' and that potentially threatens human survival with an immediacy that even climate change does not, though we can see the results of climate change here and now and of course the immediate post-nuclear results for Hiroshima and Nagasaki as well.

### 1AC---FW

#### The standard is maximizing expected well-being.

#### Death is bad and o/w—ontologically destroys the subject.

Paterson 1 – Department of Philosophy, Providence College, Rhode Island. (Craig, “A Life Not Worth Living?”, Studies in Christian Ethics, <http://sce.sagepub.com>)

Contrary to those accounts, I would argue that it is death per se that is really the objective evil for us, not because it deprives us of a prospective future of overall good judged better than the alter- native of non-being. It cannot be about harm to a former person who has ceased to exist, for no person actually suffers from the sub-sequent non-participation. Rather, death in itself is an evil to us because it ontologically destroys the current existent subject — it is the ultimate in metaphysical lightening strikes.80 The evil of death is truly an ontological evil borne by the person who already exists, independently of calculations about better or worse possible lives. Such an evil need not be consciously experienced in order to be an evil for the kind of being a human person is. Death is an evil because of the change in kind it brings about, a change that is destructive of the type of entity that we essentially are. Anything, whether caused naturally or caused by human intervention (intentional or unintentional) that drastically interferes in the process of maintaining the person in existence is an objective evil for the person. What is crucially at stake here, and is dialectically supportive of the self-evidency of the basic good of human life, is that death is a radical interference with the current life process of the kind of being that we are. In consequence, death itself can be credibly thought of as a ‘primitive evil’ for all persons, regardless of the extent to which they are currently or prospectively capable of participating in a full array of the goods of life.81  In conclusion, concerning willed human actions, it is justifiable to state that any intentional rejection of human life itself cannot therefore be warranted since it is an expression of an ultimate disvalue for the subject, namely, the destruction of the present person; a radical ontological good that we cannot begin to weigh objectively against the travails of life in a rational manner. To deal with the sources of disvalue (pain, suffering, etc.) we should not seek to irrationally destroy the person, the very source and condition of all human possibility.82

#### Extinction outweighs:

#### A] Structural violence- death causes suffering because people can’t get access to resources and basic necessities

#### B] Comes before value-to-life---life is a prerequisite

Lisa Schwartz 02, Chair at the Centre for Health Economics and Policy Analysis, 2002, “Medical Ethic: A Case Based Approach,” Chapter 6, www.fleshandbones.com/readingroom/pdf/399.pdf

The second assertion made by supporters of the quality of life as a criterion for decisionmaking is closely related to the first, but with an added dimension. This assertion suggests that the determination of the value of the quality of a given life is a subjective determination to be made by the person experiencing that life. The important addition here is that the decision is a personal one that, ideally, ought not to be made externally by another person but internally by the individual involved. Katherine Lewis made this decision for herself based on a comparison between two stages of her life. So did James Brady. Without this element, decisions based on quality of life criteria lack salient information and the patients concerned cannot give informed consent. Patients must be given the opportunity to decide for themselves whether they think their lives are worth living or not. To ignore or overlook patients’ judgement in this matter is to violate their autonomy and their freedom to decide for themselves on the basis of relevant information about their future, and comparative consideration of their past. As the deontological position puts it so well, to do so is to violate the imperative that we must treat persons as rational and as ends in themselves.

#### C] Mathematically outweighs.

MacAskill 14 [William, Oxford Philosopher and youngest tenured philosopher in the world, Normative Uncertainty, 2014]

The human race might go extinct from a number of causes: asteroids, supervolcanoes, runaway climate change, pandemics, nuclear war, and the development and use of dangerous new technologies such as synthetic biology, all pose risks (even if very small) to the continued survival of the human race.184 And different moral views give opposing answers to question of whether this would be a good or a bad thing. It might seem obvious that human extinction would be a very bad thing, both because of the loss of potential future lives, and because of the loss of the scientific and artistic progress that we would make in the future. But the issue is at least unclear. The continuation of the human race would be a mixed bag: inevitably, it would involve both upsides and downsides. And if one regards it as much more important to avoid bad things happening than to promote good things happening then one could plausibly regard human extinction as a good thing.For example, one might regard the prevention of bads as being in general more important that the promotion of goods, as defended historically by G. E. Moore,185 and more recently by Thomas Hurka.186 One could weight the prevention of suffering as being much more important that the promotion of happiness. Or one could weight the prevention of objective bads, such as war and genocide, as being much more important than the promotion of objective goods, such as scientific and artistic progress. If the human race continues its future will inevitably involve suffering as well as happiness, and objective bads as well as objective goods. So, if one weights the bads sufficiently heavily against the goods, or if one is sufficiently pessimistic about humanity’s ability to achieve good outcomes, then one will regard human extinction as a good thing.187 However, even if we believe in a moral view according to which human extinction would be a good thing, we still have strong reason to prevent near-term human extinction. To see this, we must note three points. First, we should note that the extinction of the human race is an extremely high stakes moral issue. Humanity could be around for a very long time: if humans survive as long as the median mammal species, we will last another two million years. On this estimate, the number of humans in existence in the The future, given that we don’t go extinct any time soon, would be 2×10^14. So if it is good to bring new people into existence, then it’s very good to prevent human extinction. Second, human extinction is by its nature an irreversible scenario. If we continue to exist, then we always have the option of letting ourselves go extinct in the future (or, perhaps more realistically, of considerably reducing population size). But if we go extinct, then we can’t magically bring ourselves back into existence at a later date. Third, we should expect ourselves to progress, morally, over the next few centuries, as we have progressed in the past. So we should expect that in a few centuries’ time we will have better evidence about how to evaluate human extinction than we currently have. Given these three factors, it would be better to prevent the near-term extinction of the human race, even if we thought that the extinction of the human race would actually be a very good thing. To make this concrete, I’ll give the following simple but illustrative model. Suppose that we have 0.8 credence that it is a bad thing to produce new people, and 0.2 certain that it’s a good thing to produce new people; and the degree to which it is good to produce new people, if it is good, is the same as the degree to which it is bad to produce new people, if it is bad. That is, I’m supposing, for simplicity, that we know that one new life has one unit of value; we just don’t know whether that unit is positive or negative. And let’s use our estimate of 2×10^14 people who would exist in the future, if we avoid near-term human extinction. Given our stipulated credences, the expected benefit of letting the human race go extinct now would be (.8-.2)×(2×10^14) = 1.2×(10^14). Suppose that, if we let the human race continue and did research for 300 years, we would know for certain whether or not additional people are of positive or negative value. If so, then with the credences above we should think it 80% likely that we will find out that it is a bad thing to produce new people, and 20% likely that we will find out that it’s a good thing to produce new people. So there’s an 80% chance of a loss of 3×(10^10) (because of the delay of letting the human race go extinct), the expected value of which is 2.4×(10^10). But there’s also a 20% chance of a gain of 2×(10^14), the expected value of which is 4×(10^13). That is, in expected value terms, the cost of waiting for a few hundred years is vanishingly small compared with the benefit of keeping one’s options open while one gains new information.

### 1AC---UV

#### 1] 1AR theory is legit – anything else means infinite incentivized NC abuse – drop the debater – 1AR is too short to make up for the time trade-off, deters future abuse through a loss and set better norms for debate since you are less likely to repeat a practice you can lose for -- CI- reasonability is arbitrary and encourages judge intervention since there’s no clear model of debate, we race to the top where we create the best possible norms for debate through offense - no RVIs – 6 min 2NR means they can brute force me every time.

#### 2] Only AFF gets RVIs on counter interps:

#### Four minute 1AR needs to be able to collapse to the highest layer—if I undercover theory they can spend six minutes on it but if I overcover they can kick it and I’m behind on substance. Theoretical reasons for the RVI outweigh substantive ones, NC theory shells are functionally NIBs which are devastating collapses.