# 2NR

# 1NC

## OFF

#### Interpretation and Violation – Large Satellite constellations aren’t apporpriation

#### 1] Appropiation is a term of art that doesn’t mean occupation or usage. Satellites and objects in geosynchronous orbit do not constitute appropriation – it’s not permanent nor stationary

Gorove 84 Stephen Gorove, Major Legal Issues Arising from the Use of the Geostationary Orbit, 5 MICH. J. INT'L L. 3 (1984). Available at: <https://repository.law.umich.edu/mjil/vol5/iss1/1> //RD Debatedrills

Crucial to a proper analysis of this issue is an understanding of the concept of "appropriation." The term "appropriation" in law is used most frequently to signify "the taking of property for one's own or exclusive use with a sense of permanence." 12 The word" thus indicates something more than just casual use. The question then becomes whether the continued exclusive occupation by a geostationary satellite of the same physical area is a violation of the ban on national appropriation. While a state may certainly exercise exclusive control over a traditional object, such as a ship, or an aircraft, or a part of airspace, it is not clear that a satellite in geostationary orbit would be able to maintain its exact position and occupy the same area over a period of time. 13 Even if a position could be accurately maintained, and thus possibly constitute an "appropriation" within the meaning of article II, the satellite would have to be kept in that orbit with a "sense of permanence" and not on a temporary basis. It has been suggested that the keeping of a solar power satellite in geostationary orbit for a period of thirty years would not constitute appropriation. 14 In point of fact, thirty years would probably satisfy the "sense of permanence" requirement, unless the geostationary orbit were considered a natural resource as characterized by the International Telecommunication Convention of 1973 (ITC) 15 and as claimed by the equatorial countries. Authority exists to support the view that the ban on national appropriation of outer space does not relate to resources. 16 In view of this and the additional fact that solar energy is an inexhaustible and unlimited resource, its utilization for transmission to earth by satellites does not appear to fall under the prohibition of article II of the 1967 Treaty.

#### 2] If I prove that satelities in geostrationary orbit isn’t appropiation – then definetly Low earth orbit isn’t either because satelites are moving through space

Johnson 20’Johnson, Christopher D. "The legal status of megaleo constellations and concerns about appropriation of large swaths of earth orbit." *Handbook of small satellites: Technology, design, manufacture, applications, economics and regulation* (2020): 1-22

C. D. Johnson (\*) Secure World Foundation, Washington, DC, USA e-mail: cjohnson@swfound.org © Springer Nature Switzerland AG 2020 J. Pelton (ed.), Handbook of Small Satellites, https://doi.org/10.1007/978-3-030-20707-6\_95-1

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This Does Not Constitute Possession, or Ownership, or Occupation The use of LEO by satellite constellations is substantially similar to the use of GSO, and therefore permissible. In each region, individual actors are given permission - either from a national administrator or from an international governing body (the ITU) via a national administer–to use precoordinated subsections of space. In a way that is overwhelmingly similar to the use of orbital slots in GSO, the placement of spacecraft into orbits in LEO or higher orbits does not constitute possession, ownership, or occupation of those orbits. This is because States (and their companies) have been occupying orbital slots in GSO for decades, and these uses of GSO have never been accused of “appropriating” GSO. The users have never claimed to be appropriating GSO, and their exercising of rights to use GSO is respected by other actors in the space domain. This is the same situation for other orbits, including LEO and other non-Geostationary orbits. And while GSO locations are relatively stable (subject to space weather and other perturbations, and require stationkeeping), spacecraft in LEO are actually moving through space and are not stationary, so it is even more difficult to see this use by constellations as occupation, much less appropriation.

Semantics first:

1] Control the IL to pragmatics

2] Jurisdiction/Brightlines

3] Norms – only stable praxis

#### Standards:

#### 1] Precision- Their model incentivizes arbitrarily doing away with words in the resolution- outer space is a term of the art that requires a specific distinction.

#### 2] Neg Prep- Their model explodes the amount of potential affs because there’s thousands of different types of private satellites—in combination with the million of other things they can spec, neg prep becomes impossible since there’s no universal DA because each action has a different situation- limits k2 reciprocal engagement because it creates neg caselists.

Voters:

1] competing interps: a) race to the bottom b) judge intervention c) collapses

2] DTD and comes before 1ar theory – skew was in 1ac and affected all speeches after it

## OFF

#### Interpretation – the affirmative must defend the resolution through governmental implementation

#### The text of the resolution calls for debate on hypothetical government action: “Resolved” means to enact a policy by law.

Words & Phrases ’64 (Words and Phrases; 1964; Permanent Edition)

Definition of the word “resolve,” given by Webster is “to express an opinion or determination by resolution or vote; as ‘it was resolved by the legislature;” It is of similar force to the word “enact,” which is defined by Bouvier as meaning “to establish by law”.

#### Government action is necessary to regulate private entities.

Blaustein 18 (Blaustein, Richard. “Private-Sector Space Activities Require Government Regulation, Says US Report.” Physics World, IOP Publishing, 4 July 2018, physicsworld.com/a/private-sector-space-activities-require-government-regulation-says-us-report/.)//DebateDrills AY

The US Congress must introduce legislation to regulate the activities of private companies operating in space. That is according to a new report by the US National Academies of Sciences, Engineering and Medicine, which says the need for reform has been heightened by the “burgeoning” commercial space sector in the US. One leader in the booming US private space sector is [Space X](http://www.spacex.com/), which was founded by Tesla head Elon Musk in 2002. The firm, which has had a number of recent high-profile rocket launches, is setting its sights on missions to Mars. Even Jeff Bezos, who founded the online shopping giant Amazon, is getting in on the act with plans for his firm Blue Origin to send a manned mission to the Moon.

#### Violation: they only defend private action

#### Standards:

#### 1] predictable limits – there are more than 10,000 private companies investing in space which means aff can get uq offense on specific companies and negs don’t get generic links to gov action

Keotsier 21

John Koetsier, [Journalist, analyst, and tech executive. He is a senior contributor for Forbes, hosts the top-50 podcast TechFirst with John Koetsier(among others), and consults with Silicon Valley companies.], 22 May 2021, “Space Inc: 10,000 Companies, $4T Value ... And 52% American”, <https://www.forbes.com/sites/johnkoetsier/2021/05/22/space-inc-10000-companies-4t-value--and-52-american/?sh=42d1bb0755ac> // AK

It’s not just SpaceX. Elon Musk’s SpaceX might get all the headlines, but there are now a huge number of companies who are competing to open up an unprecedented level of human access to space. The U.S. now has 5,582 space-focused companies, almost ten times more than the next country, the UK, which has 615. And there are more than 10,000 total, globally. Competition between these companies has led the value of space-focused companies to cross the $4 trillion USD mark for the first time ever, and is a key factor in reducing launch to orbit cost by almost two orders of magnitude in the past 20 years.

#### 2] Policymaking – fiating companies into doing specific actions is utopian fiat, which isn’t realistic, only through a policymaking model can students learn how governments set obligations for companies, which is how the resolution would be implemented.

## OFF

#### Links:

#### 1] The threat of cybersecurity is overdetermined by by other social norms – magnifying conflict scenarios

**Gomez and Whyte 21** – Miguel Alberto Gomez is a Senior Researcher at the Center for Security Studies (CSS) at ETH Zurich. He holds a Masters degree in International Security from the Institut Barcelona d’Estudis Internacionals and is currently completing his doctoral studies externally at the Universität Hildesheim. He was a lecturer at both the De La Salle University and the College of St. Benilde in the Philippines and has worked in the information security industry before joining academia. Christopher Whyte is an assistant professor of homeland security and emergency preparedness. His research interests include a range of international security topics related to the use of information technology in war and peace, political communication and cybersecurity doctrine/policy. His dissertation explores the determinants of decision-making among subversive groups that choose to use different kinds of information and communication technologies (ICTs) in their campaigns. His scholarly and analytic work on cyber conflict and trends in international politics scholarship has appeared or is forthcoming in several publications including International Studies Quarterly, International Studies Review, Strategic Studies Quarterly, Orbis, Comparative Strategy, New Media & Society, Foreign Policy and The National Interest. He is also co-author of a forthcoming Routledge volume on international security and cyberspace – entitled Understanding Cyber-Warfare: Politics, Policy and Strategy – with Brian Mazanec and Angelos Stavrou.

Miguel Alberto Gomez and Christopher Whyte, “Breaking the Myth of Cyber Doom: Securitization and Normalization of Novel Threats” International Studies Quarterly (2021) 0, 1–14 // sam

According to some, advancements in technological and organizational capabilities among capable state and stateaffiliated actors over the past decade increase the likelihood that offensive cyber operations (OCOs) might soon produce destructive physical effects (Saltzman 2013; Healey 2016). Expectations of real-world damage inflicted through cyberspace reinforce the “cyber doom” narrative that digital insecurity might result in a massive failure of social and economic processes across societies dependent on new information technologies and that dread of such failure permeates public perspectives on cyber issues (Hansen and Nissenbaum 2009). For those who study public opinion surrounding foreign policymaking, the “cyber doom” type of narrative is not especially uncommon. Environmental circumstances of sufficient visibility and meaning, such as the trauma-inducing experiences of 9/11 or the Cold War, often take on life of their own and affect opinion formation independent of an individuals’ priors or the cues of elites. Oddly, however, the oft-referenced notion of “cyber doom” appears paradoxical, even despite the link some scholars make between OCOs and physical effects. Presently, conflict in cyberspace is characterized by persistent-yet-limited effects and a condition of apparent restraint exercised by cyber-capable actors (Maness and Valeriano 2016; Fischerkeller and Harknett 2018a). Moreover, the unabated integration of vulnerable information systems across all aspects of modern societies raises the question of whether or not a sense of dread associated with the exploitation of cyberspace is as severe as commonly portrayed (Jarvis, Macdonald, and Whiting 2017). Most damningly, the idea that “cyber doom” is most visible in Western national experiences as a fear appeal employed by politicians to galvanize support for policy in no way explains these curious logical shortcomings. At the heart of the “cyber doom” narrative is the assumption that information about cyberattacks released to the public—particularly information about sophisticated cyber operations of foreign countries and organized crime1— produces anxiety about the digital health and security of a person. Ironically, this assumed relationship between cyber operations, their portrayal in public-facing media, and individual impact is often discussed in unclear terms by scholars than is the determining role of techno-strategic conditions. Despite the recent turn by some to consider the societal impact of OCOs (Lin and Kerr 2017; Lindsay 2020; Whyte 2020), most research on cyber conflict continues to emphasize logic-of-the-domain explanations for the behavior of cyber-capable actors.2 This makes a certain sense because the domain is human-made and malleable. However, it is also puzzling given the scope of cyberspace and the degree to which digital action impacts both private industry and civil society across numerous levels. Though the mechanisms of interaction may be less precise than is the case with other forms of state power, the literature on public opinion, morale, and psychology in foreign policymaking tells us that popular perceptions of threat are shaped by a host of factors that then impact the formulation and implementation of state security policy. In this article, we take aim at the “cyber doom” narrative logic as an initial step toward clarifying the relationship between cyber conflict, its portrayal, and public thinking about digital insecurity. Consequently, we align with critics of the narrative itself but argue that such criticisms make overly simplistic assumptions about public opinion and national security that do little to enrich and undergird evolving cyber conflict research. The logic of the core argument about digital disaster aside, the broader “cyber doom” argument— i.e., that the rhetorical and cognitive prospect of doom has some effect on a population—is undertheorized and understudied. This point is particularly important because scholarship aimed at explaining the sources of state public policy on cyberspace makes the curious misstep of holding domestic population preferences constant while focusing on third image determinants of strategy development. Authors argue that publics cyclically react with some fear to emergent threats and that, therefore, public policy is best explained by the incidence of cyber conflict or steps taken by state peers. Given that such assumptions are clearly far from safe on the merits, this article aims to ascertain whether or not negativity among the general public associated with malicious behavior in cyberspace is as salient as broadly claimed. We add evidence to the argument that the “cyber doom” narrative is unrealistic (Lawson 2013) by showing that the assumptions found therein are misleading. Our study finds that sensitivity to cybersecurity threats is situationally shaped by exposure to negative reporting but that the onset of associated dread is not a given. Instead, it is influenced by expectations of the role of technology in modern society. Respondents dependent on such technologies are not as prone to negative effect as are those who remain not so deeply embedded in the fabric of digital society. Both groups become more sensitive to cybersecurity threats to their person as the information they consume becomes more negative, and this personal concern facilitates a heightened sensitivity to threats to the polity. However, the dread predicted by the “cyber doom” narrative is only weakly predictive of this dynamic and has no effect on the threat sensitivity of those who do not respond emotionally. Finally, in both cases, the link between concern for society is not a clear result of negative information so much as it is the result of initial sensitivity to threats at the personal level. Consequently, we make two contributions. First, we show that the impact of novel environmental circumstances on individual opinion formation is shaped by issue embeddedness, suggesting that long-term exposure to any invasive development mitigates the affective response it is associated with. Second, we present evidence suggesting nevertheless that the unique characteristics of such a development matter in opinion formation, as sensitivity to digital threats to the polity is clearly premised on personal threat sensitivity. These findings suggest that not only “cyber doom” is strategically and functionally unrealistic, but the effects of the idea’s securitization are also minimal and prone to diminishment over time. In doing so, they speak to the broad research program on public opinion and audience dynamics in foreign policymaking. More specifically, in line with recent work (Kertzer and Zeitzoff 2017), our study suggests that citizens are far more capable of responding to threat stimuli absent elite cues. Significantly, our work joins research that locates responsiveness to policy issues in the interaction of cognitive priors and social context with incoming information about new events. Judgment is rarely as linear as the “cyber doom” narrative suggests in its linking of negative reporting, fearful response, and sensitivity to threat inflation. Instead, individuals are conditioned by social circumstances such that even novel threats are incorporated into the horizon of issues the public encounters. The remainder of this article is divided into four sections. The first introduces the theoretical framework supporting the underlying claims investigated and adopts existing frameworks to account for the effects of continued exposure to cyber threats. The second discusses the experimental design employed. Though common across political science research, the methodology is only recently employed in cybersecurity and cyber conflict scholarship in response to (1) difficulties related to obtaining observational data and (2) the growing interest in individual-level behavior as impactful in digital affairs (Gross, Canetti, and Vashdi 2017; Gomez 2019b; Jensen and Valeriano 2019). This is followed by the presentation and analysis of results. Finally, an in-depth discussion is offered that further develops the theoretical and policy implications of the findings. The findings are not limited to the validity of the core “cyber doom” narrative and the general disposition of non-elites toward cybersecurity issues. Instead, we contribute to the body of scholarship on public opinion in foreign policymaking and speak to ongoing research linking decision-making and the modern digital information environment.

#### 2] Russia and Chinese conflict zones – 1ac chow ev assumes that china starts using “space stalkers” to engage in peace confilict with 0 motives or incentives (specifically it cites things like the US security review to identify china as a threat) – worst case I’m wrong but that’s terminal defense to the aff

#### 3] MacDonald – specifically cites how we’re passing a “threshold” with 0 warrants for that scenario AND assumes russia and china are passing that threshold and we need to stop them

#### 4] Any won case defense proves the aff won’t solve their impacts but links to our offense since it neccesitates intervetion

#### Their security discourse causes genocide and interventionism in the name of cleansing the world of violent “others”

Friis 2k - Friis, UN Sector at the Norwegian Institute of International Affairs, 2k, (Karsten, Peace and Conflict Studies 7.2, “From Liminars to Others: Securitization Through Myths,” <http://shss.nova.edu/pcs/journalsPDF/V7N2.pdf#page=2>). NS

The problem with societal securitization is one of representation. It is rarely clear in advance who it is that speaks for a community. There is no system of representation as in a state. Since literately anyone can stand up as representatives, there is room for entrepreneurs. It is not surprising if we experience a struggle between different representatives and also their different representations of the society. What they do share, however, is a conviction that they are best at providing (a new) order. If they can do this convincingly, they gain legitimacy. What must be done is to make the uncertain certain and make the unknown an object of knowledge. To present a discernable Other is a way of doing this. The Other is represented as an Other -- as an unified single actor with a similar unquestionable set of core values (i.e. the capital “O”). They are objectified, made into an object of knowledge, by representation of their identity and values. In other words, the representation of the Other is depoliticized in the sense that its inner qualities are treated as given and non-negotiable. In Jef Huysmans (1998:241) words, there is both a need for a mediation of chaos as well as of threat. A mediation of chaos is more basic than a mediation of threat, as it implies making chaos into a meaningful order by a convincing representation of the Self and its surroundings. It is a mediation of “ontological security”, which means “...a strategy of managing the limits of reflexivity ... by fixing social relations into a symbolic and institutional order” (Huysmans 1998:242). As he and others (like Hansen 1998:240) have pointed out, the importance of a threat construction for political identification, is often overstated. The mediation of chaos, of being the provider of order in general, is just as important. This may imply naming an Other but not necessarily as a threat. Such a dichotomization implies a necessity to get rid of all the liminars (what Huysmans calls “strangers”). This is because they “...connote a challenge to categorizing practices through the impossibility of being categorized”, and does not threaten the community, “...but the possibility of ordering itself” (Huysmans 1998:241). They are a challenge to the entrepreneur by their very existence. They confuse the dichotomy of Self and Other and thereby the entrepreneur’s mediation of chaos. As mentioned, a liminar can for instance be people of mixed ethnical ancestry but also representations of competing world-pictures. As Eide (1998:76) notes: “Over and over again we see that the “liberals” within a group undergoing a mobilisation process for group conflict are the first ones to go”. The liminars threaten the ontological order of the entrepreneur by challenging his representation of Self and Other and his mediation of chaos, which ultimately undermines the legitimacy of his policy. The liminars may be securitized by some sort of disciplination, from suppression of cultural symbols to ethnic cleansing and expatriation. This is a threat to the ontological order of the entrepreneur, stemming from inside and thus repoliticizing the inside/outside dichotomy. Therefore the liminar must disappear. It must be made into a Self, as several minority groups throughout the world have experienced, or it must be forced out of the territory. A liminar may also become an Other, as its connection to the Self is cut and their former common culture is renounced and made insignificant. In Anne Norton’s (1988:55) words, “The presence of difference in the ambiguous other leads to its classification as wholly unlike and identifies it unqualifiedly with the archetypal other, denying the resemblance to the self.” Then the liminar is no longer an ontological danger (chaos), but what Huysmans (1998:242) calls a mediation of “daily security”. This is not challenging the order or the system as such but has become a visible, clear-cut Other. In places like Bosnia, this naming and replacement of an Other, has been regarded by the securitizing actors as the solution to the ontological problem they have posed. Securitization was not considered a political move, in the sense that there were any choices. It was a necessity: Securitization was a solution based on a depoliticized ontology.10 This way the world-picture of the securitizing actor is not only a representation but also made into reality. The mythical second-order language is made into first-order language, and its “innocent” reality is forced upon the world. To the entrepreneurs and other actors involved it has become a “natural” necessity with a need to make order, even if it implies making the world match the map. Maybe that is why war against liminars are so often total; it attempts a total expatriation or a total “solution” (like the Holocaust) and not only a victory on the battlefield. If the enemy is not even considered a legitimate Other, the door may be more open to a kind of violence that is way beyond any war conventions, any jus in bello. This way, securitizing is legitimized: The entrepreneur has succeeded both in launching his world-view and in prescribing the necessary measures taken against it. This is possible by using the myths, by speaking on behalf of the natural and eternal, where truth is never questioned.

#### The alternative is to reject securitization – this opens up space for emancipatory political engagement.

**Neocleous:** [Mark, Professor of the Critique of Political Economy; Head of Department of Politics & History Brunel Univ, Critique of Security, 185-6]

The only way out of such a dilemma, to escape the fetish, is perhaps to eschew the logic of securityaltogether **-** to reject it as so ideologically loaded in favour of the state that any real political thought other than the authoritarian and reactionary should be pressed to give it up. That is clearly something that can not be achieved within the limits of bourgeois thought and thus could never even begin to be imagined by the security intellectual. It is also something that the constant iteration of the refrain 'this is an insecure world'and reiteration of one fear**,** anxiety and insecurity after **another** will also make it hard to do**.** But it is something that the critique of security suggests we may have to consider if we want a political way out of the impasse of security. This impasse exists because security has now become so all-encompassing that it marginalises all else, most notably the constructive conflicts, debates and discussions that animate political life. The constant prioritising of a mythical security as a political end - as the political end constitutes a rejection of politics in any meaningful sense of the term. That is, as a mode of action in which differences can be articulated, in which the conflicts and struggles **t**hat arise from such differences can be fought for and negotiated, in which people might come to believe that another world is possible - that they might transform the world and in turn be transformed. Security politics simply removes this; worse, it remoeves it while purportedly addressing it. In so doing it suppresses all issues of power and turns political questions into debates about the most efficient way to achieve 'security', despite the fact that we are never quite told - never could be told - what might count as having achieved it. Security politics is, in this sense, an anti-politics,"' dominating political discourse in much the same manner as the security state tries to dominate human beings, reinforcing security fetishism and the monopolistic character ofsecurity on the political imagination. We therefore need to get beyond security politics, not add yet more 'sectors' to it in a way that simply expands the scope of the state and legitimises state intervention in yet more and more areas of our lives. Simon Dalby reports a personal communication with Michael Williams, co-editor of the important text Critical Security Studies, in which the latter asks: if you take away security, what do you put in the hole that's left behind? But I'm inclined to agree with Dalby: maybe there is no hole**."**' The mistake has been to think that there is a hole and that this hole needs to be filled with a new vision or revision of security in which it is re-mapped or civilised or gendered or humanised or expanded or whatever. All of these ultimately remain within the statist political imaginary, and consequently end up reaffirming the state as the terrain of modern politics, the grounds of security. The real task is not to fill the supposed hole with yet another vision of security, but to fight for an alternative political language which takes us beyond the narrow horizon of bourgeois security and which therefore does not constantly throw us into the arms of the state. That's the point of critical politics: to develop a new political language more adequate to the kind of society we want. Thus while much of what I have said here has been of a negative order, part of the tradition of critical theory is that the negative may be as significant as the positive in setting thought on new paths. For if security really is the supreme concept of bourgeois society and the fundamental thematic of liberalism, then to keep harping on about insecurity and to keep demanding 'more security' (while meekly hoping that this increased security doesn't damage our liberty) is to blind ourselves to the possibility of building real alternatives to the authoritarian tendencies in contemporary politics. To situate ourselves against security politics would allow us to circumvent the debilitating effect achieved through the constant securitising of social and political issues, debilitating in the sense that 'security' helps consolidate the power of the existing forms of social domination and justifies the short-circuiting of even the most democratic forms. It would also allow us to forge another kind of politics centred on a different conception of the good. We need a new way of thinking and talking about social being and politics that moves us beyond security. This would perhaps be emancipatory in the true sense of the word.What this might mean**,** precisely, must be open to debate. But it certainly requires recognising that security is an illusion that has forgotten it is an illusion; it requires recognising that security is not the same as solidarity; it requires accepting that insecurity is part of the human condition, and thus giving up the search for the certainty of security and instead learning to tolerate the uncertainties, ambiguities and 'insecurities' that come with being human; it requires accepting that 'securitizing' an issue does not mean dealing with it politically, but bracketing it out and handing it to the state;it requires us to be brave enough to return the gift."'

## OFF

#### Space colonization only happens because of market demand from Starship – and our ev indicates the field is booming but on the brink

Maidenberg, 21, 12/28/21, WSJ, “SpaceX’s Future Depends on a Gigantic Rocket and 42,000 Internet Satellites”, He reports on longtime and newer space companies, as well as issues tied to the safe operation of commercial planes and other aircraft. As part of his work, he focuses on government agencies such as the National Aeronautics and Space Administration (NASA) and the Federal Aviation Administration (FAA). Prior to his current role, Micah worked as a breaking news reporter for the Journal and the Dow Jones Newswires. He began writing about business and economic issues for Crain’s Chicago Business, where he reported on real estate, manufacturing and transportation beats. He also completed an investigative-reporting fellowship at the Columbia University School of Journalism, where he earned a Master's degree. URL: <https://www.wsj.com/articles/spacexs-future-depends-on-a-gigantic-rocket-and-42-000-internet-satellites-11640687404>, KR

SpaceX wants to use its Starship rocket for the kind of voyages to Mars and beyond that Elon Musk has long dreamed of pursuing.

Starship also forms an important foundation of the future business strategy at his space company, which wants to use the vehicle in part to build out Starlink, the satellite-internet service many investors believe could eventually form the bulk of the company’s revenue.

Space Exploration Technologies Corp., the formal name for the company Mr. Musk founded almost two decades ago, faces steep challenges in engineering Starship into a reusable rocket that would sharply drive down launch costs. Mr. Musk recently said the ship takes up more of his time than any other single initiative, and warned the vehicle, along with the internet service, are creating significant challenges for the company.

“Starship is a hard, hard, hard, hard project,” he said at a December event hosted by The Wall Street Journal. “This is the biggest rocket ever made.”

Starship, which would be blasted to orbit on a booster dubbed Super Heavy, stands 160 feet tall and has a diameter of 30 feet, creating room to send hundreds of Starlink satellites to orbit at once, more than the several dozen it is able to deploy right now on one of its Falcon 9 rockets. More than half of the launches tracked by U.S. flight-safety regulators that the company has conducted the past two years have been Starlink deployments. The company plans to rapidly boost the pace of satellite launches in the years ahead. SpaceX, in a July presentation to the Federal Communications Commission, said it had so far launched around 1,800 Starlink satellites and was active in more than 20 countries. The FCC has authorized SpaceX to launch around 12,000 satellites, but the company wants to add at least around 30,000 more, according to commission filings. Mr. Musk said at an industry conference this summer that SpaceX is likely to invest at least $5 billion and perhaps as much as $10 billion in Starlink before it fully starts generating cash, with ongoing investments after that. In a November tweet, Mr. Musk said if severe global recession cut into the availability of capital and liquidity while SpaceX was losing billions on Starship and Starlink, then bankruptcy “while still unlikely, is not impossible.” Over the past two years, the company began equity sales that raised at least $3.8 billion, according to filings that some private companies like SpaceX may have to disclose under Securities and Exchange Commission rules. SpaceX doesn’t release financial statements. A spokesman for the company pointed to a recent statement posted to SpaceX’s website that said in part the company’s year ahead would include a potential first orbital mission for Starship and expanding Starlink. Mr. Musk unveiled Starlink in 2015, aiming to develop a network of smaller satellites in a low orbit around Earth that could provide high-speed internet access around the world. SpaceX set out aggressive targets for Starlink, projecting that year more than 40 million subscribers by 2025, The Wall Street Journal previously reported. SpaceX said this summer that it had around 140,000 Starlink customers. Starlink lists costs for the service at $99 a month, with a $499 charge for an internet terminal—or roughly half the amount it costs the company to make it, Mr. Musk said over the summer. Other companies, such as London-based OneWeb, are also creating networks of internet satellites, and an Amazon.com Inc. unit plans to do so in the future. Around 3.7 billion people globally remain unconnected to the internet, according to a recent report from two agencies at the United Nations, while U.S. officials have worked for years to improve access to high-speed internet in underserved areas. “There’s a need for connectivity in places that don’t have it right now,” or where connections are very limited or expensive, Mr. Musk said this summer. In addition to consumers, Mr. Musk has indicated Starlink could offer services to other businesses, recently saying in a tweet that fliers should ask airlines for Starlink.

The internet service creates a source of demand for Starship, said Matt Weinzierl, a Harvard Business School professor who has studied the space economy.

Historically, those behind big rockets without a clear use for them have faced challenges: “If we don’t know why we built them, it can be a real losing proposition,” Mr. Weinzierl said, adding he thinks the company will identify other uses for the rocket.

Starship, meanwhile, has at least one confirmed customer in place: the National Aeronautics and Space Administration, which in April awarded SpaceX a $2.9 billion contract to develop a Starship to take astronauts back to the surface of the moon.

As it works to develop Starship and Starlink, SpaceX has built out a business based on government customers such as NASA and on commercial-satellite operators.

The value of its contracts with public-sector clients amounted to $2.2 billion for the federal government’s 2021 fiscal year, up from $195 million a decade earlier, according to a contracts database. SpaceX typically charges private clients $60 million to $65 million for Falcon 9 launches, according to people familiar with the matter.

The company’s valuation has soared as it proved its spacecraft like Falcon 9 could work as intended and as it started constructing its fleet of Starlink satellites. SpaceX was valued at $100 billion in October, more than double its valuation in the summer of 2020, according to PitchBook. The latest figure rests heavily on prospects for Starlink because the potential demand for the high-speed internet service globally is much larger than the size of the launch market, investors say.

#### Specifically, Starship from spaceX is the most prominent solution

O’Callaghan, 21, 12/7/21, MIT Review, “How SpaceX’s massive Starship rocket might unlock the solar system—and beyond”, Jonathan O'Callaghan is a freelance space journalist based in London, UK who covers commercial spaceflight, astrophysics, and space exploration. URL: <https://www.technologyreview.com/2021/12/07/1041420/spacex-starship-rocket-solar-system-exploration/>, KR

Much has already been made of Starship’s human spaceflight capabilities. But the rocket could also revolutionize what we know about our neighboring planets and moons. “Starship would totally change the way that we can do solar system exploration,” says Ali Bramson, a planetary scientist from Purdue University. “Planetary science will just explode.”

If it lives up to its billing, scientists are already talking about sending missions to Neptune and its largest moon in the outer solar system, bringing back huge quantities of space rock from Earth’s moon and Mars, and even developing innovative ways to protect Earth from incoming asteroids.

Starship—which is being built at a Texas site dubbed “Starbase”—consists of a giant spaceship on top of a large booster, known as Super Heavy. Both can land back on Earth so they can be reused, reducing costs. The entire vehicle will be capable of lifting 100 metric tons (220,000 pounds) of cargo and people into space on regular low-cost missions. The volume of usable space within Starship is a whopping 1,000 cubic meters—big enough to fit the entire Eiffel Tower, disassembled. And that’s got scientists excited.

“Starship is, like, wow,” says James Head, a planetary scientist from Brown University.

In mid-November, speaking in a publicly accessible virtual meeting about Starship hosted by the US National Academies of Sciences, Engineering, and Medicine, Musk discussed the project’s scientific potential. “It’s extremely important that we try to become a multiplanet species as quickly as possible,” he said. “Along the way, we will learn a great deal about the nature of the universe.” Starship could carry “a lot of scientific instrumentation” on flights, said Musk—far more than is currently possible. “We’d learn a tremendous amount, compared to having to send fairly small vehicles with limited scientific instrumentation, which is what we currently do,” he said.

“You could get a 100-ton object to the surface of Europa,” said Musk.

Cheap and reusable

Central to many of these ideas is that Starship is designed to be not just large but cheap to launch. Whereas agencies like NASA and ESA must carefully choose a smattering of missions to fund, with launch costs in the tens or hundreds of millions of dollars, Starship’s affordability could open the door to many more. “The low cost of access has the potential to really change the game for science research,” says Andrew Westphal, a lecturer in physics at the University of California, Berkeley, with flights potentially as low as $2 million per launch. “You can imagine privately financed missions and consortia of citizens who get together to fly things.”

NASA has selected SpaceX’s Starship as the lander to take astronauts to the moon

When the first astronauts in over 50 years set foot on the moon, they’ll be riding to the surface aboard Starship.

What’s more, Starship has a key advantage over other super-heavy-lift rockets in development, such as NASA’s much-delayed Space Launch System and Blue Origin’s New Glenn rocket. The upper half of the rocket is designed to be refueled in Earth orbit by other Starships, so more of its lifting capability can be handed over to scientific equipment rather than fuel. Taking humans to the moon, for example, might require eight separate launches, with each consecutive “tanker Starship” bringing up fuel to the “lunar Starship” that then makes its way to the moon with scientific equipment and crew.

Scientists are now starting to dream of what Starship might let them do. Earlier this year, a paper published by Jennifer Heldmann of NASA Ames Research Center explored some of the scientific opportunities that might be opened by Starship missions to the moon and Mars. One great benefit is that Starship could carry full-sized equipment from Earth—no need to miniaturize it to fit in a smaller vehicle, as was required for the Apollo missions to the moon. For example, “you could bring a drilling rig,” says Heldmann. “You could drill down a kilometer, like we do on Earth.” That would afford unprecedented access to the interior of the moon and Mars, where ice and other useful resources are thought to be present. Before, such an idea have been “a little bit insane,” says Heldmann. But with Starship, “you could do it, and still have room to spare,” she adds. “What else do you want to bring?”

Because Starship can land back on Earth, it will also—theoretically—be able to bring back vast amounts of samples. The sheer volume that could be returned, from a variety of different locations, would give scientists on Earth unprecedented access to extraterrestrial material. That could shed light on a myriad of mysteries, such as the volcanic history of the moon or “the question of life and astrobiology” on Mars, says Heldmann.

Starship could also enable more extravagant missions to other locations, either via a direct launch from Earth or perhaps by using the moon and Mars as refueling stations, an ambitious future envisioned by Musk.

#### Space exploration solves extinction and endless resource wars.

Collins 10 [Patrick Collins, professor of economics at Azabu University in Japan, and a Collaborating Researcher with the Institute for Space & Astronautical Science, as well as adviser to a number of companies, Adriano V. Autino is President of the Space Renaissance International; Manager, CEO/CTO, Systems Engineering Consultant / Trainer at Andromeda Systems Engineering LLC; and Supplier of methodological tools and consultancy at Intermarine S.p.A, Acta Astronautica, Volume 66, Issues 11–12, June–July 2010, “What the growth of a space tourism industry could contribute to employment, economic growth, environmental protection, education, culture and world peace”, Pages 1553–1562]

7. World peace and preservation of human civilisation

The major source of social friction, including international friction, has surely always been unequal access to resources. People fight to control the valuable resources on and under the land, and in and under the sea. The natural resources of Earth are limited in quantity, and economically accessible resources even more so. As the population grows, and demand grows for a higher material standard of living, industrial activity grows exponentially. The threat of resources becoming scarce has led to the concept of “Resource Wars”. Having begun long ago with wars to control the gold and diamonds of Africa and South America, and oil in the Middle East, the current phase is at centre stage of world events today [37]. A particular danger of “resource wars” is that, if the general public can be persuaded to support them, they may become impossible to stop as resources become increasingly scarce. Many commentators have noted the similarity of the language of US and UK government advocates of “war on terror” to the language of the novel “1984” which describes a dystopian future of endless, fraudulent war in which citizens are reduced to slaves.

7.1. Expansion into near-Earth space is the only alternative to endless “resource wars”

As an alternative to the “resource wars” already devastating many countries today, opening access to the unlimited resources of near-Earth space could clearly facilitate world peace and security. The US National Security Space Office, at the start of its report on the potential of space-based solar power (SSP) published in early 2007, stated: “Expanding human populations and declining natural resources are potential sources of local and strategic conflict in the 21st Century, and many see energy as the foremost threat to national security” [38]. The report ended by encouraging urgent research on the feasibility of SSP: “Considering the timescales that are involved, and the exponential growth of population and resource pressures within that same strategic period, it is imperative that this work for “drilling up” vs. drilling down for energy security begins immediately” [38].

Although the use of extra-terrestrial resources on a substantial scale may still be some decades away, it is important to recognise that simply acknowledging its feasibility using known technology is the surest way of ending the threat of resource wars. That is, if it is assumed that the resources available for human use are limited to those on Earth, then it can be argued that resource wars are inescapable [22] and [37]. If, by contrast, it is assumed that the resources of space are economically accessible, this not only eliminates the need for resource wars, it can also preserve the benefits of civilisation which are being eroded today by “resource war-mongers”, most notably the governments of the “Anglo-Saxon” countries and their “neo-con” advisers. It is also worth noting that the $1 trillion that these have already committed to wars in the Middle-East in the 21st century is orders of magnitude more than the public investment needed to aid companies sufficiently to start the commercial use of space resources.

Industrial and financial groups which profit from monopolistic control of terrestrial supplies of various natural resources, like those which profit from wars, have an economic interest in protecting their profitable situation. However, these groups’ continuing profits are justified neither by capitalism nor by democracy: they could be preserved only by maintaining the pretence that use of space resources is not feasible, and by preventing the development of low-cost space travel. Once the feasibility of low-cost space travel is understood, “resource wars” are clearly foolish as well as tragic. A visiting extra-terrestrial would be pityingly amused at the foolish antics of homo sapiens using long-range rockets to fight each other over dwindling terrestrial resources—rather than using the same rockets to travel in space and have the use of all the resources they need!

7.2. High return in safety from extra-terrestrial settlement

Investment in low-cost orbital access and other space infrastructure will facilitate the establishment of settlements on the Moon, Mars, asteroids and in man[/woman]-made space structures. In the first phase, development of new regulatory infrastructure in various Earth orbits, including property/usufruct rights, real estate, mortgage financing and insurance, traffic management, pilotage, policing and other services will enable the population living in Earth orbits to grow very large. Such activities aimed at making near-Earth space habitable are the logical extension of humans’ historical spread over the surface of the Earth. As trade spreads through near-Earth space, settlements are likely to follow, of which the inhabitants will add to the wealth of different cultures which humans have created in the many different environments in which they live.

Success of such extra-terrestrial settlements will have the additional benefit of reducing the danger of human extinction du

e to planet-wide or cosmic accidents [27]. These horrors include both man-made disasters such as nuclear war, plagues or growing pollution, and natural disasters such as super-volcanoes or asteroid impact. It is hard to think of any objective that is more important than preserving peace. Weapons developed in recent decades are so destructive, and have such horrific, long-term side-effects that their use should be discouraged as strongly as possible by the international community. Hence, reducing the incentive to use these weapons by rapidly developing the ability to use space-based resources on a large scale is surely equally important [11] and [16]. The achievement of this depends on low space travel costs which, at the present time, appear to be achievable only through the development of a vigorous space tourism industry.

## CASE

#### 1] Big problem with the aff is that “large satellite constellations” isn’t a term of art and can be circumvented with a slightly less satellite constellation-- **Their solvency ev concedes this**

Takaya et al 18 “The Principle of Non-Appropriation and the Exclusive Uses of LEO by Large Satellite Constellations” Yuri Takaya-Umehara [Visiting researcher at the University of Tokyo since April 2017. She was affiliated to the Kobe University to provide a course on space law to post-graduate students (2011-2017). She chairs a working group on the formulation of global norms in space law organized by the Keio University since 2018. She obtained her Ph.D. degree at the IDEST of Paris XI University in France, LL.M. at the Leiden University in the Netherlands.] Quentin Verspieren [Ph.D. in public policy @ The University of Tokyo, Assistant Professor of Space Policy @UTokyo, General Manager, Global Strategy @ArkEdge Space Inc., Associate Research Fellow @ESPI] Goutham Karthikeyan [The University of Tokyo & Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency (ISAS-JAXA)] 2018 https://www.researchgate.net/publication/328094878\_The\_Principle\_of\_Non-Appropriation\_and\_the\_Exclusive\_Use\_of\_LEO\_by\_Large\_Satellite\_Constellations SM

* LSC = large satellite constellations
* Outlines “L”SC thresholds

By investigating expected large satellite constellation projects and by reviewing existing interpretations of international space law, this paper argues that the exclusive use of specific LEO orbits by a large constellation of satellite could constitute a violation of the non-appropriation principle by means of occupation and by means of use, drawing a parallel between orbits as resources and the exploitation of tangible mineral resources in space. Based on this, the important question to be raised is what constitutes an exclusive use of a specific orbit. In other words, an important hurdle in the concrete evaluation of whether a planned or established constellation potentially violates the non-appropriation principle through an exclusive use of LEO resides in the lack of clear definition on what can be considered an exclusive use. While the authors claim that legal issue can be clearly solved in abstracto, it naturally shifts towards a regulatory challenge.

This regulatory challenge consists in first defining qualitatively what is the exclusive use of an orbit before translating this definition into measurable, technical rules. In this paper, the authors define an exclusive use of an orbit by a state40 as any use that would prevent/hinder the usage of the same orbit by any other state. Translating this definition into an applicable regulation could consist in defining a threshold of orbital collision risk or a threshold of density of satellites along an orbit based on its altitude, shape, relative velocity of neighbouring objects, etc. It is however not the purpose of this space law paper. What is more appropriate here is to think about which organization or forum would be in charge of elaborating this technical definition. Serious candidates could be the ITU, with excellent track-record in dealing with the use of the GEO region but which would have to review its “first come, first served” principle, or the UNCOPUOS, aiming for the widespread adoption of a new piece of international law. Moreover, even if its rules suffer from a low implementation rates, the IADC would be an appropriate discussion platform thanks to its very deep technical focus.6. Conclusion

The various announced projects of LSC, also called mega-constellations, push existing regulations and practices to their limit, forcing researchers and practitioners around the world to rethink the applicability of existing space law principles to this new trend. In this paper, the authors, after providing background information on current LSC plans as well as recalling the legal status of the LEO region, investigate whether the deployment of an LSC having an exclusive use of an orbit constitutes a violation of the nonappropriation principle as stated in OST Article II. This paper concludes that:

♣ The exclusive use of an orbit by an LSC constitutes a violation of the non-appropriation principle by means of occupation due to the innate nature of orbit being a specific location in space that can be occupied, but most notably by means of use, considering orbits as “limited natural resources” and invoking parallels with the exploitation of natural resources in outer space;

♣ ITU’s “first come, first served” principle is reaching its limits with current LSC projects and should be re-evaluated;

♣ The main challenge ahead is not legal but technical and regulatory and consists in defining precisely what can constitute an exclusive use of an orbit and in translating such definition into a clear regulation or code of conduct.

#### Private companies use and have historically used legal ambiguities to appropiate outer space

Stockwell 20’Legal ‘Black Holes’ in Outer Space: The Regulation of Private Space Companies Written by Samuel Stockwell This PDF is auto-generated for reference only. As such, it may contain some conversion errors and/or missing information. For all formal use please refer to the official version on the website, as linked below. Legal ‘Black Holes’ in Outer Space: The Regulation of Private Space Companies https://www.e-ir.info/2020/07/20/legal-black-holes-in-outer-space-the-regulation-of-private-space-companies/ SAMUEL STOCKWELL, JUL 20 2020

Lunar rock samples from the Apollo missions containing rare Earth resources, such as Helium-3 which produces more power and less waste than traditional nuclear reactors on Earth, have since fuelled incentives for extraterrestrial resource mining (Brearley, 2006: 44-46). This was further facilitated by suggestions that near-earth objects (NEOs) like the so-called ‘Anteros asteroid’ could comprise of over five trillion dollars’ worth of magnesium silicate and aluminium (Kramer, 2017: 131). Envisaging appropriation concerns that might arise from the future extraction of space assets by spacefaring nations, Article II of the UN OST declared that: “Outer space is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means” (UN, 1967). The emphasis on claims of national sovereignty were intimately tied to the Cold War context at the time, where space activities were under the exclusive monopoly of governmental agencies and initiated for goals of military dominance or national prestige (Sachdeva, 2017: 210). However, the privatisation of the space industry that has occurred since the 1980s has meant that the legislation leaves an enormous amount of legal ambiguity and interpretation regarding the regulation of private resource mining in space. As Shaer (2016) demonstrates, the Article II provision fails to address either the exploitation of space for financial gain or the property claims of commercial enterprises (Shaer, 2016: 47). Nevertheless, Article VI of the UN OST asserts that: “States shall be responsible for national space activities whether carried out by governmental or non-governmental entities” (UN, 1967; own emphasis). Some scholars have suggested that this clause significantly restrains the activities of private space corporations by incentivising states to regulate their domestic organisations for fear of liability concerns (Abeyratne, 1998: 168). However, the US government recently enacted a piece of legislation which exploited this clause, in order to circumvent its own restrictions and strengthen US economic influence in space. The passage of the 2015 SPACE Act enabled US citizens to privately “possess, own, transport, use, and sell the resources” they obtain in outer space, whilst making careful consideration to deny national sovereign claims over such materials (Leon, 2018: 500). Yet, regardless of whether it is an American private company or public venture, the US is still satisfying its geopolitical interests; by exclusively siphoning off extra-terrestrial resources for American gain, the nation’s soft power is thereby extended at the expense of spacefaring adversaries such as China (Basu & Kurlekar, 2016: 65). Indeed NewSpace actors cleverly played on these strategic concerns prior to the bill’s passage, with billionaire space entrepreneur Robert Bigelow asserting that the biggest danger wasn’t private enterprises on the Moon, but that “America is asleep and does nothing, while China comes along… surveying and laying claim [to the Moon]” (Klinger, 2017: 222). The US government’s support for private space companies is also likely to lead to the reinforcement of Earth-bound wealth inequalities in space. Many NewSpace actors frame their long-term ambitions in space with strong anthropogenic undertones, by offering the salvation of the human race from impending extinction through off-world colonial developments (Kearnes & Dooren: 2017: 182). Yet, this type of discourse disguises the highly exclusive nature of these missions. Whilst they seem to suggest that there is a stake for ordinary citizens in the vast space frontier, the reality is that these self-described space pioneers are a member of a narrow ‘cosmic elite’ – “founders of Amazon.com, Microsoft, Pay Pal… and a smattering of games designers and hotel magnates” (Parker, 2009: 91).

#### 2] Bernat concedes a) alt causes like mining b) tech transfers which aren’t apporpriation since private entities don’t do them

Bernat 19 “The Inevitability of Militarization of Outer Space” Paweł Bernat [Assistant Professor, Polish Air Force University] Safety & Defense 5(1) (2019) 49–54 <https://philarchive.org/archive/BERTIO-52> SM

Currently, the dominant interpretations of this article argue that the placement of conventional weapons, including systems with nuclear drives, in orbit does not violate the provisions of the Treaty (Bourbonniere & Lee, 2008). The Treaty, according to these elucidations, does not also prohibit nuclear weapons or weapons of mass destruction on trajectory passing through space, as it is the case with the Russian ballistic missile RS-28 Sarmat. However, it prohibits placing and keeping biological, bacteriological, chemical, and nuclear weapons in orbit (Boothby, 2017).

Of course, there are also other interpretations, according to which the Treaty has been infringed more than once. They are based on the quite right belief that in the case of modern weapons, one should talk about systems rather than a single ballistic missile. After all, the satellite navigation system was created as part of a ballistic missile guidance system with thermonuclear warheads (LaGrone, 2014). Therefore, we are dealing here with a very important philosophical and legal question whether the satellite being a part of such a system is a weapon and hence prohibited by the Treaty. This brings us back to the difficulty of clear and sound definition of the term “space weapon” addressed before. Does the fact that a civil communication satellite can be used (and often is) for military purposes make it a part of a weapon system? If so, what would be the consequences, especially if we took into consideration the fact that approximately 95% of satellites could be used that way? These questions, although theoretical in nature, bear significant consequences for the binding power of the Treaty, and therefore the whole outer space legal framework.

So far, however, the Treaty has been fulfilling its task quite well, and its provisions have been relatively seldom broken or violated. On the other hand, we are currently witnessing an undoubted renaissance of the space sector, which also applies to offensive and defensive military technologies and programs. The structure of the sector has changed as well – the twentieth-century traditional bipolar competition between the United States and the Soviet Union is long gone. New entities have appeared in the game, both, private companies, such as SpaceX, Blue Origin, Virgin Galactic and Virgin Orbit, Bigelow Aerospace, Rocket Lab, and national agencies – Indian ISRO (Indian Space Research Organization) or Chinese CNSA (China National Space Administration), which joined the key global actors like American NASA, Russian Roscosmos, European ESA, or Japanese JAXA. The record of orbital launches – 139, was set in 1967 (Kyle, 2019a). It may seem surprising that humanity has not been able to break this record for over 50 years. However, since the middle of the first decade of the 21st century, we have been observing a steady increase in the number of orbital launches (52 in 2005, 70 in 2010, 114 in 2018), and it seems that this record will be broken in 2019 because 173 starts are planned (Kyle, 2019b). The space sector is also growing as a market. It is estimated that it is currently worth about USD 350 billion, and according to various consulting companies, it should reach a value of between USD 1 and 2.7 trillion in 2040 (Foust, 2018).

The change in the sector means that the existing solutions, including the Space Treaty, are losing their significance (e.g., space mining cannot be reconciled with Article II of the Treaty), and the current geopolitical situation seems to exclude new, more adequate agreement that would be adapted to modern technologies. This situation, in turn, translates into more and more bolder violations of the existing laws, e.g., the already mentioned SPACE Act of 2015 or increasingly explicit orbital or suborbital weapons systems, which are clearly not developed “in the interest of maintaining international peace and security and promoting international co-operation and understanding” as it is stated in the Art. III of the Outer Space Treaty (UNOSA, 1967), as, e.g., the programs of Prompt Global Strike (CRS, 2019).

3. Outer Space as a Theatre for Potential Conflict

The progressive development of the space sector brings forth, as a natural consequence, the growth of its strategic importance. Every year we launch more and more satellites into the orbit. They are part of communication, navigation, reconnaissance, or security systems, which are used more and more and play an increasingly important role in the economy and security. Among many examples, one may point to the already mentioned Prompt Global Strike guidance system, the European Galileo navigation system, or Starlink - a constellation of satellites, which is expected to provide broadband internet for the entire globe and consist of approximately 42,000 satellites (SpaceX has already obtained a permission to launch 12,000 satellites, and in October 2019 the company asked the International Telecommunication Union to arrange spectrum for 30,000 new ones) (Henry, 2019).

On the other hand, there is a growing threat of the democratization of weapons capable of destroying satellite systems. According to the 2018 Worldwide Threat Assessment of the US Intelligence Community describes the space threat as one of the most significant ones (Coats, 2018, p. 13). ASAT The anti-satellite weapons (ASAT) are currently in possession of four countries – the United States, Russia, China, and, more recently, India. However, it is reported that other nation-states have the potential to develop direct-ascent (DA) ASAT systems on the basis of their ballistic missiles, e.g., Iran and North Korea (Weeden, Samson, 2019, pp. 4.1-2, 5.1-2), and some believe that Israel’s Arrow 3 missile has been developed to gain such a capability (Opall-Rome, 2009). There are many indications that this technology will eventually also be available to traditionally weak actors who will acquire it through purchase or by developing their own systems. As it was already mentioned, the space sector is growing by leaps and bounds. National-states and private entities that did not invest much or at all in the space industry before are now developing launching technologies (e.g., New Zealand, Norway, Poland), what, as a consequence, must lead to the democratization of the technology. What is more, in addition to traditional groundspace or air-space ASAT missiles, new types of that kind of weapon can be developed (potentially it could also become available for traditionally weak actors), such as small kamikaze satellites1 , cyber-hacking involving redirecting the object to a cloud of cosmic debris leading to its destruction or a weapon system that would be capable of “blinding” the satellite or destroy its sensors without physically destroying the object.

Considering the above facts, it should not come as a surprise that in order to ensure the operability of increasingly important, also for national security, satellite systems, there are programs being implemented to create offensive and defensive systems for objects in orbit. And that, in turn, has generated the construction of countermeasures – weapons that would be able to neutralize the new systems – by the potential adversaries. As a consequence, we are witnessing an expansion of the potential conflict arena where outer space becomes a possible theatre for military operations. This process is still in its early stages, but there should be no doubts that it is taking place already. Countries with sufficient technological potential caring for their current and future interests have been developing and will continue working on defensive systems (also aimed at eliminating the threat from traditionally weak actors) and offensive systems (ensuring military superiority and deterrence factor). Space corps are established and developed for exactly these purposes.

There is no indication that this process will stop. On the contrary, it seems that due to the progressive development of space technologies and the privatization of the sector, as well as substantial potential revenues from space mining or the global satellite broadband internet system, it will accelerate. As it was demonstrated in the section dedicated to the legal framework of operating in outer space, the current laws and treaties have lost their significance, and they are not taken into account while planning future operations. The United Nations and its Office for Outer Space Affairs (UNOOSA) are structurally and legally too weak to inflict punishment or sanction for breaking the rules. One may then risk the claim that further militarization of space is inevitable. It will undoubtedly further affect the validity of the Outer Space Treaty, which, over time, will not be respected at all. That, in turn, will open the door to the development of various kinds of space offensive weapon systems.

4. Militarization of Outer Space Is Imminent

The main argument of the paper provides the information why there will be a progressive increase of weapon systems placed in orbit, and various types of space corps will be further developed by national-states.

As was demonstrated above, we, as humankind, rely more and more on orbital communication, navigation, and security systems. Global and regional navigation satellite systems are continually developed and perfected by a progressive number of entities, mainly national states. Examples of GNSS include Europe’s Galileo, the US’s NAVSTAR Global Positioning System (GPS), Russia’s Global’naya Navigatsionnaya Sputnikovaya Sistema (GLONASS) and China’s BeiDou Navigation Satellite System. There are, however, another two regional systems under development, i.e., Indian Regional Navigation Satellite System (IRNSS) and Japanese Quasi-Zenith Satellite System (QZSS). All of those satellites, apart from securing civil safety (e.g., in transportation, logistics, communication), play a crucial role in national security.

Another example is the mentioned already Starlink system that will provide broadband internet for the Northern US and parts of Canada already in 2020, and the plan is to create the global system before 2027 (Mosher, 2019). Again, the system, although designed for civil purposes, will be used by the military – the US Air Force is testing SpaceX’s Starlink technology in military aircraft to deliver high bandwidth into the cockpit of Air Force planes under a program called Global Lightning (Malik, 2019). The facts are straightforward – there are more and more satellite systems that play an essential role in countries’ security and are part of critical infrastructure, so in order to secure their interests and protect that infrastructure, these national states keep developing both defensive and offensive means. The Worldwide Threat Assessment of the US Intelligence Community is very clear in its predictions in this regard:

We assess that, if a future conflict were to occur involving Russia or China, either country would justify attacks against US and allied satellites as necessary to offset any perceived US military advantage derived from military, civil, or commercial space systems (Coats, 2018).

However, we must not forget about the democratization of the weapon systems that may pose a serious and real threat to satellite systems. Currently, there are four countries in possession of the ASAT weapons that could destroy a satellite in orbit. However, more and more entities, both national states and private companies have been working on their launch technologies, like New Zeeland, Norway, Poland, just to name a few. Moreover, it should be remembered that not only ASAT missile systems may be used to attack and destroy satellites – one may use small kamikaze satellites to crash into the target, cyber-hacking to direct the object into the cloud of space debris, “blinding” the satellites with ground-based lasers (Mizokami, 2019). These technologies are much more reachable. Therefore, in time, we should expect that traditionally weak actors, like rogue states or terrorist organizations, will gain have access to them (Bernat, Posłuszna, 2018).

#### 3] Your blatt evidence is about ASATs and offense dominant systems causing miscalc – not debris - Very least alt causes I read blue

Blatt 20 [Talia, joint concentration in Social Studies and Integrative Biology at Harvard, specialization in East Asian geopolitics and security issues] “Anti-Satellite Weapons and the Emerging Space Arms Race,” Harvard International Review, May 26, 2020, <https://hir.harvard.edu/anti-satellite-weapons-and-the-emerging-space-arms-race/> TG

Despite their deterrent functions, ASATs are more likely to provoke or exacerbate conflicts than dampen them, especially given the risk they [pose](https://thebulletin.org/2019/06/arms-control-in-outer-space-the-russian-angle-and-a-possible-way-forward/) to early warning satellites. These satellites are a crucial element of US ballistic missile defense, capable of [detecting missiles](https://www.globalsecurity.org/space/world/japan/warning.htm) immediately after launch and tracking their paths.

Suppose a US early warning satellite goes dark, or is shut down. Going dark could signal a glitch, but in a world in which other countries have ASATs, it could also signal the beginning of an attack. Without early warning satellites, the United States is much more susceptible to nuclear missiles. Given the strategy of counterforcing—[targeting](https://www.belfercenter.org/sites/default/files/files/publication/isec_a_00273_LieberPress.pdf) nuclear silos rather than populous cities to prevent a nuclear counterattack—the Americans might believe their nuclear weapons are imminently at risk. It could be [twelve hours](https://books.google.com/books?id=ET8lDwAAQBAJ&pg=PA1&lpg=PA1&dq=%22Protecting+Space+Assets%22+johnson-freese&source=bl&ots=6Oq0IdeBjw&sig=ACfU3U1G6Hj8QdP4JlCRNxA6i5XplZwHyg&hl=en&sa=X&ved=2ahUKEwj1n-jT2YzpAhUugnIEHUuMCu4Q6AEwA3oECAkQAQ#v=onepage&q=%22Protecting%20Space%20Assets%22%20johnson-freese&f=false) before the United States regains satellite function, which is too long to wait to put together a nuclear counterattack. The United States, therefore, might move to mobilize a nuclear attack against Russia or China over what might just be a piece of debris shutting off a satellite.

Additionally, accidental warfare, or strategic miscalculation, is uniquely likely in space. It is [much easier](https://books.google.com/books?id=VyXTDwAAQBAJ&pg=PA339&lpg=PA339&dq=space+offense+dominant&source=bl&ots=Mw0bgJ51qf&sig=ACfU3U3DeZiEHpr9nfszlCbJZIoyyssIpg&hl=en&sa=X&ved=2ahUKEwjrs-WD3IzpAhVulHIEHbL0AE4Q6AEwCXoECAoQAQ#v=onepage&q=space%20offense%20dominant&f=false) to hold an adversary’s space systems in jeopardy with destructive ASATs than it is to [sustainably defend](https://www.cnas.org/publications/commentary/the-us-military-should-not-be-doubling-down-on-space) a system, which is expensive and in some cases not technologically feasible because of limitations on satellite movement. Space is therefore [considered](https://books.google.com/books?id=VyXTDwAAQBAJ&pg=PA339&lpg=PA339&dq=space+offense+dominant&source=bl&ots=Mw0bgJ51qf&sig=ACfU3U3DeZiEHpr9nfszlCbJZIoyyssIpg&hl=en&sa=X&ved=2ahUKEwjrs-WD3IzpAhVulHIEHbL0AE4Q6AEwCXoECAoQAQ#v=onepage&q=space%20offense%20dominant&f=false) offense-dominant; offensive tactics like weapons development are prioritized over defensive measures, such as [improving GPS](https://www.politico.com/story/2018/04/06/outer-space-war-defense-russia-china-463067) or making satellites more resistant to jamming.

As a result, countries are left with poorly defended space systems and rely on offensive posturing, which increases the risk that their actions are perceived as aggressive and incentivizes rapid, risky counterattacks because militaries cannot rely on their spaced-based systems after first strikes.

There are several hotspots in which ASATs and offensive-dominant systems are particularly relevant. Early warning satellites [play](https://www.politico.com/story/2018/04/06/outer-space-war-defense-russia-china-463067) a central role in US readiness in the event of a conflict involving North Korea. News of North Korean missile launches comes from these satellites. Given North Korea’s [history](https://www.bbc.com/news/world-asia-pacific-11813699) of nuclear provocations, unflinchingly hostile rhetoric towards the United States and South Korea, and diplomatic opacity, North Korea is always a threatening, unknowable adversary, but recent developments have magnified the risk. With the health of Kim Jong-un [potentially in jeopardy](https://apnews.com/f5d302ae65b03838173e40848223b771), a succession battle or even civil war on the peninsula [raises the chances](https://www.express.co.uk/news/world/1273890/Kim-Jong-un-dead-North-Korea-nuclear-weapon-news-latest-death-US) of loose nukes. If the regime is terminal, traditional MAD risk calculus will become moot; with nothing to lose, North Korea would have no reason to hold back its nuclear arsenal. Or China [might decide](https://foreignpolicy.com/2020/04/28/kim-jong-un-china-north-korea/) to seize military assets and infrastructure of the regime. If the US does not have its early warning satellites because they have been taken out in an ASAT attack, the US, South Korea, and Japan are all in imminent nuclear peril, while China could be in a position to fundamentally reshape East Asian geopolitics.

The South China Sea is another hotspot in which ASATs could risk escalation. China [is developing](https://missiledefenseadvocacy.org/missile-threat-and-proliferation/todays-missile-threat/china-anti-access-area-denial-coming-soon/) Anti-Access Area Denial (A2/AD) in the South China Sea, a combination of long range radar with air and maritime defense meant to deny US freedom of navigation in the region. Given the disputed nature of territory in the South China Sea, the United States and its allies do not want China to successfully close off the region.

#### 4] MacDonald ev is about intelligence gathering satellites –its in the first highlighted line which the aff can’t solve since governments can produce them individually

#### 5] Geosynch private satellites are an alt cause to hacking – aff only bans leo megaconstellations

**Nichols 21** ‘Steven Vaughan-Nichols, 8-5-2021, "Starlink is better than its satellite competition but not as fast as landline internet," ZDNet, <https://www.zdnet.com/article/starlink-is-better-than-its-satellite-competition-but-not-as-fast-as-landline-internet//> MonVis RD

To no great surprise, [Ookla found Starlink beats HughesNet and Viasat handly](https://www.speedtest.net/insights/blog/starlink-hughesnet-viasat-performance-q2-2021/). The company found that "Starlink was the only satellite internet provider in the United States with fixed-broadband-like latency figures, and median download speeds fast enough to handle most of the needs of modern online life at 97.23 Megabits per second (Mbps) during Q2 2021. HughesNet was a distant second at 19.73 Mbps and Viasat third at 18.13 Mbps." As for latency, the time between when you start an activity over the internet and when you get a response back, it's not even a competition. Starlink's median latency, 45 milliseconds (ms) is close to fixed broadband's 14 ms. Low latency is vital for voice and video calling, gaming, and live content streaming. By comparison, Viasat, 630 ms, and HughesNet, 724 ms, are almost unusable for these purposes. Why was there such a huge difference? It's simple physics. Unless we ever get [quantum networking](https://www.energy.gov/articles/us-department-energy-unveils-blueprint-quantum-internet-launch-future-quantum-internet), we can't network faster than the speed of light. Starlink uses low earth orbit (LEO) satellite constellations, flying above us at a relatively close 550 to 1,200 kilometers (km), while HughesNet and Viasat have far higher geosynchronous orbits of about 35,000km.

#### 6] Their own hacking evi is BEFORE starlink – 2019 which proves having can happen with non mega non leo

#### 7] Also geosynch sats k2 miscalc because that’s where early warning is – you can’t thrust 29,000 miles above LEO to geosynch

#### 8] Half of your evidence concedes NASA satellites being hacked – Insert rehighlthing here

#### 9] Ozones: multiple alt causes and their ev doesn’t identify a brink point just that we’re heading there – two implications; a) spacex puts satellites in non leo orbits like other countries b) other satellites + other appopriation and government usage use aluminum and trigger their impacts

#### No ozone impact. Their uniqueness ev is about the Antarctic ozone hole closing but it’s going to reopen again. It’s normal.

**Ridley, 12** (Matt Ridley, columnist for The Wall Street Journal and author of The Rational Optimist: How Prosperity Evolves, 8/17, “Apocalypse Not: Here’s Why You Shouldn’t Worry About End Times”, <http://www.wired.com/wiredscience/2012/08/ff_apocalypsenot/all/>)

The threat to the ozone layer came next. In the 1970s scientists discovered a decline in the concentration of ozone over Antarctica during several springs, and the Armageddon megaphone was dusted off yet again. The blame was pinned on chlorofluorocarbons, used in refrigerators and aerosol cans, reacting with sunlight. The disappearance of frogs and an alleged rise of melanoma in people were both attributed to ozone depletion. So too was a supposed rash of blindness in animals: Al Gore wrote in 1992 about blind salmon and rabbits, while The New York Times reported “an increase in Twilight Zone-type reports of sheep and rabbits with cataracts” in Patagonia. But all these accounts proved incorrect. The frogs were dying of a fungal disease spread by people; the sheep had viral pinkeye; the mortality rate from melanoma actually leveled off during the growth of the ozone hole; and as for the blind salmon and rabbits, they were never heard of again.¶ There was an international agreement to cease using CFCs by 1996. But the predicted recovery of the ozone layer never happened: The hole stopped growing before the ban took effect, then failed to shrink afterward. The ozone hole still grows every **Antarctic** spring, to roughly the same extent each year. Nobody quite knows why. Some scientists think it is simply taking longer than expected for the chemicals to disintegrate; a few believe that the cause of the hole was misdiagnosed in the first place. Either way, the ozone hole cannot yet be claimed as a looming catastrophe, let alone one averted by political action.

#### Low chance of ozone depletion—Multilat solves CFC offsets to balance.

Grenoble, 13 (Ryan Grenoble – Editor on the Traffic & Trends team at The Huffington Post, 2/13, “Ozone Hole At Record Low: 2012 Data Shows Smallest Loss In Last Decade (PHOTO)”, The Huffington Post, <http://www.huffingtonpost.com/2013/02/13/ozone-hole-record-low-2012_n_2678907.html>)

Finally some good news regarding the health of our planet: The hole in the ozone layer over Antarctica appears to have shrunk.

According to Europe's MetOp weather satellites, the ozone hole's size is at a record low. Per the satellite's data from 2012, hole was the smallest it has been in the last decade.

Scroll down for a photo of the ozone hole.

LiveScience notes that the hole over Antarctica first appeared in the early 1980s and resulted from the use of chlorofluorocarbons (CFCs) and other ozone-depleting chemicals. It typically occurs from September through November, as a result of high winds, which channel cold air across the continent. Ozone-depleting chemicals are most damaging in cold weather.

In 2012, "It happened to be a bit warmer... in the atmosphere above Antarctica, and that meant we didn't see quite as much ozone depletion as we saw [in 2011], when it was colder," explained Jim Butler with National Oceanic and Atmospheric Administration's (NOAA) Earth System Research Laboratory in Boulder, Colo.

In addition to the yearly shifts attributed to fluctuating winter temperatures, the United Nations has also taken an active role to help shrink the ozone hole. In 1987, nearly 200 countries signed the Montreal Protocol on Substances that Deplete the Ozone Layer, an international agreement to limit the production of chemicals that significantly harm the ozone layer. The U.N. reports that, by 2006, the countries that ratified the Protocol "reduced their consumption of ozone-depleting substances by approximately 95 percent." Former U.N. Secretary-General Kofi Annan in 2003 called the Montreal Protocol "perhaps the single most successful international agreement to date."

#### 10] No space wars ---

#### a] Dependence on space creates a de facto taboo

Triezenberg, 17

Bonnie Triezenberg, Senior engineer at RAND. Previously, she was the senior technical fellow at the Boeing Company, specializing in agile systems and software development. “Deterring Space War: An Exploratory Analysis Incorporating Prospect Theory into a Game Theoretic Model of Space Warfare,” RAND Corporation. 2017. <https://www.rand.org/pubs/rgs_dissertations/RGSD400.html>

The above discussion suggests that a likely means to achieve deterrence of acts of war in outer space is to increase civilian dependence on space to support day-to-day life—if everyone on earth is equally dependent on space, no one has an incentive to destroy space. Largely by accident, this dependence appears to have, in fact, occurred. The space age was born in an age of affluence and rapid economic expansion; space quickly became a domain of international commerce as well as a domain of national military use. Space assets and the systems they enable have transformed social, infrastructure and information uses perhaps more visibly than they have transformed military uses. In fact, in the current satellite database published by the Union of Concerned Scientists, of the 1461 satellites in orbit 40% support purely commercial ventures, while only 16% have a strictly military use.46 The first commercial broadcast by a satellite in geo-synchronous orbit was of international news between Europe and the United States.47 The first telephony uniting the far flung islands of Indonesia was enabled by satellite48. Those of us who are old enough remember the 1960s “magic” of intercontinental phone calls and international “breaking news” delivered by satellite. Today, most social and infrastructure uses of space are taken for granted – even in remote locales of Africa, people expect to be able to monitor the weather, communicate seamlessly with colleagues and to find their way to new and unfamiliar locations using the GPS in their phones. All of us use space every day.49 These unrestricted economic and social uses of space may be the best deterrent, making everyone on all sides of combat equally dependent on space and heightening the taboo against weaponizing space or threatening space assets with weapons.

#### b] Resource constraints, the OST, and space taboos

Pavur, 19 - DPhil Researcher Cybersecurity Centre for Doctoral Training at Oxford University

James Pavur, “The Cyber-ASAT: On the Impact of Cyber Weapons in Outer Space”, 2019 11th International Conference on Cyber Conflict: Silent Battle T. Minárik, S. Alatalu, S. Biondi, M. Signoretti, I. Tolga, G. Visky (Eds.), <https://ccdcoe.org/uploads/2019/06/Art_12_The-Cyber-ASAT.pdf>

A. Limited Accessibility Space is difficult. Over 60 years have passed since the first Sputnik launch and only nine countries (ten including the EU) have orbital launch capabilities. Moreover, a launch programme alone does not guarantee the resources and precision required to operate a meaningful ASAT capability. Given this, one possible reason why space wars have not broken out is simply because only the US has ever had the ability to fight one [21, p. 402], [22, pp. 419–420]. Although launch technology may become cheaper and easier, it is unclear to what extent these advances will be distributed among presently non-spacefaring nations. Limited access to orbit necessarily reduces the scenarios which could plausibly escalate to ASAT usage. Only major conflicts between the handful of states with ‘space club’ membership could be considered possible flashpoints. Even then, the fragility of an attacker’s own space assets creates de-escalatory pressures due to the deterrent effect of retaliation. Since the earliest days of the space race, dominant powers have recognized this dynamic and demonstrated an inclination towards de-escalatory space strategies [23]. B. Attributable Norms There also exists a long-standing normative framework favouring the peaceful use of space. The effectiveness of this regime, centred around the Outer Space Treaty (OST), is highly contentious and many have pointed out its serious legal and political shortcomings [24]–[26]. Nevertheless, this status quo framework has somehow supported over six decades of relative peace in orbit. Over these six decades, norms have become deeply ingrained into the way states describe and perceive space weaponization. This de facto codification was dramatically demonstrated in 2005 when the US found itself on the short end of a 160-1 UN vote after opposing a non-binding resolution on space weaponization. Although states have occasionally pushed the boundaries of these norms, this has typically occurred through incremental legal re-interpretation rather than outright opposition [27]. Even the most notable incidents, such as the 2007-2008 US and Chinese ASAT demonstrations, were couched in rhetoric from both the norm violators and defenders, depicting space as a peaceful global commons [27, p. 56]. Altogether, this suggests that states perceive real costs to breaking this normative tradition and may even moderate their behaviours accordingly. One further factor supporting this norms regime is the high degree of attributability surrounding ASAT weapons. For kinetic ASAT technology, plausible deniability and stealth are essentially impossible. The literally explosive act of launching a rocket cannot evade detection and, if used offensively, retaliation. This imposes high diplomatic costs on ASAT usage and testing, particularly during peacetime. C. Environmental Interdependence A third stabilizing force relates to the orbital debris consequences of ASATs. China’s 2007 ASAT demonstration was the largest debris-generating event in history, as the targeted satellite dissipated into thousands of dangerous debris particles [28, p. 4]. Since debris particles are indiscriminate and unpredictable, they often threaten the attacker’s own space assets [22, p. 420]. This is compounded by Kessler syndrome, a phenomenon whereby orbital debris ‘breeds’ as large pieces of debris collide and disintegrate. As space debris remains in orbit for hundreds of years, the cascade effect of an ASAT attack can constrain the attacker’s long-term use of space [29, pp. 295– 296]. Any state with kinetic ASAT capabilities will likely also operate satellites of its own, and they are necessarily exposed to this collateral damage threat. Space debris thus acts as a strong strategic deterrent to ASAT usage.

## OFF

#### The plan requires clarifying international space law---causes strategic bargaining to extract concessions

Alexander William Salter 16, Assistant Professor of Economics, Rawls College of Business, Texas Tech University, "SPACE DEBRIS: A LAW AND ECONOMICS ANALYSIS OF THE ORBITAL COMMONS", 19 STAN. TECH. L. REV. 221 (2016), https://law.stanford.edu/wp-content/uploads/2017/11/19-2-2-salter-final\_0.pdf

V. MITIGATION VS. REMOVAL

Relying on international law to create an environment conducive to space debris removal initially seems promising. The Virginia school of political economy has convincingly shown the importance of political-legal institutions in creating the incentives that determine whether those who act within those institutions behave cooperatively or predatorily.47 In the context of space debris, the role of nation-states, or their space agencies, would be to create an international legal framework that clearly specifies the rules that will govern space debris removal and the interactions in space more generally. The certainty afforded by clear and nondiscriminatory48 rules would enable the parties of the space debris “social contract” to use efficient strategies for coping with space debris. However, this ideal result is, in practice, far from certain. To borrow a concept from Buchanan and Tullock’s framework,49 the costs of amending the rules in the case of international space law are exceptionally high. Although a social contract is beneficial in that it prevents stronger nation-states from imposing their will on weaker nation-states, it also creates incentives for the main spacefaring nations to block reforms that are overall welfare-enhancing but that do not sufficiently or directly benefit the stronger nations.

The 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (more commonly known as the Outer Space Treaty) is the foundation for current international space law.50 All major spacefaring nations are signatories. Article VIII of this treaty is the largest legal barrier to space debris removal efforts. This article stipulates that parties to the treaty retain jurisdiction over objects they launch into space, whether in orbit or on a celestial body such as the Moon. This article means that American organizations, whether private firms or the government, cannot remove pieces of Chinese or Russian debris without the permission of their respective governments. Perhaps contrary to intuition, consent will probably not be easy to secure.

A major difficulty lies in the realization that much debris is valuable scrap material that is already in orbit. A significant fraction of the costs associated with putting spacecraft in orbit comes from escaping Earth’s gravity well. The presence of valuable material already in space can justifiably be claimed as a valuable resource for repairs to current spacecraft and eventual manufacturing in space. As an example, approximately 1,000 tons of aluminum orbit as debris from the upper stages of launch vehicles alone. Launching those materials into orbit could cost between $5 billion and $10 billion and would take several years.51 Another difficulty lies in the fact that no definition of space debris is currently accepted internationally. This could prove problematic for removal efforts, if there is disagreement as to whether a given object is useless space junk, or a potentially useful space asset. Although this ambiguity may appear purely semantic, resolving it does pose some legal difficulties. Doing so would require consensus among the spacefaring nations. The negotiation process for obtaining consent would be costly.

Less obvious, but still important, is the 1972 Convention on International Liability for Damage Caused by Space Objects, normally referred to as the Liability Convention. The Liability Convention expanded on the issue of liability in Article VII of the Outer Space Treaty. Under the Liability Convention, any government “shall be absolutely liable to pay compensation for damage caused by its space objects on the surface of the Earth or to aircraft, and liable for damage due to its faults in space.”52 In other words, if a US party attempts to remove debris and accidentally damages another nation’s space objects, the US government would be liable for damages. More generally, because launching states would bear costs associated with accidents during debris removal, those states may be unwilling to participate in or permit such efforts. In theory, insurance can partly remediate the costs, but that remediation would still make debris removal engagement less appealing.

A global effort to remediate debris would, by necessity, involve the three major spacefaring nations: the United States, Russia, and China.53 However, any effort would also require—at a minimum—a significant clarification and—at most —a complete overhaul of existing space law.54 One cannot assume that parties to the necessary political bargains would limit parleying to space-related issues. Agreements between sovereign nation-states must be self-enforcing.55 To secure consent, various parties to the change in the international legal-institutional framework may bargain strategically and may hold out for unrelated concessions as a way of maximizing private surplus. The costs, especially the decision-making costs, of changing the legal framework to secure a global response to a global commons problem are potentially quite high.

#### Russia uses negotiations to push the PPWT---erodes US space dominance---unilat solves

Michael Listner 18, JD, Regent University School of Law, the founder and principal of the legal and policy think-tank/consultation firm Space Law and Policy Solutions, Sept 17 2018, "The art of lawfare and the real war in outer space", The Space Review, www.thespacereview.com/article/3571/1

A battle for primacy in outer space took place on August 14, 2018, among the Russian Federation, the United States, and, indirectly, the People’s Republic of China. This battle did not involve the exotic technology of science fiction, antisatellite weapons (ASATs), or the incapacitation of satellites; it was not part of a hot war and did not even occur in outer space. Rather, it took place in the halls of the Conference of Disarmament in Geneva, Switzerland, and concerned the interdiction of the hypothetical deployment of instrumentalities of a hot war in outer space. The carefully orchestrated arena for this battle by the proponents of banning so-called space weapons involved methodologies, institutions, and agents of international law but was undermined by a vigorous counterattack by the United States using the same forum and suite of instruments so skillfully levied against it.1 This battle, of course, is not a single instance but the latest skirmish of a much larger conflict involving real war in space.

There’s been significant attention—and overstatem­ent— about the effect of a proposed Space Force by the United States, including an arms race and dominance as articulated by the United States,2 yet little attention has been given to the contest that continues to be fought over outer space using the tools of international law and policy, both of which are instruments of “lawfare.” Maj. General Charles N. Dunlap, Jr. (retired)3 first defined lawfare in the paper “Law and Military Interventions: Preserving Humanitarian Values in 21st Conflicts,” as “a method of warfare where law is used as a means of realizing a military objective.”4 This definition can be expanded to the use of hard law, soft law, and non-governmental organizations and institutions within the international arena to achieve a national objective and geopolitical end that would otherwise require the use of hard power. As observed by General Dunlap, lawfare imputes the teachings of Sun Tzu in particular this teaching: “The supreme art of war is to subdue the enemy without fighting.”5

Lawfare is not a new concept and has been used in many domains, but the tools brought to bear have become more prolific, and the domain of outer space has been and continues to be a theater where it is applied. The earliest example of lawfare (even though the term was not yet coined) in outer space occurred pre-Sputnik with Soviet Union attempting to use customary law to make claims of sovereignty extending beyond the atmosphere to the space above its territory. This claim was preempted by the launch of Sputnik 1 and the act of the satellite flying over the territory of other nations.6 The Eisenhower Administration saw this as an opportunity to meet a national space policy goal and likewise used customary law as an implement of lawfare and successfully created the principle of free access to outer space, which it utilized for photoreconnaissance activities in lieu of overflights of another nation’s sovereign airspace.7 The Soviet Union unsuccessfully attempted to defeat this move using lawfare in the United Nations through a proposal that would have prohibited the use of outer space for the purpose of intelligence gathering.8

Since that setback, the art of lawfare in outer space has settled on the objective ascribed to another teaching of Sun Tzu:

“With regard to precipitous heights, if you proceed your adversary, occupy the raised and sunny spots, and there wait for him to come up. Remember, if the enemy has occupied precipitous heights before you, do not follow him, but retreat and try to entice him away.”9

The second part of this teaching exemplifies the role of lawfare in the present war in outer space: to employ the tools and institutions of international law as a means to legally corner an adversary and gain geopolitical advantage in soft power, with the aim of slowing and eroding the advantage that adversary has attained through preeminence in the domain of outer space, and replace it with their own. This objective is accomplished by two general means: legally-binding measures, most commonly in the form of treaties, and so-called non-binding measures couched as sustainability.

Lawfare in space continued in the intervening years between Sputnik-1 and the signature and ratification of the Outer Space Treaty and afterward. The weapon of choice: disarmament proposals for outer space. Provisions for banning so-called space weapons in the Outer Space Treaty were rejected by the Soviet Union in favor of separate arms control measures.10 These measures included proposals, some of which related to the proscription of ASATs, designed to not only gain an advantage in outer space but to gauge political intent and resolve.11

The lawfare offensive escalated after the proposed Strategic Defense Initiative with an effort curtail space-based missile defense technology through a ban on so-called space weapons and a proverbial arms race in outer space. The Prevention of an Arms Race in Outer Space (PAROS), introduced in 1985, continues to seek a legally binding measure to place any weapon in outer space, including those designed for self-defense. It spawned measures such as the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force against Outer Space Objects (PPWT), co-sponsored by Russia and China. This and other measures have met resistance as unverifiable and certainly are not likely to gain the advice and consent of the US Senate for ratification. The end game of the use of lawfare in the form of efforts like PAROS—the latest attempt at which was defeated in Geneva—is to propose legally binding measures that proponents would ignore to their advantage in any event. The sponsors and advocates of these hard-law measures recognize they will not come to fruition but, in the process of promoting them, will enhance their soft power and moral authority, which can be applied to entice their adversary down.

Non-binding resolutions and measures in the form of political agreements and guidelines are being used concurrently in the lawfare engagement in outer space, where proposals for legally binding measures alone fall short of the goal of creating hard law and challenging dominance in outer space. These resolutions and measures, which emphasize sustainability, are designed to perform an end run around the formalities of a treaty to entice agreement on issues that would otherwise be unacceptable in a hard-law agreement. These measures have the dual effect to create soft-power support on the one hand and hard law on the other. This tool of lawfare, which uses clichés of cooperation and sustainability, is a ploy that applies the ambiguous nature of customary international law to achieve what cannot be done through treaties: to “entice the adversary away” and create legal and political constraints to bind and degrade its use of outer space or prevent it from maintaining its superiority, all the while allowing others to play catchup and replace one form of dominance with another. While lawfare is by nature asymmetric, this indirect approach could be considered a subset an irregular tactic of lawfare, as opposed to the use of formal treaties in lawfare.

The crux is that, like space objects used in outer space, international law and its implements are dual-use in that they can be used for proactive ends or weaponized, with those using the appliances of lawfare to encourage cession of the high ground choosing the latter rather than the former. The decision to weaponize international law and its institutions to prosecute this war in space brings into question the efficacy of new rules or norms. Indeed, the idea of expanding the jurisprudence of outer space through custom, as being suggested by the United States, and more recently gap-filling rules being suggested by academia that could become custom, presents the real chance that, rather than the creation of the ploughshare of sustainability, new and more effective swords for lawfare will be forged.

To paraphrase Sun Tzu, “all war is deception.” In the case of outer space, the pretext in the current war in space is that an arms race and a hot war in outer space is inevitable, and can only be avoided by formal rules or international governance. Conversely, a hot war can be prevented in no small part by using lawfare to engage in the contemporary war in space using the tools of, and the abundant resources found in, the experience of attorneys and litigators in particular to supplement and support diplomats to extend the velvet glove when applicable, and bare knuckles when necessary. If the August 14 statement in Geneva is any indicator, the United States may have just done that and begun the shift from light-touch diplomacy to bringing its legal warriors to bear in full-contact lawfare to engage and win the current war in outer space and help deter a more serious hot war from occurring without sacrificing the superiority it possesses in outer space.

#### The PPWT prohibits space-based missile defense

Jack M. Beard 16, Associate Professor of Law at the University of Nebraska College of Law, Feb 15 2016, "Soft Law ’s Failure on the Horizon: The International Code of Conduct for Outer Space Activities", University of Pennsylvania Journal of International Law, Vol. 38, No. 2, 2016, <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1086&context=spacelaw>

B. Avoid Arms Control Traps in Space

Any successful effort to achieve legally binding restrictions on military activities or weapons in space must focus on specific, definable, and limited objectives or run afoul of issues that have historically ensured deadlock among suspicious and insecure adversaries.306 Some seemingly desirable goals, however, are likely to ensure failure.

The first such problematic goal involves attempting to use arms control agreements or other instruments to comprehensively ensure peace in space. Unfortunately, the integration of modern military systems on earth, sea, air and space guarantees that at some point states seeking to disrupt or deny the ability of an adversary (such as the United States) to project power will find space capabilities to be a particularly appealing target, especially in the early stages of a crisis or conflict.307 The presence of so many things of military value in space thus makes actions by an adversary to neutralize, disrupt or destroy these things likely during a major conflict on earth.308

The second problematic arms control goal in space that seems certain to ensure stalemate involves attempting to define and prohibit military technologies with a view to broadly prevent the weaponization of space. Clearly defining a space weapon for purposes of any legally binding arms control agreement is a daunting task, one which is made particularly challenging by the “essentially military nature of space technology.”309 As noted, space technologies are routinely viewed as dual-use in nature, meaning that they can be readily employed for both civilian and military uses. Determining the ultimate purpose of many space technologies may thus depend on discerning the intentions of states, a process perhaps better suited for psychological than legal evaluation. 310

Further complicating the classification of space military technologies is the inherent difficulty in distinguishing most space weapons on the basis of their offensive and defensive roles or even their specific missions.311 For example, this problem lies at the heart of debates over the status and future of ballistic missile defense (BMD) programs, since the technology underlying BMD systems and offensive ASAT weapons is often indistinguishable.312 Vague and broad soft law instruments do not resolve this problem, but create instead their own confusion and insecurity. Vague and broad provisions in legally binding agreements that do not or cannot distinguish between these missions are similarly problematic.

These issues, particularly difficulties in distinguishing ASAT and BMD systems, have figured prominently in complicating negotiations on space weapons over previous decades.313 Similarly, these concerns were a significant factor in initial U.S. opposition to the arms control measure proposed by China and Russia (the PPWT) since it prohibits states from placing any type of weapon in outer space (regardless of its military mission), thus effectively prohibiting the deployment of ballistic missile defense systems. 314 Furthermore, even if clear legal restrictions could be developed, verifying compliance with respect to technology in orbit around Earth would be very difficult (a point conceded even by China with respect to its own proposed PPWT).315

#### Causes rogue state missile threats---that escalates

Patrick M. Shanahan 19, Acting Secretary of Defense from January to June 2019, previously vice president and general manager of Boeing Missile Defense Systems, Jan 2019, "2019 MISSILE DEFENSE REVIEW", US Department of Defense, https://media.defense.gov/2019/Jan/17/2002080666/-1/-1/1/2019-MISSILE-DEFENSE-REVIEW.PDF

U.S. Homeland Missile Defense will Stay Ahead of Rogue States’ Missile Threats

Technology trends point to the possibility of increasing rogue state missile threats to the U.S. homeland. Vulnerability to rogue state missile threats would endanger the American people and infrastructure, undermine the U.S. diplomatic position of strength, and could lead potential adversaries to mistakenly perceive the United States as susceptible to coercive escalation threats intended to preclude U.S. resolve to resist aggression abroad. Such misperceptions risk undermining our deterrence posture and messaging, and could lead adversaries to dangerous miscalculations regarding our commitment and resolve.

It is therefore imperative that U.S. missile defense capabilities provide effective protection against rogue state missile threats to the homeland now and into the future. The United States is technically capable of doing so and has adopted an active missile defense force-sizing measure for protection of the homeland. DoD will develop, acquire, and maintain the U.S. homeland missile defense capabilities necessary to effectively protect against possible missile attacks on the homeland posed by the long-range missile arsenals of rogue states, defined today as North Korea and Iran, and to support the other missile defense roles identified in this MDR.

This force-sizing measure for active U.S. missile defense is fully consistent with the 2018 NPR, and in order to keep pace with the threat, DoD will utilize existing defense systems and an increasing mix of advanced technologies, such as kinetic or directed-energy boost-phase defenses, and other advanced systems. It is technically challenging but feasible over time, affordable, and a strategic imperative. It will require the examination and possible fielding of advanced technologies to provide greater efficiencies for U.S. active missile defense capabilities, including space-based sensors and boost-phase defense capabilities. Further, because the related requirements will evolve as the long-range threat posed by rogue states evolves, it does not allow a static U.S. homeland defense architecture. Rather, it calls for a missile defense architecture that can adapt to emerging and unanticipated threats, including by adding capacity and the capability to surge missile defense as necessary in times of crisis or conflict.

In coming years, rogue state missile threats to the U.S. homeland will likely expand in numbers and complexity. There are and will remain inherent uncertainties regarding the potential pace and scope of that expansion. Consequently, the United States will not accept any limitation or constraint on the development or deployment of missile defense capabilities needed to protect the homeland against rogue missile threats. Accepting limits now could constrain or preclude missile defense technologies and options necessary in the future to effectively protect the American people.

As U.S. active defenses for the homeland continue to improve to stay ahead of rogue states’ missile threats, they could also provide a measure of protection against accidental or unauthorized missile launches. This defensive capability could be significant in the event of destabilizing domestic developments in any potential adversary armed with strategic weapons, and as long-range missile capabilities proliferate in coming years.

U.S. missile defense capabilities will be sized to provide continuing effective protection of the U.S. homeland against rogue states’ offensive missile threats. The United States relies on nuclear deterrence to address the large and more sophisticated Russian and Chinese intercontinental ballistic missile capabilities, as well as to deter attacks from any source consistent with long-standing U.S. declaratory policy as re-affirmed in the 2018 NPR.