# 1NC

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#### CP: The appropriation of outer space except for Active Debris Removal done explicitly by private entities is unjust.. Governments ought to permit the appropriation of outer space for designated safety zones and tech stationing for active debris removal by private entities.

#### It’s key to preventing satellite destruction – oweighs the aff on current forms of debris

Kim, 21, 8/25/21, “Can the World’s First Space Sweeper Make a Dent in Orbiting Debris?”, Smithsonian, Shi En Kim is a writer and researcher at the University of Chicago who studies the physics of nano-sized objects. Outside the lab, she freelances for various publications, including National Geographic, Scientific American, Science News, Slate and others. She is Smithsonian's 2021 AAAS Mass Media Fellow, URL: <https://www.smithsonianmag.com/science-nature/can-worlds-first-space-sweeper-make-dent-orbiting-debris-180978515/>, KR

To combat this issue, Astroscale Inc., a private Japan-headquartered company, has devised several commercial spacecrafts tasked with decluttering space. The company is on track to deliver the world’s first garbage truck for removing defunct satellites in 2024, and today announced its prototype completed its first demonstration in space. Although experts say that one active debris remover isn’t enough to solve the problem, it is an important move toward protecting valuable equipment in space, including satellites that aid with everything from weather forecasts to GPS navigation.

“Those services are under threat,” says Lewis. “That threat is the destruction of the satellites, or the disruption to the services because we have to maneuver the satellites to avoid the space debris.”

Astroscale’s efforts are one of the first, tiny steps towards cleaning up debris. Its flagship mission is ELSA, short for “end-of-life services by Astroscale.” ELSA will drag satellites that are no longer operating down from high altitudes to the planet’s natural incinerator: the oxygen-rich atmosphere at lower Earth orbits. Both the space-cleaner and satellite will burn up here before they hit the surface of the Earth. In March this year, Astroscale launched its prototype ELSA-d (d stands for demonstration) to test its proximity capture technology. It contains two satellites: a chaser and a target that will proxy as a hunk of wreckage. Each satellite is equipped with a magnetic docking plate so that the chaser can latch onto its target.

The satellite pair successfully performed the first of four catch-and-release demos for debris disposal today. In this first test, the chaser validated its magnetic capture system by separating with the target then snagging it at close range. All the while, on-the-ground mission control recalibrated ELSA-d's sensors and verified its operational procedures. In the coming months, ELSA-d will undergo challenges of increasing complexity, from the chaser snagging prey that’s drifting away to pursuing a freely tumbling target and plucking it from its flightpath. ELSA-d’s fourth and final test will represent a full-service mission, in which the chaser inspects the target at close range and allows its human operators to make a go-no-go decision on the cleanup. In a fiery finale, both target and catcher will head down to lower Earth orbit to burn up in the atmosphere.

“Once those technologies are demonstrated and the global community sees that [ELSA] is a really big step towards active debris removal and end-of-life services, they're going to embrace this as more of a reality,” says Mike Lindsay, Astroscale’s chief technology officer. “Hopefully they'll incorporate that possibility into their own plans” as they prepare the next generation of satellites, he adds.

#### 1AR theory is skewed towards the aff – a) the 2NR must cover substance and over-cover theory, since they get the collapse and persuasive spin advantage of the 3min 2AR, b) their responses to my counter interp will be new, which means 1AR theory necessitates intervention.

#### Implications – a) reject 1AR theory since it can’t be a legitimate check for abuse, b) drop the arg to minimize the chance the round is decided unfairly, c) use reasonability with a bar of defense or the aff always wins since the 2AR can line by line the whole 2NR without winning real abuse

## OFF

#### Counterplan text - the appropriation of outer space by private entities ought to be banned except for the scientific mining of asteroids for the purpose of solely preventing climate change. The CP uses international bodies like the UN and aff solvency mechanisms to arbitrate usage.

#### Private companies are set to mine in space – new tech and profit motives make space lucrative

Gilbert 21, (Alex Gilbert is a complex systems researcher and PhD student in Space Resources at the Colorado School of Mines, “Mining in Space is Coming”), 4-26-21, Milken Institute Review, https://www.milkenreview.org/articles/mining-in-space-is-coming // MNHS NL

Space exploration is back. after decades of disappointment, a combination of better technology, falling costs and a rush of competitive energy from the private sector has put space travel front and center. indeed, many analysts (even some with their feet on the ground) believe that commercial developments in the space industry may be on the cusp of starting the largest resource rush in history: mining on the Moon, Mars and asteroids. While this may sound fantastical, some baby steps toward the goal have already been taken. Last year, NASA awarded contracts to four companies to extract small amounts of lunar regolith by 2024, effectively beginning the [era of commercial space mining](https://payneinstitute.mines.edu/wp-content/uploads/sites/149/2020/09/Payne-Institute-Commentary-The-Era-of-Commercial-Space-Mining-Begins.pdf). Whether this proves to be the dawn of a gigantic adjunct to mining on earth — and more immediately, a key to unlocking cost-effective space travel — will turn on the answers to a host of questions ranging from what resources can be efficiently. As every fan of science fiction knows, the resources of the solar system appear virtually unlimited compared to those on Earth. There are whole other planets, dozens of moons, thousands of massive asteroids and millions of small ones that doubtless contain humungous quantities of materials that are scarce and very valuable (back on Earth). Visionaries including Jeff Bezos [imagine heavy industry moving to space](https://www.fastcompany.com/90347364/jeff-bezos-wants-to-save-earth-by-moving-industry-to-space) and Earth becoming a residential area. However, as entrepreneurs look to harness the riches beyond the atmosphere, access to space resources remains tangled in the realities of economics and governance. Start with the fact that space belongs to no country, complicating traditional methods of resource allocation, property rights and trade. With limited demand for materials in space itself and the need for huge amounts of energy to return materials to Earth, creating a viable industry will turn on major advances in technology, finance and business models. That said, there’s no grass growing under potential pioneers’ feet. Potential economic, scientific and even security benefits underlie an emerging geopolitical competition to pursue space mining. The United States is rapidly emerging as a front-runner, in part due to its ambitious Artemis Program to lead a multinational consortium back to the Moon. But it is also a leader in creating a legal infrastructure for mineral exploitation. The United States has adopted the world’s first spaceresources law, recognizing the property rights of private companies and individuals to materials gathered in space. However, the United States is hardly alone. Luxembourg and the United Arab Emirates (you read those right) are racing to codify space-resources laws of their own, hoping to attract investment to their entrepot nations with business-friendly legal frameworks. China reportedly views space-resource development as a national priority, part of a strategy to challenge U.S. economic and security primacy in space. Meanwhile, Russia, Japan, India and the European Space Agency all harbor space-mining ambitions of their own. Governing these emerging interests is an outdated treaty framework from the Cold War. Sooner rather than later, we’ll need [new agreements](https://issues.org/new-policies-needed-to-advance-space-mining/) to facilitate private investment and ensure international cooperation.

Back up for a moment. For the record, space is already being heavily exploited, because space resources include non-material assets such as orbital locations and abundant sunlight that enable satellites to provide services to Earth. Indeed, satellite-based telecommunications and global positioning systems have become indispensable infrastructure underpinning the modern economy. Mining space for materials, of course, is another matter. In the past several decades, planetary science has confirmed what has long been suspected: celestial bodies are potential sources for dozens of natural materials that, in the right time and place, are incredibly valuabl**e**. Of these, water may be the most attractive in the near-term, because — with assistance from solar energy or nuclear fission — H2O can be split into hydrogen and oxygen to make rocket propellant, facilitating in-space refueling. So-called “rare earth” metals are also potential targets of asteroid miners intending to service Earth markets. Consisting of 17 elements, including lanthanum, neodymium, and yttrium, these critical materials (most of which are today mined in China at great environmental cost) are required for electronics. And they loom as bottlenecks in making the transition from fossil fuels to renewables backed up by battery storage. The Moon is a prime space mining target. Boosted by NASA’s mining solicitation, it is likely the first location for commercial mining. The Moon has several advantages. It is relatively close, requiring a journey of only several days by rocket and creating communication lags of only a couple seconds — a delay small enough to allow remote operation of robots from Earth. Its low gravity implies that relatively little energy expenditure will be needed to deliver mined resources to Earth orbit. The Moon may look parched — and by comparison to Earth, it is. But recent probes have confirmed substantial amounts of water ice lurking in [permanently shadowed craters](http://lroc.sese.asu.edu/posts/1105) at the lunar poles. Further, it seems that solar winds have implanted significant deposits of helium-3 (a light stable isotope of helium) across the equatorial regions of the Moon. Helium-3 is a potential fuel source for second and third-generation fusion reactors that one hopes will be in service later in the century. The isotope is packed with energy (admittedly hard to unleash in a controlled manner) that might augment sunlight as a source of clean, safe energy on Earth or to power fast spaceships in this century. Between its water and helium-3 deposits, the Moon could be the resource stepping-stone for further solar system exploration. Asteroids are another near-term [mining target](https://foreignpolicy.com/2016/04/28/the-asteroid-miners-guide-to-the-galaxy-space-race-mining-asteroids-planetary-research-deep-space-industries/). There are all sorts of space rocks hurtling through the solar system, with varying amounts of water, rare earth metals and other materials on board. The asteroid belt between the orbits of Mars and Jupiter contains most of them, many of which are greater than a kilometer in diameter. Although the potential water and mineral wealth of the asteroid belt is vast, the long distance from Earth and requisite travel times and energy consumption rule them out as targets in the near term. The prospects for space mining are being driven by technological advances across the space industry. The rise of reusable rocket components and the now-widespread use of off-the-shelf parts are lowering both launch and operations costs. Once limited to government contract missions and the delivery of telecom satellites to orbit, private firms are now emerging as leaders in developing “NewSpace” activities — a catch-all term for endeavors including orbital tourism, orbital manufacturing and mini-satellites providing specialized services. The space sector, with a market capitalization of $400 billion, could grow to as much as $1 trillion by 2040 as private investment soars.

#### Space mining is the only way to solve climate change

Duran 21, (Paloma Duran is a journalist and industry analyst at Mexico Business News, “Is Space Mining the Best Option to Face Climate Change?”), 11-03-21, Mexico Business News, https://mexicobusiness.news/mining/news/space-mining-best-option-face-climate-change // MNHS NL

Going to net zero means that more mining is needed. Experts have said that the current supply cannot support the necessary metals demand for the green transition. As a result, new mining alternatives have gained greater relevance, among them is space mining. Several countries, including Mexico, have shown their interest in this alternative, creating a new space race. “The solar system can support a billion times greater industry than we have on Earth. When you go to vastly larger scales of civilization, beyond the scale that a planet can support, then the types of things that civilization can do are incomprehensible to us … We would be able to promote healthy societies all over the world at the same time that we would be reducing the environmental burden on the Earth,” said Dr. Phil Metzger, Planetary Scientist at the University of Central Florida. Currently, there are several attempts to address global warming and transition to a net zero carbon economy. There has been an increasing interest in renewable energy and infrastructure, which has increased demand for various minerals, especially lithium, cobalt, nickel, copper and rare earth elements. However, according to experts, the world is close to entering a metals supercycle, where demand will exceed available supply, causing prices to skyrocket. Consequently, the mining industry has sought alternatives to achieve the required supply. Options include recycling and improved mine waste management, sea mining and space mining. The latter is considered one of the alternatives with the greatest potential. However, a regulatory framework is still lacking and there is almost no experience in this regard. Despite the lack of knowledge regarding space mining, it has become a very attractive option since the planet is running out of resources. While some people believe that land-based mining is cheaper than space mining, experts believe this may change in the long term. Furthermore, within the solar system there are countless bodies rich in minerals, ores and elements that will accelerate the fight against climate change. “There will come a point when there is nothing left to mine on the surface, prompting mines to reach even further below. But even those resources are destined to run out and so we will aim toward ocean mining, which already has specific technologies that are being developed. Nevertheless, even those mines are limited as well. The mine of the future, which today may seem unlikely, will no longer be on our planet. There will be a time when space mining will be as common as an open leach mine,” Eder Lugo, Minerals Head at Siemens, told MBN. More than 150 million asteroids measuring approximately 100m are believed to be in the inner solar system alone. In addition, astronomers have also identified abundant minerals near the Earth’s space and the Main Asteroid Belt. There are three main groups into which asteroids are divided: C- type, S- type, and M- type. The last two groups are the most abundant in minerals such as gold, platinum, cobalt, zinc, tin, lead, indium, silver, copper and rare earth metals. "Energy is limited here. Within just a few hundred years, you will have to cover all of the landmass of Earth in solar cells. So, what are you going to do? Well, what I think you are going to do is you are going to move out in space … all of our heavy industry will be moved off-planet and Earth will be zoned residential and light-industrial,” said Jeff Bezos, Founder of Amazon and the Space Launch Provider Blue Origin.

#### Anthropogenic warming causes extinction --- mitigation efforts now are key

Griffin, 2015 (David, Professor of Philosophy at Claremont, “The climate is ruined. So can civilization even survive?”, CNN, 4/14/2015, <http://www.cnn.com/2015/01/14/opinion/co2-crisis-griffin/> )

Although most of us worry about other things, climate scientists have become increasingly worried about the survival of civilization. For example, Lonnie Thompson, who received the U.S. National Medal of Science in 2010, said that virtually all climatologists "are now convinced that global warming poses a clear and present danger to civilization." Informed journalists share this concern. The climate crisis "threatens the survival of our civilization," said Pulitzer Prize-winner Ross Gelbspan. Mark Hertsgaard agrees, saying that the continuation of global warming "would create planetary conditions all but certain to end civilization as we know it." These scientists and journalists, moreover, are worried not only about the distant future but about the condition of the planet for their own children and grandchildren. James Hansen, often considered the world's leading climate scientist, entitled his book "Storms of My Grandchildren." The threat to civilization comes primarily from the increase of the level of carbon dioxide (CO2) in the atmosphere, due largely to the burning of fossil fuels. Before the rise of the industrial age, CO2 constituted only 275 ppm (parts per million) of the atmosphere. But it is now above 400 and rising about 2.5 ppm per year. Because of the CO2 increase, the planet's average temperature has increased 0.85 degrees Celsius (1.5 degrees Fahrenheit). Although this increase may not seem much, it has already brought about serious changes. The idea that we will be safe from "dangerous climate change" if we do not exceed a temperature rise of 2C (3.6F) has been widely accepted. But many informed people have rejected this assumption. In the opinion of journalist-turned-activist Bill McKibben, "the one degree we've raised the temperature already has melted the Arctic, so we're fools to find out what two will do." His warning is supported by James Hansen, who declared that "a target of two degrees (Celsius) is actually a prescription for long-term disaster." The burning of coal, oil, and natural gas has made the planet warmer than it had been since the rise of civilization 10,000 years ago. Civilization was made possible by the emergence about 12,000 years ago of the "Holocene" epoch, which turned out to be the Goldilocks zone - not too hot, not too cold. But now, says physicist Stefan Rahmstorf, "We are catapulting ourselves way out of the Holocene." This catapult is dangerous, because we have no evidence civilization can long survive with significantly higher temperatures. And yet, the world is on a trajectory that would lead to an increase of 4C (7F) in this century. In the opinion of many scientists and the World Bank, this could happen as early as the 2060s. What would "a 4C world" be like? According to Kevin Anderson of the Tyndall Centre for Climate Change Research (at the University of East Anglia), "during New York's summer heat waves the warmest days would be around 10-12C (18-21.6F) hotter [than today's]." Moreover, he has said, above an increase of 4C only about 10% of the human population will survive. Believe it or not, some scientists consider Anderson overly optimistic. The main reason for pessimism is the fear that the planet's temperature may be close to a tipping point that would initiate a "low-end runaway greenhouse," involving "out-of-control amplifying feedbacks." This condition would result, says Hansen, if all fossil fuels are burned (which is the intention of all fossil-fuel corporations and many governments). This result "would make most of the planet uninhabitable by humans." Moreover, many scientists believe that runaway global warming could occur much more quickly, because the rising temperature caused by CO2 could release massive amounts of methane (CH4), which is, during its first 20 years, 86 times more powerful than CO2. Warmer weather induces this release from carbon that has been stored in methane hydrates, in which enormous amounts of carbon -- four times as much as that emitted from fossil fuels since 1850 -- has been frozen in the Arctic's permafrost. And yet now the Arctic's temperature is warmer than it had been for 120,000 years -- in other words, more than 10 times longer than civilization has existed. According to Joe Romm, a physicist who created the Climate Progress website, methane release from thawing permafrost in the Arctic "is the most dangerous amplifying feedback in the entire carbon cycle." The amplifying feedback works like this: The warmer temperature releases millions of tons of methane, which then further raise the temperature, which in turn releases more methane. The resulting threat of runaway global warming may not be merely theoretical. Scientists have long been convinced that methane was central to the fastest period of global warming in geological history, which occurred 55 million years ago. Now a group of scientists have accumulated evidence that methane was also central to the greatest extinction of life thus far: the end-Permian extinction about 252 million years ago. Worse yet, whereas it was previously thought that significant amounts of permafrost would not melt, releasing its methane, until the planet's temperature has risen several degrees Celsius, recent studies indicate that a rise of 1.5 degrees would be enough to start the melting. What can be done then? Given the failure of political leaders to deal with the CO2 problem, it is now too late to prevent terrible developments. But it may -- just may -- be possible to keep global warming from bringing about the destruction of civilization. To have a chance, we must, as Hansen says, do everything possible to "keep climate close to the Holocene range" -- which means, mobilize the whole world to replace dirty energy with clean as soon as possible.

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### 1NC – Core

#### CP: States ought to:

#### --Announce that appropriation of outer space by private actors violates the Outer Space Treaty and that this is a settled matter of customary international law

#### --Announce that this action is taken pursuant to *opinio juris* (the belief that the action is taken pursuant to a legal obligation) and that non-compliant actors are in violation of international law

#### --Fully comply, not appropriating outer space in a manner inconsistent with these proclamations

#### Solves the Aff.

[Fabio](https://kluwerlawonline.com/journalarticle/Air+and+Space+Law/33.3/AILA2008021) **Tronchetti 8**. Dr. Fabio Tronchetti works as a Co-Director of the Institute of Space Law and Strategy and as a Zhuoyue Associate Professor at Beihang University, “The Non–Appropriation Principle as a Structural Norm of International Law: A New Way of Interpreting Article II of the Outer Space Treaty,” Air and Space Law, Volume 33, No 3, 2008, <https://kluwerlawonline.com/journalarticle/Air+and+Space+Law/33.3/AILA2008021>, RJP, **DebateDrills**.

The non–appropriation principle represents the fundamental rule of the space law system. Since the beginning of the space era, it has allowed for the safe and orderly development of space activities. Nowadays, however, the principle is under attack. Some proposals, arguing the need for abolishing it in order to promote commercial use of outer space are undermining its relevance and threatening its role as a guiding principle for present and future space activities. This paper aims at safeguarding the non–appropriative nature of outer space by suggesting a new interpretation of the non–appropriation principle that is based on the view that this principle should be regarded as a customary rule of international law of a special character, namely ‘a structural norm’ of international law.

#### That competes ---

#### 1] Widespread support for OST overhaul means a new treaty is likely---top military leaders are pushing it.

Theresa **Hitchens 21**. Theresa Hitchens is the Space and Air Force reporter at Breaking Defense. The former Defense News editor was a senior research associate at the University of Maryland’s Center for International and Security Studies at Maryland (CISSM). Before that, she spent six years in Geneva, Switzerland as director of the United Nations Institute for Disarmament Research (UNIDIR). “US Should Push New Space Treaty: Atlantic Council,” Breaking Defense, April 12, 2021, <https://breakingdefense.com/2021/04/us-should-push-new-space-treaty-atlantic-council/>, RJP, **DebateDrills**

WASHINGTON: The US should push hard to overhaul the entire international legal framework for outer space — including replacing the foundational [1967 Outer Space Treaty (OST),](https://breakingdefense.com/tag/outer-space-treaty/) a new report from the Atlantic Council says.

As it moves to do so, the US also should more aggressively court allies with an eye to establishing a “collective security alliance for space” among likeminded countries to “deter aggression” and defend “key resources and access.”

“The 1967 Treaty is dated. It was written, literally, in a different era,” said former Air Force Secretary Deborah Lee James in an Atlantic Council briefing today. “At present it is too broad, and in some cases it’s probably overly specific.”

The year-long study, [“The Future of Security In Space: A Thirty-Years US Strategy”](https://www.atlanticcouncil.org/wp-content/uploads/2021/04/TheFutureofSecurityinSpace.pdf)was co-chaired by James and retired Marine Corps Gen. Hoss Cartwright, former vice chair of the Joint Chiefs of Staff. In essence, it argues that the US needs to lead international efforts to craft a new rules-based regime to govern all space activities — from exploration to commercial ventures to military interactions. As the two argued in a recent [op-ed in Breaking D,](https://breakingdefense.com/2021/03/the-space-rush-new-us-strategy-must-bring-order-regulation/) “Great-power competition among the United States, China, and Russia has launched into outer space without rules governing the game.”

“The international law of space, centered on the 1967 Outer Space Treaty, is outdated and insufficient for a future of space in which economic activity is primary. The international community needs a new foundational space treaty, and the United States should precipitate its negotiation,” the study argues.

James elaborated that the idea would be to craft a more expansive treaty that covers emerging issues like debris mitigation and removal and [commercial extraction of resources](https://breakingdefense.com/tag/space-resource-extraction/) from the Moon and/or asteroids. That said, she stressed that the US should not abandon the OST — which has been signed by 193 nations — unless and until something new is there to replace it.

#### 2] Space law is typically treaty-based---Russian and Chinese proposals prove.

Stephanie **Nebehay 8**. Reporter, Reuters, “China, Russia to Offer Treaty to Ban Arms in Space,” Reuters, January 26, 2008, <https://www.reuters.com/article/us-arms-space/china-russia-to-offer-treaty-to-ban-arms-in-space-idUSL2578979020080125>, RJP, **DebateDrills**

GENEVA (Reuters) - China and Russia will submit a joint proposal next month for an international treaty to ban the deployment of weapons in outer space, a senior Russian arms negotiator said on Friday.

Valery Loshchinin, Russia’s ambassador to the United Nations-sponsored Conference on Disarmament, said the draft treaty would be presented to the 65-member forum on February 12.

Russian Foreign Minister Sergei Lavrov is due to address the Geneva forum, which constitutes the world’s main disarmament negotiating body, on that day. Loshchinin gave no details on the proposal which has been circulated to some senior diplomats.

Tensions between Russia and the United States have deepened in recent years over U.S. plans to revive its stalled “Star Wars” program from the 1980s with a new generation of missile defense shields.

Nuclear and other weapons of mass destruction are banned from space under a 1967 international treaty. But Washington’s plans have stirred concerns about non-nuclear arms in space.

#### 3] Treaties are the foundation of space law.

Sophie **Goguichvili et. al 21**. Program Associate, the Wilson Center, “The Global Legal Landscape of Space: Who Writes the Rules on the Final Frontier?” The Wilson Center, October 1, 2021, <https://www.wilsoncenter.org/article/global-legal-landscape-space-who-writes-rules-final-frontier>, RJP, **DebateDrills**

As previously mentioned, a series of treaties adopted by the U.N. General Assembly (UNGA) form the foundation of the global space governance system. The first and most significant of these treaties is the “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**or**OST** for short (1967). The Outer Space Treaty is considered the most comprehensive space treaty and provides the basic framework for international space law, namely: the exploration and use of outer space for peaceful purposes by all States for the benefit of mankind (Art. I); the outlaw of national appropriation or claims of sovereignty of outer space or celestial objects (Art. II); a ban on the placement of weapons of mass destruction in orbit or on celestial bodies (Art. IV); that astronauts should be regarded as the envoys of mankind (Art. V); and that States are required to supervise the activities of their national entities (Art. VI).

#### We solve better, since CIL is far superior to treaties for space AND causes follow-on.

Koplow, 9 – Professor of Law, Georgetown University Law Center.

David A. Koplow, “ASAT-isfaction: Customary International Law and the Regulation of Anti-Satellite Weapons,” Michigan Journal of International Law. Volume 30, Summer 2009. <http://scholarship.law.georgetown.edu/cgi/viewcontent.cgi?article=1452&context=facpub>

Finally, the Article concludes with some policy recommendations, suggesting mechanisms for the world community to press forward with autonomous efforts to promote stability and security in outer space, even in the face of recalcitrance from the leading space powers. I would certainly support the negotiation and implementation of a comprehensive new treaty to prevent an arms race in outer space, and a carefully drafted, widely accepted accord could accomplish much, well beyond what customary law alone could create. But the treaty process, too, has costs and disadvantages, and the world need not pursue just one of these alternatives in isolation.

If the absence of global consensus currently inhibits agreements that countries could already sign, perhaps the world community can nevertheless get some "satisfaction" via the operation of CIL, constructing a similar (although not completely equivalent) edifice of international regulation of ASATs based simply on what countries do.

#### CIL is critical to solve climate change threats. Relying only on treaty commitments fails.

**Clark 18** (Kayla Clark is a lawyer at Morgan Lewis. Education: University of Notre Dame Law School, 2018, J.D. California Polytechnic State University, 2015, B.A. “The Paris Agreement: Its Role in International Law and American Jurisprudence”. 5-10-2018.)

Moreover, the long-term nature of the Paris Agreement has the additional benefit of potentially creating **c**ustomary **i**nternational **l**aw **regarding** international **environmental norms** and development. Customary international law, **recognized to be legally binding** on participating nations,65 **can** be shaped when a custom, such as a commitment to **consistently reduce** greenhouse gas **emissions**, becomes regarded as law. Evidence of customary international law can include: general acceptance by the participants; adherence for a sufficient duration; consistent understanding of the terms and stable enforcement; and a finding of opinio juris––evidence that the terms are seen as law.66 If it can be shown throughout the Paris Agreement’s implementation that the terms, including participants’ commitments and implementation of goals, transitioned from mere statutory obligations to **c**ustomary **i**nternational **l**aw, then the Paris Agreement **stands a credible chance at recognition beyond the limits of** the **treaty**’s **text.** The architecture of the Agreement, with an aspirational goals of temperature reduction and evaluation periods every five years beginning in 2023, leaves ample time for the already binding international treaty to take on another stable and well-recognized form—customary international law.67 In addition to the aspirational goals of the Paris Agreement, the nuanced form of differentiation between nations is a feature that positions the pact for success. The differentiation is meant to be both inclusive and empowering to all participants.68 Beginning with the preamble of the Agreement, “one finds in a condensed manner carefully crafted expressions of the main tensions underpinning the entire text, between developed and developing countries, between more vulnerable countries and the rest, between countries that expect to suffer from measures that ‘respond’ to climate change and the rest . . .”69 The Agreement is facilitated by each state voluntarily committing to reduce its emissions reductions. All states are asked to commit to some amount of emissions reduction, but no states are assigned a mandatory reductions target, as they were in Kyoto. **Under** Paris, “[s]tates thus choose their level of ambition subject to two requirements, namely the regular updating––at least every five years . . . and **a**n obligation of non-regression . . . .”70 The Paris Agreement’s **voluntary contribution scheme** seeks to diffuse the sharply divisive Annex 1 and non-Annex 1 strategy of the Kyoto Protocol, as well as reduce the coercive effect of mandatorily assigned targets. The Annex strategy not only excluded many developing countries, chief of which included high carbon emitters like China and India, but also disheartened developed countries that felt that even a good faith attempt at meeting their target emissions would make only a marginal impact on overall climate change efforts.71 Additionally, the distinction between Annex 1 and non-Annex 1 under the Kyoto Protocol restricted the ability or motivation of developing countries to reduce their greenhouse gas emissions, as they were not required to participate.72 Now, developing **countries like China or India cannot shirk participation merely because of their developing status**.73 The Paris Agreement reflects the principle of common but differentiated responsibilities, but implements this international law doctrine more effectively. Though all participating nations must voluntarily assume and be accountable for their emission reduction goals, accommodations for developing countries are also included. To offset the cost on now-included developing countries, the Paris Agreement incorporates adaptation by developing countries as a goal, and urges developed countries to provide developing states with financial and logistical support. Including mechanisms to support adaptation is a new way to address climate change, responsive to the reality that, as Vinuales writes, “[i]t may be that climate change is no longer a matter of precaution but one of prevention – preventing acknowledged risk.”74 Creating infrastructure and advancing technology in developing nations, via funding from developed nations, recognizes the different capacities of different countries, reflects the common but differentiated responsibilities doctrine, and focuses on adaptation. However, the Agreement still expects developing nations to contribute throughout the adaptation process. The third promising feature of the Paris Agreement is the innovative approach to oversight and enforcement. Compared to the Kyoto Protocol’s mandatory and legally-binding emissions reductions, the Paris Agreement takes a less coercive, information-based approach.75 Through the construction of **i**nternational **law**, the Paris Agreement hopes to use both official and unofficial sources of pressure in its information-based enforcement. As Falkner writes, the Paris Agreement **relies on a “two-level game” logic that unites domestic climate politics with strategic international interaction**.76 Though the Paris Agreement does not impute a legal obligation for states to actually reduce their emissions per their commitments, it does require periodic reports to be disclosed to the participants of the Agreement. These reports will occur every five years, beginning in 2023, and will provide the international community with a transparent look into the efforts of other states to combat climate change.77 The information garnered from these periodic reports, and their subsequent review, may facilitate the “naming and shaming” of states that have not succeeded in meeting their goals.78 **The peer pressure function should work effectively** between nations, as they may easily identify **and** call out those that have failed to make a good faith effort to meet their voluntary contributions. The mandatory reporting serves to make the Agreement transparent and legitimate to the international community.79 The naming and shaming also **anticipates pressure on the contributing parties from civil society**, as governments of underperforming countries may experience naming and shaming by environmental groups, the media, and other interested parties.80 Domestically, after nations choose their emission reduction contribution, they will likely face some pressure from groups in their country regarding their performance under the contribution. Internationally, the Agreement is also designed to create peer pressure among states, which could be exerted on states that are failing to meet their commitments. The naming and shaming function between states delivers the brunt of the Agreement’s enforcement mechanism. Though the enforcement tools of the Paris Agreement do not create actual legal liability for states that neglect their commitments, the enforcement strategies should not be seen as toothless.81 By **operating with multiple kinds of enforcement**, and engaging with both domestic and international paradigms over a long period of time, the Paris Agreement consciously **increases the** likelihood of **immediate enforcement** and **of** transitioning from mere statute to **binding customary international law**.82

## OFF

#### The characterization of space as conflict-prone zone encourages the securitization of space – that hyperintensities conflict by driving arms races and increasing military investment

Peoples, 2011, aylor Francis, “The Securitization of Outer Space: Challenges for Arms Control”, Columba holds a BA in History, Politics and Social Studies from the University of Limerick, Ireland, and MScEcon & PhD qualifications in International Politics, URL: <https://www.tandfonline.com/doi/full/10.1080/13523260.2011.556846?scroll=top&needAccess=true>, KR

It is worth noting that the securitization of outer space – in terms of the identification of space with security – is, in itself, not a novel phenomenon or development. The extent to which ostensibly civil uses of outer space have been linked implicitly and explicitly to national security functions historically – or, as in the case of the space race between the United States and Soviet Union, have acted as a surrogate for direct military engagement – is well documented.50 Similarly, the characteriz- ation of the Sputnik launch in 1957 as placing the United States ‘in the greatest danger in its history’ suggests that the representation of space technologies as poten- tial existential threats is not entirely new either.51 What is of significance, though, is the intensification, expansion and entrenchment of securitizing moves as features of national space policies. The Space Security Index report Space Security 2009, in its overview of national policies, explicitly noted that, on the one hand, ‘National space policies consistently emphasize international cooperation and the peaceful uses of outer space’, but on the other hand that there is a ‘Growing focus within national policies on the security uses of outer space’.52 The report cited as evidence: Japan’s 2008 space law framework, which lifted its previous ban on national security and military space activities; China’s 2006 National Defense White Paper, which identifies national security as principle of China’s emerging space programme; France’s White Paper on Defense and National Security, which calls for an overhaul of its national space strategy; and the renewed priority on ‘space for security’ within EU policy.53

Within recent United States space policy securitization has been most noticeably prevalent and institutionalized, which is significant given the continued preeminence of the United States as a space power. As is noted in one recent assessment, around 50 countries, intergovernmental consortia, and nongovernmental organizations have at least one satellite in space, ‘mostly for reasons that have more to do with economic performance and Earth monitoring than with military applications.’54 However, in spite of the increasing diversity of interests in space and the increased range of func- tions space-based technologies now fulfil, the United States defence budget still remains the single largest source of investment in space technologies. In part this sus- tained investment arises out of American deployment and development of missile defence systems. Space and missile defences have been intimately connected issues historically and there are obvious technological overlaps between the two. Missile defence systems, including the ground-based system (Ground-Based Mid- course Defence or GMD) currently deployed by the United States at sites in Alaska and California, are dependent on satellite and space-based tracking technol- ogies to detect and track incoming missiles, and there is a possibility that the future connection between missile defence and space will be even stronger if current plans for missile defence are pursued to their fullest extent. Two such systems are already in the early stage of their development: the Space-Based Laser (SBL), which, like the Strategic Defence Initiative or Star Wars proposals of the 1980s, envisages using lasers to shoot down missiles in flight;55 and the ‘NFIRE’ or Near Field Infrared Experiment, a proposal to launch interceptor missiles not from the ground, as in the currently deployed GMD, but from space.56

Even if the developmental status of space-based missile defence interceptors remains uncertain (not least due to the budgetary constraints involved), the currently deployed ground-based system also poses a complex issue in terms of arms control. Though ostensibly intended for defensive purposes, ground and sea-based com- ponents of American missile defence could theoretically be employed as an ASAT – Anti-Satellite attack – device, and the use of sea-based Aegis ballistic missile defence capabilities and its Standard Missile 3 (SM3) to shoot down the malfunction- ing USA-193 spy satellite in February 2008 has done little to dispel concerns over the offensive applications of current missile defence capabilities.57 In addition, the United States also conducts research into more exotic forms of space weaponry, and funds a variety of technologies aimed at creating a force application capacity from space. The Department of Defense has reportedly explored several high- concept space weapons systems such as Hypervelocity Rod Bundles (tungsten rods dropped on targets from space that would theoretically use gravity as accelerant in a manner akin to a meteor, or Rods from God as they are also colloquially known), the Experimental Spacecraft System (XSS) (a manoeuvrable microsatellite weighing only 100 kilograms which could prospectively be used to attack other satellites), and the Common Aerospace Vehicle or CAV (this so-called Spaceplane would be unmanned and would orbit the earth, entering the atmosphere when needed to deploy precision guided munitions against selected targets). 58

Such programmes with possible space weapons applications (beyond ground-to- space ASAT capabilities) are still in their relative infancy, and the technical prospects for such technologies, as with the more exotic missile defence proposals outlined above, are far from certain.59 Yet much of the rhetoric emanating from the United States in recent years has made expansive claims to space dominance far beyond existing capabilities. In short, rather than seeking to control the means of violence in and from space, much of the military discourse on space has generally cast the United States as a trailblazer in this regard, with exotic systems cited as a necessity for future military dominance in and from space.60 Historically these claims have tended to emanate primarily from the Air Force and Air Force Space Command. In 1998, Space Command defined the control of space (‘space control’) as ‘The ability to assure access to space, freedom of operations within the space medium, and an ability to deny others use of space, if required’61, and space was also con- sidered as part of the remit for ‘full spectrum dominance’ in Joint Vision 2020.62 Space warriors within and beyond the United States military also make frequent reference to the ‘. . .importance of dominating space in peace and war’.63

Yet, ‘The decision to weaponize space does not lie within the military (seeking short-term military advantage in support of national security) but at the higher- level of national policy (seeking long-term national security, economic well-being, and worldwide legitimacy of US constitutional values).’64 Instances of the securitiza- tion of outer space within military circles are hardly surprising, given vested interests and the perceived utility of space support for American forces; what is more signifi- cant though is the extent to which national policy, though stopping short of explicit advocating of space weapons, has tended to similarly maintain the centrality of space for national security. 65 As Moore’s ‘biography’ of the idea of unilateral space dom- inance in the United States attests to, this school of thought has long held a prominent place in American strategic circles.66 Of significance, though, is the extent to which this type of thinking has migrated into official policy, portraying American access to, and dominance of, outer space as key to national survival in the process. The tenure of the George W. Bush administration in particular saw military and policy discourse move much closer in terms of goals and language used, entrenching securitization within United States space policy as a whole. In the terms used above, the views of space warriors made much greater inroads under the Bush administration, and this has had a significant bearing on how the United States has positioned itself in terms of arms control and how other states – particularly China and Russia – have subsequently defined their own positions.67

The evolution of official American discourse on outer space over the past decade attests to this subtle shift. In 2001, the Commission to Assess United States National Security Space Management and Organization (or Rumsfeld Space Commission as it is often referred to owing to Donald Rumsfeld’s position as chair) pointed out that a number of states hostile to the United States could attain ASAT capabilities, and, infamously, warned that if the United States did not secure space it would face a Space Pearl Harbor. Members of the Bush administration subsequently went on to effectively endorse the space control concept, asserting the primacy of space for security by openly linking its potential civil and military uses (and thus suggesting only a minimal distinction between the two). Then Deputy Secretary of Defense Paul Wolfowitz argued in a 2002 speech on missile defence that ‘as we look ahead we need to think about areas that would provide higher leverage. Nowhere is that more true than in space. Space offers attractive options not only for missile defense but for a broad range of interrelated civil and military missions. It truly is the ultimate highground.’68 The culmination of this line of thinking in policy terms came with the release of the National Space Policy (NSP) in August 2006, which stated that:

The United States considers space capabilities – including the ground and space segments and supporting links – vital to its national interests. Consistent with this policy, the United States will: preserve its rights, capabilities, and freedom of action in space; dissuade or deter others from either those rights or developing capabilities intended to so; take those actions necessary to protect its space capabilities; respond to interference; and deny, if necessary, adversaries the use of space capabilities hostile to US national interests.69

The framing of the arguments from those within the Bush administration thus clearly aligns with the dynamics of securitization as identified by Buzan et al. The idea of a Pearl Harbor from Space invokes the nightmare scenario of a surprise attack on American interests in or from space, and was accompanied in the Rumsfeld Commission’s report by the sense of urgency characteristic of securitizing moves: ‘the present extent of US dependence on space [and] the rapid pace at which this dependence is increasing and the vulnerabilities it creates, all demand that US national security space interests be recognized as a top national security priority’.70 The Pearl Harbor analogy implied a focus on a surprise attack itself, but the rest of the report stressed the radical implications of such an attack, suggesting a potential existential threat to American commerce, society and, ultimately, way of life. As the report noted, ‘Space enters homes, businesses, schools, hospitals and government offices through its applications for transportation, health, the environment, telecom- munications, education, agriculture and energy. Much like highways and airways, water lines and electric grids, services supplied from space are already an important part of the US and global infrastructures.’71

In turn, the NSP of 2006 repeated many of these same securitizing moves. It elev- ated national security functions of United States space policy, declaring these as vital to national interests, and national security as ‘critically dependent upon space capabilities... this dependence will grow.’ Similarly, the NSP described United States space systems as critical to ‘. . .a wide range of civil, commercial, and national security users’, identifying the wider security implications of space as well as its more direct military uses.72 Crucially, this securitization of space was then used to justify exceptional measures with regards to arms control and the previous era of multilateral space agreements. Among the ‘actions necessary’ to protect space capabilities the NSP declared that:

#### Security discourse constructs threats to justify massive exploitation and oppression. The alternative is anti-Security. An unflinching rejection of security discourse is the only emancipatory political option.

Neocleous and Rigakos 11 — Mark Neocleous, Professor of the Critique of Political Economy at Brunel University London, Editor of the journal *Radical Philosophy*, holds a Ph.D. in Philosophy from Middlesex University London, and George S. Rigakos, Chair of Law and Legal Studies at Carleton University, holds a Ph.D. in Sociology from York University, 2011 (“Anti-Security: A Declaration,” *Anti-Security*, Edited by Mark Neocleous and George S. Rigakos, Published by Red Quill Books, ISBN 9781926958149, p. 15-19), re-cut KR

The purpose of the project, put simply, is to show that security is an illusion that has forgotten it is an illusion. Less simply, that security is a dangerous illusion. Why ‘dangerous’? Because it has come to act as a blockage on politics: the more we succumb to the discourse of security, the less we can say about exploitation and alienation; the more we talk about security, the less we talk about the material foundations of emancipation; the more we come to share in the fetish of security, the more we become alienated from one another and the more we become complicit in the exercise of police powers.

Fleshing out how we got here is the first challenge; showing how damaging this has been is an even greater challenge; doing these things in a way that contributes to a radical, critical and emancipatory politics even more so. But it is a challenge that must be made, and must be made collectively. As a start, we therefore offer the following declarations about an Anti-Security politics. [end page 15]

We deny all false binaries that obfuscate and reify the security problematic and serve only to reinforce its power. We therefore reject:

\* Liberty versus Security: In the works of the founders of the liberal tradition - that is, the founders of bourgeois ideology - liberty is security and security is liberty. For the ruling class, security always has and always will triumph over liberty because ‘liberty’ has never been intended as a counter-weight to security. Liberty has always been security’s lawyer.

\* Public versus Private: No post-hoc juridical determination about accountability, legal standing, uniforming, or legitimate use of force can undo the historic inter-operability of public and private police, state and mercenary armies, corporate and government security, or transnational corporations and international relations. The public sphere does the work of the private sphere, civil society the work of the state. The question is therefore not ‘public versus private’ or ‘civil [end page 16] society versus the state’, but the unity of bourgeois violence and the means by which pacification is legitimized in the name of security.

\* Soft versus Hard: Such dichotomous constructions – soft versus hard policing for suppressing dissent; soft versus hard military intervention for stamping out local and indigenous resistance; soft versus hard power to impose global imperial hegemony – are but aspects of the unity of class violence, distracting us from universal pacification carried out in the name of capital.

\* Barbarism versus Civilization: The history of civilization after the Enlightenment is the consolidation of wage labour, the cultural and material imposition of imperial domination, and the violence of class war. In the form of the ‘standard of civilization’ the majesty of the Law was central to this project. To civilize is to project police power. ‘Civilization’ is code for enforcing capitalist relations; which is to say: bourgeois civilization is barbarism. [end page 17]

\* Domestic versus Foreign: The greatest tyranny of security is its insistence on the construction of the ‘other’. Security creates both internal domestic and external foreign threats, generating the fear and division that underpins raison d’état. The colonial pacification of subjects abroad is soon turned into domestic pacification of subjects at home. New international policing initiatives are but a laboratory for the militarization of domestic security. The ‘war on terror’ is a permanent multi-front assault that lumps jihadists with peaceniks, feminists with Islamists, and socialists with assassins. No pretence at a distinction is necessary because the capitalist state is insecure in all directions.

\* Pre- and post-9/11: Let’s be clear: the murder of 3,000 on September 11, 2001 was horrific, but it did not change anything. To believe so is to engage in a deliberate act of forgetting. The security apparatus that revved up in the days after the attack had been in the making for decades as the [end page 18] terrain of the class war shifted. The targets of the new ‘war’ - this time on terror - were not new. The cry of ‘insecurity’ was again answered with two familiar demands: you consume, and we will destroy. Go to Disneyland, and let the state continue the work it had been conducting for generations. If 9/11 accomplished anything, it was to make security all but unassailable.

\* Exception and Normality: This is not a state of exception. The capitalist state riding roughshod over human rights in the name of security is normal. The ruling class carrying out acts of violence in the name of accumulation is normal. The devising of new techniques to discipline and punish recalcitrant subjects is normal. Targeted assassinations, the bombing of civilians, imprisonment without trial… normal, normal, normal. And, lest we forget: liberals falling over themselves justify such things? Normal. [end page 19]

We understand instead that security today:

\* operates as the supreme concept of bourgeois society.

\* colonizes and de-radicalizes discourse: hunger to food security; imperialism to energy security; globalization to supply chain security; welfare to social security; personal safety to private security. Security makes bourgeois all that is inherently communal. It alienates us from solutions that are naturally social and forces us to speak the language of state rationality, corporate interest, and individual egoism. Instead of sharing, we hoard. Instead of helping, we build dependencies. Instead of feeding others, we let them starve… all in the name of security.

\* is a special commodity, playing a pivotal role in the exploitation, alienation and immiseration of workers. It produces its own fetish, embedding itself into all other commodities, producing even more risk and fear while intensifying and distracting us from the material conditions of exploitation that have [end page 20] made us inherently insecure. It makes concrete our ephemeral insecurities under capitalist relations. It attempts to satiate through consumption what can only be achieved through revolution.

The call of this Declaration is that we:

\* name security for what it really is;

\* stand against the securitization of political discourse;

\* challenge the authoritarian and reactionary nature of security;

\* point to the ways in which security politics shifts attention away from material conditions and questions, in the process transforming emancipatory politics into an arm of police;

\* fight for an alternative political language that takes us beyond the narrow horizon of bourgeois security and its police powers…

[This card is the full declaration; it ends with an ellipses.]

## CASE

#### Private entities circumvent – no dispute resolution means fiat CAN’T entirely replace how international space law works AND doesn’t mean private entities can’t escape with little liability

Isnardi, 20, “Problems with Enforcing International Space Law on Private Actors”, Columbia Law, Christina: Juris Doctor Candidate, Columbia Law School., URL: <https://static1.squarespace.com/static/5daf8b1ab45413657badbc03/t/5ed6c19ec930145149b92f2f/1591132576033/%28i%29+Isnardi+%2858-2%29.pdf>, KR

Lack of Enforcement Mechanisms in International Space Law

Even if private actors did fall under the purview of interna- tional space law, international space law has inadequate enforcement mechanisms to actually implement these laws. Much like how the treaties generally were intended to outline a framework for the rights and obligations of States Parties specifically, the enforcement mecha- nisms of these treaties also intend that states be the only entities al- lowed to submit or defend claims. The five international space treaties for the most part lack any sort of dispute resolution organ at all. The two treaties that do have these organs are riddled with inadequacies that allow private actors to avoid being subject to these dispute resolu- tion frameworks.

Part B.1 discusses the dispute resolution framework within the international space law treaties themselves. Part B.2 analyzes the reg- ulatory enforcement mechanisms established outside the treaties, with a focus on UNCOPUOS and other key intergovernmental organiza- tions.

(i) Isnardi (58-2) (Do Not Delete) 4/2/2020 12:58 PM

2020] ENFORCING INT’L SPACE LAW 513 1. Enforcement Infrastructure within the Space Treaties

Only two of the five treaties explicitly list enforcement author- ities provided for by the treaty: the Liability Convention and the Reg- istration Convention. The remaining three treaties (the Outer Space Treaty, the Rescue Convention, and the Moon Agreement) provide that states retain legal authority over persons and objects launched into space from their territory and provide jurisdiction to the respective states.135 It is the responsibility of the states to provide courts or tribu- nals to adjudicate any matters that arise from violations of these trea- ties. The Liability Convention and the Registration Convention’s en- forcement capabilities, or their lack thereof, are described in turn below.

a. The Liability Convention’s Claims Commission

The Liability Convention’s Claims Commission provides for the only outer-space specific means of alternative dispute resolu- tion.136 Articles IX through XX establish the dispute settlement sys- tem. The system mandates a diplomatic stage before providing for an arbitration stage before the Claims Commission, which is the body that makes decisions regarding the merits of the claim and the compensa- tion awarded.137 Since the Convention entered into force in 1972, this conflict resolution procedure has only been invoked once (in the Soviet Cosmos 954 crash, explained supra). This case was resolved in the mandatory diplomatic phase, so the Claims Commission has yet to pre- side over any conflicts.138

However, even if the Claims Commission does have the oppor- tunity to hear claims, the conflict resolution system is inhibited by ma- jor shortcomings. First, the Convention does not provide the Claims

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Commission with the same authority of a judicial court.139 One effect of this quasi-judicial structure is that the Commission’s decisions are not binding unless both parties haveagreed other wise.140 Withoutsuch an agreement, the decision is only advisory.141 This allows the launch- ing state that is hostile to the victim state a simple way to avoid reper- cussions for injuries caused by its space object.142 Second, the dispute resolution system provided in the Convention only allows for the par- ticipation of states.143 Consequently,thedisputeresolutionframework has been “highly criticized and rendered useless”144 as it provides no direct enforcement authority over private actors.

b. The Registration Convention’s International Registry

The Registration Convention does provide some international involvement in enforcement, but it is not nearly as robust as in the Li- ability Convention. The Registration Convention requires that “[t]he Secretary-General of the United Nations . . . maintain[s] a Register in which the information furnished [by the launching States] shall be rec- orded.”145 However, this register is compiled based on records pro- vided by states, so state involvement in enforcement is crucial to this international registry. The ability to enforce the provisions of the Reg- istration Convention on a private actor is therefore only as strong as the enforcement efforts of the state that holds jurisdiction over that private actor. Even if these state enforcement efforts were strong, only sixty-four states have ratified the Registration Convention (as of De- cember 2017), making it the second least ratified treaty of the space treaties.146 Because this Convention has not solidified its regulations

(i) Isnardi (58-2) (Do Not Delete)

into customary international law, its lack of widespread ratification un- doubtedly reduces the ability to enforce its provisions even if it had the requisite enforcement mechanisms.

Looking at all of the international space treaties collectively, there is a notable absence of regulatory and licensing provisions that states must follow to enforce law domestically. As the Outer Space Treaty requires that states retain responsibility over all activity launched from their state, it is peculiar that the treaty does not explic- itly designate how states should authorize and supervise these activi- ties.147 Allowing states to take complete control over the manner in which they authorize and supervise the launch of space activities has allowed a wide range of enforcement levels between states. For in- stance, some states issue a single license for all space activities while other states issue a single license for only specific space activities.148 National laws regarding the scope of jurisdiction have also varied across states. Some states assert jurisdiction over where an object is launched, while other states assert jurisdiction over the nationality of the private actor that launched the space object.149 This lack of uni- formity in national space law may incentivize private actors to choose a state to launch their space objects from based on the enforcement policies that are most beneficial to it.

### Innovation

#### Don’t vote on top ev – even If the top is about innovation the part that says armed conflict is violating the non-appropriation principple but a) it has no warrants for why that can’t be controlled like it is on earth and b) empirically disproven by things like luxembourg, space x grants, and asteroid mining increases

Turn – all their ev is about commerical space but the aff gets rid of that – that’s unieulqy better for innovaiton then partnerships since a) they have financial incentives to invest that they control since its market based – but govenrment contracts leave them with no option in the 1AC so less demand would exist b) private companies generate consumer demand through things like markets and stock exchange but partnerships assume a state fully fulls-in which is either limited by budget or causes overspending c) no warrants or quals in their ev doesn’t give any reason why they might have larger change and even if they do it doesn’t assume a large scale like all of appropriation beign replaced

### Hacking

#### Nasa satellites are being hacked already – we read blue

Akoto 20 “Hackers could shut down satellites -- or turn them into weapons” February 13, 2020 William Akoto [a postdoctoral research fellow at the University of Denver.] <https://www.upi.com/Top_News/Voices/2020/02/13/Hackers-could-shut-down-satellites-or-turn-them-into-weapons/4091581597502/> SM

Makers of these satellites, particularly small CubeSats, use off-the-shelf technology to keep costs low. The wide availability of these components means hackers can analyze them for vulnerabilities. In addition, many of the components draw on open-source technology. The danger here is that hackers could insert back doors and other vulnerabilities into satellites' software.

The highly technical nature of these satellites also means multiple manufacturers are involved in building the various components. The process of getting these satellites into space is also complicated, involving multiple companies. Even once they are in space, the organizations that own the satellites often outsource their day-to-day management to other companies. With each additional vendor, the vulnerabilities increase as hackers have multiple opportunities to infiltrate the system.

Hacking some of these CubeSats may be as simple as waiting for one of them to pass overhead and then sending malicious commands using specialized ground antennas. Hacking more sophisticated satellites might not be that hard either.

Satellites are typically controlled from ground stations. These stations run computers with software vulnerabilities that can be exploited by hackers. If hackers were to infiltrate these computers, they could send malicious commands to the satellites.

History hacks

This scenario played out in 1998 when hackers took control of the U.S.-German ROSAT X-Ray satellite. They did it by hacking into computers at the Goddard Space Flight Center in Maryland. The hackers then instructed the satellite to aim its solar panels directly at the sun. This effectively fried its batteries and rendered the satellite useless. The defunct satellite eventually crashed back to Earth in 2011. Hackers could also hold satellites for ransom, as happened in 1999 when hackers took control of the U.K.'s SkyNet satellites.

Over the years, the threat of cyberattacks on satellites has gotten more dire. In 2008, hackers, possibly from China, reportedly took full control of two NASA satellites, one for about two minutes and the other for about nine minutes. In 2018, another group of Chinese state-backed hackers reportedly launched a sophisticated hacking campaign aimed at satellite operators and defense contractors. Iranian hacking groups have also attempted similar attacks.

Although the U.S. Department of Defense and National Security Agency have made some efforts to address space cybersecurity, the pace has been slow. There are no cybersecurity standards for satellites and no governing body to regulate and ensure their cybersecurity. Even if common standards could be developed, there are no mechanisms in place to enforce them. This means responsibility for satellite cybersecurity falls to the individual companies that build and operate them.

As they compete to be the dominant satellite operator, SpaceX and rival companies are under increasing pressure to cut costs. There is also pressure to speed up development and production. This makes it tempting for the companies to cut corners in areas like cybersecurity that are secondary to actually getting these satellites in space.

### Monopolies

#### No accountability by government states – empirically proven by places like China and Russia where rights constraints weren’t enough – if private entreptruenuers like Musk could get away with it then so can they

#### No link – this ev is strategically highlighted to not mention the space debris link which it’s about and how people have to intervene to stop that – that isn’t what their impact is about so no internal link

### Space War

#### No space wars ---

#### 1] 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.

#### 2] 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>

1. 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
2. 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.

### Debris

#### Squo tracking, shielding, and removal plans solve

Dr. Brian Koberlein 16, Professor of Physics at the Rochester Institute of Technology and PhD in Astrophysics from the University of Connecticut, “Cascade Effect”, 5-4, https://archive.briankoberlein.com/2016/05/04/cascade-effect/index.html

In the movie Gravity the driving force of the plot is a catastrophic cascade of space debris. An exploding satellite sends high speed debris into the path of other satellites, and the resulting collisions create more space debris until everything from a space shuttle to the International Space Station faces an eminent threat of destruction. Not unexpectedly, the movie portrayal of such a situation is not particularly accurate, but the risk of a debris cascade is very real.

It’s known as the Kessler syndrome, after Donald Kessler, who first imagined the scenario in the 1970s. The problem comes down to the fact that small objects in Earth orbit can stay in orbit for a very long time. If an astronaut drops a bolt, it can stay in orbit for decades or centuries. Because the relative speed of two objects in orbit can be quite large, it doesn’t take a big object to pose a real threat to your spacecraft. On the highway a small pebble can chip your car windshield. In space it can be done by a chip of paint traveling at thousands of kilometers per hour. In the history of the space shuttle missions, there were more than 1,600 debris strikes. Because of such strikes, more than 90 space shuttle windows had to be replaced over the lifetime of shuttle missions.

While that might sound alarming, it’s actually quite manageable. Upgrades and maintenance were quite common on the shuttle missions, and we tend to err on the side of caution when it comes to replacing parts. Modern spacecraft also have ways to mitigate the risk of small impacts, such as Whipple shields made of thin layers of material spaced apart so that objects disintegrate when hitting the shield rather than the spacecraft itself. We also have a tracking system that currently tracks more than 300,000 objects bigger than 1 cm, so we can make sure that most spacecraft avoid these objects.

But the risk of big collisions isn’t negligible. In 2009 the Iridium 33 and Kosmos-2251 satellites collided at high speed, destroying both spacecraft and creating more dangerous debris. It wouldn’t take many collisions like this for the debris numbers to rise dramatically, and more debris means a greater risk of collisions. In Gravity the cascade happens very quickly, triggered by a single event. The reality is not quite so grave. Instead of happening overnight, Kessler syndrome would occur gradually, raising collision risks to the point where certain orbits become logistically impractical. It could occur so gradually that we might not notice it early on, and there are some that argue it’s already underway.

The good news is that we’re aware of the threat. And, as the old saying goes, knowing is half the battle. Already we take steps to limit the amount of debris created. New spacecraft include end of life plans to remove them from orbit, either by sending them into Earths atmosphere to burn up, or sending them to a “graveyard orbit” that poses little risk to other spacecraft. There are also plans on the drawing board to clear orbits of debris, particularly in low-Earth orbit where the risk is greatest. The cascade effect is a real risk, but it’s also one we can likely manage with a bit of ingenuity.

#### **Military space satellites have already been broken up by space debris – their escalation scenario is absurd**

Wall 21’ Home News Spaceflight Space collision: Chinese satellite got whacked by hunk of Russian rocket in March By Mike Wall published August 17, 2021 We may see more and more of these orbital smashups in the coming years. //RD Debatedrills

Yunhai 1-02's wounds are not self-inflicted. In March, the U.S. Space Force's 18th Space Control Squadron (18SPCS) reported the breakup of Yunhai 1-02, a Chinese military satellite that launched in September 2019. It was unclear at the time whether the spacecraft had suffered some sort of failure — an explosion in its propulsion system, perhaps — or if it had collided with something in orbit. We now know that the latter explanation is correct, thanks to some sleuthing by astrophysicist and satellite tracker Jonathan McDowell, who's based at the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts. Sponsored Links Cupertino: Startup Is Changing the Way People Retire SmartAsset Related: The worst space debris events of all time Click here for more Space.com videos... CLOSE On Saturday (Aug. 14), McDowell spotted an update in the Space-Track.org catalog, which the 18SPCS makes available to registered users. The update included "a note for object 48078, 1996-051Q: 'Collided with satellite.' This is a new kind of comment entry — haven't seen such a comment for any other satellites before," McDowell tweeted on Saturday. He dove into the tracking data to learn more. McDowell found that Object 48078 is a small piece of space junk — likely a piece of debris between 4 inches and 20 inches wide (10 to 50 centimeters) — from the Zenit-2 rocket that launched Russia's Tselina-2 spy satellite in September 1996. Eight pieces of debris originating from that rocket have been tracked over the years, he said, but Object 48078 has just a single set of orbital data, which was collected in March of this year. "I conclude that they probably only spotted it in the data after it collided with something, and that's why there's only one set of orbital data. So the collision probably happened shortly after the epoch of the orbit. What did it hit?" McDowell wrote in another Saturday tweet. Yunhai 1-02, which broke up on March 18, was "the obvious candidate," he added — and the data showed that it was indeed the victim. Yunhai 1-02 and Object 48078 passed within 0.6 miles (1 kilometer) of each other — within the margin of error of the tracking system — at 3:41 a.m. EDT (0741 GMT) on March 18, "exactly when 18SPCS reports Yunhai broke up," McDowell wrote in another tweet. Thirty-seven debris objects spawned by the smashup have been detected to date, and there are likely others that remain untracked, he added. Despite the damage, Yunhai 1-02 apparently survived the violent encounter, which occurred at an altitude of 485 miles (780 kilometers). Amateur radio trackers have continued to detect signals from the satellite, McDowell said, though it's unclear if Yunhai 1-02 can still do the job it was built to perform (whatever that may be). Space Junk Clean Up: 7 Wild Ways to Destroy Orbital Debris Click here for more Space.com videos... McDowell described the incident as the first major confirmed orbital collision since February 2009, when the defunct Russian military spacecraft Kosmos-2251 slammed into Iridium 33, an operational communications satellite. That smashup generated a whopping 1,800 pieces of trackable debris by the following October. However, we may be entering an era of increasingly frequent space collisions — especially smashups like the Yunhai incident, in which a relatively small piece of debris wounds but doesn't kill a satellite. Humanity keeps launching more and more spacecraft, after all, at an ever-increasing pace. "Collisions are proportional to the square of the number of things in orbit," McDowell told Space.com. "That is to say, if you have 10 times as many satellites, you're going to get 100 times as many collisions. So, as the traffic density goes up, collisions are going to go from being a minor constituent of the space junk problem to being the major constituent. That's just math." We may reach that point in just a few years, he added. The nightmare scenario that satellite operators and exploration advocates want to avoid is the Kessler syndrome — a cascading series of collisions that could clutter Earth orbit with so much debris that our use of, and travel through, the final frontier is significantly hampered. RELATED STORIES — Who's going to fix the space junk problem? — Space junk removal is not going smoothly — The world needs space junk standards, G7 nations agree Our current space junk problem is not that severe, but the Yunhai event could be a warning sign of sorts. It's possible, McDowell said, that Object 48078 was knocked off the Zenit-2 rocket by a collision, so the March smashup may be part of a cascade. "That's all very worrying and is an additional reason why you want to remove these big objects from orbit,"