## Off 1

#### Russia and China are developing weapons to attack US space supremacy

Donovan 21 It’s imperative America preserve its space power advantage By Matthew Donovan Matthew Donovan is the director of the Mitchell Institute for Aerospace Studies’ Spacepower Advantage Research Center. He previously served as the undersecretary of defense for personnel and readiness, the acting secretary of the U.S. Air Force, and the undersecretary of the Air Force. He also served on the Senate Armed Services Committee as majority policy director and a professional staff member. He served more than 30 years as an active-duty airmen before retiring in 2008. <https://www.defensenews.com/opinion/commentary/2021/04/27/its-imperative-america-preserve-its-space-power-advantage/> //avery

A few weeks ago, Director of National Intelligence Avril Haines released the 2021 edition of the Office of the Director of National Intelligence’s “Annual Threat Assessment” — a document that is considered to be one of the most authoritative assessments of the global security environment. According to the report, Russian and Chinese space capabilities stand as top dangers facing the United States and its allies. Given this reality, it is critical to set U.S. Space Command and the Space Force up for success to defend our space architecture. This will be a team effort. For decades, Russia has stood as a top space competitor — with the legendary “space race” of the 1950s and 1960s yielding one of the most technologically innovative periods in world history. Tensions still exist today as Russia continues to expand its arsenal of counter-space capabilities by testing and fielding new ground-launched, anti-satellite missiles as well as launching on-orbit satellite kill vehicles. More concerning are its increasingly provocative actions in space over the last decade, with the highly unusual maneuvering of Russian satellites in close proximity to both U.S. and other nations’ space assets — activity highly escalatory in nature. Nor is Russia the only threat. China’s enormous push in recent years to match and overtake the U.S. in space should trouble all Americans. Space permeates nearly every facet of our daily lives, and we cannot afford to unilaterally cede this domain to an adversary with opposed interests and values. Ever since China demonstrated over 14 years ago its ability to destroy a satellite in orbit from the ground, the Chinese Communist Party and the People’s Liberation Army have kicked efforts into overdrive to overtake the U.S. in space. Their intent is far from benign or peaceful. China has aggressively developed a broad roster of counter-space capabilities including ground-based, anti-satellite missiles as well as on-orbit, electronic-warfare and directed-energy weapons. Make no mistake: There is no alternate peaceful application for these systems. They are entirely military offensive capabilities. The PLA also centralized China’s strategic space, cyber, electronic, and psychological warfare missions and capabilities into a single theater-level organization, demonstrating the seriousness with which China views space and its integral relationship with war fighting. Both Russia and China outwardly express their desire for expanding the use of space for peaceful purposes such as exploration and commerce. But at the same time, both nations also published their own military strategy and doctrine emphasizing their intent to employ counter-space weapons that threaten U.S. and allied space assets. Both nations were “first movers” in this regard, and the United States is in a position of responding to ensure continued access to the space domain for peaceful and military purposes. One of the most meaningful set of responses from the U.S. government was the reestablishment of U.S. Space Command and the creation of the U.S. Space Force, the first new American military service since 1947. While the space domain was historically viewed by America as a benign and peaceful environment, Russian and Chinese actions have proved otherwise. Standing up U.S. Space Command and the U.S. Space Force were not gimmicks or political stunts; they were necessary and crucial steps to ensure America preserves her space power advantage.

#### The US military wants Starlink to help it maintain communication supremacy

Buenconsejo 20 SpaceX's 'Cleverly Engineered' Starlink Satellites Could Improve US Military Communications Against Potential Threats: Air Force Acquisition Chief is Impressed Urian B., Tech Times 24 September 2020, 08:09 pm Urian Buenconsejo <https://www.techtimes.com/articles/252827/20200924/spacexs-cleverly-engineered-starlink-improve-military-communications-against-potential-threats.htm> Urian Buenconsejo Senior Copywriter/Journalist at Tech Times //avery

SpaceX is currently deploying a constellation-like quantity of Starlink satellites all into low Earth orbit in order to deliver a global broadband internet. There are already about 708 satellites circulating in orbit, out of the whole 4,409 satellites that will be the initial Starlink network. The company is actually focused on being able to connect rural areas all around the world where the existing internet connection is both unreliable and also inaccessible. SpaceX's deal with the United States Air Force SpaceX has a deal signed by the United States Air Force with a value of about $28 million that was signed in 2018 in order to assess the whole Starlink network's military platforms performance. The Air Force is already actively experimenting with just how the space-based internet could result in an enhancement of Multi-Domain Operations otherwise known as MDO. The said operations require being able to move a huge amount of data between five different domains of warfare: sea, ground, sky, outer space, and of course, cyberspace. The military is in need for a reliable communication system at every single time in order to both protect and defend the whole country from any potential threats. The recent assessment of Starlink will be able to offer military insight on whether the US military should purchase a long-term Starlink service. The accounts of US Air Force Chief for Acquisition Dr. Will Roper, the US Air Force Chief for Acquisition who actually serves as the principal adviser in the field of technology development and research, has met with certain reporters in order to discuss a new live-fire military exercise that has taken place some time earlier this month according to [Investors](https://www.investors.com/news/spacex-starlink-impressed-air-force-in-big-live-fire-exercise/)news reports. During the known conference, Roper made SpaceX Starlink go through the live-fire exercise which is part of the military's very own Advanced Battle Management System or ABMS in order to test it. According to Roper, Starlink was both "impressive" and also "positive" during those tests even complementing that they have "cleverly engineered satellites" as well as "cleverly deployed" them. Roper even stated that there's still a lot of things to learn from how these satellites were designed. The conducted test and its meaning Roper even shared that the United States Air Force actually connected Starlink with a bunch of air as well as terrestrial assets. The Starlink terminals were being hooked to a Boeing KC-135 Stratotanker aircraft's cockpit in order to assess the whole network's main performance while the particular airplanes fly. The addition of a stable satellite-based internet system will in turn enable the US military to be able to communicate at all given times across the globe, even in certain areas where the actual internet mainly does not exist. Roper noted that the advantage of a [satellite-based internet system](https://www.tesmanian.com/blogs/tesmanian-blog/starlink-airforce) is that it can help supply the Navy, the airplanes, and other military vehicles on the go.

#### China and Russia developing weapons to counter US satellites, which are key to US heg

Erwin 21 U.S. generals planning for a space war they see as all but inevitable by Sandra Erwin — September 17, 2021https://spacenews.com/u-s-generals-planning-for-a-space-war-they-see-as-all-but-inevitable/ Sandra Erwin writes about military space programs, policy, technology and the industry that supports this sector. She has covered the military, the Pentagon, Congress and the defense industry for nearly two decades as editor of NDIA’s National Defense Magazine and Pentagon correspondent for Real Clear Defense. //avery

Additionally, China and Russia are deploying non-kinetic space weapons, according to the Center for Strategic and International Studies. These include lasers that can be used to temporarily dazzle or permanently blind sensors on satellites, and jamming devices that interfere with the communications to or from satellites by generating noise in the same radio frequencies. In the face of these threats, the United States aims to make space networks more resilient by using a diversity of satellites in different orbits, complicating an adversary’s ability to launch an effective attack. Kendall said resiliency “isn’t just about the individual satellite, it’s about the architecture.” DoD’s Space Development Agency is looking to demonstrate what it hopes will be a more resilient space architecture. The agency is working to deploy a proliferated constellation of small satellites in low Earth orbit as an alternative to the traditional large, expensive spacecraft that DoD has traditionally flown in higher orbits but much smaller numbers. “We’re getting away from ‘juicy targets’,” said SDA Director Derek Tournear. The idea of a proliferated architecture is to have enough satellites in orbit that “we can handle some attrition.”

#### Space warfare leads to nuclear war

Johnson-Freese 17 Joan Johnson-Freese is a Professor and former Chair of National Security Affairs at the US Naval War College, Newport, Rhode Island, and author of several books. Pg 18-19 SPACE WARFARE IN THE 21ST CENTURY https://www.routledge.com/Space-Warfare-in-the-21st-Century-Arming-the-Heavens/Johnson-Freese/p/book/9781138693883 //avery

Space warfare runs two untenable risks: the creation of destructive debris and escalation to terrestrial, even nuclear, warfare. Kinetic warfare in space creates debris traveling at a speed of more than 17,000 miles per hour, which then in itself becomes a destructive weapon if it hits another object—even potentially triggering the so-called Kessler Syndrome,86 exaggerated for dramatic effect in the movie Gravity. Ironically, both China and the United States learned the negative lessons of debris creation the hard way. In 1985, the United States tested a miniature homing vehicle (MHV) ASAT launched from an F-15 aircraft. The MHV intercepted and destroyed a defunct US satellite at an altitude of approximately 250 miles. It took almost 17 years for the debris resulting from that test to be fully eliminated by conflagration re-entering the Earth’s atmosphere or being consumed by frictional forces, though no fragment had any adverse consequences to another satellite—in particular, no collisions. China irresponsibly tested a direct-ascent ASAT in 2007, destroying one if its defunct satellites. That test was at an altitude almost twice that of the 1985 US test. The debris created by the impact added 25 percent to the debris total in low Earth orbit87 and will dissipate through the low Earth orbit, heavily populated with satellites, for decades, perhaps centuries, to come. Perhaps most ironically, because of superior US debris-tracking capabilities, the United States—even though not required to do so—has on more than one occasion warned China that it needed to maneuver one of its satellites to avoid a collision with debris China itself had likely created.88 In 2013, a piece of Chinese space junk from the 2007 ASAT test collided with a Russian laser ranging nanosatellite called BLITS, creating still more debris.89 The broader point is that all nations have a compelling common interest in avoiding the massive increase in space debris that would be created by a substantial ASAT conflict. Gen. Hyten has said that not creating debris is “the one limiting factor” to space war. “Whatever you do,” he warns, “don’t create debris.”90 While that might appear an obvious “limiting factor,” preparing to fight its way through a debris cloud had been a Pentagon consideration in the past. Now, however, sustaining the space environment has been incorporated into Pentagon space goals. Beyond debris creation, MacDonald points out that as China becomes more militarily capable in space and there is more symmetry between the countries, other risks are created – specifically, escalation. That is, the United States could threaten to attack not just Chinese space assets, but also ground-based assets, including ASAT command-and-control centers and other military capabilities. But such actions, which would involve attacking Chinese soil and likely causing substantial direct casualties, would politically weigh much heavier than the U.S. loss of space hardware, and Protecting space assets 19 thus might climb the escalatory ladder to a more damaging war that both sides would probably want to avoid.91 MacDonald isn’t alone in concerns about escalation. Secure World Foundation analyst Victoria Samson has also voiced apprehension regarding US rhetoric that does not distinguish between actions against unclassified and classified US satellites, stating that “things can escalate pretty quickly should we come into a time of hostility.”92 Theresa Hitchens explained the most frightening, but not implausible, risk of space war escalation in a 2012 Time magazine interview. Say you have a crisis between two nuclear-armed, space-faring countries, Nation A and Nation B, which have a long-standing border dispute. Nation A, with its satellite capability, sees that Nation B is mobilizing troops and opening up military depots in a region where things are very tense already, on the tipping point. Nation A thinks: “That’s it, they’re going to attack.” So it might decide to pre-emptively strike the communications satellite used by Nation B to slow down its ability to move toward the border and give itself time to fortify. Say this happens and Nation B has no use of satellites for 12 hours, the time it takes it to get another satellite into position. What does Nation B do? It’s blind, it’s deaf, it’s thinking all this time that it’s about to be overwhelmed by an invasion or even nuked. This is possibly a real crisis escalation situation; something similar has been played out in U.S. Air Force war games, a scenario-planning exercise practiced by the U.S. military. The first game involving anti-satellite weapons stopped in five minutes because it went nuclear – bam. Nation B nuked Nation A. This is not a far-out, “The sky’s falling in!” concern, it is something that has been played out over and over again in the gaming of these things, and I have real fears about it.93 While escalation to a nuclear exchange may seem unthinkable, in war games conducted by the military, nuclear weapons are treated as just another warfighting weapon. Morgan also voiced concerns about escalation generally and nuclear escalation specifically in the 2010 RAND report, stating: The adversary would also likely be deterred from damaging U.S. satellite early-warning system (SEWS) assets to avoid risking inadvertent escalation to the nuclear threshold, but that firebreak would almost certainly collapse with the conclusion that such escalation is inevitable and that it is in the adversary’s interest to launch a preemptive nuclear strike.

#### We hijack their nuclear war impact

#### Primacy solves arms races and great power war – unipolarity is sustainable, and prevents power vacuums and global escalation

Brands 18 [(Hal, Henry Kissinger Distinguished Professor at Johns Hopkins University's School of Advanced International Studies and a senior fellow at the Center for Strategic and Budgetary Assessments) "American Grand Strategy in the Age of Trump," Page 129-133]

Since World War II, the United States has had a military second to none. Since the Cold War, America has committed to having overwhelming military primacy. The idea, as George W. Bush declared in 2002, that America must possess “strengths beyond challenge” has featured in every major U.S. strategy document for a quarter century; it has also been reflected in concrete terms.6

From the early 1990s, for example, the United States consistently accounted for around 35 to 45 percent of world defense spending and maintained peerless global power-projection capabilities.7 Perhaps more important, U.S. primacy was also unrivaled in key overseas strategic regions—Europe, East Asia, the Middle East. From thrashing Saddam Hussein’s million-man Iraqi military during Operation Desert Storm, to deploying—with impunity—two carrier strike groups off Taiwan during the China-Taiwan crisis of 1995– 96, Washington has been able to project military power superior to anything a regional rival could employ even on its own geopolitical doorstep.

This military dominance has constituted the hard-power backbone of an ambitious global strategy. After the Cold War, U.S. policymakers committed to averting a return to the unstable multipolarity of earlier eras, and to perpetuating the more favorable unipolar order. They committed to building on the successes of the postwar era by further advancing liberal political values and an open international economy, and to suppressing international scourges such as rogue states, nuclear proliferation, and catastrophic terrorism. And because they recognized that military force remained the ultima ratio regum, they understood the centrality of military preponderance.

Washington would need the military power necessary to underwrite worldwide alliance commitments. It would have to preserve substantial overmatch versus any potential great-power rival. It must be able to answer the sharpest challenges to the international system, such as Saddam’s invasion of Kuwait in 1990 or jihadist extremism after 9/11. Finally, because prevailing global norms generally reflect hard-power realities, America would need the superiority to assure that its own values remained ascendant. It was impolitic to say that U.S. strategy and the international order required “strengths beyond challenge,” but it was not at all inaccurate.

American primacy, moreover, was eminently affordable. At the height of the Cold War, the United States spent over 12 percent of GDP on defense. Since the mid-1990s, the number has usually been between 3 and 4 percent.8 In a historically favorable international environment, Washington could enjoy primacy—and its geopolitical fruits—on the cheap.

Yet U.S. strategy also heeded, at least until recently, the fact that there was a limit to how cheaply that primacy could be had. The American military did shrink significantly during the 1990s, but U.S. officials understood that if Washington cut back too far, its primacy would erode to a point where it ceased to deliver its geopolitical benefits. Alliances would lose credibility; the stability of key regions would be eroded; rivals would be emboldened; international crises would go unaddressed. American primacy was thus like a reasonably priced insurance policy. It required nontrivial expenditures, but protected against far costlier outcomes.9 Washington paid its insurance premiums for two decades after the Cold War. But more recently American primacy and strategic solvency have been imperiled.

THE DARKENING HORIZON For most of the post–Cold War era, the international system was— by historical standards—remarkably benign. Dangers existed, and as the terrorist attacks of September 11, 2001, demonstrated, they could manifest with horrific effect. But for two decades after the Soviet collapse, the world was characterized by remarkably low levels of great-power competition, high levels of security in key theaters such as Europe and East Asia, and the comparative weakness of those “rogue” actors—Iran, Iraq, North Korea, al-Qaeda—who most aggressively challenged American power. During the 1990s, some observers even spoke of a “strategic pause,” the idea being that the end of the Cold War had afforded the United States a respite from normal levels of geopolitical danger and competition. Now, however, the strategic horizon is darkening, due to four factors.

First, great-power military competition is back. The world’s two leading authoritarian powers—China and Russia—are seeking regional hegemony, contesting global norms such as nonaggression and freedom of navigation, and developing the military punch to underwrite these ambitions. Notwithstanding severe economic and demographic problems, Russia has conducted a major military modernization emphasizing nuclear weapons, high-end conventional capabilities, and rapid-deployment and special operations forces— and utilized many of these capabilities in conflicts in Ukraine and Syria.10 China, meanwhile, has carried out a buildup of historic proportions, with constant-dollar defense outlays rising from US$26 billion in 1995 to US$226 billion in 2016.11 Ominously, these expenditures have funded development of power-projection and antiaccess/area denial (A2/AD) tools necessary to threaten China’s neighbors and complicate U.S. intervention on their behalf. Washington has grown accustomed to having a generational military lead; Russian and Chinese modernization efforts are now creating a far more competitive environment.

## Off 2

#### Counterplan Text: The United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOUS) should create and operate a space leasing system

#### The CP is goldilocks – maintains the integrity of OST while allowing national and private use of outer space

Pershing 19 Interpreting the Outer Space Treaty¶s NonAppropriation Principle: Customary International Law from 1967 to Today Abigail '. Pershing† Abigail D. Pershing, Interpreting the Outer Space Treaty's Non-Appropriation Principle: Customary International Law from 1967 to Today, 44 Yale J. Int'l L. (2019). Available at: <https://digitalcommons.law.yale.edu/yjil/vol44/iss1/5> Abigail D. Pershing, Yale Law School //avery

One promising proposal that does not appear to have received much attention in the literature is the concept of leasing space to nations, private individuals, or companies rather than allocating it as permanently-owned property. It appears that the only authors who have even tangentially considered the possibility of leasing property rights in space beyond rights to mineral extraction are Marcel Williams and G.S. Sachdeva. Williams’ writing is limited to a thought experiment in which he imagines renting out up to one percent of the moon’s surface. This property would be directly leased to national governments, which in turn would be vested with the power to sublease sections of this territory to private companies or individuals.134 This proposal is not elaborated any further and is left as a broad-strokes outline. The second mention of leasing or renting space comes from G.S. Sachdeva, who argues that a U.N. Space Superintendence Authority could grant leases to those able to pay.135 Yet this theory is limited to a discussion of renting property rights in particular orbits to allow for hovering geostationary space hotels and does not delve into questions of renting land on celestial bodies. The concept of leasing outer space deserves greater consideration by space law scholars. This Section sketches a brief outline of how such a system might operate via an internationally-run space property rental system modeled on UNCLOS. Although UNCLOS itself is deeply problematic in its potentially devastating environmental consequences and negative impacts on indigenous peoples as it regulates deep-sea mining,136 the UNCLOS model may nonetheless be the best option for preserving non-space-faring nations’ rights with regard to outer space, given its success in providing developing nations with a voice in the regulation of the high seas and the seabed beyond national jurisdiction.137 It is worth noting that although very few scholars appear to have considered the possibility of renting space, several have examined the similarities between UNCLOS and space law.138 The approach advanced here differs from the conventional approach to this comparison in that it suggests that the international community move beyond merely authorizing nations or individuals to extract a certain quantity of minerals and instead consider the possibility of leasing out actual tracts of space land. Opened for signature on December 10, 1982, UNCLOS establishes the international rules that govern the use of the world’s oceans and their resources. An examination of UNCLOS is especially apt because it deals with resources— the high seas—that, like space, are not subject to national appropriation. In language strikingly similar to Article II of the Outer Space Treaty, Article 137 of UNCLOS reads: No State shall claim or exercise sovereignty or sovereign rights over any part of the Area [resources of the seabed and ocean floor beyond the limits of national jurisdiction] or its resources, nor shall any State or natural or juridical person appropriate any part thereof.139 Although there are clear similarities between the two treaties, there are substantial differences as well, many of which would be useful in informing an update to the Outer Space Treaty. In addition to extending the prohibition on sovereignty to individuals as well as to nations, UNCLOS goes far beyond the Outer Space Treaty in detailing the limits of the non-appropriation principle. All of Part XI of UNCLOS, totaling fifty-eight Articles, gives a detailed description of how States can negotiate within the bounds of the non-appropriation principle to exploit ocean resources. Of particular relevance for purposes of crafting a parallel space law proposal is UNCLOS Part XI, Section 4, which lays out the rules governing the International Seabed Authority—the main mechanism through which States and private companies can legally exploit ocean resources, including mining of the deep seabed.140 Using UNCLOS as a model, a similar system may prove promising for the evolution of space law. However, the new space system should allow for rental of space land instead of merely allowing for the extraction of space resources. As with UNCLOS, any such space leasing system should be run through the United Nations. Situating such a system in this forum would help the international community stay true to the intentions of the Outer Space Treaty, which provides, in the words of one author, a “philosophical roadmap for the future development of the outer space legal regime.”141 Although a new committee within the United Nations could be formed for this purpose, the existing Committee on the Peaceful Uses of Outer Space (UNCOPUOS) would be an ideal environment for the creation and operation of such a system. UNCOPUOS is composed of eighty-seven geographically and economically diverse member States (including all the major space-faring States). Additionally, intergovernmental organizations and non-governmental organizations have observer status.142 Given its central mission to maintain space as a peaceful arena of international cooperation, as well as its representative composition,143 it would be an ideal body to bring a space leasing system to fruition. UNCOPUOS, in turn, should operationalize the leasing system by establishing a new International Outer Space Authority. This Outer Space Authority should parallel the International Seabed Authority described above.144 There should be similar provisions for the International Outer Space Authority relating to the makeup and functioning of the Authority (with each country getting one vote and decisions made by a two-thirds majority);145 the power of the Outer Space Authority to exercise control over space generally;146 the ability to decide how much rent to charge nations or individual corporations;147 and how to use these funds,148 among other provisions. For this proposed Outer Space Authority to be useful as well as operational, it is critical that it have jurisdiction over property rights in space beyond mining rights. Having rights to property in addition to rights to extracted minerals would add an extra layer of legal security for companies considering venturing into space for mining purposes. And, although businesses currently seem most interested in the possibilities of mining space resources, in the long term, questions of space tourism and the potential development of space colonies may arise. Having a flexible system in place that can adequately handle these concerns is therefore desirable. Instead of just focusing on mining, an Outer Space Authority with broader jurisdiction will have longer staying power and will require less reworking in the near future. Part of the appeal of this rental model is that it works so seamlessly with the current Outer Space Treaty. Turning again to the language of the Treaty and beginning with the non-appropriation principle, Article II lays out that “[o]uter space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.”149 Because no State or individual would ever own land in space under a leasing system, this proposed leasing regime would not be in contravention to Article II. And yet, despite this, a leasing regime would establish enough legal security that exploitation of space resources would not be impeded—the main rationale for those who argue that the Treaty (or at least Article II) should be rescinded. Moreover, the principle established in Article I of the Outer Space Treaty, that “[t]he exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind,” is also upheld under this leasing regime.150 Leasing not only allows nations and private companies to exploit space resources and reap the benefits of their labor, but also directly benefits developing countries not yet able to tap into the resources of space by redistributing some of the space-going nations’ profits via a leasing fee and a tax on extracted resources.

#### Independently, commercial space innovation stops extinction

Charles Beames 18, Chairman of the SmallSat Alliance, Executive Chairman of York Space Systems, former Principal Director of Space and Intelligence in the Office of the Undersecretary of Defense for Acquisition, Technology, and Logistics (OUSD(AT&L)), Col. (ret.) in the USAF where he served 23 years in space & intelligence leadership positions around the world, 8/8/18, “Op-ed | SmallSat Alliance is on a path toward a new space horizon,” <https://spacenews.com/op-ed-smallsat-alliance-is-on-a-path-toward-a-new-space-horizon/>

We find ourselves still at the dawn of a new space century, mindful of the victories and setbacks of our past, eager to pass the torch to the next generation of space visionaries, scientists, engineers, and enthusiasts. We look to the future not just to see how much bigger, faster, or higher we can reach, but also how the United States, and specifically the U.S. space community, can again inspire the nations of the world to align with us, as it did in the 20th century.

The SmallSat Alliance is an alliance of companies developing, producing, and operating in all segments of the ‘next generation’ space economy; championing renewed U.S. leadership in the burgeoning commercial space economy, and advocating for the transformation of government-led space capabilities. We are experienced space professionals who have chosen to join with others leveraging our decades of hard-won experience, to develop smarter ways to explore space in the 21st century.

A wonderful outgrowth of the legacy space program is the commercial, entrepreneurial, and job-creating commercial space business that it bequeathed. These next-generation enterprises range from multi-million-dollar startups providing rideshare opportunities or components for small satellites to multi-billion-dollar space data-analytic platforms reinventing urban car service and agricultural production. The early returns of this economic revolution are already on our doorstep: space data capabilities are exponentially growing elements of the 21st century world economy.

Beginning with the dreams and funding by successful tech entrepreneurs, enormous venture investments are already delivering wondrous benefits to the world.

Commercial Space – Profit and Non-Profit

There are really two major categories in the commercial sector, the profit driven and the non-profit. The classic for-profit companies include not only those designing, building, launching, and operating satellites but also the tech sector that is turning that raw space data into gold through machine-learning analytics. Since for-profit companies are no longer dependent upon the revenues generated by the Cold War space race culture of a bygone era, this new generation of space companies is able to more efficiently capitalize on Moore’s Law, the nonstop exponential growth in chip density, and the associated networking technology co-evolving with it. This new generation is building profitable businesses helping to clean up our oceans of garbage and debris with satellite surveillance, reconnoitering to assist in enforcing laws that protect our oceans from illegal, unregulated, unlicensed fishing, something that is rapidly depleting the world’s most valuable and essential lifeforms. It’s leading in the innovative use of low-cost satellite constellations to produce ubiquitous remote-sensing data, enabling small business owners to be more profitable and less wasteful. For example, precise timing signals from space are already optimizing transportation of people, goods, and services, with even further gains anticipated with the introduction of artificial intelligence to assist drivers, perhaps even someday replacing them entirely.

The non-profit sector is the other side of commercial space, concerned more for the general welfare of society, but every bit as integral to this new space enterprise. Much like every century before it in human history, ours is not without its unique challenges, some of which have been a consequence of the last, and all of which the space data domain can be leveraged to help solve. Examples are endless, but one challenge that this new space community is uniquely well-adapted for is to further inform worldwide resource allocation for the 21st century and beyond. These two primary resources are sustainable water and the materials needed for adequate housing for an ever-increasing human population. As cities and urbanization continue to expand, governmental planning challenges such as transportation design optimization for goods and services are only the beginning. Additionally, through using inexpensive remote sensing technologies, some members are designing space data analytics to mitigate human suffering from plagues, contain outbreaks, and combating illegal poaching. Some are connecting with other non-profits to curtail human trafficking for the sex trade or forced labor for migrant debt repayment. Still others are helping non-governmental organizations in their work to expose the use of children as soldiers. Addressing these challenges has little to do with resuscitating dreams conceived by long deceased science-fiction writers and much more to do with turning “swords back into plowshares” to solve real threats to humanity.

Other non-profit initiatives include pursuing an even more foundational understanding of who we are and how to be the best custodians of our environment. Much as exploring and monitoring the world’s oceans has advanced civilization through a better understanding of human life and the planet, so too does exploring and monitoring from space. Low Earth orbit (LEO) provides a unique vantage point to look back on the planet and understand what is happening, anticipate what might happen and prepare for the future. In addition to better understanding Earth, responsible and rapid exploitation of the low Earth orbit domain will enhance the understanding of the solar system and the rest of the universe. Small satellites already offer low-cost platforms to study and explore what lies beyond the Earth. Other members are pioneering the use of zero-carbon, hydrogen-based reusable propulsion systems to ensure we don’t worsen our atmosphere using kerosene-fueled rockets for the coming tsunami of satellite launches. Finally, a mission ensuring the general welfare and planet survival for the next thousand years is finally confronting the existential threat that asteroids and comets pose to humanity. These extra-terrestrial, deep-space threats are passing dangerously close to our planet, and today we have no solar map of them and no defense.

## Off 3

#### Interpretation and violation, private entities exclude publicly held companies

Upcounsel ND (<https://www.upcounsel.com/private-entity>, ND, UpCounsel accepts only the top 5 percent of lawyers to its site. Lawyers on UpCounsel come from law schools such as Harvard Law and Yale Law and average 14 years of legal experience, including work with or on behalf of companies such as Google, Menlo Ventures, and Airbnb. //avery

A private entity can be a partnership, corporation, individual, nonprofit organization, company, or any other organized group that is not government-affiliated. Indian tribes and foreign public entities are not considered private entities. Unlike publicly traded companies, private companies do not have public stock offerings on Nasdaq, American Stock Exchange, or the New York Stock Exchange. Instead, they offer shares privately to interested investors, who may trade among themselves. Private Company vs. Private Entity The Companies Act of 2013 governs the registration of private companies. This type of company is formed by following the steps laid out by this law. Private entities are determined not by this law but by ownership and holding. For example, sole proprietorships and partnerships are designed as private entities. A private entity is not necessarily a private company, but all private companies are private entities.

#### Non-Exhaustive list of topical companies

. Bigelow Aerospace, Inc. Blue Origin LLC. Copenhagen Suborbitals. Deep Space Industries. Frontier Astronautics LLC. Intelsat. Masten Space. Moon Express (MoonEx). Planetary Resources. Rocketplane, Ltd. Scaled Composites, LLC. Sierra Nevada Corp. (SNC) Space Systems. Space Information Labs (SIL). The Spaceship Company. SpaceX. Ventions, LLC. Virgin Galactic LLC. XCOR Aerospace.

* <http://www.space-settlement-institute.org/private-space-companies.html>

#### List of companies that are public – things the aff can’t affect

. ALCOA Inc. Alliant Techsystems Astrotech Corp B/E Aerospace The Boeing Company Curtiss-Wright Corporation . Ducommun, Inc. Essex Corporation GenCorp, Inc. General Dynamics General Electric Harris Corp Honeywell L-3 Communications LMI Aerospace Inc. Lockheed Martin Moog Inc. Northrop Grumman ORBCOMM Inc. Orbit International Orbital Sciences Precision Castparts Raytheon Rockwell Collins SpaceDev. SpaceHab Teledyne Technologies, Inc TransDigm Group Inc. United Launch Alliance United Technologies

* <http://www.space-settlement-institute.org/space-companies.html>

#### Standards -

#### 1] Limits – Only our interp accurately sets the upper limit to the topic. Counter interps that allow publicly traded companies blows the lid off the topic and means an aff can now indict ANY COMPANY in existence no matter its legal status as private entity or not. Destroys legal distinctions and forces a divestment from the topic literature base which explodes prep burdens for the negative.

#### 2] Precision – Private entities is a legal term of art. Only affs that accurately cohere to already agreed upon legal definitions are predictable. Precise readings of the topic allow us to get to the core controversy of the topic and discuss the nuances within it. Only 2 months to discuss the topic means we should discuss the right topic.

#### 3] Ground – Only our interp correctly divides ground in both directions. Open ended topics make both sides reach for ends of the universe in what they run to be unpredictable because anything somewhat related is allowed.

#### 4] Strat-Skew and Clash – Open ended interpretations that allow public companies to exist under the affirmatives action leads to infinite 1ACs. Force the negative to allows fall back onto generics that can never have the potential to engage with affirmative on a content level. Aff gets everything while the neg is left with breadcrumbs.

#### Voters

#### 1] Education – 2 month time limit on the topic means every round is valuable. Specific education about the direct question the resolution asks is the only take away we get from this event. Precision in what they aff can read forces concise topic research in a limited area that allows us to deeply explore every area of the topic.

#### 2] Fairness – Fairness controls engagement with the 1AC and what we are actually able to do in the round. If the game stops becoming fair we have no reason to palay in the first place. If every round was 80/20 skewed towards the aff then no one would ever be able to play the game. Fairness is key to clash and is an internal link into any of their offense

#### Topicality is drop the debater – We indict your ability to read and garner offense from the affirmative in the first place. Drop the argument on T also decks the entire aff so they are equivalent. The more the aff drops offense to meet the shell the less they solve and you can vote on presumption.

#### Competing interps over reasonability – Reasonability is always arbitrary and can never set a Brightline on what is reasonable and what isn’t. T is a question of models not specific affirmatives or rounds.

#### No RVIs on T –

#### 1] T is a gateway issue for the negative towards the affirmative. Affirmative is always proactive towards topicality while the neg is forced to always be reactive towards the affirmative. The ground is skewed because we always have to hyper tailor T args to the affirmative while the aff can infinitely prep out the 6 T shells on the Topic.

#### 2] Illogical – You don’t get to win for following the rules. That’s like me getting to win because I didn’t read 8 condo positions

#### 3] Deterrence – Winning you are topical isn’t justification for an aff ballot. Deters debaters from calling out untopical affs against techier opponents because they will always lose on the flow even if they are true. Shouldn’t actively punish for trying to meet the rules of the game.

#### T outweighs 1AR theory –

#### 1] T is a forced reaction to untopical affs, even if we did something wrong, you drew first blood. Any abuse from the negative is predicated by abuse from the affirmative.

#### 2] All theory collapses to reasonability. Evaluate competing interps about the rules of the topic before arbitrary discussion of the rules of the game.

## Off 4

#### Interpretation – The affirmative can only garner offense from the appropriation of outer space by private entities being unjust. To clarify, no garnering offense off of methods to solve private entities appropriating outer space such as treaties or actor action.

#### Violation – They have extra offense from prohibition by states and the circumvention and stuff that it prevents

#### Standards:

#### 1] Limits – Only our interp accurately sets the upper limit to the topic. The CI will let the aff garner offense from any possible way to reduce property rights/private appropriation, which can range from treaties like OST, PTD, Common Heritage or state/actor action, which there are hundreds of. 0% chance the neg can prep for all possible offense relating to space possible and forces random LARP generics, killing fairness.

#### 2] Strat-Skew – Open ended interpretations that allow public companies to appropriate literally anything in space leads to infinite 1ACs. Forces the negative to allows fall back onto generics that can never have the potential to engage with affirmative on a content level. Aff gets everything while the neg is left with breadcrumbs. Kills fairness since the neg is always on the backfoot and no edu as we read backfile generics and try to outtech.

## Off 5

#### T – Appropriation

#### Interp – Use of LEO by mega-constellations does not qualify as appropriation

Johnson 20 The Legal Status of MegaLEO Constellations and Concerns About Appropriation of Large Swaths of Earth Orbit Christopher D. Johnson <https://swfound.org/media/206951/johnson2020_referenceworkentry_thelegalstatusofmegaleoconstel.pdf> //avery

An opposite conclusion can also be reasonably arrived at when approached along the following lines. The counter argument would assert that the deployment and operation of these global constellations, such as SpaceX’s Starlink, OneWeb, Kepler, etc., are aligned with and in full conformity with the laws applicable to outer space. These constellations are merely the exercise and enjoyment of the freedom of exploration and use of outer space and do not constitute any impermissible appropriation of the orbits that they transit. 18 C. D. Johnson Freedom of Access and Use Permits Constellations Rather than being a violation of other’s rights to access and explore outer space, the deployment of these constellations is more correctly viewed as the exercise and enjoyment of the right to access and use outer space. Article I of the Outer Space Treaty establishes a right to access and use space without discrimination. Not allowing an actor to deploy spacecraft, regardless of their number or destination, would be infringing with the exercise of their freedom. It would be discriminatory. Additionally, actors do not need permission from any other State, or group of States, to access and explore outer space. Aligned with the Intentions of the Outer Space Treaty This use of outer space by constellations in LEO, while not explicitly mentioned by the drafters of the Outer Space Treaty or other space law, actually is the fulfillment of their visions for the use of outer space. The preamble to the Outer Space Treaty (which contains the subject matter and purpose of the treaty and can be used for interpreting the operative articles of the treaty) speaks of the aspirations of humanity in exploring and using outer space. It is easy to see constellations that will provide Internet access to the world as fulfilling the visions of the drafters: The States Parties to this Treaty, Inspired by the great prospects opening up before mankind as a result of man’s entry into outer space, Recognizing the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes, Believing that the exploration and use of outer space should be carried on for the benefit of all peoples irrespective of the degree of their economic or scientific development, Desiring to contribute to broad international cooperation in the scientific as well as the legal aspects of the exploration and use of outer space for peaceful purposes, Believing that such cooperation will contribute to the development of mutual understanding and to the strengthening of friendly relations between States and peoples, As such, subsequent article of the Outer Space Treaty should be read in a permissive light, as permitting constellations, rather than a restrictive light which only sees potential negative aspects of constellations. Due Regard and Harmful Contamination Will be Addressed Operators in LEO are well aware of the challenges to space sustainability that their constellations will pose and will be taking efforts to mitigate the creation of debris. OneWeb is keenly focused on space sustainability and has even argued that the current norm, whereby spacecraft are not in space for longer than 25 years and are deorbited from lower orbits at the end of their lifetime (aka post mission disposal), is not sufficient The Legal Status of MegaLEO Constellations and Concerns About Appropriation... 19 to keep outer space clean and that shorter lifespan limits should be imposed on operators, especially operators in LEO, and operators of small satellites. Additionally, these systems will be able to cooperate with emerging space safety and space traffic management plans and can operate in ways that do not restrict or impinge on other users of the space domain. Because due regard is therefore displayed for the space domain, and to the interests of others, these constellations do not prejudice or infringe upon the freedoms of use and exploration of the space domain and are therefore not occupation, or possession, much less appropriation. 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. Moreover, Space Situational Awareness (SSA) and Space Traffic Management (STM) will allow other uses to use these orbits, and nothing about the use of any one user necessarily precludes others. Lastly, there is no intention by operators of constellations to exclusively occupy, must less possess or appropriate, these orbits. Would not the appropriation of outer space be an intentional, volutional act? No such intention can be found in the operators of global constellations. Conclusion The development and deployment of constellations is certainly a unique and impressive technological development which will bring unprecedented advancements to both space activity and concerns here on Earth. It offers more benefits than risks. Rather than being multiple users which would threaten orbital safety, a single user at any altitude makes SSA and STM easier, and the actor merely has to govern their own spacecraft, rather than worry about others spacecraft. No such data sharing issues will exist with global constellations. Consequently, and in conclusion, it is in the wider public interests to permit, and not prevent, actors from planning, developing, deploying, and operating constellations in LEO. This technological advancement, of plentiful, off-the-shelf spacecraft, is the wave of the future for space exploration and utilization. It should not only be 20 C. D. Johnson permitted, it should be positively authorized, fostered, and nurtured. It is a future we want, where all can benefit from space technologies and capabilities.