

THE NEW SPACE RACE: EXPLORATION AND EXPLOITATION IN THE COMMONS OF THE TWENTY-FIRST CENTURY

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I. Introduction

On October 4, 1957, the USSR launched the Earth's first artificial satellite, Sputnik, into low Earth orbit.¹ Unbeknownst to the Kremlin and amid a cold war with the United States, the USSR had inaugurated the "space age."² The United States military, scientific community, and government "were caught off guard by the Soviet technological achievement" and, being weary of the USSR's stated intentions for their launch, thrust forth its own, similar effort.³ The efforts of these communities to duplicate and surpass the USSR's achievements added a "space race" to an already delicate international relationship.⁴ In a stunning feat for humankind, on July 20, 1969, the United States led crew of the Apollo 11 mission successfully landed the first human beings on the moon.⁵

However, the risk that completely unregulated space posed for humankind was not lost on the international community in the interim between the two feats. In an attempt to proactively curtail the risk that

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¹ *Oct 4, 1957 CE: USSR Launches Sputnik*, NAT'L GEOGRAPHIC (May 20, 2022), available at <https://education.nationalgeographic.org/resource/ussr-launches-sputnik> (last visited Sept. 27, 2022).

² *Sputnik Launched*, Hist. (Nov. 24, 2009), available at <https://www.history.com/this-day-in-history/sputnik-launched> (last visited Sept. 27, 2022).

³ *Id.*

⁴ *Id.*

⁵ *Apollo 11 Launches into History*, NASA (July 16, 2020), available at <https://www.nasa.gov/image-feature/apollo-11-launches-into-history> (last visited Sept. 27, 2022).

this space race posed to global stability, the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space [hereinafter the Outer Space Treaty] was entered into force on October 10, 1967.⁶ However, while pivotal to space relations, the Outer Space Treaty was flawed from its inception. To be discussed in subsequent sections, this Agreement is inadequate for many reasons, but its fundamental flaw is found in the timing of its creation. At its signing, Sputnik had launched but the Apollo moon mission had not yet occurred. By virtue of its timing alone, this treaty simply could not have fathomed the idea of humankind amongst the stars, let alone create a treaty to adequately govern it. As such, the United States' swift rate of space centered innovation rendered newly governing space law outdated by 1969.⁷

Since 1969, other international agreements have been instituted in a manner that, while still inefficient to deal with the issues of tomorrow, exhibits a willingness to work together that is generally absent from twenty-first century global politics.⁸ Notwithstanding this surprising stream of cooperation, the United States and the world are behind the curve of an age of extraterrestrial expansion in which stability will need to be constantly assessed. This stability will need to be established by international law that is not simply a new application of old norms, but rather a whole new system cultivated to meet the issues of today, tomorrow, and beyond. In other words, the law must evolve just as much as our technology and our ambitions. In the days since Apollo, not only has the world changed, but so has the nature of space exploration in general. An area the United States once coveted as the pinnacle of American ingenuity has ceased to be the pinnacle of its government's concern.⁹ Yet, humankind's inclination to look upward has not dwindled. Like most other potential industries, where the United States government begins to lessen its grasp, the private sector will be quick to fill the void. US billionaires such as Jeff Bezos, Elon Musk and others are battling to

⁶ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, *opened for signature* Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205, 61 I.L.M. 386.

⁷ *Id.*

⁸ See *Infra* Sec. V

⁹ See Glenn H. Reynolds, *America is behind in the new space race China is determined to win*, NEW YORK POST (Dec. 2, 2021), available at <https://nypost.com/2021/12/02/america-is-behind-in-space-race-china-is-determined-to-win/> (last visited Mar. 1, 2022).

be the twenty-first century's space pioneers.¹⁰ Recently, Jeff Bezos was aboard a privately launched space flight which brought him and his passengers to low Earth orbit and then safely back to Earth again.¹¹ The efforts of Bezos and his competitors are just the beginning of the private industry's launch into the final frontier. But the billionaires will not be alone. Nations other than the United States and Russia are beginning to set their sights on the stars.¹² Most notably, China has expanded its space program.¹³ With spaceborne capabilities returning to the forefront of scientific development at the hands of billionaires and adversarial nations, the United States and the world must ask themselves: Are terrestrial ailments and conflicts going to find their way into space? And if so, are we currently equipped to deal with them? The answer to those questions respectively is, almost certainly and definitely not.

With the recent surge in spaceborne development, the world must once again venture to find common ground in a new global commons. As the world looks towards the heavens, we must impart on future spacegoers that which has become increasingly difficult to enforce on Earth. At the present moment, humans have a chance to proactively regulate the space commons in a manner beneficial to all of humankind. Without regulation, we risk allowing space exploration to devolve into space exploitation.

II. Current State of Space Laws and Regulations and Their Pitfalls

The Outer Space Treaty as is has many flaws, some more serious than others. For example, this framework treaty fails to even define where space begins.¹⁴ This omission alone leaves room for dispute. However, for this analysis, the Outer Space Treaty fails to adequately

¹⁰ Maricia Dunn, *Jeff Bezos blasts into space on his own rocket: Best Day ever!*, ASSOCIATED PRESS (July 21, 2021), available at <https://apnews.com/article/jeff-bezos-space-e0afeaa813ff0bdf23c37fe16fd34265> (last visited Mar. 1, 2022).

¹¹ *Id.*

¹² See W.J. Hennigan & Ralph Vartabedian, *Foreign nations push into space as U.S. pulls back*, LOS ANGELES TIMES (July 22, 2011), available at <https://www.latimes.com/business/la-xpm-2011-jul-22-la-fi-0722-space-race-20110722-story.html> (last visited Mar 1, 2022).

¹³ See Luke Harding, *The space race is back on – but who will win?*, THE GUARDIAN (Jul. 16, 2021), available at <https://www.theguardian.com/science/2021/jul/16/the-space-race-is-back-on-but-who-will-win> (last visited Mar. 1, 2022).

¹⁴ *Supra* note 6

regulate the following three categories of space activity in the twenty-first century, each of which pose a significant threat: Environmental concerns, militarization, and space commerce.

Just as humankind has been reckless with the terrestrial environment that surrounds us; there are signs of our disregard for the environment above us.¹⁵ Already there is a concerning amount of “space junk” orbiting Earth at this moment, which poses a risk to space travelers and Earth dwellers alike.¹⁶ Advancements in space technology will ultimately result in more space travel with the transitive effect being that the space junk issue will only get worse. Considering the huge environmental threat space junk creates, there is clearly a need for international regulation moving forward.

Another area of necessary international regulation is that of space militarization. While the Outer Space Treaty does contemplate some militarization of outer space, it fails to adequately police new technological advancements. Article IV for example prohibits the presence of nuclear weapons or weapons of mass destruction in space.¹⁷ However, the Outer Space Treaty fails to address the emergence of other potentially damaging weapons such as Anti-Satellite Technology [hereinafter ASAT], which can have an effect not only on space-borne activities, but also on activities on Earth.¹⁸ ASATs have the potential to disrupt everything from cell phone reception to military infrastructure by virtue of the devastating effect they can have on a nation’s satellite capabilities.¹⁹ While some may argue that, logically, not all space exploration will be peaceful, and as such this defensive measure is necessary, ASAT’s potential for abuse puts Article I (which states that space exploitation “shall be carried out for the benefit and in the interests of all countries”) and Article IV (which states that the only weapons banned in space are “nuclear weapons” or “any other kinds of weapons

¹⁵ *Id.*

¹⁶ *Space Debris*, NASA (July 1, 2019), available at https://www.nasa.gov/centers/hq/library/find/bibliographies/space_debris (last visited Sept. 21, 2022).

¹⁷ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies, *supra* note 6, at Art. IV.

¹⁸ L. Col. EHJ Roberds, *Failure of Outer Space Treaty*, 40 CANADIAN FORCES COLLEGE 1, 1-12 (2016).

¹⁹ *Id.* at 2-3.

of mass destruction”) at odds with each other.²⁰ How a dispute of this kind would be handled is unclear by the language of the treaty. As will be discussed further, this grey area puts a powerful tool in the hands of U.S. adversaries, who are actively pursuing spaceborne development with a vigor not matched by the United States.

Finally, the Outer Space Treaty fails to address the economic reality of future space travel and commercialization. As will be discussed in subsequent sections, issues of a similar nature to those seen on Earth are likely to find their way into space.²¹ National Security concerns, among others, are points of contention that are just as likely to happen above Earth as they are on it. With private industry heading into space, world leaders must consider how they wish to regulate space commerce as the Outer Space Treaty does not begin to regulate these activities in a manner commensurate to the plans private industry likely has in store.

The seminal Outer Space Treaty does not stand alone; a handful of other treaties, agreements, and committees, while still not comprehensive enough, show that international groups have already begun considering space regulation. Some examples of these agreements include the Moon Agreement, the Rescue Agreement, the Liability Convention, and the Registration Convention, but there are many others.²² Together, these subsequent agreements represent the basis for further, bolder, and necessary regulation. Together, these subsequent agreements represent the basis for further, bolder, and necessary regulation.

III. A Potential Solution: Learning from a Long History of Regulating Global Commons

Physical space, considering our surface level knowledge of it relative to the unknowns of the final frontier, is complicated to the point of confusion for most human beings. As such, regulation in this

²⁰ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies, *supra* note 6, at Art. I & IV.

²¹ *Infra* Sec. IV - VII

²² See Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, Dec. 18, 1979, 1363 U.N.T.S. 22, 18 I.L.M. 1434 (1979); Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, Dec. 19, 1967, 9 U.S.T. 7570, 672 U.N.T.S. 119, 7 I.L.M. 149 (1968); Convention on International Liability for Damage Caused by Space Objects, 24 U.S.T. 2389, 861 U.N.T.S. 187, 10 I.L.M. 965 (1972); Convention on Registration of Objects Launched into Outer Space, Nov. 12, 1974, 28 U.S.T. 695, 1023 U.N.T.S. 15, 14 I.L.M. 43 (1975).

area will become increasingly intricate as human beings continue to make advancements in space travel technology. In human history, only one other commons has come close to comparing to space by means of its vast wonders: The sea. The United Nations Convention on the Law of the Sea [hereinafter UNCLOS] is one of the most comprehensive pieces of regulation ever achieved on a global scale.²³ UNCLOS was designed not only to address a complex set of issues with specific rules and regulations, but also to ensure that in doing so, the values of humankind were reflected therein. This is precisely what is needed in space.

Space, like the sea, will require an intricate document that enumerates values, laws, and regulations, not simply a loose framework of ideas. To that end, it would be appropriate that the world comes together to construct the United Nations Convention on the Law of Space. As nations and businesses alike look upward, it would be wise of the world to parallel the scale of the UNCLOS while taking advantage of an opportunity to improve on the framework of what is a widely respected document. By the time UNCLOS was ratified, sea travel had existed for centuries.²⁴ So while it did enact specific provisions²⁵ for those issues that required it, UNCLOS primarily codified the norms of traveling the seas. Our efforts in space law do not need to be hampered by after-the-fact regulations on issues that truly matter in twenty-first century space travel. At the moment, space law is underregulated, but this has not yet become an issue because our capabilities to travel within it are relatively limited. Humankind has a chance to define what we think space law should look like in real-time by virtue of the scientific advancements that will make them increasingly necessary.

In the sections to follow, we will examine the risk that scientific advances outpacing regulation pose to stability and the reasons that a UN Convention on the Law of Space will remedy these issues to the greatest extent possible.²⁶ This will be achieved by drawing parallels

²³ See United Nations Convention on the Law of the Sea, Dec. 10, 1982, 833 UNTS 397, 21 ILM 1261 (1982).

²⁴ See *History of Ships*, Britannica, available at <https://www.britannica.com/technology/ship/History-of-ships> (Sept. 21, 2022).

²⁵ *Supra* note 23.

²⁶ *Infra* Sec. VII.

to terrestrial conflicts that are likely to find their way into space when the technology allows for it.

IV. National Security in Space: Familiar Threats in the Final Frontier

The implications that space will have on national security are potentially sweeping. However, some of these issues are predictable as we will likely see similar conflicts of law imputed from Earth to space. Just as the seas became inundated with erroneous or troublesome claims and actions, so too will space. With adversaries of the United States, many of whom already running afoul of well-established international law, and billionaires leading the way into the new space race, humankind will find renewed meaning in the phrase “old habits die hard.” To mitigate this, it is vital that the UN Convention on the Law of Space takes some cues from UNCLOS. There are some contentious areas of sea law that are almost certain to make their way upward as those who break the law on the seas head into space.

As we see companies and nations alike head to space, we risk imputing the environmental crisis from Earth’s surface to its atmosphere as well as space becoming a breeding ground for mankind’s next major conflicts, both of which constitute paramount national security concerns. This section explores environmental concerns as they relate to national security, the militarization of space, and the risks posed to space commerce as its focal points.

A. ENVIRONMENTAL CONCERNS: THE BYPRODUCT OF ANOTHER GIANT LEAP FOR MANKIND

On Earth, environmental alarm bells have been ringing without an indication that the planet’s major environmental offenders are ready or able to do anything about it.²⁷ Inaction or ineffective action on climate change seems to be par for the course in most global meetings on the matter. As such, it is important as we head into space that we

²⁷ See Brad Plumer & Raymond Zhong, *Climate Change is Harming the Planet Faster than We Can Adapt, U.N. warns*, N.Y. TIMES (Feb. 28, 2022), available at <https://www.nytimes.com/2022/02/28/climate/climate-change-ipcc-report.html> (last visited Sept. 21, 2022).

do not cause more irreparable harm to the Earth in the name of human advancement.

Space debris, or “space junk,” is the environmental issue to watch as Earth once more looks upward. One reason for this heightened concern is that space debris is already arguably out of control.²⁸ To date, there 27,000 pieces of space junk orbiting Earth that are tracked by NASA at any given time.²⁹ However, there is much more space junk out there that NASA cannot track due to their small size.³⁰ Despite their size, this space junk still poses a threat to space bound aircraft, the International Space Station, and other objects due to the speed at which the debris and the aircraft are moving.³¹ While these are only estimates, NASA believes that there are half of a million pieces of debris that are one centimeter or larger, 100 million pieces of debris that are one millimeter or larger and an innumerable amount of debris that is even smaller than that.³² Given the sheer volume and potential speed, which for some debris is around 17,500 miles per hour, this space junk poses an immense risk to humans.³³ Even more concerning, this number is expected to rise exponentially as space activities inevitably increase.³⁴ Paired with increased space bound activity, an already pressing risk to humans will become that much more severe. When speaking to just how dire the situation is, some have already recognized the exigency of this matter. Comments go so far as to say that “[i]f left unchecked, thick fields of debris created by spent spacecraft parts colliding and breaking apart could pose a dangerous obstacle to space exploration itself—and imperil a new era of space travel just as it begins.”³⁵ Alongside the risk to those who are

²⁸ See Kathy Jones, Krista Fuentes & David Wright, *A Minefield in Earth Orbit: How Space Debris is Spinning Out of Control*, SCIENTIFIC AMERICAN (Feb. 1, 2012), available at <https://www.scientificamerican.com/article/how-space-debris-spinning-out-of-control/> (last visited Sept. 21, 2022).

²⁹ *Space Debris and Human Spacecraft*, NASA (May 26, 2021), available at https://www.nasa.gov/mission_pages/station/news/orbital_debris.html (last visited Sept. 28, 2022).

³⁰ *Id.*

³¹ *Id.*

³² *Id.*

³³ *Id.*

³⁴ *Space Debris and Human Spacecraft*, *supra* note 29.

³⁵ W. Robert Pearson & Benjamin L. Schmitt, *The Crisis in Space*, Foreign Policy (May 15, 2021), available at <https://foreignpolicy.com/2021/05/15/space-junk->

space bound, there is a risk to those of us still on Earth when space junk decides to fall out of orbit and plummet to the ground.³⁶ This worry extends to private space activities as well as those of nation states. Policy experts are worried about programs such as Elon Musk's planned Star Link program, a satellite-based internet service.³⁷ The rapid development of such programs raises "legitimate concerns over the proliferation of space junk" as well as how it may hinder ground based scientific efforts.³⁸

This is an issue that already seems to garner international support. Some experts are already calling for a reaffirmation of current space policy such as the Outer Space or Moon treaties.³⁹ As such, this is a potential entry way into a larger conversation on the proposed UN Convention on the Law of Space. Using UNCLOS as a guide, there must be anti-pollution provisions or in this case, anti-space junk provisions, within the proposed Convention on the Law of Space. Article 145 of UNCLOS reads the following:

Necessary measures shall be taken⁴⁰ in accordance with this Convention with respect to activities in the Area to ensure effective protection for the marine environment from harmful effects which may arise from such activities. To this end the Authority shall adopt appropriate rules, regulations and procedures for *inter alia*:

- a) the prevention, reduction and control of pollution and other hazards to the marine environment, including the coastline, and of interference with the ecological balance of the marine environment, particular attention being paid to the need for protection from harmful effects of such activities as drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities;

rocket-debris-long-march-starlink-elon-musk-moon-asteroids-travel-militarization-resource-competition/ (last visited Sept. 28, 2022).

³⁶ *Id.*

³⁷ *Id.*

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ United Nations Convention on the Law of the Sea, *supra* note 23, at art.145.

- b) the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment.⁴¹

Language such as this would be vital to ensuring that a bad situation does not turn for the worst. However, this provision in UNCLOS does not go far enough; the Convention on the Law of Space must have more specific language. The above language from UNCLOS was the result of a compromise derived from a fear that less developed nations would be effectively boxed out of international trade by being forced to meet stringent international standards.⁴² The efforts of a UN Convention on the Law of Space has a chance to push past this. At the moment, only a handful of companies and corporations even have the capability to launch objects or people into orbit.⁴³ In recognition of this, the United Nations has the ability to deal with two issues at once. First, while the rest of the world is updating their space capabilities, this body will have a chance to hold powerful, preexisting space capable nations to task under these provisions. This will not only be a testing ground for the convention but will breathe legitimacy into enforcement mechanisms therein. Second, this will give lesser developed but space-hopeful nations an opportunity to pursue their space bound dreams in a manner in keeping with this convention. So, rather than preventing them from doing something they already were doing, such as trading via the sea, this convention simply asks that as these countries undergo an already expensive journey towards space, they give their due diligence for the environmental concerns associated with space travel.

Included in this expanded section on environmental concerns must be some aspects of the Convention on International Liability for

⁴¹ *Id.*

⁴² Amy DeGeneres Berret, *UNCLOS III: Pollution Control in the Exclusive Economic Zone*, 55 L.A. L. Rev. 1165 (1995).

⁴³ Org. for Econ. Co-operation and Dev. (2011), *The Space Economy at a Glance 2011*, OECD Publishing (Jul. 22, 2011), available at <https://www.oecd-ilibrary.org/docserver/9789264113565-15-en.pdf?expires=1640224172&id=id&accname=guest&checksum=DE0C41E7C26DDE866118FB608718325B> (last visited Sept. 30, 2022).

Damage Caused by Space Objects.⁴⁴ Article III of this Convention reads: In the event of damage being caused elsewhere than on the surface of the Earth to a space object of one launching State or to persons or property on board such a space object by a space object of another launching State, the latter shall be liable only if the damage is due to its fault or the fault of persons for whom it is responsible.⁴⁵

This Article gives a general idea of the purpose of the convention and is a good launching point for the efforts towards a UN Convention on the Law of Space. However, Article III and counterparts from the Convention must be adapted to the changing conditions of space. Using the Convention as a framework, policy makers must find ways to apply it to states and corporations alike as they become decreasingly linked.⁴⁶ These provisions must be strongly worded and strict in their effect insofar that it is nearly always disadvantageous of a nation or corporation to needlessly increase the amount of space junk in our atmosphere.

Overall, these provisions are not only the international community's chance to find common ground early in the formation of this newfound Convention, but also learn from the mistakes of climate abuse on Earth. As we see terrestrial environmental efforts getting bogged down in international and national systems alike, this must be an imperative of space law. There always has seemed to be a culmination of goodwill towards progress from most, if not all, parties involved in molding space law; the world must use that to bolster its efforts here or risk our terrestrial shortfalls leaking into the formation of our extraterrestrial efforts.⁴⁷ As the next section will illustrate, these concerns are intertwined in national security to an alarming extent.

⁴⁴ Convention on International Liability for Damage Caused by Space Objects, 24 U.S.T. 2389, 861 U.N.T.S. 187, 10 I.L.M. 965 (1972).

⁴⁵ *Id.* at art. III

⁴⁶ See generally Nicholas Reimann, *Leaving A Planet In Crisis: Here's Why Many Say The Billionaire Space Race Is A Terrible Idea*, Forbes (Jul. 12, 2021), available at <https://www.forbes.com/sites/nicholasreimann/2021/07/12/leaving-a-planet-in-crisis-heres-why-many-say-the-billionaire-space-race-is-a-terrible-idea/?sh=7f1a8d1477c9> (last visited Oct. 2 2022); see generally Eric Mack, *In 2022, the new space race will get more heated, crowded and dangerous*, CNET (Jan. 4, 2022), available at <https://www.cnet.com/news/in-2022-the-new-space-race-will-get-more-heated-crowded-dangerous/> (last visited Oct. 2, 2022).

B. MILITARIZATION OF SPACE: CAN SPACE REALLY BE FOR ALL OF MANKIND?

The Outer Space Treaty, as previously mentioned, was flawed from its inception.⁴⁸ Its failure to anticipate technology that arose a matter of years after its signing pales in comparison to what it fails to regulate decades later. Subsequent treaties do not do much better. Most of the concern lies with nuclear weapons, weapons that are placed on celestial bodies, or other concerns.⁴⁹ But as our technological ability to explore space has improved, so too has our military's technological abilities.

The military ambitions of most space bearing nations grows alongside their technological advances, with space operations already having great significance in terrestrial military actions.⁵⁰ By all indications, the use of space for military initiatives only seems to be intensifying.⁵¹ Western military powers already "have developed significant network-centric warfare concepts that rely heavily on space-borne assets for success."⁵² Further, Senior United States Military officials recognize the strategic significance of space; they see space as "the ultimate high ground" and regards superiority in this commons to be the "future of warfare."⁵³ By extension, NATO allies recently declared space an "operational domain."⁵⁴ This preexisting

⁴⁸ See *supra*, Sec. II

⁴⁹ See Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, 1363 U.N.T.S. 22, 18 I.L.M. 1434 (1979); see Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, 9 U.S.T. 7570, 672 U.N.T.S. 119, 7 I.L.M. 149 (1968); see Convention on International Liability for Damage Caused by Space Objects, 24 U.S.T. 2389, 861 U.N.T.S. 187, 10 I.L.M. 965 (1972); See Convention on Registration of Objects Launched into Outer Space, 28 U.S.T. 695, 1023 U.N.T.S. 15, 14 I.L.M. 43 (1975).

⁵⁰ Dale Stephens, *Military Space Operations and International Law*, JUST SECURITY (Mar. 2, 2020), available at <https://www.justsecurity.org/68815/military-space-operations-and-international-law/> (last visited Sept. 23, 2022).

⁵¹ Dale Stephens & Cassandra Steer, *Conflicts in Space: International Humanitarian Law and its Application to Space Warfare*, 40 *Annals of Air and Space L.* 1 (2015).

⁵² *Id.*

⁵³ *Id.*

⁵⁴ Hitoshi Nasi, *Nato recognizes Space as an "Operational Domain": One Small Step Towards Rules-Based International Order in Space*, JUST SECURITY (Mar. 4,

military ambition with regards to space contains a heightened concern in the face of other nations' seemingly fast improving space bound capabilities.⁵⁵ Like western powers, as the space capabilities of these nations expand, so too will the military presence of those nations in space.⁵⁶ The ambitions of adversarial nations, such as China, represent a challenge of regulating space without a new framework through which to do so.⁵⁷

One major threat to mankind peacefully navigating space is the increased use of Anti-Satellite or ASAT technology. ASATs are generally surface to air or air to space weapons with the purpose of destroying a satellite.⁵⁸ Both the United States and China have publicly exhibited their ASAT capabilities by destroying their own satellites.⁵⁹ These displays bring to the forefront two concerning realities.

First, two powerful military nations, China, and the United States, are dedicated to the regular usage of ASATs. Not only does this imply that these weapons are going to become commonplace in a new space era, but it also creates the risk of another arms race. The appeal of these weapons coupled with the ambitions of two adversarial nations in these endeavors all but ensures that some form of an arms race is to ensue. ASATs appeal to these nations begins with the reliance on space for military and civilian communications.⁶⁰ "The threat, however, is greatest for the United States. The United States has

2020), available at <https://www.justsecurity.org/68898/nato-recognizes-space-as-an-operational-domain-one-small-step-toward-a-rules-based-international-order-in-outer-space/> (last visited Oct. 16, 2022)

⁵⁵ *Id.*

⁵⁶ See William J. Broad, *How Space Became the Next 'Great Power' Contest between the US and China*, THE NEW YORK TIMES (Jan. 24, 2021), available at <https://www.nytimes.com/2021/01/24/us/politics/trump-biden-pentagon-space-missiles-satellite.html> (last visited Sept. 30, 2022).

⁵⁷ See Loren Grush, *China unveils five-year plan for space exploration that continues push into lunar space*, THE VERGE (Jan. 28, 2022), available at <https://www.theverge.com/2022/1/28/22906277/china-space-exploration-white-paper-five-year-plan> (last visited Sept 30, 2022).

⁵⁸ Stephens & Steer, *supra* note 51.

⁵⁹ See Brian Britt, *Arms control in outer space won't work*, THE SPACE REVIEW (Feb. 21, 2022), available at <https://www.thespacereview.com/article/4336/1> (last visited Oct. 16, 2022).

⁶⁰ Talia M. Blatt, *Anti Satellite Weapons and the Emerging Space Race*, HARVARD INTERNATIONAL REVIEW (May 26, 2020), available at <https://hir.harvard.edu/anti-satellite-weapons-and-the-emerging-space-arms-race/> (last visited Oct. 16, 2022)

realized that via the telephone, computers, and eventually the internet, the United States pioneered the use of space-based communications for most civil and military functions. The benefits of satellite-based communications—namely increased efficiency, precision, and volume of information transmitted—are self-evident; however, the US lead in the transition to space-based systems posed a threat: relying on satellites for military use more than any other country created an asymmetric dependency.”⁶¹

By extension, these weapons can potentially serve as great conflict deterrents.⁶² Even countries with ASAT technology must consider the high risk of engaging in hostilities with a country like the United States or China, who possess advancing versions of this technology. Simply stated, “[i]f they both can ‘turn off’ each other’s militaries—or deny access to the satellites upon which their opponent’s conventional and nuclear forces rely—both countries are rendered close to defenseless, a risk they would be extremely reluctant to take.”⁶³ As such, the United States has a particularly high interest in the continued proliferation of these weapons. But this means that other nations also share this interest. This runs of the risk of the onset of a “uniquely dangerous” arms race because despite the theoretical deterrent that ASATs purport to be, they are more likely to exacerbate tensions than chill them.⁶⁴ This is ultimately because ASATs and other space borne weapons make space an offensive dominant sphere.⁶⁵ Due to the expense and the technological limitations needed to create a more defensive posture vis a vis space weaponry, “offensive tactics like weapons development are prioritized over defensive measures, such as improving GPS or making satellites more resistant to jamming.”⁶⁶ The recognition that nations will almost certainly choose offensive over defensive measures makes the nature of this potential conflict volatile. Professor Jonson Freese of the Naval War College, in light of the risks posed by ASATs and other space weaponry, presented the ultimate question: “How do we protect our space assets without

⁶¹ *Id.*

⁶² *Id.*

⁶³ *Id.*

⁶⁴ Blatt, *supra* note 60

⁶⁵ *Id.*

⁶⁶ *Id.*

creating the exact conditions for an arms race that leads to a war in space?”⁶⁷

Second, this arms race will likely encourage the creation and proliferation of other types of space weaponry that current regulatory schemes are unable to properly curtail. This arms race showcases the weaknesses of current space regulations.⁶⁸ Civilian and military operations in space are, for the most part, regulated by means of five treaties: The 1967 Outer Space Treaty, the 1968 Astronaut Rescue Agreement, 1971 Liability Convention, 1975 Registration Convention, and the 1979 Moon Convention.⁶⁹ Despite these regulations, ASAT proliferation has continued and evidences how countries will push the boundaries of conflict and strategic superiority in space. While further proliferation is certainly a primary concern, nations and international organizations alike should be more concerned for what happens after they are put into use. Not only are countries finding gaps to militarize space, but they are also likely to find gaps that allow them to absolve themselves of legal responsibility if they decide to use these weapons. While areas of terrestrial international law are extended to Space, their direct application is unclear at best. Here, space can draw a parallel to terrestrial cyber-attacks and cyber law to further exhibit the shortfalls of current international law as a whole in space. Article 2(4) of the UN Charter states that “[a]ll members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the purposes of the United Nations.”⁷⁰ In an era of increased risk of cyber-attacks on both military and civilian targets, the international community has yet to come up with a universal regulatory response. As of now “there are no internationally accepted criteria yet for determining whether a nation state cyber-attack is a use of force equivalent to an armed attack, which could trigger a military

⁶⁷ Bryan Bender & Jacqueline Kilmas, *Space War is Coming – and the U.S. is not ready*, POLITICO, (Apr. 6, 2018), available at <https://www.politico.com/story/2018/04/06/outer-space-war-defense-russia-china-463067> (last visited Sept. 27, 2022).

⁶⁸ See Dale Stephens, *Military Space Operations and International Law*, JUST SECURITY (Mar. 2, 2020), available at <https://www.justsecurity.org/68815/military-space-operations-and-international-law/> (last visited Sept. 27, 2022).

⁶⁹ *Id.*

⁷⁰ U.N. Charter art. 2, ¶ 4.

response.”⁷¹ Even as countries like China, Russia and Iran persistently and with increasing audaciousness engage in cyber-attacks, the world has yet to concretely define if these actions violate their own laws and if so, what the legally permissive response is.⁷² This will almost certainly be even more problematic in under regulated space. The following questions of international law are of the utmost importance and their dubious or non-existent answers foreshadow the risk that reactionary, rather than proactive, regulation in space poses:

Does jamming, dazzling, or damaging a satellite amount to a use of force prohibited under Article 2(4) of the United Nations Charter and customary international law? If so, when? Is it lawful to declare and operate “space exclusion zones,” even though States are prohibited from claiming sovereignty in space under Article II of the Outer Space Treaty? During an international armed conflict, does a belligerent State have right to capture and detain astronauts when they are also members of enemy armed forces, even though States are obliged to rescue and return them as “envoys of mankind” under Article V of the Outer Space Treaty?⁷³

These questions of international law are currently only theoretical due to our technological limitations, but will almost definitely breed an exigent crisis when the technology finally matches the ambitions of these nations. In particular, the confusion stemming from the lack of or under regulation of space will set off a pattern of “cherry picking” international law.⁷⁴ This phenomenon would involve nations choosing which provisions of current international law it would like to see applied in the outer space context.⁷⁵ By virtue of this risk, and the havoc that would ensue if it became a common practice of nations,

⁷¹ See *Use of Force in Cyber Space*, CONGRESSIONAL RESEARCH SERVICE (Dec. 10, 2021), available at <https://sgp.fas.org/crs/natsec/IF11995.pdf> (last visited Sept. 27, 2022).

⁷² See *China Cyber Threat Overview and Advisories*, CYBERSECURITY & INFRASTRUCTURE SECURITY AGENCY, available at <https://www.cisa.gov/uscert/china> (last visited Sept. 26, 2022).

⁷³ Hitoshi Nasu, *NATO Recognizes Space as an “Operational Domain”*: One Small Step Toward a Rules-Based International Order in Outer Space, JUST SECURITY (Mar. 4, 2020), available at <https://www.justsecurity.org/68898/nato-recognizes-space-as-an-operational-domain-one-small-step-toward-a-rules-based-international-order-in-outer-space/> (last visited Sept. 26, 2022).

⁷⁴ *Id.*

⁷⁵ *Id.*

there is an urgent need to establish the rules by which state actors and private companies or individuals operate in space.⁷⁶

To minimize the risk of yet another convention that is obsolete at the time of signing, the UN Convention on the Law of Space should begin to codify the provisions of the Woomera Manual with regards to these issues.⁷⁷ The Woomera Manual is an academic endeavor to “objectively articulate and clarif[y]” existing international space law.⁷⁸ The impetus of the Woomera Manual’s creation was the risk outlined in the above section.⁷⁹ The authors of the Woomera Manual saw the need for this non-governmental guidance because the lack of normative clarity presents the risk of State or non-State actors taking action involving outer space that might be misunderstood by others, or even characterized as unlawful. It also allows States that might wish to conduct hostile space operations to do so in a zone of uncertainty, that complicates responses by other States.⁸⁰

This is not the first time an endeavor like this has been undertaken. The authors of the Woomera Manual bolster their claim that this manual is a positive contribution to a new domain by pointing to other instances in which similar manuals have borne success. Specifically, they point to the San Remo Manual on International Law Applicable to Armed Conflict at Sea, the Harvard Manual on International Law Applicable to Air and Missile Warfare, and both versions of the Tallinn Manual on International Law Applicable to Cyber Operations.⁸¹ These are shining examples of why Woomera not only needs to be expanded upon as space technology advances, but ultimately relied on as the regulatory body develops.

Using Woomera as a starting point for this Convention’s provisions, the drafters will be solving multiple issues at once. First, the world would be that much closer to having a universal understanding as to how current international law applies to space.⁸²

⁷⁶ *Id.*

⁷⁷ See *Woomera Manual*, UNIV. OF ADELAIDE, available at <https://law.adelaide.edu.au/woomera/> (last visited Sept. 26, 2022).

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ See *Woomera Manual*, UNIVERSITY OF ADELAIDE, available at <https://law.adelaide.edu.au/woomera/> (last visited Sept. 24, 2022).

⁸¹ *Id.*

⁸² See *Woomera Manual*, University of Adelaide, available at <https://law.adelaide.edu.au/woomera/> (last visited Sept. 24, 2022).

Second, this would provide the newer provisions with much needed foundational support. Nations will be freer to explore the implications of new provisions of the Convention once they are confident that existing international law is adequately applied and understood. Further, once nations understand how international law already applies to space, they will be more aptly situated to truly cultivate what they want space regulation to look like.

By codifying what the Woomera Manual has found to be settled in international space law and having open debate about the areas of law it perceives to contain conflicting positions, this Convention will be better overall.⁸³ In particular, it will imbue upon space some of the important tenants of other comparable areas of international law. Specifically, this section of the convention will serve to clarify what distinction, proportionality, and precautions in space look like.⁸⁴ Customary international law has generally made the distinction between that which is civilian and that which is military.⁸⁵ In space, humans will once again need to establish what levels of distinction are necessary. International scholars already struggle with this idea in cyber law.

Cyber-attacks are to be carried out on targets with a military purpose.⁸⁶ However, systems that are dual use, insofar that they contain military and civilian elements, present a unique challenge for policy makers and world leaders alike.⁸⁷ It is possible for a civilian object like a computer, computer networks, and cyber infrastructure, or even data stocks, [to] become a military target, if used either for both civilian and military purposes or exclusively for the latter. However, in cases of doubt, the determination that a civilian computer is in fact used to make an effective contribution to military action may only be made after a careful assessment. Should

⁸³ Hitoshi Nasu, *NATO Recognizes Space as an "Operational Domain": One Small Step Toward a Rules-Based International Order in Outer Space*, JUST SECURITY (Mar. 4, 2020), available at <https://www.justsecurity.org/68898/nato-recognizes-space-as-an-operational-domain-one-small-step-toward-a-rules-based-international-order-in-outer-space/> (last visited Sept. 27, 2022).

⁸⁴ Stephens & Steer, *supra* note 51.

⁸⁵ *Id.*

⁸⁶ *Military Objectives*, INTERNATIONAL CYBERLAW TOOLKIT, available at https://cyberlaw.ccdcoe.org/wiki/Military_objectives (last visited Sept. 26, 2022)

⁸⁷ *Id.*

substantive doubts remain as to the military use of the object under consideration, it shall be presumed not to be so used.⁸⁸

In the cyber sphere, consideration of an attack's effect sits at the center of most distinction questions.⁸⁹ Similarly, the world must decide with specificity what distinctions should be made with regards to dual use space assets. From GPS to communications, conflict in space will be riddled with discussions of how to distinguish civilian from military uses. In this regard, the Woomera Manual can help international policymakers determine the appropriate rule to promulgate in the sphere of space regulation.⁹⁰ Distinction questions are further complicated when countries begin to consider proportionality and precautions to be taken in these matters; all are issues that cyber law currently grapple with; but all are issues that space law could address proactively.⁹¹

National security will be a concern as human beings look upward, but the militarization of space will be the paramount concern. The implementation of the Woomera Manual as a starting point for not only discussions but also a bedrock framework for this section of the UN Convention on the Law of Space keeps this proposal on the right track.

C. THE FUTURE OF COMMERCE AS A NATIONAL SECURITY CONCERN IN SPACE

Professor Steven Freeland spoke of “‘technology encouraging law’ or, as might be more accurate in the case of outer space regulation, ‘law chasing technology’”⁹² In particular, he spoke about the risks involved in space tourism.⁹³ As he describes it, space tourism presents a wide array of complex legal issues that policy

⁸⁸ *Id.*

⁸⁹ *Id.*

⁹⁰ See Roger Handberg, *Dual Use as Unintended Policy Driver: The America Bubble*, in SOCIETAL IMPACT OF SPACEFLIGHT 353-68 (Roger Launius & Steven Dick eds., 2007), available at <https://history.nasa.gov/sp4801-chapter18.pdf> (last visited Sept. 27, 2022).

⁹¹ Stephens & Steer, *supra* note 51.

⁹² Steven Freeland, *How Will International Law Cope with Commercial Space Tourism*, 11 MELBOURNE J. OF INT'L L. 93 (2010).

⁹³ *Id.*

makers must grapple with in this subsection of an already complex area of the law.⁹⁴

Professor Freeland reiterates that

[i]n essence, outer space is “free” for use—tourist activities that take place in outer space are not subject to prior consent on the part of any sovereign state, although they will remain subject to the obligation of the “appropriate” state to authorize and continually supervise such private commercial ventures, as specified in art VI of the *Outer Space Treaty*.⁹⁵

However, without a clear definition of where space begins, not only is there a question of how to regulate, but there is also a broader conflict as to at what altitude space law begins to govern.⁹⁶ Clarity here is vital for some reasonable expectation of freedom from harm from other states in an already risky endeavor upwards.

As Elon Musk and Jeff Bezos set their sights on space, distinction of when space begins has deep-seated business implications and is also a concern for human life..⁹⁷ Billionaires such as Jeff Bezos and Elon Musk wish to build business parks and expand the commercial use of space in the coming decade.⁹⁸ These ambitious plans pose a national security risk in future space travel. Much like on Earth's seas, space has the potential for abuse by nations, particularly if left underregulated. Specifically, the freedom of navigation that is generally assured on Earth's seas needs to be assured in space if commerce is to truly thrive. This concern is heightened by two realities: [1] Space will increasingly be occupied by adversaries of the United States, especially as its interest in space wanes, and [2] companies that head to space will unavoidably be more vulnerable there than they are on the seas.

First, while China, Russia, and other adversaries head upwards, some of their international law violations will likely follow them upwards.⁹⁹ China presents a special concern for space bearing

⁹⁴ *Id.*

⁹⁵ *Id.*

⁹⁶ Freeland, *supra* note 92.

⁹⁷ *Supra* Sec. IV(B).

⁹⁸ See A. Tarantola, *Billionaire space barons want to build 'mixed use business parks' in low Earth orbit*, ENGADGET (Feb. 4, 2022), available at <https://www.engadget.com/billionaire-space-barons-want-to-build-mixed-use-business-parks-in-low-Earth-orbit-153050603.html> (last visited Sept. 26, 2022).

⁹⁹ See Broad, *supra* note 56.

companies due to their established aversion to freedom of navigation on the seas.¹⁰⁰ A prime example of this is a recent maritime rule promulgated by China in the South China Sea.¹⁰¹ This rule, which is in clear violation of international law, including the UN Convention on the Law of the Sea, “requires foreign vessels to report information such as their name, call sign, current position, destination and cargo before sailing through the country's ‘territorial sea.’”¹⁰² Such affronts to international law, which are already a risk to free navigation and commerce on Earth, will almost definitely find their way into underregulated space. The striking absence of the United States in space makes this prediction even more concerning.

On the seas, order can generally be assured by virtue of the United States Navy, which is viewed as the world’s preeminent “blue water” navy.¹⁰³ The US Navy generally maintains peace and ensures compliance with international law; if present space policy remains, companies and nations alike will not have this protection in space.¹⁰⁴ While the world cannot control what the United States does with its own foreign policy, it can mitigate the risks associated with their absence. The United Nations Convention on the Law of Space is a mitigation tactic and more. At the very least, by filling in the gaps left by inadequate space regulation, the world has a chance to curtail predicted abuses in space by means of a clearly promulgated set of

¹⁰⁰ See 7th Fleet Destroyer Conducts Freedom of Navigation Operation in the South China Sea, NAVY. MIL (Feb. 16, 2021), available at <https://www.navy.mil/Press-Office/News-Stories/Article/2505124/7th-fleet-destroyer-conducts-freedom-of-navigation-operation-in-south-china-sea/> (last visited Sept., 27, 2022).

¹⁰¹ Jong Feng, *U.S. Says China Maritime Law Poses ‘Serious Threat’ to Freedom of the Seas*, Newsweek (Sept. 2, 2021), available at <https://www.newsweek.com/us-says-china-maritime-law-poses-serious-threat-freedom-seas-1625257> (last visited Sept. 27, 2022).

¹⁰² *Id.*

¹⁰³ See Kyle Mizokami, *Blue Water Navy Time: How China is Close to Overtaking America*, THE NATIONAL INTEREST (Jan. 28, 2020), available at <https://nationalinterest.org/blog/buzz/blue-water-navy-time-how-china-close-overtaking-america-117916> (last visited Sept, 27, 2022).

¹⁰⁴ See Jonathan Masters, *Sea Power: The US Navy and Foreign Policy*, Council on Foreign Relations (Aug. 19, 2019), available at <https://www.cfr.org/background/sea-power-us-navy-and-foreign-policy> (last visited Mar. 8, 2022).

rules that coincide with a clearly promulgated set of consequences attached.¹⁰⁵

Wrapping the risks to commerce into national security concerns will be strategically essential for all nations, and it is likely that increased cooperation between governments and corporations in the early years of the new space era will be needed. The risks of conflict involving private actors being imputed back to their home nations is too high to not plan accordingly. By these circumstances alone, there is an exigent need for this Convention, or some form a piecemeal regulation while the world waits for it to arrive.

V. Current Status of International Space Affairs From a US Perspective

The risk that underregulated space poses to the security of the United States has not been lost on the leadership of the world's most expensive military.¹⁰⁶ In December of 2019, the United States established a new branch of the military: The US Space Force.¹⁰⁷ One justification for a military branch dedicated to space was that "the military and civilian advantages created by greater use of space have also created new vulnerabilities."¹⁰⁸ The fact of the matter is that the US military, as well as its civilian economy, are becoming

¹⁰⁵ See Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies, 18 U.S.T. 2410 610 U.N.T.S. 205, 61 I.L.M. 386 (1967); see Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, 1363 U.N.T.S. 22, 18 I.L.M. 1434 (1979); see Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, 9 U.S.T. 7570, 672 U.N.T.S. 119, 7 I.L.M. 149 (1968); see Convention on International Liability for Damage Caused by Space Objects, 24 U.S.T. 2389, 861 U.N.T.S. 187, 10 I.L.M. 965 (1972); see Convention on Registration of Objects Launched into Outer Space, 28 U.S.T. 695, 1023 U.N.T.S. 15, 14 I.L.M. 43 (1975).

¹⁰⁶ See Stephens & Steer, *supra* note 51.

¹⁰⁷ *United States Space Force History*, UNITED STATES SPACE FORCE, available at <https://www.spaceforce.mil/About-Us/About-Space-Force/History/> (last visited Mar. 1, 2022).

¹⁰⁸ Robert Farley, *Space Force: Ahead of Its Time or Dreadfully Premature?*, CATO Institute (Dec. 10, 2020), available at <https://www.cato.org/policy-analysis/space-force-ahead-its-time-or-dreadfully-premature#what-space-why-does-it-need-military> (last visited Oct. 16, 2022).

increasingly dependent on space for basic necessities.¹⁰⁹ This all comes at a time when adversarial nations, such as Russia, are bolstering their militarizing efforts in space, including the implementation of ASATs.¹¹⁰ Reducing this risk down to a single assessment, there are systemic and potentially crippling threats to both civilian and military infrastructure that stem from a global effort towards space.

The Department of Defense has its eyes on China in particular. China is looking to expand its reach both terrestrially and extra-terrestrially.¹¹¹ In both instances, the Department of Defense has stated that it will constantly assess its strategy and capabilities to “meet the China challenge.”¹¹² However, there may be some hope that China’s increased presence in space is merely a threat. In 2008, China and Russia submitted the beginnings of a treaty that would essentially prevent the placement of weapons in outer space.¹¹³ This treaty ended up getting bogged down by questions of its ability to be a binding document.¹¹⁴ Even still, the UN commissioned a group to explore some version of international agreement on the subject, but they ultimately came to no consensus.¹¹⁵

Regardless, this effort on China’s part cannot distract the world from their increased interest in space in consideration of their actions here on Earth. China is currently planning a mission to the moon, a mission to explore Jupiter, and a wide array of space tourism.¹¹⁶ These

¹⁰⁹ *Id.*

¹¹⁰ See Stephens & Steer, *supra* note 51.

¹¹¹ See *Global Conflict Tracker*, COUNCIL ON FOREIGN RELATIONS, available at <https://www.cfr.org/global-conflict-tracker/conflict/territorial-disputes-south-china-sea> (last visited Sept. 22, 2022).

¹¹² Terri Moon Cronk, *Hicks Says DOD to Link Strategy, Capabilities to Meet China Challenge*, United States Space Command (Sept. 8, 2021), available at <https://www.defense.gov/News/News-Stories/Article/Article/2767985/hicks-says-dod-to-link-strategy-capabilities-to-meet-china-challenge/> (last visited Mar. 1, 2022).

¹¹³ Hitoshi Nasu, *NATO Recognizes Space as an “Operational Domain”: One Small Step Toward a Rules-Based International Order in Outer Space*, JUST SECURITY (Mar. 4, 2020), available at <https://www.justsecurity.org/68898/nato-recognizes-space-as-an-operational-domain-one-small-step-toward-a-rules-based-international-order-in-outer-space/> (last visited Oct. 16, 2022).

¹¹⁴ *Id.*

¹¹⁵ *Id.*

¹¹⁶ Arjun Kharpal, *China plans crewed moon mission, tourism and Jupiter exploration in space race with the U.S.*, CNBC (Jan. 31, 2022), available at

efforts seem to only be the beginning. China has a busy five years planned for their space efforts.¹¹⁷ Experts comment “[i]n the next five years, China will continue to improve the capacity and performance of its space transport system and move faster to upgrade launch vehicles.” China’s five-year plan states “[i]t will further expand the launch vehicle family, send into space new-generation manned carrier rockets and high-thrust solid-fuel carrier rockets and speed up the R&D [research and development] of heavy-lift launch vehicles.”¹¹⁸ Some people see these efforts as a positive step for China and the world stating that “[t]he space industry will contribute more to China’s growth as a whole, to global consensus and common effort with regard to outer space exploration and utilization and to human progress.”¹¹⁹ But, China’s actions on Earth may be an indicator as to what their posture in space may be. In particular, the South China Sea conflict illuminates two overarching risks. First, there is a risk that involves China holding too much of the power in forming traditional and customary international law in this new commons.¹²⁰ Second, there is a concern as to whether China will comply with established international law once space law is more established, like they do with their maritime claims in the South China Sea.¹²¹

In tandem with the aims of nations, multinational corporations show no sign of lessening their space ambitions. Jeff Bezos, Elon Musk, and others are all but destined to continue to innovate in this sphere. What do all of these space ambitions have in common? They are all a risk if space is underregulated. From commercial to military uses, space has the potential to create or exacerbate conflict here on Earth. As such, space regulation is quickly taking precedence over other policy concerns as it engulfs twenty-first century research. As

<https://www.cnbc.com/2022/02/01/china-space-plans-crewed-moon-mission-tourism-jupiter-exploration.html> (last visited Sept. 22, 2022).

¹¹⁷ Mike Wall, *China lays out ambitious space plans for next 5 years*, Space.com (Jan. 29, 2022), available at <https://www.space.com/china-five-year-plan-space-exploration-2022> (last visited Sept. 22, 2022).

¹¹⁸ *Id.*

¹¹⁹ *Id.*

¹²⁰ See *Study on the People’s Republic of China’s South China Sea Maritime Claims*, U.S. DEPARTMENT OF STATE (Jan. 12, 2022), available at <https://www.state.gov/study-on-the-peoples-republic-of-chinas-south-china-sea-maritime-claims/> (last visited Sept. 19, 2022).

¹²¹ *Id.*

such, it is in the interest of all nations to have adequate, specific, and meaningful legislation in this area. The UN Convention on the Law of Space meets these needs and once again prioritizes the need for international cooperation in space.

VI. Recommendation: The United Nations Convention on the Law of Space

Much like the sea, space's vastness challenges not just our understanding of the commons, but also how humans should interact within it. As such, the world must enact a UN Convention on the Law of Space.

First, the UN Convention on the Law of Space will make up for the inadequacies of current regulations. While the Outer Space Treaty and other subsequent agreements embody the spirit of space regulation, they do not nearly go far enough. In the new space race, the risks of space under-regulation increases in tandem with humankind's advancements in space travel, commerce, and militarization. The emergence of ASATs and the increase in both national and private action in space facilitate the need for clear boundaries if we are to be proactive in our efforts above Earth.

Second, this agreement would begin to ensure security for countries, businesses, and individuals alike. The fact is that space is about to change at an unanticipated rate. From private actors to new state actors, what was once a vast emptiness will ultimately become a bustling and relatively busy commons. Unlike the sea, space does not have a blue water navy equivalent to police its rules. As such, the risk of states and corporations flexing their muscle is too high to be left unchecked. While these types of agreements are not perfect in enforcement or deterrence, they stand as the backbone of humankind's view for what the fair and equitable use of space is.

Lastly, the UN Convention on the Law of Space is the world's chance to truly shape a commons rather than simply codify and correct past norms. Unlike the sea, humans are new to traveling space. As such the law now has an opportunity to, at the very least, pace our advancements in space. Human beings are now faced with a unique opportunity to prevent issues rather than react to them. In the decades to come, this proposed agreement can stand as the building block of a truly peaceful attitude towards space and represent hope that humans

will be able to leave our petty differences on the ground where they belong.

VII. Why Does a UN Convention on the Law of Space Solve the Problem?

As stated above, this convention allows the international community to get a better handle on a rapidly changing situation. But, with UNCLOS as a guide, there is so much more that a UN Convention on the Law of Space has to offer.

First, this convention, like UNCLOS, will offer a space-specific dispute resolution method. If one of the main concerns about space is the conflict therein, then there must be a "one stop shop" for resolving space conflicts in an amicable manner; keeping not only with this Convention but the UN Charter at large.¹²² Particularly, the UN Convention on the Law of Space needs to mirror specific provisions of the UN Convention on the Law of the Sea. Article 279 of UNCLOS requires that disputes be settled by "peaceful means" in accordance with the UN Charter.¹²³ It must also encompass many, if not all, of the Articles from 280 onward to facilitate a clear and equitable process by which to bring and try disputes.¹²⁴

Second, this Convention will set clear guidelines for what human beings want to permit in space activities. This will range from the specific provisions needed to regulate space to broader and more symbolic provisions. Specifically, the world needs to reaffirm that space is, was and will continue to be for the common and peaceful use of mankind.¹²⁵

Third, it will officially establish long-lasting and adaptable space law. The impetus of this Convention is simply that, as is, space law is obsolete. The UN Convention on the Law of Space will do what UNCLOS before it accomplished for the Sea. The UN Convention on the Law of the Sea is "[a]n unprecedented attempt by the international community to regulate all aspects of the resources of the sea and uses

¹²² See U.N. Charter art. 1 & 2.

¹²³ United Nations Convention on the Law of the Sea, *supra* note 23, at art 279.

¹²⁴ United Nations Convention on the Law of the Sea, *supra* note 23, at arts. 280 – 299.

¹²⁵ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies, 18 U.S.T. 2410 610 U.N.T.S. 205, 61 I.L.M. 386 (Dec. 19, 1967).

of the ocean, and thus bring a stable order to mankind's very source of life."¹²⁶ The proposed United Nations Convention on the Law of Space has the potential to do this and more. The UN Convention on the Law of the Sea, entered into force in 1994, came centuries after humankind found themselves navigating the seas.¹²⁷ By contrast, the United Nations Convention on the Law of Space will enter into force only decades after human beings first found their way into space.¹²⁸ As such, human beings will get to actively form the basis upon which all future space law is built, rather than dealing with centuries-old customs such as with the Law of the Sea.

Fourth, the Convention can ensure that all peoples and nations have access to this commons by setting uniform standards. Space is an area of human interest that seems, more so than most other international issues, to have some form of a common stride towards global consensus. As such, standards must be set to ensure that certain realities of terrestrial law and operations do not make their way into space. At the moment, mostly rich and powerful nations have space bound capabilities. But this will not be the case forever. The UN Convention on the Law of Space gives poorer and less powerful nations the chance to have a say in regulations that do not apply to them currently but will when they eventually achieve space travel. This moment is a chance to get things right by demanding that the political realities of Earth do not hamper the efforts to regulate a commons for the good of all mankind.

VIII. How Do We Get to the Space Convention?

The prospect of forming, let alone broadly passing, a UN Convention on the Law of Space is not only daunting but is seemingly a longshot at best. Agreements like these have their foundation in hard fought, and generally unlikely, international cooperation. The UN

¹²⁶ See *The United Nations Convention on the Law of the Sea (A historical perspective)*, UN (1998), available at https://www.un.org/depts/los/convention_agreements/convention_historical_perspective.htm (last visited Sept. 25, 2022).

¹²⁷ *United Nations Convention on the Law of the Sea Overview and Full Text*, UN (last updated July 13, 2022), available at https://www.un.org/depts/los/convention_agreements/convention_overview_convention.htm (last visited Sept. 25, 2022).

¹²⁸ NATIONAL GEOGRAPHIC, *supra* note 1.

Convention on the Law of Space not only would clarify humans' rights and obligations in space, but it would also put forth a sweeping regime paralleled only by the UN Convention on the Law of the Sea. This is a lofty goal to say the least. However, there is some hope that meaningful strides can be taken in this direction. Space, unlike most other areas of international concern and regulation, harbors a refreshing amount of international cooperation.¹²⁹ It would behoove the would-be drafters and proponents of this convention to utilize this unique cooperation to make incremental, yet meaningful, steps towards the ultimate goal of drafting and ratifying a UN Convention on the Law of Space.

The first area to be tackled would be the militarization of space.¹³⁰ Implementing the broader strokes of the Woomera Manual would serve two purposes in the lead up to eventually passing a UN Convention on the Law of Space. First, implementation of the Woomera Manual prior to the formation of this Convention is an important step which would minimize the risk of conflict in the interim. Woomera contains clarifications of current international law and seeks to identify broader conflicts in this sphere as well.¹³¹ Codifying this legal framework while simultaneously making strides to resolve known conflicts of international space law lessens the risk that comes with waiting for a UN Convention on the Law of Space to be ratified. Second, a preexisting framework will make the ultimate cultivation of the UN Convention on the Law of Space easier. Much of what was encompassed within the UN Convention on the Law of the Sea was codified preexisting customary law and international law norms.¹³² Negotiations then centered around those provisions that were more dubious in their acceptance or simply had not been regulated prior.¹³³ Implementing some of the recommendations of the Woomera Manual will have a similar effect. By summarily transferring an existing legal framework into this Convention, time

¹²⁹ See *International Cooperation in Outer Space*, U.S. MISSION TO INTERNATIONAL ORGANIZATIONS IN VIENNA (Apr. 30, 2021), available at <https://vienna.usmission.gov/international-cooperation-in-outer-space/> (last visited Sept. 25, 2022).

¹³⁰ *Supra* Sec. IV(B).

¹³¹ See *Supra* note 80.

¹³² See *United Nations Convention on the Law of the Sea*, *supra* note 126.

¹³³ *Id.*

can be spent on issues of genuine dispute which all nations should expend time and effort to resolve.

The second concern that should be addressed, and that should be worked into existing conversations about terrestrial pollution, is extraterrestrial pollution. As mentioned above, space debris has a potentially detrimental effect on both our national security and our commerce.¹³⁴ With civilian and military assets becoming increasingly dependent upon satellites, space debris threatens further expansion in space and the protection of preexisting assets.¹³⁵ As such, the threat to human beings' way of life cannot wait any longer to be addressed. Much like terrestrial pollution, space pollution is a pressing issue that should be at the forefront of international conversation for the sake of mankind's long-term well-being.

Overall, pre-Convention efforts such as regulating space debris or codifying the Woomera Manual represent a piecemeal approach to this convention that serves two important ends. First and most importantly, it begins to close the gap on how far behind the law is compared to the advancements of space technology and space bearing nations. Secondly, it ensures that the dialogue that will lead to this essential United Nations Convention on the Law of Space occurs. In the end, this convention will benefit all of mankind and as such we must not be intimidated by the uphill battle to bring it to fruition but rather, we should plan for all different avenues to make it so.

We cannot allow space exploration to become space exploitation.

¹³⁴ See *Space Debris and Human Spacecraft*, *supra* Sec. IV(A).

¹³⁵ See Stephens, *supra* Sec. IV(A)(B).