

ARTICLE

CAPTAIN HOOK TO SPACE CROOK:
TOWARDS A CONVENTION ON THE
SUPPRESSION OF SPACE PIRACY

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ABSTRACT

While the commercial future of outer space endeavors is bright, parallels between outer space and the high seas and advances in modern technology suggest Space Piracy will become a real and serious peril to States and their nationals. Because preexisting international law does not adequately empower States to tackle this threat, States must proactively consider adoption of a Convention on the Suppression of Space Piracy. Based on the strengths and weaknesses of applicable law of the sea and criminal aviation law, this work offers draft language for two key provisions of this Convention—a definition of “Space Piracy” and a delineation of State jurisdiction over such conduct.

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I. INTRODUCTION

Looking towards the commercial future of outer space, Space Piracy presents a serious risk to all States and their nationals. The potential of commercial space endeavors is bright, with many anticipating that one day outer space will become host to a vast array of commercial activity promising not only incredible

financial gain but enrichment of life on the Earth. However, this glowing future does not come without perils. While significant parallels between the high seas and outer space indicate the latter will one day become a critical commercial highway, they also herald the development of piracy in space by non-State actors. The immense riches promised by space will attract not only legitimate entrepreneurs but those that seek to plunder their fortunes in the vast expanse of space. Indeed, contemporary technology, such as unmanned aerial vehicles and precisely calibrated robotic arms, suggest the tools needed for such criminal activity are already in advanced stages of development. While Space Piracy will be distinct from the terrestrial piracy embodied by famous figures such as Black Beard, there will also be meaningful similarities between such activities—robbery, plundering, seizure, kidnapping, and ransom.

Like historical sea piracy that captivates the popular imagination, Space Piracy has the potential to materially interfere with international commerce in a manner that takes a serious economic toll. Indeed, such effects could be so severe as to meaningfully slow the development and proliferation of commercial endeavors in outer space. Moreover, such phenomenon will pose a real threat to the safety of outer space navigation, undoubtedly resulting in harm to property and persons. These dangers can impact all States and should not be taken lightly. States must anticipate future Space Piracy and ensure they are adequately empowered by law to suppress, police, and punish such conduct when it occurs. To the extent pre-existing law does not enable such action, States must come together to create new international law that does.

This work proceeds in five parts. Part II presents the issue of Space Piracy in greater detail, emphasizing the harm presented by such activities in an effort to illustrate the need for State readiness to combat such conduct. Part III explores whether pre-existing international law adequately empowers States to deal with the eventuality of Space Piracy by surveying regimes applicable to the sea and air addressing conduct popularly included under the umbrella of “piracy.” Through this survey, this work concludes pre-existing international law does *not* adequately equip States to directly tackle Space Piracy. Part IV begins by arguing States should consider negotiating a treaty that empowers

States to effectively combat Space Piracy. It then discusses the drafting of two critical aspects of a Convention on the Suppression of Space Piracy—a definition for “Space Piracy” and a provision governing State jurisdiction over such conduct—through examining the strengths and weaknesses of pre-existing international law pertaining to terrestrial piratical activities. An Appendix to this work presents proposed language for both aspects of such a convention. Finally, Part V provides final conclusions regarding State policing and punishment of Space Piracy.

II. SPACE PIRACY IS A REAL THREAT TO THE COMMERCIAL FUTURE OF OUTER SPACE

The USSR’s launch of Sputnik 1 into orbit in 1957 unlocked not only a new plane of conflict but a new plane of commercial endeavor. Highly publicized across the globe, the launch triggered a paradigm shift in the way earthlings conceptualized outer space—once considered the realm of the gods, studied, and contemplated from afar, it became man’s next frontier.

Since then, incredible strides have been made in space technologies. Many of these developments have been the result of partnerships between the private and the public sectors, as States have sought to increase their space capabilities in connection with national security. However, over the past decades, the private sector has increasingly ventured into this realm independently.¹

The profit potential presented by outer space is incalculable, promising immense riches to those who dare to venture boldly

1. Victoria Samson, *The Complicating Role of the Private Sector in Space*, *BULLETIN OF ATOMIC SCIENTISTS* (Jan. 17, 2022), <https://thebulletin.org/premium/2022-01/the-complicating-role-of-the-private-sector-in-space> [<https://perma.cc/JQ2B-5KV2>]:

At this exact moment, we are seeing the increasing dominance of commercial actors in space—specifically the rise of mega-constellations, or large numbers of small satellites flying in formation to provide global coverage for a variety of governmental and commercial uses, including both communications and Earth observation. Consequently, the fundamental nature of space is changing to one of a domain dominated by commercial actors.

beyond the terrestrial realm.² Untapped mineral resources,³ solar energy,⁴ and new manufacturing environments⁵ are only a few of the potential sources of commercial gain outer space offers to courageous entrepreneurs. Indeed, today's private sector space-facing efforts are steadily paving the way for these commercial endeavors in space. Such efforts have resulted not only in improved space technologies but decreased technological

2. See Kristin Houser, *Space Could Be a Trillion Dollar Industry by 2040*, FREETHINK (Apr. 8, 2023), <https://www.freethink.com/space/space-economy#:~:text=Between%20the%20money%20to%20be,%E2%80%8B%24370%20billion%20in%202020> [<https://perma.cc/PEF8-Y5BA>] (“Between the money to be made from rocket launches, asteroid mining, space manufacturing, tourism, and more, experts predict the global space economy – combining private and public groups – could be generating \$1 trillion in revenue annually by 2040”); *Space: Investing in the Final Frontier*, MORGAN STANLEY (Jul. 24, 2020), <https://www.morganstanley.com/ideas/investing-in-space> [perma.cc/U2YW-RWJZ] (estimating the global space industry will already be generating \$1 trillion by 2040, and providing industry based breakdown of growth); *The Space Sector to be Bigger than the Oil Industry*, EVONA, <https://www.evona.com/blog/the-space-sector-to-be-bigger-than-the-oil-industry/#:~:text=In%202019%2C%20the%20total%20revenues,over%20%243%20trillion%20by%202050> [<https://perma.cc/9ZA6-YEMZ>] (last visited May 16, 2023) (indicating the space sector is estimated to be worth over \$3 trillion by 2050).

3. Sarah Maher, *Mining in Space*, GENERAL KINEMATICS (Dec. 18, 2017), <https://www.generalkinematics.com/blog/mining-in-space/#:~:text=Minerals%20that%20can%20be%20found,in%20the%20mining%20of%20water> [<https://perma.cc/BM4M-SY8D>]:

Minerals that can be found in asteroids are: iron, nickel, iridium, palladium, platinum, gold, and magnesium to name a few. Metal, however, is not the only thing that would be mined from asteroids. There is a certain interest in the mining of water . . . Mining asteroids for water would also support space travel endeavors as a means of supporting life different from sending goods out from earth.

4. *Space-Based Solar Power*, DEP'T OF ENERGY, <https://www.energy.gov/space-based-solar-power> [<https://perma.cc/53Z7-NVYU>] (last visited April 13, 2023) (“Solar power directly from space may arrive sooner than you think.”).

5. Carsten Hirschberg et al., *The Potential of Microgravity: How Companies Across Sectors Can Venture into Space*, MCKINSEY & CO. (June 13, 2022), <https://www.mckinsey.com/industries/aerospace-and-defense/our-insights/the-potential-of-microgravity-how-companies-across-sectors-can-venture-into-space> [<https://perma.cc/ST24-XYQX>]:

Space offers a unique research and manufacturing environment to a broad range of sectors because of its near-vacuum state, microgravity (which confers weightlessness), and higher levels of radiation. These features may enable new processes or reveal new insights. Many companies believe that the environment of space could help them discover new products, enhance their current offerings, or decrease development timelines.

costs—in turn catalyzing further private sector involvement in spacefaring activities—a self-feeding cycle that shows little indication of slowing.⁶ The future holds an Earth deeply commercially intertwined with the space ecosystem. Space industries are expected to be bustling, contributing to a better terrestrial life. Zero-gravity open space and the altered gravitational state of celestial bodies provides a novel manufacturing environment that will facilitate improved production of goods, including fiber optic cables critical to our modern internet and various pharmaceuticals that have dramatically improved the human condition.⁷ Point-to-point movement of people and goods that materially accelerates transportation will see the rapid entry and exit from space of vehicles intended to dramatically shorten travel time across the globe.⁸ Space tourism will blossom, as individuals take to space for leisure.⁹ The Moon, other planets, and asteroids will be mined to

6. Stefan Ellerbeck, *The Space Economy is Booming. What Benefits Can It Bring to Earth?*, THE WORLD ECON. F. (Oct. 19, 2022), <https://www.weforum.org/agenda/2022/10/space-economy-industry-benefits/#:~:text=The%20Space%20Foundation's%20The%20Space,increase%20from%20a%20year%20earlier> [<https://perma.cc/M8QL-TLUE>];

Another change since man first landed on the moon in 1969 is that lower costs mean it's not just governments that can afford to put rockets and satellites into the skies. A host of private-sector companies are now investing in space programmes, seeking everything from scientific advances to potentially lucrative business opportunities.

7. See Hirschberg et al., *supra* note 5 (discussing the many benefits a space environment can provide for development of pharmaceuticals); Gregory Barber, *The Best Place to Make Undersea Cables Might Be . . . in Space*, WIRED (Sept. 11, 2019), <https://www.wired.com/story/the-best-place-to-make-undersea-cables-might-be-in-space> [<https://perma.cc/7MB9-LDSD>] (discussing plans to produce ZBLAN fiber-optic cables in the International Space Station's micro-gravity environment to avoid development of microcrystals harmful to the cable's potential).

8. See Michael Sheetz, *NYC to Shanghai in 40 minutes: SpaceX's Goal for Point-to-Point Space Travel*, CNBC (June 8, 2019), <https://www.cnbc.com/2019/06/07/nyc-to-shanghai-in-40-minutes-spacexs-goal-for-point-to-point-travel.html> [<https://perma.cc/L8D8-P3B6>]; Sandra Erwin, *SpaceX Wins \$102 Million Air Force Contract to Demonstrate Technologies for Point-to-Point Space Transportation*, SPACE NEWS (Jan. 19, 2022), <https://spacenews.com/spacex-wins-102-million-air-force-contract-to-demonstrate-technologies-for-point-to-point-space-transportation> [<https://perma.cc/W5KW-8YGC>].

9. See Mike Wall, *Virgin Galactic Is Just Weeks Away from Next Astronaut Test Flight, Eyes Space Tourist Flights Soon*, SPACE.COM (May 8, 2023), <https://www.space.com/virgin-galactic-fifth-spaceflight-late-may-2023> [<https://perma.cc/TX2C-XGA9>]; Michael Sheets, *How SpaceX, Virgin Galactic, Blue*

harvest lucrative amounts of valuable resources that can be used to further other space activities or that can be transported back to Earth for use.¹⁰ Each of these space industries, lucrative in and of themselves, will be accompanied by equally profitable logistics trails critical to their establishment and functioning.¹¹ Unfortunately, as these industries blossom, so too will parasitic activities by private actors that prey on legitimate commercial ecosystems. Given the significant parallels between outer space and the high seas, such predatory activity will most likely include Space Piracy.

While considered far-fetched today, modern technology and the lessons of the high seas indicate Space Piracy will take place when outer space contains a more vibrant commercial ecosystem. The future currently anticipated for outer space mirrors that of the high seas, which have historically been a fertile ground for piracy. Like the high seas, it is expected outer space will become a bustling commercial highway. Countless goods and persons will be transported across enormous distances to and from Earth as well as across space locations. Moreover, as with the high seas, outer space is too vast to be effectively overseen by States at all times. Vessels navigating commercial routes in outer space will be largely alone in boundless space, far from the protection and projection of State police power. These factors will coalesce to provide a strong incentive for piracy, offering ample opportunity to gain financially through theft, seizure, kidnapping, and ransom.¹² This is especially so, as technological improvement

Origin and Others Compete in the Growing Space Tourism Market, CNBC (Sept. 26, 2020), <https://www.cnn.com/2020/09/26/space-tourism-how-spacex-virgin-galactic-blue-origin-axiom-compete.html> [<https://perma.cc/N6BD-N69Q>].

10. See Brad Blair, *Space Mineral Resources*, NAT'L SPACE SOC'Y (Winter 2015), <https://space.nss.org/space-mineral-resources> [<https://perma.cc/NR28-K8ZP>]:

A recently released study by the International Academy of Astronautics (IAA) found that space mineral resources (SMR) can serve as an economic gamechanger, opening a vast new source of wealth to benefit humanity. Study findings on SMR technology and engineering design are that mining asteroids and lunar regolith is within reach of the current state of the technical art.

11. See ANNA E. GUNN-GOLKIN, COUNTERING SPACE PIRATES: THE UNITED STATES SPACE GUARD 10 (2018).

12. See *Reopening the American Frontier: Promoting Partnerships between Commercial Space and the U.S. Government to Advance Exploration and Settlement Before the Subcommittee on Space, Science, & Competitiveness of the Senate*

further minimizes both cost and risk to potential perpetrators.¹³ Examining technology commonly used today only emphasizes this conclusion. In particular, unmanned spacecrafts,¹⁴ autonomous vehicles,¹⁵ robotic arms,¹⁶ and the network of radio antennas supporting space missions¹⁷ indicate humanity is already well into the development of tools that will one day be fundamental to Space Piracy.

Thus, Space Piracy is likely to manifest in ways that have striking similarities to current popular notions of sea piracy, including through plundering, robbing, seizure, kidnapping,

Committee on Commerce, Science, and Transportation, 115th Cong. (2017) (statement of Dr. Moriba Jah, Professor, The University of Texas at Austin) (“Space Piracy has likely already happened, is happening, and will happen so long as we lack the ability to comprehensively monitor all space activities. This unfortunate human behavior has happened in all other domains and to expect the Space Domain to be an exception is naïve at best.”).

13. Technology could certainly be used in outer space to execute piratical acts while actors direct from a distance, reducing harm and even attribution to bad actors. As relevant technology improves, not only will capability excel but costs will drop, decreasing barriers to entry into the realm of space piracy. See Gregory D. Miller, *Space Pirates, Geosynchronous Guerillas, and Nonterrestrial Terrorists: Nonstate Threats in Space*, 33 *AIR & SPACE POWER J.*, 33, 40 (2019) (discussing rogue activities by non-State actors in space “as the cost of entry comes down, more groups will have the ability to carry out attacks”).

14. See *In-Situ Exploration and Sample Return: Autonomous Planetary Mobility, MARS Exploration Rovers*, NASA, <https://mars.nasa.gov/mer/mission/technology/autonomous-planetary-mobility> [<https://perma.cc/VH9W-F7MQ>] (last visited Nov. 17, 2023); ExxonMobil, *NASA’s New Unmanned Spacecraft: Marvels of Engineering*, YOUTUBE (Sept. 25, 2014), https://www.youtube.com/watch?app=desktop&v=BW6Tf5oGH3w&ab_channel=ExxonMobil [<https://perma.cc/CE4G-SQNE>].

15. See *Factsheet: Autonomous Vehicles*, CENTER FOR SUSTAINABLE SYSTEMS, [https://css.umich.edu/publications/factsheets/mobility/autonomous-vehicles-factsheet#:~:text=Autonomous%20vehicles%20\(AVs\)%20use%20technology,and%20responding%20to%20traffic%20conditions](https://css.umich.edu/publications/factsheets/mobility/autonomous-vehicles-factsheet#:~:text=Autonomous%20vehicles%20(AVs)%20use%20technology,and%20responding%20to%20traffic%20conditions) [<https://perma.cc/ZUV9-YLZN>] (last visited Nov. 17, 2023).

16. See *Types of Robotic Arms*, UNIVERSAL ROBOTS (Nov. 11, 2022), <https://www.universal-robots.com/in/blog/types-of-robotic-arms> [<https://perma.cc/8HMD-NTGK>].

17. Heather Monaghan, *What is the Deep Space Network?*, NASA (Mar. 30, 2020), <https://www.nasa.gov/directorates/somd/space-communications-navigation-program/what-is-the-deep-space-network> [<https://perma.cc/2G58-SU94>]; *What is the Deep Space Network?*, NASA, <https://www.nasa.gov/directorates/somd/space-communications-navigation-program/what-is-the-deep-space-network> [<https://perma.cc/84EE-3JD4>].

hijacking, and demands for ransom (hereafter “Space Piracy”).¹⁸ For instance, it is not unimaginable to conceive an unmanned pirate vessel seizing and robbing an unmanned asteroid mining vessel in outer space. Such a scenario is akin to the classic plunder of a ship at sea but without crew on either side of the interaction—a circumstance inconceivable half a century ago but not surprising today given the advent and proliferation of unmanned spacecrafts and the deep space network.¹⁹ Similarly, it is not hard to imagine a Space Pirate boarding a vessel to kidnap wealthy tourists to hold for ransom. Such an occurrence would be equivalent to incidents of hostage-taking that have occurred in the Gulf of Aden but in the context of a zero-gravity vacuum.²⁰ Finally, consider a situation where the crew of a pirate vessel in outer space takes control of a nearby manufacturing vessel through cyber means, demanding payment for restoration of control. Again, such a situation aligns with our conceptions of sea piracy and are not at all inconceivable in light of serious hacking incidents that have taken place in the last decade.²¹

Though it may be novel to consider future Space Piracy, this eventuality should not be taken lightly—like piracy at sea, space piracy will not only present a threat to life but to commerce and, by extension, the advancement of humanity. Piracy at sea offers a vivid cautionary tale. Historically, sea piracy has seriously

18. See GUNN-GOLKIN, *supra* note 11, 11-13.

19. The deep space network is the term used to refer to the “NASA’s international array of giant radio antennas that supports interplanetary spacecraft missions, plus a few that orbit Earth.” See Monaghan, *supra* note 17.

20. See, e.g., *The Hostage Rescue Team*, FBI NEWS (Mar. 27, 2013), <https://www.fbi.gov/news/stories/hostage-rescue-team-mission-in-the-gulf-of-aden> [<https://perma.cc/AWV8-7J72>].

21. See Ian Prasad Philbrick, *It Took a Specialist Less than Half an Hour to Hack into a Superyacht*, SLATE (May 16, 2017), <https://slate.com/technology/2017/05/it-specialist-hacks-into-superyacht-in-less-than-30-minutes.html> [<https://perma.cc/3U3T-SLTV>] (“Ransomware operators have already... held a vessel’s steering controls ransom.”); *The NHS Cyber Attack*, ACRONIS (Feb. 6, 2020), <https://www.acronis.com/en-us/blog/posts/nhs-cyber-attack> [<https://perma.cc/H5LZ-ZATE>] (“On Friday 12th May 2017, the [United Kingdom’s] NHS, was brought to a standstill for several days due to the WannaCry [ransomware] outbreak, affecting hospitals and GP surgeries across England and Scotland.”); Kim Zetter, *An Unprecedented Look at Stuxnet, the World’s First Digital Weapon*, WIRED (Nov. 3, 2014), <https://www.wired.com/2014/11/countdown-to-zero-day-stuxnet> [<https://perma.cc/UM4J-CK8E>] (discussing how Stuxnet was used to disable centrifuges critical to Iranian uranium enrichment).

interfered with international commerce and the safety of navigation.²² Even today, the effects of such piracy are not inconsequential for international trade and shipping.²³ The toll of space piracy will be no different, materially impacting international space commerce for the worse while taking numerous casualties in the process. To the extent Space Piracy becomes a real scourge, it could even dissuade investment into space industries, stifling the technological development needed for commercial endeavors in outer space and the broader advancement of humanity connected therewith. In this way, if left unchecked, space piracy presents a real threat to all States and their nationals.

States must ensure they can combat and police such conduct before it becomes a serious problem. Such authority is crucial to facilitating the commercial growth and navigation of outer space that will benefit nationals of all States—both directly and indirectly. Whether, and to what extent, a State has the power to engage in such conduct is contingent on the law. Given Space Piracy threatens all States and, as discussed below, would take place beyond the sovereign territory of any particular State, States must consider international law rather than domestic law when assessing their readiness to tackle this future challenge.

22. See Nathan Ray, *Forced Upon the Account: Pirates and the Atlantic World in the Golden Age of Piracy, 1690-1726* (Fall 2017) (M.A. thesis, James Madison University) (on file with James Madison University scholarly commons) (“Before pirates were mostly expelled from the Caribbean because of increased national interests they held a significant amount of power in the seventeenth century to influence local trade.”); see also Roger Adamson, *The Fading Gleam of a Golden Age: Britain’s Battle Against Piracy in the Americas in the Early 18th Century* (May 2004) (honors project, Illinois Wesleyan University) (on file with the Illinois Wesleyan University Digital Commons) (“[A]round the beginning of the 18th century, after realizing that the trade and safety of their empire was in considerable danger, Britain waged war upon the pirates which roamed the waters of the Caribbean as well as the North American Coast.”).

23. See Freddie Pierce, *Piracy Costs Global Shipping \$9B Each Year*, SUPPLYCHAIN (May 17, 2020), <https://supplychaindigital.com/logistics/piracy-costs-global-shipping-dollar9b-each-year> [<https://perma.cc/5V6C-77E4>] (“The ship owners cite increased insurance costs, longer shipping routes, armed guards and ransoms paid as the reasons that Somalian piracy is driving up cost for international shippers.”); *\$500 million spent Annually to Keep Piracy at Bay in the Gulf of Guinea*, TRT WORLD (2022), <https://www.trtworld.com/magazine/dollar500-million-spent-annually-to-keep-piracy-at-bay-in-the-gulf-of-guinea-12771615> [<https://perma.cc/2L9C-4RRZ>] (“Piracy costs African countries in the Gulf of Guinea over \$ 500 million annually in what is currently the world’s maritime piracy hotspot.”).

III. DOES EXISTING INTERNATIONAL LAW ALREADY EMPOWER STATES TO COMBAT SPACE PIRACY?

States must ask whether pre-existing international law already empowers them to effectively deal with the matter of Space Piracy. Part III will survey international legal regimes that address terrestrial activities commonly associated with piracy to determine whether international law as it currently exists could be effectively applied to combat Space Piracy. As a prelude to this examination Section III.A will first establish international law applies in space. Section III.B will then begin analysis of pre-existing international law by examining the law of the sea, specifically the UN Convention on the Law of the Sea. Section III.B will then explore treaties in the realm of criminal aviation law, specifically the 2010 Beijing Protocol Supplementary to the Convention on Unlawful Seizure of Aircraft (the Beijing Protocol). Finally, Section III.C will consider whether customary international law (CIL) applies to the matter of Space Piracy. Ultimately, this work concludes pre-existing international law does not extend to Space Piracy.

A. *International Law Applies to Space*

It is widely acknowledged there are four sources of international law. Article 38 of the Statute of the International Court of Justice establishes these sources are:

- (a) international conventions, whether general or particular [;] . . .
- (b) international custom, as evidence of a general practice accepted as law;
- (c) the general principles of law recognized by civilized nations [; and] . . .
- [(d)] judicial decisions and teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law.²⁴

The law governing State activities in space—also known as space law—arises from five treaties drafted under the auspices of the United Nations. Of relevance to this Section III.A is the OST

24. U.N. Statute of the International Court of Justice art. 38; *see also* League of Nations, Statute of the Permanent Court of International Justice art. 38.

(as defined below), which established international law applies to outer space.

The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (OST) entered into force in 1967. The document was drafted through the United Nations and was largely reflective of previous UN General Assembly resolutions concerned with State activities in space and, more particularly, stymieing the extension of the Cold War arms race into this new frontier.²⁵ The OST is widely recognized as the most important of the five space treaties, establishing “the foundation of the international legal framework for all space activities.”²⁶ Currently, 114 States have ratified the OST, including all space faring nations—Australia, China, France, Germany, India, Japan, Russia, South Korea, the United Kingdom, and the United States.²⁷

The OST is clear international law applies to State activities in outer space. OST Article I indicates, “[o]uter space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law.”²⁸ This notion is reaffirmed by Article III, which asserts:

States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest

25. See G.A. Res. 1962-1963 (XVIII) 1963 (Dec. 12, 1964); STEVE MIRMINA & CARYN SCHENEWERK, *INTERNATIONAL SPACE LAW AND SPACE LAWS OF THE UNITED STATES* 29-30 (2022).

26. *Reopening the American Frontier: Exploring How the Outer Space Treaty Will Impact American Commerce and Settlement in Space*, S. Comm. on Space, Sci., and Competitiveness, 115th Cong. (2017) (letter for the record from Ian Christiansen and Christopher Johnson); see also MIRMINA & SCHENEWERK, *supra* note 25, at 25.

27. See Comm. on the Peaceful Uses of Outer Space, Status on International Agreements Relating to Activities in Outer Space as at 1 January 2022, U.N. Doc. A/AC.105/C.2/2022/CRP.10 (2022), https://www.unoosa.org/res/oosadoc/data/documents/2024/aac_105c_22024crp/aac_105c_22024crp_3_0_html/AC105_C2_2024_CRP03E.pdf [https://perma.cc/S75S-BG5W].

28. Treaty on Principles Governing the Activities of State in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies art. I, Oct. 10, 1967, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

of maintaining international peace and security and promoting international cooperation and understanding.²⁹

As such, the OST is clear States contemplating or engaging in activities in outer space are bound by pre-existing international law.

To the extent a State is not a party to the OST, it may still be bound by certain legal principles reflected in the document. Some scholars and States have asserted certain portions of the OST have crystallized into customary international law (CIL), including Article III's indication public international law applies to State's activities in outer space. For instance, Austria takes this position, arguing the principles contained in the OST are drawn from a unanimously adopted UN General Assembly resolution and

[s]uch an unanimous approval is an indication of *opinio juris sive necessitatis* when accompanied by concomitant practice [(i.e., it is CIL)]. A large majority of states, including all major space faring nations, have ratified the Outer Space Treaty and conduct their space activities in accordance with the above-mentioned principles. An opinion or practice objecting to or dissenting from these principles by states which are not party to the Outer Space Treaty does not seem to be identifiable.³⁰

Outside of these opinions and from a practical perspective, the application of international law to space is not only intuitive but supported by the expansion of international law to other new frontiers. For instance, States have agreed international law applies *mutatis mutandis* to the cyber plane, an uncharted realm materially distinct from any another other plane through which international law has developed—land, air, or sea.³¹ When

29. *Id.* art. III.

30. Comm. on the Peaceful Uses of Outer Space, Responses to the Set of Questions Provided by the Chair of the Working Group on the Status and Application of the Five United Nations Treaties on Outer Space, U.N. Doc. A/AC.105/C.2/2017/CRP.6 (2017).

31. See Lauren M. Cherry & Peter P. Pascucci, *International Law in Cyberspace*, AMERICAN BAR ASS'N (Jan. 27, 2023), https://www.americanbar.org/groups/law_national_security/publications/abastanding-committee-on-law-and-national-security-60th-anniversary-anthology/international-law-in-cyberspace/?login [https://perma.cc/7K46-EFVR](discussing the ways in which States such as France, Canada, Estonia, and the

compared to cyber, it can credibly be argued outer space is more readily comparable to each of the physical planes already governed by international law. As such, it would be unprecedented for States to refuse to extend pre-existing international law to outer space.

B. Potentially Applicable LOS Instruments

As traditionally conceived, piracy is an act tied to the waters. Thus, Section III.B begins this work's survey of pre-existing international law by examining conceptions of piracy under the law of the seas (LOS), in particular the UN Convention on the Law of the Seas (UNCLOS). Considered the constitution of the seas, States diligently negotiated the terms of UNCLOS for more than ten years before the treaty finally opened for signature in 1982. Entering into force in 1994, UNCLOS is integral to the LOS, codifying a variety of its fundamental concepts, such as the manner in which maritime baselines can be drawn; the width of various maritime zones; and the rights of coastal States and foreign vessels within such zones. While UNCLOS has been ratified by 168 States, much of its content is widely recognized as reflective of CIL.³² As such, States that may not be parties to UNCLOS can nonetheless be legally bound by concepts reflected in the document.³³ Of note to this work is the fact the definition of piracy provided in UNCLOS is widely considered reflective of CIL.³⁴

United States interpret international legal concepts to apply to the cyber realm); TALLINN MANUAL 2.0 (Michael Schmitt ed., 2017) (addressing the ways in which esteemed scholars and practitioners conceive international law applies to the cyber realm).

32. For instance, while the United States is not a party to UNCLOS it has publicly recognized much of its contents is reflective of CIL. See President Ronald Reagan, Statement on United States Ocean Policy, (Mar. 10, 1983) (transcript available at the Ronald Reagan Presidential Library And Museum) <https://www.reaganlibrary.gov/archives/speech/statement-united-states-oceans-policy> [<https://perma.cc/YQ5P-LCLJ>] (“[T]he convention also contains provisions with respect to traditional uses of the oceans which generally confirm exciting maritime law and practice and fairly balance the interests of all states.”).

33. *Id.*

34. Sandra Lynne Hodgkinson, *The Governing International Law on Maritime Piracy*, in PROSECUTING MARITIME PIRACY: DOMESTIC SOLUTIONS TO INTERNATIONAL CRIMES 13, 13-17 (Michael P. Scharf et al. eds., 2015).

1. Introducing the UNCLOS Piracy Provisions

UNCLOS includes various provisions addressing piracy. Article 101 of UNCLOS provides the following definition of piracy:

Piracy consists of any of the following acts:

- (a) any illegal acts of violence or detention, or any act of depredation, committed for private ends by the crew or the passengers of a private ship or a private aircraft, and directed:
 - (i) on the high seas, against another ship or aircraft, or against persons or property onboard such ship or aircraft;
 - (ii) against a ship, aircraft, persons or property in a place outside the jurisdiction of any State;
- (b) any act of voluntary participation in the operation of a ship or of an aircraft with knowledge of facts making it a pirate ship or aircraft;
- (c) any act of inciting or of intentionally facilitating an act described in subparagraph (a) or (b).³⁵

Having clarified what constitutes piracy, UNCLOS Article 103 also provides a separate definition for “pirate ships” or “pirate aircraft” as a “ship or aircraft if it is intended by the persons in dominant control to be used for the purpose of committing [piracy] . . . [or] has been used to commit any such act, so long as it remains under the control of the persons guilty of that act.”³⁶

UNCLOS empowers States to prevent and punish such conduct. UNCLOS Article 110 establishes the right of States to board and examine foreign ships encountered on the high seas when there are reasonable grounds to suspect a ship “is engaged in piracy.”³⁷ UNCLOS Article 105 goes further by empowering States to seize pirate ships or aircraft: “[o]n the high seas, or in any place outside the jurisdiction of any State, *every* State may seize a pirate ship or aircraft, or ship or aircraft taken by piracy and under the control of pirates, and arrest the persons and seize the property on board.”³⁸ Moreover, UNCLOS authorizes the

35. U.N. Convention on the Law of the Sea art. 101, Dec. 10, 1982, 1833 U.N.T.S. 397 [hereinafter UNCLOS].

36. *Id.* art. 103.

37. *Id.* art. 110 (this right may only be exercised by warships).

38. *Id.* art. 105 (emphasis added).

courts of any seizing State to impose penalties and otherwise decide what actions are to be taken with the seized ship, aircraft, or property.³⁹ Finally, UNCLOS Article 100 charges all States with a duty to cooperate to repress piracy.

2. Do the UNCLOS Piracy Provisions Extend to Space Piracy?

On their face, it is unclear whether the UNCLOS piracy provisions extend to Space Piracy. Only a close examination of their text in light of international law can provide an answer. Section III.B.2 engages in such an analysis. Focusing on the definition of piracy presented in UNCLOS Article 101, this work will first examine whether piracy extends to activities in outer space and then considers whether the “ships” and “aircraft” required for engaging in piracy include space crafts or other space objects. Ultimately, Section III.B.2. concludes that, while the Article 101 definition *does* extend to activities in outer space, it *does not* extend to space crafts or space objects.

a. Can Piratical Acts Take Place in Outer Space?

The UNCLOS piracy provisions repeatedly discuss conduct that occurs in a location outside any State’s jurisdiction, a concept that extends to outer space. The definition of piracy reaches conduct that occurs “in a place outside the jurisdiction of any State”⁴⁰ and UNCLOS empowers States to seize pirate ships or aircraft that are encountered “in a place outside the jurisdiction of any State.”⁴¹ While States have yet to achieve consensus on where exactly space begins, Article II of the OST explicitly notes “[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.”⁴² In this sense, outer space is not subject to the jurisdiction of any State. Putting aside the question of vessels, it seems outer space is one of the few locations in which the type of piracy discussed in UNCLOS Article 101(a)(ii) *can* occur.

39. *Id.*

40. *Id.* art. 101

41. *Id.* art. 105.

42. See MIRMINA & SCHENEWERK, *supra* note 25 (“There is no international consensus as to where airspace ends and outer space begins.”); Outer Space Treaty, *supra* note 28, art. II.

b. Do “Ships” Include Space Objects?

The UNCLOS piracy provisions indicate piracy is an activity committed *from* a ship (or aircraft) *against* a ship (or aircraft). Though used hundreds of times throughout UNCLOS, the word “ship” is never defined therein. Is it possible the term is broad enough to encompass spacecrafts used in the pursuit of Space Piracy? Indeed, spacecrafts were not a distant figment of science fiction when UNCLOS opened for signature, more than a decade after the United States sent a man to the moon. The Oxford English Dictionary provides both a narrow and a broad definition of the noun “ship.” On the one hand, the term can be used to narrowly mean “a large sea-going vessel (as opposed to a boat).”⁴³ On the other, it can be applied more to various objects used for navigation, such as a “balloon, aircraft, or powered spacecraft.”⁴⁴ If the piracy provisions were intended to employ the broader definition, then UNCLOS could extend to include spacecrafts. Which definition was intended by the drafters of UNCLOS? Greater clarity can only be gleaned through treaty interpretation.

International law regarding treaty interpretation highlights the importance of a treaty’s context, its object and purpose, and its subsequent application by States. The 1969 Vienna Convention on the Law of Treaties (VCLT)—widely recognized as reflective of CIL— provides crucial guidance regarding the interpretation of treaties. In particular, VCLT Article 31 establishes that a “treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.”⁴⁵ It provides context can be ascertained from a treaty’s text, including its preamble and annexes.⁴⁶ VCLT Article 31 also establishes treaty interpretation should consider “any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation.”⁴⁷ Applying this interpretive method, it is clear

43. *Ship*, OXFORD ENGLISH DICTIONARY, <https://www.oed.com/search/dictionary/?scope=Entries&q=ship> [https://perma.cc/5WXV-E7AE] (last visited May 16, 2023).

44. *Id.*

45. Vienna Convention on the Law of Treaties art. 31(1), May 23, 1969, 1155 U.N.T.S. 331.

46. *Id.* art. 31(2).

47. *Id.* art. 31(3).

UNCLOS employs the narrow definition of “ship,” as a vessel used solely for maritime navigation.

The object and purpose of UNCLOS is tied to the seas. The interpretation process set forth in VCLT Article 31 is greatly reliant on an understanding of the object and purpose of the relevant treaty. However, there is significant debate regarding the meaning of the phrase “object and purpose” as it appears in the VCLT, ultimately translating into different schools of interpretation.⁴⁸ Acknowledging these differing approaches, it is still clear the object and purpose of UNCLOS is tied to the seas. In particular, this work argues the object and purpose of UNCLOS was the creation of a new and unified regime of the seas that promotes peaceful use of the seas, equitable consumption of marine resources, and protection of marine ecosystems. At the time of UNCLOS’s drafting, the LOS suffered from serious gaps—how far did the sovereignty of coastal States extend into the waters? Was this breadth commensurate with coastal States’ economic rights to marine resources in coastal waters?⁴⁹ How did pre-existing LOS apply to archipelagic States?⁵⁰ Paired with these questions was the sudden realization exploitation of marine resources was having serious detrimental effects on the environment.⁵¹ The advance of technology had enabled industries, especially fishing, to harvest marine resources more aggressively. This activity began to take its toll on coastal States heavily dependent on such resources for sustenance and economic strength. Cognizant of the danger of leaving these issues unresolved, States came together to negotiate a new constitution of the seas that would finally resolve the tenuous uncertainty pervading the then-existing LOS regime. What emerged was UNCLOS, a comprehensive treaty that not only

48. See David S. Jonas & Thomas N. Saunders, *The Object and Purpose of a Treaty: Three Interpretive Methods*, 43 *VAND. J. TRANSNAT’L L.* 565, 567 (2010).

49. See YOSHIFUMI TANAKA, *THE INTERNATIONAL LAW OF THE SEA* 39 (3d ed. 2019) (addressing the breadth of the territorial sea and the exclusive economic zone); Charlotte Ku, *The Archipelagic States Concept and Regional Stability in Southeast Asia*, *CASE W. RES. J. INT’L L.* 463, 463 (indicating UNCLOS marked international acceptance of the notion of archipelagic state with sovereignty over their archipelagic waters).

50. See sources cited *supra* note 49.

51. See TANAKA, *supra* note 49, at 32.

reaffirmed pre-existing LOS but resolved many of its serious gaps in a manner that balanced the principles of sovereignty, freedom, and common heritage of all mankind.⁵²

The preamble and substantive text of the document echo this object and purpose, thoroughly anchoring UNCLOS in maritime matters. As indicated by VCLT Article 31, a treaty's context is critical to its interpretation and includes its preamble and substantive text. The preamble of UNCLOS repeatedly discusses seas and oceans, asserting the treaty will establish "a legal order for the seas and oceans," thereby grounding all aspects of the document to such waters.⁵³ This narrow focus is mirrored in the substantive text, which deals exclusively with the seas, their navigation, marine resources, and matters ancillary thereto. While the term "ship" is used throughout UNCLOS, so too is the term "aircraft." Often both terms appear alongside one another in the same provision.⁵⁴ The usage of both words in such a fashion indicates the terms are intended to carry distinct meanings—one does not encompass the other. Moreover, this indicates that, to the extent the drafters of UNCLOS felt the need to do so, they were willing and able to conceptualize, memorialize, and distinguish the rights and obligations of vessels that are and are not seafaring. In this sense, use of both terms evinces an intent to employ a narrow definition of "ship" that does not encompass all objects that can be used for navigation.

State application of the treaty only reaffirms this interpretation. The VCLT establishes subsequent State implementation of a treaty may be critical to understanding the intent of the parties in drafting and binding themselves to such document.⁵⁵ Following entry into force of UNCLOS, States have interpreted the term "ship" narrowly, excluding other vehicles included in the broader definition of the word. While certain provisions of UNCLOS accord rights or impose obligations on navigation of both "ships" and "aircraft," others do so only with respect to "ships."⁵⁶ Where a right or obligation set forth in the

52. See TANAKA, *supra* note 49, at 22.

53. See UNCLOS, *supra* note 35, pmb1.

54. See UNCLOS, *supra* note 35 (employing both terms).

55. Vienna Convention on the Law of Treaties, *supra* note 45, art. 31(3)(b).

56. Compare UNCLOS, *supra* note 35, art. 38 (according the right of transit

treaty only refers to “ships,” States have applied such provisions to seafaring vessels alone. For instance, UNCLOS Article 17 establishes “ships of all States, whether coastal or land-locked, enjoy the right of innocent passage through the territorial sea” of a coastal State.⁵⁷ States have interpreted this provision as limiting innocent passage to seafaring vessels. That is, airplanes do *not* enjoy the right of innocent passage.⁵⁸ This pre-existing State practice is a strong indication States interpret the term “ship,” as it appears in UNCLOS, as denoting seafaring vessels alone.

Principles of treaty interpretation established by international law indicate the word “ship” employed throughout the UNCLOS piracy provisions would not encompass the spacecrafts used in furtherance of Space Piracy. Through examining the object and purpose of UNCLOS, the treaty’s context, and its subsequent implementation by States, it is clear the document is grounded in the sea. As such implementation of the principles of treaty interpretation reflected by the VCLT indicate UNCLOS employs a narrow definition of “ship” to mean only seafaring vessels in connection with their navigation over the waters.

c. Do “Aircraft” Include Space Objects?

As with ships, the UNCLOS piracy provisions repeatedly refer to aircraft. The UNCLOS definition of piracy includes acts committed by persons on an aircraft or against persons on an aircraft. Moreover, UNCLOS does not simply define the term “pirate ships” but also includes a definition for the term “pirate

passage to both ships and aircraft), *with* UNCLOS, *supra* note 35, art. 17 (according the right of innocent passage to ships alone).

57. *Id.* art. 17.

58. See *Freedom of Navigation, in* LAW OF THE SEA (2017), <https://sites.tufts.edu/lawofthesea/chapter-three/#:~:text=While%20there%20is%20no%20right,aircraft%20over%20an%20international%20strait> [https://perma.cc/GY8Z-2RWG] (“While there is no right to innocent passage for aircraft, and coastal States may deny entry to aircraft attempting to traverse airspace over their territorial waters, they may not deny transit passage to aircraft over an international strait.”); TANAKA, *supra* note 49, at 105 (“It is important to note that the right of innocent passage does not comprise the freedom of overflight.”).

aircraft” and empowers States to seize such aircraft. Does the term “aircraft,” as used in UNCLOS encompass spacecrafts or other space objects? It is unlikely. As it appears throughout UNCLOS, the term “aircraft” is generally understood to be consistent with the 1944 Convention on Civil Aviation (the “Chicago Convention”), which entered into force more than two decades before States began to negotiate the terms of UNCLOS.⁵⁹ Annex 7 to the Chicago Convention defines an aircraft as “[a]ny machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against earth’s surface.”⁶⁰ Annex 7 also provides examples of aircraft falling within this definition, including airplanes, rotorcraft, gliders, kites, balloons, and airships such as dirigible balloons.⁶¹

Generally, neither spacecrafts nor the launch vehicles used to propel them into outer space would fall within the Chicago Convention’s definition of “aircraft” and therefore, by extension, would not be captured by the term “aircraft,” as employed throughout UNCLOS. As technology exists today, spacecrafts and other space objects (such as satellites) are incapable of independent travel into space.⁶² Instead, these objects are wholly reliant on launch vehicles, sometimes termed “rockets,” to get to their intended destination.⁶³ Launch vehicles enter the air by generating so much exhaust from burning propellants that the resulting thrust enables the vehicle to leave the ground and ultimately enter space.⁶⁴ In this sense, launch vehicles are distinct from planes because their flight is not contingent upon lift provided by the air but by internally generated combustion reactions. As such, launch vehicles are not “aircraft” for purposes of the Chicago Convention because they do not “derive support

59. Conversation with Captain Katherine Pasieta, Deputy Legal Counsel at the Office of the Chairman of the Joint Chiefs of Staff (Mar. 22, 2023) (on file with author).

60. International Civil Aviation Organization, Convention on Civil Aviation, annex 7, Dec. 7, 1944, 61 Stat. 1180, 15 U.N.T.S. 295 [hereinafter Chicago Convention].

61. *Id.*

62. See *How Do We Launch Things Into Space?*, NASA: SPACE PLACE, <https://spaceplace.nasa.gov/launching-into-space/en/#:~:text=We%20launch%20satellites%20and%20spacecraft,rockets%20and%20the%20most%20propellent> [https://perma.cc/6LFA-PQ66] (last visited Feb. 6, 2023).

63. See *id.*

64. See *id.*

in the atmosphere from the reactions of the air.” In contrast, spacecrafts reach outer space through reliance on launch vehicles and only begin to “fly” independently when they first enter orbit. While a spacecraft is in orbit above Earth, it does not derive any support in the atmosphere from the reactions of the air, as the air density is extremely low.⁶⁵ Instead, spacecrafts maintain orbit through the momentum generated during launch coupled with the gravity that pulls them back towards Earth.⁶⁶ As such, during the process of journeying into space and orbiting around Earth, a spacecraft also does not “derive support in the atmosphere from the reactions of the air” and therefore does not fall within the Chicago Convention’s definition of “aircraft.” This analysis generally extends to any other space object carried into space via a launch vehicle.

This analysis changes slightly but materially when considering the case of spacecrafts intended to return to the surface of the Earth. Vessels capable of re-entry into Earth’s atmosphere generally function as unpowered gliders during the process of re-entry.⁶⁷ That is, they “derive support in the atmosphere from the reactions of the air other than the reactions of the air against earth’s surface.” As such, while exercising re-entry function, spacecrafts actually meet the Chicago Convention’s definition of “aircraft.” These facts create an interesting dual-status for spacecrafts that can and do exercise a re-entry function. On their way to outer space and while functioning in outer space, such spacecrafts do not fall within the definition of “aircraft” but while re-entering Earth’s atmosphere and venturing towards land or water they do.

Given this duality, could the UNCLOS piracy provisions extend to cover Space Piracy committed by a spacecraft that has

65. See *Speed Regimes: Hypersonic Re-entry*, NASA: GLENN RSCH. CTR., <https://www.grc.nasa.gov/www/k-12/BGP/hihyper.html#:~:text=As%20a%20spacecraft%20re%2Denters,twenty%20five%2C%20M%20%3C%2025> [https://perma.cc/LD9P-YSJY] (last visited May 7, 2021) (“[T]he low density of the air at altitudes above 50 miles makes aerodynamic surfaces ineffective.”).

66. See *Why Don’t Satellites Fall out of the Sky?*, SCIJINKS, <https://scijinks.gov/satellites-orbit/#:~:text=The%20Short%20Answer%3A&text=Gravity%E2%80%94combined%20with%20the%20satellite’s,back%20down%20to%20the%20ground> [https://perma.cc/X6ZH-5P2Z] (last visited May 16, 2023).

67. *Speed Regimes: Hypersonic Re-entry*, *supra* note 65.

re-entry capability? It is unlikely. UNCLOS Article 101 indicates piracy is committed by pirate aircraft, that is, at the time of the offense the vessel used to commit the offense must be an aircraft. While under this dualistic approach to spacecrafts, a pirate spacecraft may be treated as an aircraft at the time of its re-entry into Earth, at the time the piratical act takes place in outer space, such spacecraft would not be considered an “aircraft” within the meaning of the Chicago Convention. As such, UNCLOS Article 101 would not be triggered by such Space Piracy.

Even if spacecraft with re-entry capability were broadly characterized as aircraft, the UNCLOS piracy provisions would only address a portion of the Space Piracy contemplated by this work. Some may argue a vessel treated as an aircraft when engaging in one function should be treated as an aircraft with respect to all functions. Thus, any spacecraft that has re-entry capability should broadly be characterized as an “aircraft” within the definition of the Chicago Convention and is therefore “eligible” to engage in piracy as defined in UNCLOS. While certain Space Piracy would fall within the UNCLOS piracy provisions under this approach, much would not. In particular, in those instances where a victim vessel does not have re-entry capability—as is the case with many space objects—and, thus, could not be treated as an aircraft pursuant to this argument. Because UNCLOS Article 101 requires “two ships,” if the victim vessel does not fall under the definition of the terms “ship” or “aircraft,” any depredation against such vessel by a pirate spacecraft would not constitute piracy. As such, this approach touches only a portion of those activities that would fall within the category of Space Piracy—those where both the perpetrating and victim vessels have re-entry capabilities. Therefore, even if one could extend the definition of “aircraft” set forth by the Chicago Convention to space objects with re-entry capability, a material portion of the conduct within the definition of Space Piracy would remain outside the purview of UNCLOS.

C. Potentially Applicable CAL Instruments

The popular conception of piracy includes not only theft and ransoming but also hijacking. There is little doubt Space Piracy will also encompass such conduct. While the piracy provisions of UNCLOS extend to hijacking at sea, the current international

legal regime governing hijacking of civil aircraft is also extremely relevant to discussions of pre-existing international law that may extend to cover piratical acts in outer space.

Modern criminal aviation law (CAL) derives from several instruments. The first internationally publicized hijacking of a civil aircraft occurred in the 1931, with incidents increasing over time.⁶⁸ By the 1960s, hijacking of aircraft had become so frequent States took action to stymie such conduct. The 1963 Convention on Offenses and Certain Other Acts Committed on Board Aircraft (the Tokyo Convention) was drafted to empower States to combat hijacking of civil aircraft. While this treaty ensured States had the jurisdiction to punish hijacking, it did not define the offense, instead leaving the task to States' domestic legislation.⁶⁹ Unfortunately, the Tokyo Convention was ineffective at stemming such criminal activity and in the period between the late 1960s and early 1970s, a hijacking occurred globally an average of once every five days.⁷⁰

In response to this alarming trend, a conference of the International Civil Aviation Organization (ICAO) adopted the Convention for the Suppression of Unlawful Seizure of Aircraft (the Hague Convention) in 1970.⁷¹ The Hague Convention provided a specific definition of the acts that constituted hijacking of civil aircraft and obliged States to incorporate such offenses into their domestic criminal legislation.⁷² The treaty also bound States to adhere to the principle of *aut dedere aut judicare*.⁷³

68. See Janet Bednarek, *A Brief History of Airplane Hijackings, From the Cold War to D.B. Cooper*, SMITHSONIAN MAG. (July 18, 2022), <https://www.smithsonianmag.com/history/a-brief-history-of-airplane-hijackings-db-cooper-netflix-180980408> [<https://perma.cc/Z5WX-ZTV5>].

69. See *Chapter Three: Convention for the Suppression of Unlawful Seizure of Aircraft 1970*, U.N. OFF. ON DRUGS & CRIME 45, https://www.unodc.org/pdf/crime/terrorism/Commonwealth_Chapter_3.pdf [<https://perma.cc/84FS-JTAS>] (last visited May 16, 2023).

70. See Bednarek, *supra* note 68.

71. See *Chapter Three: Convention for the Suppression of Unlawful Seizure of Aircraft 1970*, *supra* note 69.

72. See Convention for the Suppression of Unlawful Seizure of Aircraft art. 1, Dec. 16, 1970, 22 U.S.T. 1641, 860 U.N.T.S. 105 (defining the offense of unlawful seizure of aircraft) [hereinafter Hague Convention]; *id.* art. 2 (obliging States to implement the treaty through analogous domestic criminal law); *id.* art. 3(2) (limiting the Convention to civil aircraft).

73. *Id.* art. 7.

Though the Hague Convention was a significant and necessary step towards empowering States to quash hijacking of civil aircraft, gaps remained in the international legal regime. In 2010, the Beijing Protocol to the Hague Convention opened for signature—one of many counterterrorism instruments contemporaneously negotiated within the broader UN framework.⁷⁴ The document was intended to modernize the Hague regime through stopping such gaps, including through expanding the definition of the offense, liability for the offense, and State jurisdiction over the offense.⁷⁵ The Beijing Protocol entered into force in 2018. While the Hague Convention has 183 State parties, the Beijing Protocol only has thirty-nine.⁷⁶ Unlike UNCLOS, neither the Hague Convention nor the Beijing Protocol are considered reflective of CIL.

74. See *International Legal Instruments*, UNITED NATIONS OFF. COUNTER-TERRORISM, <https://www.un.org/counterterrorism/international-legal-instruments> [<https://perma.cc/S7RL-PW7E>] (last visited May 16, 2023) (note especially the 2010 Convention on the Suppression of Unlawful Acts Relating to International Civil Aviation, the 2005 Amendments to the Convention on the Physical Protection of Nuclear Material, the 2005 Protocol to the Convention for the Suppression of Unlawful Acts Against Safety of Maritime Navigation, and the 2005 International Convention for the Suppression of Acts of Nuclear Terrorism); see also *Status of the Universal Anti-Terrorism Conventions and Protocols as well as other International and Regional Legal Instruments related to Terrorism and Co-operation in Criminal Matters in the OSCE Area*, ORG. FOR SEC. AND COOP. EUROPE (July 2018), https://www.osce.org/files/f/documents/5/8/17138_0.pdf [<https://perma.cc/HCW5-VPM2>] (characterizing the treaties listed in the foregoing parenthetical (as well as others) as “Universal Anti-Terrorism Instruments”).

75. See Int’l Civ. Aviat. Org. (ICAO), Administrative Package for Ratification of or Accession to the Protocol Supplementary to the Convention for the Suppression of Unlawful Seizure of Aircraft (Beijing Protocol, 2010), https://www.icao.int/secretariat/legal/Administrative%20Packages/Beijing_protocol_EN.pdf [<https://perma.cc/J5TA-YAAC>] (last visited May 24, 2024):

The Beijing Protocol is the result of collective efforts by the international community to modernize the legal framework for aviation security. By expanding the scope of the offence to cover different forms of hijacking, including certain preparatory acts for the offence, it will strengthen the capacity of States to prevent the commission of these offences, and to prosecute and punish those who commit such offences.

76. See *Summary Information: 2010 Beijing Convention on the Suppression of Unlawful Acts Relating to International Civil Aviation*, CTR. FOR INT’L L., NAT’L UNIV. OF SING., <https://cil.nus.edu.sg/database/cil/2010-beijing-convention-on-the-suppression-of-unlawful-acts-relating-to-international-civil-aviation> [<https://perma.cc/U4R6-6F33>] (last visited May 16, 2023).

1. Introducing the Hijacking Provisions of the Beijing Protocol

As explored below, the Beijing Protocol approaches criminal conduct in a manner distinct from UNCLOS—in many ways empowering States to reach a much broader swath of conduct. The Beijing Protocol establishes a wide variety of offenses fall under the umbrella of unlawful hijacking. The Protocol first establishes that, “[a]ny person commits an offence if that person unlawfully and intentionally seizes or exercises control of an aircraft in service by force or threat thereof, or by coercion, or by any other form of intimidation, or by any technological means” (hereafter referred to as the “Core Offense”).⁷⁷ The document clarifies “an aircraft is considered to be in service from the beginning of the pre-flight preparation of the aircraft by ground personnel or by the crew for a specific flight until twenty-four hours after any landing.”⁷⁸ In this sense, although piracy under UNCLOS is limited to activities that take place in the high seas or other areas outside any State’s jurisdiction, unlawful seizure of aircraft can take place in airspace under the jurisdiction of a State. The Protocol also extends the definition of the offense of hijacking to include threats of a Core Offense, attempts at a Core Offense, assistance with a Core Offense, and assisting another in evading investigation, prosecution, or punishment for a Core Offense.⁷⁹

The Beijing Protocol modernizes notions of criminal liability for such offenses through examining involvement of both natural persons and legal persons in such offenses. Ultimately, the Protocol establishes that any criminal liability for such offenses should extend not only to individual perpetrators but also to entities involved in commission of such acts, facilitating punishment of both persons and organizations involved in such conduct.⁸⁰ Like the Hague Convention, the Beijing Protocol obliges States to make such offenses severely punishable under their own domestic law.⁸¹

77. Protocol Supplementary to the Convention on the Suppression of Unlawful Seizure of Aircraft art. II, July 1, 2018, U.N.T.S. [hereinafter Beijing Protocol].

78. *Id.* art. V.

79. *See id.* art. II.

80. *See id.* art. IV.

81. *See id.* art. III

Finally, the Beijing Protocol expands the world of States with jurisdiction over such offenses.⁸² Pursuant to Article VII of the Protocol,

1. Each State Party shall take such measures as may be necessary to establish jurisdiction over the offences . . . in the following cases:

(a) when the offence is committed in the territory of that State;

(b) when the offence is committed against or on board an aircraft registered in that State;

(c) when the aircraft on board which the offence is committed lands in its territory with the alleged offender still on board;

(d) when the offence is committed against or on board an aircraft leased . . . to a lessee whose principle place of business, or if the lessee has not such place of business, whose permanent residence is in the State;

(e) when the offence is committed by a national of that State.

2. Each State Party may also establish its jurisdiction over any such offence in the following cases:

(a) when the offence is committed against a national of that State;

(b) when the offence is committed by a stateless person whose habitual residence is in the territory of that State.⁸³

In this sense, several States may be empowered to wield criminal jurisdiction over the offender, though the acts may have taken place within the airspace or on the territory of other States.

2. Do the Hijacking Provisions of the Beijing Protocol Apply to Space Piracy?

It is unlikely the Beijing Protocol extends to Space Piracy. The Core Offense discussed by the Beijing Protocol involves an aircraft that is in service. Both the Hague Convention and the

82. The Hague Convention only provided bases for State jurisdiction in the cases now set forth in the above Articles VII(1)(a) – (c) of the Beijing Protocol. *Compare* Hague Convention, *supra* note 72, art. 4, *with* Beijing Protocol, *supra* note 77, art. VII.

83. Beijing Protocol, *supra* note 77, art. VII.

Beijing Protocol were adopted under the auspices of the ICAO. As such, the documents promulgated under the auspices of ICAO are rooted in the Chicago Convention regime, including the fundamental definitions contained therein. Therefore, like UNCLOS, the definition of the term “aircraft” as employed in the Beijing Protocol is found in Annex 7 to the Chicago Convention. As discussed in Section III.B.2, although an argument can be made that an “aircraft” includes any spacecraft that can be characterized as an aircraft in the exercise of one of its many functions, this argument would only enable a small sliver of space objects involved in Space Piracy to fall within the definition of the Beijing Protocol—chiefly, those spacecrafts with re-entry capability. Moreover, current State approaches to the term “aircraft” do not adopt this approach, formally treating aircraft and spacecrafts as distinct under the law.⁸⁴ As such, it is unlikely the Beijing Protocol adequately empowers States to curb or punish Space Piracy.

D. Customary International Law

Long before UNCLOS’s entry into force, CIL characterized piracy as the original crime of universal jurisdiction.⁸⁵ While it is widely recognized that UNCLOS Article 101’s definition of piracy is reflective of CIL, certain scholars have questioned whether the UNCLOS piracy provisions reflect the *full* extent of CIL that exists on this matter.⁸⁶ That is, they argue while UNCLOS may

84. See Sven Kaltenhäuser et. al, Air Traffic Management and Space Transportation: System Wide Information Management and Integration into European Airspace, ICAO Space/UNOOSA Aerospace Symposium (Mar. 18, 2015), <https://www.icao.int/Meetings/SPACE2015/Presentations/2%20-%20S.%20Kaltenhaeuser%20-%20DLR.pdf> [https://perma.cc/8Z6P-NJPW] (presentation by German Institute for Flight Guidance at ICAO Space 2015 Conference, repeatedly distinguishing between aircraft and space vehicles, even when considering space vehicles engaged in re-entry to Earth); 14 C.F.R. § 401.5 (indicating US agencies refer to space ships and the rockets that propel them into outer space as aircraft, but as “payloads” and their “launch vehicles,” rather than as aircraft).

85. See Hodgkinson, *supra* note 34, at 15-16 (discussing States’ universal jurisdiction over the offense of piracy and highlighting the 1696 case of *Rex v. Dawson* in which Sir Charles Hedges invokes such universal jurisdiction before the jury).

86. See Barry Hart Dubner, *On the Definition of the Crime of Sea Piracy Revisited: Customary vs. Treaty Law and the Jurisdictional Implications Thereof*, 42 J. MAR. L. & COM. 71, 93 (2011):

reflect *some* of the CIL on the issue of piracy, it does not reflect *all* of it. To the extent additional CIL has crystallized with respect to piracy, it is important to consider whether this law extends to conduct that would fall within the purview of Space Piracy.

Initial attempts to draft a convention on piracy in the early twentieth century indicate the UNCLOS definition of piracy may be narrower than CIL on the topic. The UNCLOS definition of piracy replicates the definition that appears in the 1958 Geneva Convention on the High Seas (the “Geneva Convention”).⁸⁷ In turn, the Geneva Convention’s definition can be traced to the 1932 Draft Convention on Piracy, which was created through the efforts of several American lawyers under the auspices of Harvard University (the “Harvard Draft”).⁸⁸

The Harvard Draft examines the wide breadth of State practice and *opinio juris* regarding the international crime of piracy through examining the works of respected scholars in the field.

In the comments to the Draft, its authors opined that

[a]t the outset of his task, the draftsman of a convention on piracy must decide on the theme and plan of his draft . . . In seeking an answer, he will meet at once a diversity of opinion which runs throughout the subject. This diversity is especially remarkable with respect to the following fundamental matters:

- (1) The definition of piracy in the sense of the law of nations.
- (2) The meaning and justification of the traditional assertions that piracy is an offence or a crime against the law of nations.

The fact that the international conventions decided to adopt certain parts of customary law, in creating the international definition of sea piracy on the high seas, does not automatically mean that the crime of sea piracy no longer exists for geographical areas outside the high seas. In fact, since a State is entitled to define what it means by sea piracy, this, in and of itself, would seem to suggest that there is a customary law of sea piracy still surviving the two conventions. This customary law is the same as conventional definition and is even more expansive.

87. See Geneva Convention on the High Seas art. 15, Apr. 29, 1958, 450 U.N.T.S.

11.

88. See Dubner, *supra* note 86, at 77.

(3) The common jurisdiction of all states to prosecute and punish pirates.⁸⁹

Despite the wide divergence of opinions on these matters, the authors of the Harvard Draft were able to craft a document they felt States could generally embrace. Indeed, the authors conceded their draft convention was crafted with expediency in mind—the more palatable their language to States, the more successful their draft.⁹⁰In this sense, the provisions in the Harvard Draft were intended to be the most mutually agreeable construction of such concepts as between States. Thus, it is feasible alternative formulations of the relevant concepts exist that more broadly reflect CIL at the time of the creation of the Harvard Draft, including aspects of the law that faced persistent objection but were nonetheless observed widely enough to constitute CIL.⁹¹

The perception the UNCLOS piracy provisions do not fully capture CIL on the matter of piracy is further supported by the Geneva Convention's definition of piracy and the passage of time. Though the Geneva Convention relied on the Harvard Draft in constructing its treatment of piracy, the definition ultimately adopted by this treaty was actually narrower than that offered by the Harvard Draft, which (as discussed above) is likely to have offered a definition that was the most mutually agreeable to the broadest swath of States.⁹² Thus, UNCLOS (which adopted the

89. See William Denam, et al., *Draft Convention on Piracy*, 26 AM. J. INT'L L. 739, 749 (1932) [hereinafter *Harvard Draft*].

90. See *id.* at 787 (“It is expediency that should be the chief guide in the formulation of a convention.”). Indeed, they acknowledge their decisions regarding a variety of aspects of the draft were motivated by expediency, including location of the act of piracy, the types of persons that could engage in piracy, and motivations for the act of piracy. *Id.* at 807 (“[E]xpeditious to exclude from the definition of piracy offenses which involve only ships and territory under the ordinary jurisdiction of one state”); *id.* at 794-95 (“It is contended [by scholars] . . . that piracy does not consist of single acts of violence or depredation, but of a manner of life or sort of enterprise. Pirates are those who follow a career of sea-robbery . . . [This] doctrine runs contrary to the dictates of expediency and to practical operation of municipal law.”); *id.* at 823 (“[E]xpeditious to require an international element in at least the purpose of the offenders. Therefore Article 4 excludes from the category of pirate ships those in control of persons whose purposes of violence or depredation are definitely limited to attacks against only ships and territory of the state to which the offending ship belongs.”).

91. See Dubner, *supra* note 86.

92. *Harvard Draft*, *supra* note 89, at 743:

Geneva Convention's definition of piracy verbatim) employs a limited version of an already limited definition of piracy. The passage of time and further development of CIL, especially in connection with the uptick in modern piracy during the aughts, further suggest the UNCLOS piracy provisions do not reflect the totality of contemporary CIL regarding piracy.

Despite this conclusion, it is uncertain whether CIL empowers States to combat Space Piracy. While international law extends to space, and CIL with it, it is fundamentally unclear whether the definition of "piracy" under CIL is anchored to the seas and air on Earth. As of yet, there is no State practice on this issue and there is unlikely to be before advances in technology facilitate much greater proliferation of commercial endeavors in space. Until then, the international community is met with a lack of clarity on the matter, leaving it to rely on analogies between current understandings of terrestrial piracy and activities included within the definition of Space Piracy. Strong theoretical arguments exist on both sides of the issue.

Those that would argue pre-existing CIL extends to Space Piracy could assert the policies that undergird CIL's approach to terrestrial piracy are equally valid in outer space. In particular, piracy's original characterization as a crime of universal jurisdiction arose in large part because (i) the crime occurred in an area so vast it was beyond any State's ability to police or control

Piracy is any of the following acts, committed in a place not within the territorial jurisdiction of any state:

1. Any act of violence or of depredation committed with intent to rob, rape, wound, enslave, imprison, or kill a person or with intent to steal or destroy property, for private ends without bona fide purpose of asserting a claim of right, provided that the act is connected with an attack on or from the sea or in or from the air. If the act is connected with an attack which starts from on board a ship, either that ship or another ship which is involved must be a pirate ship or a ship without national character.
2. Any act of voluntary participation in the operation of a ship with knowledge of facts which make it a pirate ship.
3. Any act of instigation or of intentional facilitation of an act described in paragraph 1 or paragraph 2 of this article.

It is unlikely this proposed definition extends to Space Piracy, as this document was drafted almost 10 years before the development of the V-2 missile, the first man-made object to be launched into outer space. *See V-2 Rocket*, ENCYCLOPEDIA BRITANNICA, <https://www.britannica.com/technology/V-2-rocket> [https://perma.cc/U84S-9YVH] (last visited May 12, 2023).

and (ii) the crime threatened safety of navigation and international commerce of *all* States.⁹³ Both of these factors remain salient when considering Space Piracy. Such activities will occur in outer space, an area too expansive for any one State to control or monitor on an ongoing basis. Furthermore, it is likely Space Pirates will prey upon a broad range of commercial activities, regardless of the nationality of the relevant victims. In this sense, CIL regarding piracy should naturally extend to Space Piracy.

Those that would argue pre-existing CIL does not extend to Space Piracy could highlight the unique nature of space as the next frontier. At the time CIL regarding piracy was in the process of crystallizing, humans could not have conceived that objects—and even persons—would one day fly beyond the Earth. Indeed, outer space is a truly new frontier. This plane is innately *sui generis*—thoroughly distinguishable from the land, sea, and air on Earth around which pre-existing CIL has formed. As such, the novel issues presented by outer space demand novel legal solutions that come in the form of new law. In this sense, pre-existing CIL does not properly account for the eventuality of Space Piracy. This is especially so given the matter of vertical sovereignty has yet to be settled between States.⁹⁴ Where does the atmosphere convert from sovereign airspace into an area outside of any State's control? Resolution of this conundrum is integral to extending CIL regarding terrestrial piracy to activities that take place in outer space. As the UNCLOS piracy provisions indicate, drawing this distinction is critical to understanding when activities become piracy over which States have universal jurisdiction.

Though theoretical arguments can be made on either side of the question whether pre-existing CIL extends to Space Piracy, only State practice can provide the clarity necessary to resolve this matter. Unfortunately, this clarity is unlikely to be forthcoming before Space Piracy becomes a phenomenon. This is one of the unfortunate aspects of CIL—it does not crystallize anticipatorily.

93. See Ved P. Nanda, *Exercising Universal Jurisdiction Over Piracy*, in *PROSECUTING MARITIME PIRACY: DOMESTIC SOLUTIONS TO INTERNATIONAL CRIMES*, *supra* note 34, at 54, 64 (Michael P. Scharf et al. eds., 2015).

94. See MIRMINA & SCHENEWERK, *supra* note 25 (“There is no international consensus as to where airspace ends and outer space begins.”).

IV. CORE CONSIDERATIONS FOR A CONVENTIONS ON THE SUPPRESSION OF SPACE PIRACY

Having established pre-existing international law does not adequately empower States to combat Space Piracy, States should consider adopting a Convention on the Suppression of Space Piracy. Rather than wait for State practice to resolve this issue, when it will already arguably be too late, States should proactively eliminate this lack of clarity through entering into a Convention on the Suppression of Space Piracy (the “Convention”). Any such Convention will provide a forum in which States are able to take an active role in shaping the legal regime governing State responses to Space Piracy. Not only will such a treaty preemptively ensure States have the authority to effectively prevent Space Piracy at the time it arises but it will further private sector investment in space industry by demonstrating the community of States’ commitment to fostering a safe and equitable commercial ecosystem in outer space.

This Part discusses the drafting of two critical aspects of such a Convention—a definition of Space Piracy and State jurisdiction over such conduct. Ultimately, this work proposes draft language for both of these facets of the Convention, which appear in the Appendix. The proposals contained herein are pulled from the lessons of pre-existing LOS and CAL, with the intent to adopt the strengths of such regimes while avoiding their weaknesses. Section IV.A. first discusses how States should approach the definition of Space Piracy, a fundamental building block of the Convention. Then, Section IV.B. examines the matter of State jurisdiction over Space Piracy.

A. *Space Piracy Defined*

The heart of a Convention on the Suppression of Space Piracy will necessarily be the very definition of the substantive offense of Space Piracy. The manner in which this definition is crafted will affect how broad or narrow any such treaty will ultimately be, in turn either empowering or constraining State action to combat such conduct. Pre-existing international law provides a strong starting point for crafting a definition of “piracy” to be included in the Convention. Not only is such law helpful as a foundation for drafting the Convention but the

lessons learned from gaps or ambiguities in pre-existing law also provide tremendous insight into improved means of empowering State action. This Section IV.A will examine key strengths and weaknesses of the definition of “piracy” as set forth in UNCLOS (the “LOS Definition”) and the definition of “hijacking”⁹⁵ as set forth in the Beijing Protocol (the “CAL Definition,” and together with the LOS Definition, the “Initial Definitions”). This work will examine five major aspects of pre-existing international law. First, Section IV.A.1 will examine the constraining duality between piracy and armed robbery at sea. Second, Section IV.A.2 will explore the “two vessels” requirement. Third, Section IV.A.3 will discuss the offender’s motivation. Fourth, Section IV.A.4 will assess “depredation.” Finally, Section IV.A.5 will consider whether the offense should encompass inchoate offenses. The definition of the substantive offense of Space Piracy proposed based on the considerations discussed in this Section IV.A is contained in Section A of the Appendix to this work (the “Definition”).

1. Duality of Legal Regimes

Terrestrial piracy is governed by a dual legal regime that materially informs policing and suppression of such activity. Popular understanding of piracy encompasses all manner of depredation on the seas—betraying an assumption that such conduct will be treated similarly under the law. But this is not the case. The legal ramifications of such conduct are actually highly contingent on where it occurs. If such acts occur on the high seas, they will be characterized as piracy.⁹⁶ However, if such

95. Note, while this work refers to the Core Offense discussed in the Beijing Protocol as “hijacking,” the Protocol itself does not provide any formal title for such definition. Indeed, the Beijing Protocol only discusses the Core Offense as an “offense,” *see supra* note 77, art. II. Perhaps the Core Offense would most accurately be characterized as “unlawful seizure of an aircraft,” a term pulled from the title of the Hague Convention, *see supra* note 72. However, for purposes of this Article, the term hijacking has been used to facilitate efficiency.

96. *See* UNCLOS, *supra* note 35, art. 101; Lucas Bento, *Toward an International Law of Piracy Sui Generis: How the Dual Nature of Maritime Piracy Law Enables Piracy to Flourish*, 29 *BERKELEY J. INT’L L.* 399, 418 (2011) (“UNCLOS geographically restricts piracy to the high seas and does not address acts that occur in the territorial [or] internal waters.”).

acts occur in the internal or territorial waters of a State, they will be treated as armed-robbery at sea.⁹⁷ To some extent, this duality is mirrored in the Beijing Protocol, which does not extend to hijackings in which the place of a flight's take off or actual landing are within the territory of the relevant aircraft's State of registration.⁹⁸

While States have universal jurisdiction to punish and interdict piracy, only coastal States⁹⁹ have the jurisdiction to punish and interdict armed robbery at sea. What results is a firm line between what would otherwise be the same activity. This is not surprising. States guard their sovereignty fiercely to ensure it does not erode through voluntary cessation. As such, States would generally not acquiesce to an international regime that empowered other States to police and punish conduct within their sovereign territory, including their territorial waters.

Though completely logical from the perspective of a sovereign seeking to preserve sole power within their territory, from a practical perspective, what results is an unfortunate gap in the law. Two aspects of this gap are particularly striking. First, while States may pursue armed robbers at sea out of their territorial waters and into the high seas, they cannot pursue pirates out of the high seas and into the territorial waters of another State.¹⁰⁰ To do so would be to exercise police powers within such territorial waters—an affront to the sovereignty of the relevant coastal State, which extends over such waters to the exclusion of all other States.¹⁰¹ In this sense, based on limitations baked into the LOS

97. See TANAKA, *supra* note 49, at 455; Dubner, *supra* note 86, at 72.

98. See Cyril-Igor Grigorieff et al., *Attacks Against Aviation: Beijing Convention and Protocol Now in Force*, 44 AIR & SPACE L. 125, 127 (2019); Hague Convention, *supra* note 72, art. 3(3); Beijing Protocol, *supra* note 77, art. V(2).

99. Or States with jurisdiction over the internal waters in which such armed-robbery at sea occurs.

100. See UNCLOS, *supra* note 35, art. 111 (indicating the authorities of one State must cease hot pursuit of a vessel where the pursued vessel enters the territorial waters of another State); *id.* art. 2(1) (sovereignty of a coastal State extends to its territorial waters); see also Bento, *supra* note 96, at 420:

Hot pursuit occurs where a state ship pursues a pirate ship from within a state's territorial waters onto the high seas. There are no problems with hot pursuit, given the freedom of high seas. Reverse hot pursuit, however, is problematic because it involves the right of any ship pursuing pirates on the high seas to enter into or cross the territorial waters of another state.

101. UNCLOS, *supra* note 35, art. 2.

Definition, pirates have a clear method of evading capture and suppression by one State through slipping into the territorial waters of another.¹⁰² To the extent the relevant coastal State chooses not to take up the chase, the chase must end. Second, most activity popularly considered to be piracy takes place within territorial waters—that is, it is armed-robbery at sea.¹⁰³ As such, the regime of universal jurisdiction typically assumed to meaningfully empower States to combat such conduct is largely inapplicable to such activity. Therefore, it is up to individual States to fight such conduct by implementing domestic law through which they are empowered to suppress and punish such armed robbery at sea and by enforcing such law aggressively. Unfortunately, the States most heavily plagued by the phenomenon of armed robbery at sea may not have the resources and infrastructure necessary to effectively quash such activity.

It is possible a similar problem could arise under the Convention. Like the sea adjacent to Coastal States, air space above States is delineated into different zones in which a State does and does not have sovereignty. While the Chicago Convention and UNCLOS indicate States have exclusive sovereignty over the airspace above their territory¹⁰⁴ and territorial waters,¹⁰⁵ the Outer Space Treaty is clear that outer space is outside the jurisdiction of any State and free from the claims of any sovereign.¹⁰⁶ This status quo is further complicated by the lack of international consensus regarding the vertical limits of State sovereignty—where exactly does sovereign air space end?¹⁰⁷

It is unlikely States would seek to avoid a similar duality in the Convention, even if the activities that would generally constitute Space Piracy in outer space also occur within their sovereign airspace. As mentioned above, States are extremely

102. See Bento, *supra* note 96, at 421 (“Pirates already take advantage of these sanctuaries to operate with relative impunity within territorial waters. This failure creates a loophole that pirates may one day learn to manipulate, like a game of ‘cat and mouse.’”).

103. See Joshua M. Goodwin, *Universal Jurisdiction and the Pirate: Time for an Old Couple to Part*, 39 *VAND. J. TRANSNAT’L L.* 973, 982 (2006).

104. See Chicago Convention, *supra* note 60, art. 1.

105. See UNCLOS, *supra* note 35, art. 2(2).

106. See Outer Space Treaty, *supra* note 28, art. II.

107. See MIRMINA & SCHENEWERK, *supra* note 25.

unwilling to cede aspects of their sovereignty and guard their jurisdiction over territory and nationals ferociously. Seeking to create a legal regime governing Space Piracy that eliminates the gaps engendered by the dual legal regime governing terrestrial piracy will necessarily entail a cessation of State sovereignty that is unrealistic. This is unlikely to change in the near—or even distant—future. As such, a definition of Space Piracy that avoids this duality could be a major sticking point for creation of the Convention, likely to stall or even grind State negotiations to a halt. Therefore, the Definition offered by this work does not avoid creating the same dual legal regime with respect to Space Piracy as exists with respect to terrestrial piracy. However, if States wish to take advantage of the Definition’s susceptibility to a dual regime—thereby ensuring full protection of their sovereignty—they must come to a consensus on the vertical limits of sovereignty before entering into the Convention. That is, a line must be drawn and accepted between sovereign airspace and the “high seas” of outer space. Without such a line, any formalistic limitation of Space Piracy in the Convention to the “high seas” of outer space will result in material ambiguity within the treaty that could, on the one hand, be paralysis-inducing, and on the other hand, lead to violation of States’ sovereignty and international tension.

2. Two Vessels Conundrum

Some scholars argue the LOS Definition is unnecessarily narrow because it requires two vessels for the commission of piracy—a pirate vessel and a victim vessel, operating on the high seas or in an area outside of any State’s jurisdiction.¹⁰⁸ Indeed, this requirement presents important limitations on the conduct that falls within the LOS Definition in two important ways, leaving significant gaps under international law that may go unredressed under domestic law. These limitations markedly curtail the scope of piratical activities in a manner that may leave significant harmful conduct unredressed under the law.¹⁰⁹

108. See UNCLOS, *supra* note 35; Bento, *supra* note 96, at 421; Hodgkinson, *supra* note 34, at 22.

109. See Hodgkinson, *supra* note 34, at 22.

First, the LOS Definition does not extend to a situation where a victim vessel on the high seas (or in an area outside of any State's jurisdiction) is subjected to violence, detention, or other depredation initiated from land, airspace, or waters other than the high seas. This is the case regardless of whether such violence, detention, or other depredation is committed by persons on or off of another vessel. While such a fact pattern may have been infrequent and even far-fetched in the past, technological advances have enabled persons to engage in violence and detention efforts against one another from greater and greater distances, for instance through cyber means such as hacking a ship from another ship.¹¹⁰ In this way, the two ships requirement enables actors to easily skirt characterization as pirates where they attack a victim vessel located in the high seas while they, themselves, are located in a different maritime zone or even on land.

Second, the LOS Definition does not address violence, detention, or depredation that originates from *within* a vessel. Because two vessels are required to characterize violence and depredation onboard a ship as piracy, any such conduct committed by a passenger *already* onboard a vessel would not be considered piracy under UNCLOS. "Accordingly, acts of hostage taking, firing on a ship, or planting a harmful device or substance on ship are not criminalized under the UNCLOS unless the individuals committing these offenses attacked from a separate ship."¹¹¹ In the absence of the universal jurisdiction that

110. See Tanya Blake, *Hackers took 'full control' of container ship's navigation systems for 10 hours*, RESILIENT NAVIGATION & TIMING FOUND. (Nov. 25, 2017), <https://rntfnd.org/2017/11/25/hackers-took-full-control-of-container-ships-navigation-systems-for-10-hours-ihs-fairplay> [<https://perma.cc/NDQ8-Z3A6>]:

[A]ccording to the source, the 10-hour attack was carried out by "pirates" who gained full control of the vessel's navigation system intending to steer it to an area where they could board and take over . . . the case serves as a "pre-warning", about what will happen in the future of shipping, with pirates using hacking to gain control and entry to vessels in order to carry out kidnap and ransom.

See also Chris C. Demchak & Michael L. Thomas, *Can't Sail Away From Cyber Attacks: 'Sea-Hacking' From Land*, WAR ON THE ROCKS (Oct. 15, 2021), <https://warontherocks.com/2021/10/cant-sail-away-from-cyber-attacks-sea-hacking-from-land> [<https://perma.cc/8XL2-E6UD>].

111. Hodgkinson, *supra* note 34, at 22.

accompanies piracy, only the flag State of a vessel on the high seas subject to such internally generated distress has jurisdiction to intervene as the harmful conduct is ongoing.¹¹² This outcome dramatically narrows the ability of States to combat such activity and has very real implications—especially where the flag State is unwilling or unable to step in or punish such activities.

The negative impact of this limitation is displayed in the *Achille Lauro* ordeal. In 1985, an Italian cruise ship, the *MS Achille Lauro*, was hijacked by Palestinian militants that had boarded the ship acting as passengers.¹¹³ The militants took control of the vessel through threat of force, taking its passengers and crew hostage for political purposes.¹¹⁴ Before the situation could be resolved, the militants killed one of the passengers, an elderly wheelchair-bound man, and threw his body overboard.¹¹⁵ This incident highlighted serious weaknesses in the LOS Definition, including those that will be discussed in this Section IV.A.3.¹¹⁶ Arguably, these holes are inconsistent with the very policies that undergird the LOS Definition, especially protection of commerce and safety of navigation.

The two vessels problem is not shared by the CAL Definition. The Beijing Protocol is drafted broadly enough to encompass offenses originating from within a vessel or from outside a vessel—a significant broadening of the original hijacking definition set forth in the Hague Convention. Indeed, while the

112. See UNCLOS, *supra* note 35, art. 110 (right to visit a ship does not include a right to visit due to internal violence occurring onboard unless it is characterized as piracy or related to the slave trade); UNCLOS, *supra* note 35, art. 105 (right to seizure only extends to pirate vessels); UNCLOS, *supra* note 35, art. 89 (the high seas are free from any States claims to sovereignty); UNCLOS, *supra* note 35, art. 92 (on the high seas, vessels are subject to the exclusive jurisdiction of their flag States alone).

A flag State is the State under whose laws a merchant vessel is registered and licensed. Flag States have an obligation to regulate ships flying its flag. UNCLOS, *supra* note 35, art. 94. With this obligation comes jurisdiction over such vessels, even when located in the high seas. UNCLOS, *supra* note 35, art. 92.

113. See Richard Pallardy, *Achille Lauro Hijacking*, BRITANNICA, <https://www.britannica.com/event/Achille-Lauro-hijacking> [https://perma.cc/8G54-9WJ6] (last visited Sept. 30, 2023).

114. See *id.*

115. See *id.* (indicating the hijackers sought release of Palestinian prisoners incarcerated in Israel).

116. Also, amongst these gaps is the “private ends” requirement baked into the LOS Definition, and discussed further in Section IV.A.3, *infra*, of this Article.

Hague Convention required the offending actor to be onboard the aircraft they intended to seize, no such requirement is including in the Beijing Protocol. This is emphasized by the fact the CAL Definition explicitly provides hijacking can be affected through technological means without any need to use force, the threat thereof, or intimidation. As such, the Beijing Protocol leaves room for hijacking by purely cyber means, where the hijacker is situated outside of the relevant aircraft. Despite the limitations presented by the LOS Definition's two ships rule, there is no clear answer to the question of whether the Definition should maintain this requirement or eschew it. This is especially so because space activity has yet to face either a two ship or a one ship scenario— largely due to the nascent state of commercial space endeavors. This lack of case studies renders tackling this question particularly difficult, as drafting a Definition is left largely reliant on theory. On the one hand, eliminating the two ships requirement would empower States to tackle a far broader range of harmful and dangerous conduct. This is regardless of whether States agree to universal jurisdiction over such offenses or a more limited sharing of jurisdiction, as discussed in Section IV.B of this work. States could more readily suppress conduct that is harmful to commerce and navigational safety, with well-resourced States able to make up for the difficulties faced by States traditionally unable to dedicate resources to combatting and punishing such conduct. On the other hand, eliminating the two ships requirement entails a greater erosion of State sovereignty when it comes to policing and punishment of Space Piracy. Article VIII of the Outer Space Treaty is clear that the State on whose registry a space object is listed “retain[s] jurisdiction and control over such object.”¹¹⁷ Thus, where a treaty empowers States beyond a space object's State of registration to reach offenses that have occurred on such object, the State of registration cedes a portion of its sovereignty in this regard.

As such, where States fall on this matter ultimately comes down to a calculus that weighs risk of harm to such State against erosion to their sovereignty. It is important to note that the extent of erosion to State sovereignty considered in such a calculus will

117. Outer Space Treaty, *supra* note 28, art. VIII.

depend on the type of jurisdiction the Convention affords States over Space Piracy. This concept is discussed further in Section IV.B of this work. Absent detailed consideration of such jurisdictional questions, two general conclusions can be reached about State willingness to incorporate the two vessels rule into the Definition. Adopting the two vessels requirement would be desirable to a State that (i) is confident in their own ability to curb and punish one ship scenarios effectively or (ii) does not anticipate great harm (direct or indirect) from one ship scenarios. In such a circumstance, there is no need to cede sovereignty to empower other States to contribute to suppression efforts. In contrast, foregoing the two vessels requirement is desirable to a State that (i) anticipates meaningful harm (direct or indirect) from one ship scenarios and (ii) is not confident in its own ability to effectively curb such scenarios. In this case, it would be better to support a law that empowers other States to take up the mantle of suppression and punishment, intensifying efforts to stamp out harmful one-ship scenarios.

Given such a calculus is likely to differ for each State, the Definition contained in the Appendix retains optionality by offering two alternatives. The first alternative diverges from the LOS Definition in favor of the Beijing Protocol's approach. The second alternative maintains the two ships requirement. This approach leaves States with the freedom to agree on treaty language that best reflects their desires and concerns. It is important to note, however, both Definitions require that (i) the victim vessel is located in outer space—a clear condition precedent to the engagement in Space Piracy—and (ii) a physical act in furtherance of the offense occurs in outer space.¹¹⁸

118. To the extent States agree to eschew the two ships requirement, it is important to consider whether the Definition should include the use of cyber from Earth to take control of a single victim vessel where no act in furtherance of the conduct occurs in outer space ("Terrestrial Hacking"). The quintessential example of such Terrestrial Hacking is the use of hacking from a terrestrial location to take control of a satellite for the purpose of halting or reorienting its transmissions. As such, no act in furtherance of the offense occurs in Space—everything is orchestrated and achieved from Earth. As opposed to the future Space Piracy envisioned by this work, this type of conduct already occurs and is likely to continue in the future. Should Terrestrial Hacking fall within the Definition? While such activity could certainly harm commerce and imperil navigation, the most practical approach to Terrestrial Hacking would be to exclude it from the purview of the Definition, leaving it to be addressed under domestic law.

3. Motivation for Action

The LOS Definition limits piracy to conduct engaged in for “private ends,” drawing a legal line between similar acts based on an actor’s motivations. Unfortunately, this language is ambiguous and therefore can, and *has*, been interpreted differently by scholars and States. These interpretations can generally be sorted into two categories. The first category, supported by a large contingent of scholars, reads “private ends” to require that actors engage in such conduct for financial benefit.¹¹⁹ Under this view, acts pursued for purely political purposes such as those that precipitated the *Achille Lauro* incident, would not fall under the LOS Definition. The second category interprets “private ends” to include “all acts of violence that lack State sanction or

Including Terrestrial Hacking within the Definition is both ineffective and unrealistic. Broadly empowering States to combat such conduct through the Convention is unlikely to translate into an actual increase in suppression of Terrestrial Hacking. To the extent a State authority is operating in outer space, they are unlikely to notice any takeover achieved through Terrestrial Hacking. Even if they were somehow able to notice the effects of Terrestrial Hacking, (i) they would be unable to intercede in a manner that ended such conduct and (ii) attribution for the purpose of punishment would be extremely difficult. Moreover, States are likely unwilling to cede their sovereignty in the manner required for the Convention to imbue all (or even some) States with the power to police and punish such Terrestrial Hacking. The same rationale that undergirds the duality between piracy and armed robbery at sea applies here. An actor engaged in Terrestrial Hacking does so from a physical location on Earth under the jurisdiction of a particular State. (Even if committed on the high seas, an actor will be subject to the jurisdiction of the flag State of the vessel they occupy). While such State has full jurisdiction to punish them for this conduct, it would likely be unwilling to cede its own sovereignty in a manner that allowed another State to step in and punish such activity. As such, it seems policing and punishment of Terrestrial Hacking is best left to domestic law, such as the United States Computer Fraud and Abuse Act.

This is not to say that any use of cyber means, whether or not occurring from Earth, would render depredation in outer space outside the purview of the Definition. Rather, to the extent some act in furtherance of the offense occurs in outer space, use of cyber means should still fall under the Definition. For instance, an actor using cyber means from Earth to control or instruct an unmanned pirate vessel in outer space to detain a nearby vessel for the purpose of plundering would be engaged in Space Piracy. Similarly, an actor situated on a pirate vessel in outer space that hacks into a nearby target vessel to gain control over it would also be engaged in Space Piracy.

119. See Hodgkinson, *supra* note 34, at 18 (private ends mean an actor engages in such conduct to “gain a financial benefit from committing the act, whether it profits from stolen property, seeks ransom from hostages taken from a ship, or both” and does not include acts that are politically motivated); Bento, *supra* note 96, at 417-18 (reading the private ends requirement to require some economic motivation for the actors conduct).

authority.”¹²⁰ As such, conduct engaged in for political or social reasons, even without any financial motivation, would fall under the LOS Definition, including the acts of the hijackers in the *Achille Lauro* incident. This understanding meaningfully broadens the LOS Definition, and has been embraced by at least two States, the United States of America¹²¹ and the Netherlands.¹²² These dueling readings of “private ends” results in significant distinctions in understanding of the LOS Definition and can lead to uneven efforts to suppress and punish such conduct. One of the most salient real-world implications of this divide has been the question of whether the LOS Definition applies to terrorism at sea.

In stark contrast with the LOS Definition, the CAL Definition does not discuss motivations behind hijacking. The absence of such a motivation element prioritizes the actions of the offenders and the harm to the victims. In this way, the Beijing Protocol presents a straightforward approach to the unlawful seizure of aircraft that does not require inquiry into or proof of the reasons behind an offender’s conduct.

The Definition adopts the approach contained in CAL Definition. Avoiding inclusion of the motivation element does not impact the Definition’s fidelity to the principles underlying the Convention—chiefly to address conduct occurring outside the jurisdiction of any State, an area too difficult for any single State to police effectively, and to protect commerce as well as the safety of outer space navigation. Moreover, eliminating a motivation element also averts the divergence in interpretations of this element that could materially change the scope and impact of the Definition in a manner that leads to inconsistent understandings and unequal applications of the Convention by States. Finally, aligning with the CAL Definition theoretically makes suppression and punishment of Space Piracy easier than

120. TANAKA, *supra* note 49, at 453.

121. *Inst. of Cetacean Resch. v. Sea Shepherd Conservation Soc’y.*, 725 F.3d 940 (9th Cir. 2013) (“We conclude that ‘private ends’ include those pursued on personal, moral or philosophical grounds, such as Sea Shepherd’s professed environmental goals. That the perpetrators believe themselves to be serving the public good does not render their ends public.”).

122. *Castle John v. NV Mabeco*, 77 I.L.R. 537-41 (Cass. 1986) (Belgium) (Dutch Court ruling actions by Green Peace members on high seas against two Dutch vessels falls within LOS Definition because such action was committed for personal ends).

terrestrial piracy by dropping States' requirement to ascertain or prove motivation—an element that can be difficult to readily glean.

4. What is Depredation?

The actions described in the Initial Definitions are unnecessarily ambiguous or too limited. The LOS Definition indicates that terrestrial piracy consists of “illegal acts of violence or detention, or any act of depredation.”¹²³ However, the term “depredation” is not defined, leaving uncertainty regarding the full range of activities that could constitute terrestrial piracy. As such, the full expanse of the LOS Definition is unclear as there could be a wide range of activities outside of illegal acts of violence or detention that fall within its purview. In contrast, the CAL Definition is clear but too narrow, focusing only on control of an aircraft. Both terrestrial and Space Piracy include activities that fall short of full control of a victim vessel, so the CAL Definition is too narrow to work from in crafting a definition to be used in the Convention. In this sense, the Definition will need to significantly deviate from both of the Initial Definitions in its efforts to describe the types of actions that constitute Space Piracy.

The Convention on the Suppression of Unlawful Acts Against the Safety of Maritime Navigation (the “SUA”) provides a strong basis for such deviation. Negotiated under the auspices of the United Nations, the SUA represents a direct response by the international shipping industry to perceived deficiencies of UNCLOS in facilitating protection to shipping, as highlighted by the *Achille Lauro* incident.¹²⁴ The SUA does not independently define piracy but does explicitly enumerate and criminalize a number of acts popularly considered to be piratical (the “SUA Definition”).¹²⁵ This SUA Definition fills many of the perceived gaps in the LOS Definition, including through resolving ambiguity resulting from use of the vague term “depredation.” As such, the Definition offered by this work pieces together elements

123. UNCLOS, *supra* note 35, art.101.

124. *See* Hodgkinson, *supra* note 34, at 25.

125. *See* International Maritime Organization, Convention on the Suppression of Unlawful Acts Against the Safety of Maritime Navigation, Mar. 10, 1988, 1678 U.N.T.S. 221 (entered into force Mar. 1, 1992) [hereinafter SUA].

of the Initial Definitions and the SUA Definition in an effort to provide States with a clear and appropriately broad understanding of the crime of Space Piracy.

5. Inchoate Offenses

The LOS Definition only addresses conduct that accompanies an act of piracy, excluding conduct that falls short of such an act.¹²⁶ The LOS Definition encompasses participation in piracy and facilitation of piracy but does not extend to attempted piracy or threat of piracy.¹²⁷ As such, to the extent terrestrial piracy is threatened or attempted but does not come to fruition, no piracy has occurred.¹²⁸ In this way, UNCLOS establishes a regime where credible threats and intent but lack of success are considered insufficient to warrant universal jurisdiction. Therefore, States are not empowered to act preemptively. Instead, actual commission of piracy must occur before States can rely on universal jurisdiction to combat such activities.

The CAL Definition and SUA Definition take the opposite approach. Both regimes criminalize attempted offenses as well as threats thereof. In doing so, these regimes acknowledge the severity of inchoate offenses and the fact that even actions falling short of successful completion of an offense can still have significant current and future impacts on commerce and navigation. As such, both the CAL and SUA regimes empower States to proactively combat such unlawful acts, enabling policing and punishment of inchoate offenses before they translate into successful offenses.

The Definition aligns directly with the CAL and SUA Definitions. Absence of inchoate offenses from the LOS Definition only protects offenders working towards successful completion of terrestrial piratical acts. Where an offender has demonstrated an intent to engage in such activity through credible threats or unsuccessful attempts, States should not be barred from acting until it is too late. Failing to empower States

126. UNCLOS, *supra* note 35, art.101.

127. See UNCLOS, *supra* note 35; Hodgkinson, *supra* note 34, at 23.

128. See UNCLOS, *supra* note 35; Hodgkinson, *supra* note 34, at 2

to combat activities that precede fruition of an offense significantly inhibits their ability to suppress such conduct in the first place. Any legal regime governing Space Piracy should fully empower States to combat such activity. As such, the Definition incorporates inchoate offenses as well as the participation and facilitation discussed in the LOS Definition.

B. State Jurisdiction over Space Piracy

The scope of jurisdiction the Convention accords State's over policing and punishing Space Piracy is critical to its effectiveness and must strike a crucial balance between empowering States while respecting their sovereignty. A Convention that accords jurisdiction too *narrowly* will not sufficiently enable States to combat Space Piracy, leaving such document largely ineffective, despite the tremendous efforts States likely invested in its drafting. However, a Convention that accords jurisdiction too *broadly* eats away at the sovereignty of States parties, could enable abuse by States, and will lead to tension between States seeking to exercise the more far-reaching aspects of such jurisdiction. In this sense, it is possible jurisdiction that is too broad will also translate into an ineffective document through causing paralysis of action, giving rise to inter-State conflicts, or both. As such, while a treaty's jurisdictional language is integral to its success it can also be a significant point of contention between drafting States.

This Section examines the jurisdictional aspects of a Convention in two parts. First, Section IV.B.1 explores whether the universal jurisdiction long considered applicable to terrestrial piracy under international law should also extend to Space Piracy through the Convention. Second, Section IV.B.2 investigates the dearth of domestic enforcement actions against terrestrial piracy and asks how the Convention can be drafted to avoid such outcomes with respect to Space Piracy. Ultimately, this work proposes draft jurisdictional language for the Convention based on the lessons of pre-existing international law. This draft language is located in Section B of the Appendix.

1. Should Universal Jurisdiction Apply to Space Piracy?

Both the LOS Definition and CIL establish States have universal jurisdiction over terrestrial piracy. That is, regardless of

a State's connection to the piratical acts, it has the jurisdiction to police and punish such conduct. Theoretically, this framework strongly facilitates State efforts to combat piracy, empowering States to suppress acts of piracy without questioning their jurisdiction to do so. States have acknowledged universal jurisdiction over piracy for centuries.¹²⁹ Historically, several reasons have been asserted for such treatment, including (i) piracy as unique in its heinousness; (ii) pirates' status as stateless; (iii) pirates' status as *hostis humani generis* (an enemy of all mankind); (iv) facilitation of uniform punishment; (v) harm to commerce and safety of navigation that affects all nations; and (vi) the locus of the crime as outside of any States' jurisdiction.¹³⁰ While most of these reasons have been successfully debunked or simply no longer apply in the modern age, the last two bases for universal jurisdiction continue to apply to terrestrial piracy today.¹³¹

In contrast, both the Beijing Protocol and SUA take a more tailored approach to the matter of jurisdiction. While both documents establish multiple grounds for State jurisdiction over relevant offenses, none of these bases include universal jurisdiction. In particular, Article 6 of the Beijing Protocol explicitly recognizes States have territorial, nationality, and passive personality jurisdiction over hijacking.¹³² While the SUA's

129. See UNCLOS, *supra* note 35; Hodgkinson, *supra* note 34, at 15-16; Nanda, *supra* note 93 (discussing two US federal court cases decided in the 1820s indicating universal jurisdiction over piracy settled in international law).

130. See Goodwin, *supra* note 103, at 973.

131. See *id.* (arguing the first four reasons discussed in the preceding sentence do not withstand muster today).

132. Beijing Protocol, *supra* note 77, art. VII:

1. Each State Party shall take such measures as may be necessary to establish jurisdiction over the offenses . . . in the following cases:

(a) when the offence is committed in the territory of that State [(territorial jurisdiction)];

(b) when the offence is committed against or on board an aircraft registered in that State [(territorial jurisdiction)];

(c) when the aircraft on board which the offence is committed lands in its territory with the alleged offender still on board [(territorial jurisdiction)];

(d) when the offence is committed against or on board an aircraft leased without crew to a lessee whose principal place of business or, if the lessee has no such place of business, whose permanent residence is in that State [(nationality jurisdiction)];

jurisdictional provisions are extremely similar to those found in the Beijing Protocol, they also explicitly acknowledge States have jurisdiction over offenses based on the “protective principle” where an offense is “committed in an attempt to compel that State to do or abstain from doing any act.”¹³³ As such, while the jurisdictional language found in the Beijing Protocol and the SUA is much more tailored than that found in UNCLOS, it nonetheless empowers several States to police and prosecute offenses.

In considering the type of jurisdictional language that should be included in the Convention it is important to first understand the extent of jurisdiction States already have over space activities and objects. Article VIII of the Outer Space Treaty establishes that where a space object appears on the register of a State, such State “shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body.”¹³⁴ Moreover, given international law applies to outer space by virtue of Article III of the Outer Space Treaty, it is likely that all five traditional basis of State jurisdiction over conduct recognized under CIL can also be extended to outer space—territorial jurisdiction, nationality jurisdiction, passive personality jurisdiction, protective jurisdiction, and universal jurisdiction.¹³⁵ Unfortunately, how these jurisdictional principles actually operate in space through the workings of CIL or Article III of the Outer Space Treaty has yet to be witnessed.¹³⁶

(e) when the offence is committed by a national of that State [(nationality jurisdiction)].

2. Each State Party may also establish its jurisdiction over any such offence in the following cases:

(a) when the offence is committed against a national of that State [(passive personality principle)];

(b) when the offence is committed by a stateless person whose habitual residence is in the territory of that State [(territorial jurisdiction)].

133. See SUA, *supra* note 125, art. 6 (2)(c).

134. Outer Space Treaty, *supra* note 28, art. VIII. In this sense, the Outer Space Treaty establishes a system analogous to that of UNCLOS, pursuant to which State’s retain exclusive jurisdiction over vessels flying their flag that are navigating on the high seas. See UNCLOS, *supra* note 35, art. 92.

135. See § 402 of Restatement of Foreign Relations Law (3d) (1987); Goodwin, *supra* note 103, at 984-87 (2006) (describing these five bases for jurisdiction in detail).

136. Though many States directly interact in outer space through the operation of the International Space Station (ISS), such operations are actually governed by an

In drafting the jurisdictional language of the Convention, it is also important to take note of the way in which the Definition it constructed. Where substantive offenses discussed in a document are drafted broadly, States may seek narrow jurisdictional language that minimizes erosion of their sovereignty as the document already meaningfully empowers State action through robustly defined substantive offenses. On the other hand, where substantive offenses are drafted narrowly, States may be more willing to accept broad jurisdictional language in an effort to strengthen the effects of a treaty because such offenses are already crafted in a manner that avoids unnecessary attrition of their sovereignty. For instance, the LOS Definition narrowly defines piracy to actions that take place only on the high seas or in areas outside of any State's jurisdiction.¹³⁷ This construction ensures the substantive offense will not occur in any area subject to the sole jurisdiction of any State. This finely drafted substantive offense likely fostered State acceptance of the universal jurisdiction over piracy that is codified in the UNCLOS regime.

The draft language proposed by this work adopts the limited jurisdiction approach employed by the Beijing Protocol and the SUA. This construction is likely to be more appealing to States than universal jurisdiction. Though the principles undergirding continued application of universal jurisdiction to terrestrial piracy also apply to Space Piracy, the broad drafting of the Definition counsels more limited jurisdiction. In particular, the Definition indicates Space Piracy includes use of cyber means from Earth to facilitate an offense, so long as an act in furtherance of the offense occurs in outer space. In this sense, a Canadian national instructing an unmanned space vessel to prey on other

intergovernmental agreement that overrides applicable CIL and the Outer Space Treaty pursuant to the doctrine of *lex specialis*. See generally, Agreement Among the Government of Canada, Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America Concerning Cooperation on the Civil International Space Station, Jan. 29, 1998, T.I.A.S. No. 12,927 (entered into force Mar. 27, 2001). This agreement establishes that each State shall retain "jurisdiction and control over the elements [of the ISS] it registers . . . and over personnel in or on the Space Station who are its nationals." *Id.* art. 5. Therefore, the international community has yet to witness the unfettered application of CIL and Article III of the Outer Space Treaty.

¹³⁷ UNCLOS, *supra* note 35, art. 101.

vessels in outer space would be considered engaged in Space Piracy. This is so even if such person is located in Canada throughout the process of sending instructions to their pirate vessel. In such a case, it is hard to analogize Space Piracy to terrestrial piracy. While actions comprising the latter occur entirely in a place outside of any State's territorial jurisdiction, a large portion of the actions comprising the former may occur *within* a State's territorial jurisdiction. As such, imbuing States with universal jurisdiction over Space Piracy may entail a significant erosion of sovereignty. In this sense, States are likely to be extremely reluctant to agree to such a broad grant of jurisdiction over policing and punishing Space Piracy.

The draft language proposed is unlikely to hinder the effectiveness of the Convention. Though not all States may police and prosecute every instance of Space Piracy, the drafting proposed empowers several States with connections to an offense to act. That multiple States may pursue such conduct increases the likelihood of effective suppression. This is especially so given the magnitude of potential punishment under the principle of "dual sovereignty" (calculated by adding all States' individual punishments together) may deter offenders from acting in the first place.¹³⁸ Indeed, the draft language may actually encourage States to act where they otherwise wouldn't give jurisdiction to police and prosecute is limited to select States rather than open to all eliminating the bystander effect between States. Moreover, by requiring States to have some connection to a Space Piracy offense, the proposed language minimizes the potential for State abuse of jurisdiction and for international tension in the process of apprehending and prosecuting such conduct. In this way, rather than engender paralysis due to concerns over straining relationships with other States or an expectation other States will act instead, the proposed language encourages States to act.

138. The principle of "dual sovereignty" empowers States to prosecute an actor for actions they have already been prosecuted for by another State. See Adam J. Adler, *Dual Sovereignty, Due Process, and Duplicative Punishment: A New Solution to an Old Problem*, 124 *YALE L.J.* 448 (Nov. 2014), <https://www.yalelawjournal.org/note/dual-sovereignty-due-process-and-duplicative-punishment-a-new-solution-to-an-old-problem>[<https://perma.cc/887C-KK7A>]. Thus, Space Pirates face potential penalties from each of the States that have jurisdiction of the relevant offense.

2. Dearth of Domestic Enforcement

While piracy may be one of the few international crimes with respect to which States are empowered to act through the exercise of universal jurisdiction, this authority is meaningless if States are unwilling to exercise it. Generally, States have been reluctant to punish terrestrial piracy through the exercise of universal jurisdiction over such conduct. This reluctance is evidenced through a lack of sufficient domestic law and a lack of domestic enforcement action. While international law empowers any State to punish piracy, it is domestic law that provides for and governs such punishment. Unfortunately, only

a minority of states have provided for universal jurisdiction in their domestic laws by enacting legislation to criminalize piracy and to prosecute alleged pirates in their courts. Even among these states, such laws frequently require a traditional connecting factor for the exercise of jurisdiction, such as the physical presence of the accused in the state or the victim being a national of that state.¹³⁹

Moreover, even where States have appropriate laws on the books, they remain unwilling to exercise such law by prosecuting captured pirates.¹⁴⁰ This outcome is not at all surprising, given UNCLOS neither obliges State parties to incorporate the LOS Definition into their domestic law nor obliges States to punish such conduct—merely to generally cooperate in the repression of piracy.¹⁴¹

The CAL and SUA differ strikingly from LOS in this regard. The Hague Convention not only imposed an obligation on State parties to incorporate the offenses it outlined into their domestic law but to make such offenses “punishable by severe penalties.”¹⁴² This provision was reaffirmed in the Beijing Protocol.¹⁴³ Though the CAL does not require States to prosecute suspected hijackers

139. Nanda, *supra* note 93, at 54.

140. *See id.* (“States are also reluctant to prosecute captured pirates.”); Hodgkinson, *supra* note 34, at 16 (“Despite the millennia-old ability to prosecute piracy cases under customary international law using universal jurisdiction, there have been very few recorded cases where such prosecution actually occurred.”).

141. *See* UNCLOS, *supra* note 35, art. 100.

142. *See* Hague Convention, *supra* note 72, art. 2.

143. *See* Beijing Protocol, *supra* note 77, art. III.

within their jurisdiction for such conduct, it does establish that if they fail to do so they must extradite such persons if so requested by another State in connection with such a prosecution.¹⁴⁴ This obligation was further clarified in the Beijing Convention, which indicates that, while State parties cannot refuse to comply with any such extradition request on the basis that such hijacking is a political offense, they are not obliged to comply where they have substantial grounds to believe the requesting State will punish such suspected hijacker for a discriminatory purpose unrelated to the relevant piracy.¹⁴⁵

The draft language proposed by this work is crafted in accordance with the Beijing Protocol and SUA in an effort to ensure the legal regime governing Space Piracy does not suffer from the same defects inherent in the legal regime governing terrestrial piracy in this regard. Obliging States to incorporate the offense of Space Piracy into their domestic law ensures they are fully empowered to prosecute space pirates at any point in time but does not require them to do so. However, by establishing an obligation to extradite or prosecute, States cannot merely sit on their hands and overlook the issue. Instead, they are required to pass suspected offenders across to a State that is ready, willing, and able to punish such conduct. In this sense, the proposed language is intended to facilitate active repression of Space Piracy while only minimally burdening States parties.

V. CONCLUSION

As humanity's next frontier, outer space presents intrepid entrepreneurs with the opportunity not only to disrupt pre-existing terrestrial industries but to amass vast amounts of wealth. While there is no doubt outer space will one day host a vibrant economic ecosystem, bustling with all manner of industries, the riches of this landscape coupled with its vast nature is sure to attract nefarious activity in the form of Space Piracy. Like the terrestrial piracy captured by the popular imagination, Space Piracy will likely involve robbery, plunder, hijacking, and kidnapping. States must be cognizant of the real likelihood such activities will emerge and proliferate in a manner that harms

144. See Hague Convention, *supra* note 72, art. 7

145. See Beijing Protocol, *supra* note 77, arts. XII, XIII.

persons, impedes safe space navigation, hinders trade between outer space and the Earth, and generally stifles technological and economic development reliant on outer space. The threat of Space Piracy is a threat to all States and their nationals.

Under pre-existing international law, States are not adequately empowered to tackle the challenge presented by Space Piracy. While international law of the sea has a storied history of addressing terrestrial piracy, there are serious concerns regarding whether it is readily applicable to activities in outer space. Similarly, while international criminal aviation law has made great strides in the past decades to enable States to tackle hijacking in the air, it is unlikely such law extends to reach conduct occurring in outer space. While States can await the development of customary international law that empowers State action against Space Piracy, such a strategy is reactive, requiring harm to befall persons and industry before States are assured they have authority to act.

States must consider proactively creating international law that empowers them to address and suppress Space Piracy, in particular through a Convention on the Suppression of Space Piracy. LOS and CAL provide solid foundations and experiences from which States can draw to craft such a treaty. This work offers two provisions for inclusion in such a Convention, crafted based on the strengths and weaknesses of these pre-existing bodies of international law. While these provisions, alone, certainly do not present a workable Convention, they address the most integral aspects of such a document—a definition of Space Piracy and discussion of jurisdiction. By offering up such a proposal, this work hopes to catalyze proactive State consideration of the threat of Space Piracy by providing a starting framework that is broadly palatable, empowering State action without demanding undue sacrifice of sovereignty.

*VI. APPENDIX*¹⁴⁶

DRAFT CONVENTION ON THE SUPPRESSION OF SPACE
PIRACY

A. Space Piracy

1. Offense

- a) Any person commits an offense if that person unlawfully and intentionally commits an act of depredation against a victim vessel and an act in furtherance of such depredation has taken place in outer space.
- b) Any person also commits an offense if that person:
 - (i) attempts to commit the offense set forth in paragraph 1(a);
 - (ii) abets the commission of the offense set forth in paragraph 1(a) or is otherwise an accomplice of a person who commits such an offense;
 - (iii) threatens, with or without condition, to commit the offense set forth in paragraph 1(a) if that threat is likely to endanger the safe navigation of the victim vessel in question; or
 - (iv) incites or intentionally facilitates an act described in paragraph 1(a).

2. Definitions

- a) An “act of depredation” shall mean any of the following, including through the use of technological means:
 - (i) seizure or exercise of control of a victim vessel, including by force or threat thereof, or by coercion, or by any other form of intimidation;

146. Note: all terms of art used in this Appendix shall be underlined and boldened.

- (ii) an act of violence against a person on board a victim vessel;
 - (iii) destruction of a victim vessel or of its cargo, including by placing a device or substance on the victim vessel that causes such destruction;
 - (iv) kidnapping of a person on board a victim vessel;
 - (v) robbery or theft of the cargo on or belonging to a victim vessel;
 - (vi) destroying or seriously damaging navigational facilities of a victim vessel or seriously interfering with their operation;
 - (vii) any other piratical act akin to plundering, robbery, seizure, kidnapping, or ransoming; or
 - (viii) injuring or killing any person in connection with the commission or the attempted commission of any of the acts set forth in paragraphs (1) to (9).¹⁴⁷
- b) An “act in furtherance” shall not include any act that takes place purely in the cyber realm.
- c) A “victim vessel” shall mean a private space object located in outer space, [excluding]¹⁴⁸ [including]¹⁴⁹ a private space object on which the actor is a passenger or crew member at the time of committing the offense described in paragraph 1(a)
- d) A “space object” shall mean any object launched or released into outer space, regardless of whether it has a crew, that:
- (i) has the capability to carry persons or objects;
 - (ii) has the capability to transmit information or energy to Earth; or
 - (iii) otherwise has monetary value, excluding any object that has been abandoned or discarded by its owner.

147. This language is largely based on Article 3 of the SUA, *see supra* note 125.

148. Include bracketed language only where States wish to adopt the two ships rule discussed in Section IV.A.2 of this Article.

149. Include bracketed language only where States wish to eschew the two ships rule discussed in Section IV.A.2 of this Article.

- e) A “private space object” shall mean any space object that is not a public space object.
- f) A “public space object” shall mean any space object owned or operated by a State and used only for government non-commercial service.

B. Jurisdiction

1. State Jurisdiction Over Offenses

- a) Each State Party shall take such measures as may be necessary to establish jurisdiction over the offenses set forth in Section A.1 in the following cases:
 - (i) when the offense is committed in part within the territory of that State;
 - (ii) when an offense is committed by a national of that State;
 - (iii) when the offense is committed against or on board a space object appearing on the registry of that State in accordance with Article II(1) of the Registration Treaty;¹⁵⁰
 - (iv) when the offence is committed against the person or property of a national of that State;
 - (v) when the offense is committed against or on board a space object leased to a lessee whose principal place of business or, if the lessee has no such place of business, whose permanent residence is in that State;¹⁵¹
- b) Each State Party may also establish its jurisdiction over any such offence in the following cases:

150. As used here “Registration Treaty” refers to the Convention on Registration of Objects Launched into Outer Space.

151. This language is largely based on Article VII of the Beijing Protocol, *see supra* note 77.

- (i) when the offence is committed by a stateless person whose habitual residence is in the territory of that State.¹⁵²
- (ii) when the offense is committed in an attempt to compel the State to do or abstain from doing any act.¹⁵³

2. Domestic Implementation

Each State Party shall make the offenses set forth in Section A.1 punishable under their domestic law by appropriate penalties which take into account the grave nature of those offenses.¹⁵⁴

3. Extradite or Prosecute

- a) Each State Party that captures a person suspected of having engaged in one or more of the offenses set forth in Section A.1, if it does not extradite such person, shall be obliged without exception whatsoever and whether or not the offense was committed within a place over which it has sovereignty, to submit the case to its competent authorities for the purpose of prosecution. Those authorities shall take their decision in the same manner as in the case of any ordinary offense under the law of that State.¹⁵⁵
- b) None of the offenses set forth in Section A.1, shall be regarded, for the purposes of extradition or mutual legal assistance, as a political offense or as an offense connected with a political offense or as an offense inspired by political motives. Accordingly, a request for extradition or for mutual legal assistance based on such an offense may not be refused on the sole ground that it concerns a political offense or an offense connected with a political offense or an offense inspired by political motives.¹⁵⁶

152. This language mirrors Article VII of the Beijing Protocol, *see supra* note 77.

153. This language mirrors Article 6(2)(c) of the SUA, *see supra* note 125.

154. This language is largely based on Article 3 of the SUA, *see supra* note 125, and Article III of the Beijing Protocol, *see supra* note 77.

155. This paragraph is largely based on Article 7 of the Hague Convention, *see supra* note 72.

156. This paragraph mirrors Article XII of the Beijing Protocol, *see supra* note 77.

- c) Nothing in this Convention shall be interpreted as imposing an obligation to extradite or to afford mutual legal assistance, if the requested State Party has substantial grounds for believing that the request for extradition for offenses set forth in Section A.1 or for mutual legal assistance with respect to such offenses has been made for the purpose of prosecuting or punishing a person on account of that person's race, religion, nationality, ethnic origin, political opinion or gender, or that compliance with the request would cause prejudice to that person's position for any of these reasons.¹⁵⁷

157. This paragraph mirrors Article XIII of the Beijing Protocol, *see supra* note 77.