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PLUGGING THE LEAKS IN OUTER SPACE CRIMINAL JURISDICTION: ADVOCATION FOR THE CREATION OF A UNIVERSAL OUTER SPACE CRIMINAL STATUTE

INTRODUCTION

A. *Opening Statements*

Humanity achieved an outer space milestone in 2019: The United States' National Aeronautics and Space Administration (NASA) began the first criminal investigation into an alleged outer space crime.¹ On August 23 of that year, *The New York Times* broke the story U.S. Astronaut Anne McClain was accused of illegally accessing bank accounts that were at least jointly owned by her estranged spouse.² The plot twist was she did it not from her home, nor from a training facility on Earth; she was on the International Space Station (ISS).³ If the allegations are true, the act raises the question, who has jurisdiction and what criminal law applies to Ms. McClain if prosecuted? Luckily, current outer space laws already answer these questions as applicable to this scenario.⁴ However, the question still lingers in situations not covered by existing legal authority, such as Jim's murder in the "Space Murder Story" discussed *infra*.

To resolve this legal question and to forestall continuation of our current scheme of ad hoc rulemaking for outer space, this Comment proposes the establishment of an Outer Space Criminal Statute (OSCS).⁵ This statute would be universal, supreme, and define crimes for all persons in outer space regardless of nationality, and its court would have original jurisdiction for all crimes in outer space. Though reaching agreement on formation of an OSCS would likely be fraught with controversy and struggle, this should not dissuade the

¹ Mike Baker, *NASA Astronaut Anne McClain Accused by Spouse of Crime in Space*, N.Y. TIMES (Aug. 23, 2019), <https://www.nytimes.com/2019/08/23/us/nasa-astronaut-anne-mcclain.html#>.

² *Id.*

³ *Id.*

⁴ See 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 Operation on the Civil International Space Station art. 22, T.I.A.S. no. 12927, Jan. 29, 1998 [hereinafter 1998 IGA]. In Lt. Col. McClain's case, she would be under U.S. jurisdiction as she is a U.S. national aboard the ISS. See *id.* As of January 24, 2020, there have been no updates on Lt. Col. McClain's investigation and it was ongoing. Ria Mee, *The Universe's Most Illegal Sandwich: The Law in Space*, ARMAGHPLANET.COM (Jan. 24, 2020), <https://armaghplanet.com/the-universes-most-illegal-sandwich-the-law-in-space.html>.

⁵ See Nina Tannenwald, *Law Versus Power on the High Frontier: The Case for a Rule-Based Regime for Outer Space*, 29 YALE J. INT'L L. 363, 370 (2004).

international community from seizing its opportunity to do so while a strong outer space esprit de corps still dominates.⁶

What this Comment does not discuss is the specific content of the proposed OSCS. Like the creation of the Rome Statute of the International Criminal Court (“Rome Statute”), there will be much international debate regarding the contents of said statute, especially in regard to elements of crimes and principles of rule and procedure. Besides admitting their probable necessity, this Comment does not discuss the executive and judicial bodies responsible for enforcing and adjudicating, respectively, violations of an OSCS. This Comment is also limited to criminal jurisdiction; there will be inevitable issues regarding establishment of territories, allocation of resources, and other civil issues.

In pursuit of this conclusion, this Comment disembarks from here with a possible “Space Murder Story” from the future. After, in Section II, this Comment further articulates the legal problem humanity faces as it prepares to embark on mass civil space travel. Section III burns through a brief summary of mankind’s journey to space, culminating in near future plans for space travel. Section IV explains current legal authority regarding criminal activity in outer space and shows its insufficiency through application to Roy’s offense from the “Space Murder Story.” Then, in Section V, this Comment presents the value of a universal and sovereign OSCS, outlines the immediate benefits, and describes the future advantages. The Comment concludes in Section VI.

B. “Space Murder Story”

Sometime in 2320, Roy untethered himself from his sleeping bag and floated across the crew quarters to the porthole facing Titan, one of Saturn’s moons. He stared at his assigned worksite, RA 983, a resource asteroid that had been towed into orbit around Titan. RA 983’s orbit was synchronized with that of his home, Scranton Station.

Scranton Station was Earth’s first permanent, commercially owned, outer space mining platform. In stable geostationary orbit, Scranton Station was connected to Titan’s surface via orbital elevator, which transported refined oil to waiting tanker drones for transport to Earth.

⁶ See Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, pmbl., July 11, 1984, 1363 U.N.T.S. 3 [hereinafter Moon Agreement]; Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, pmbl., Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter OST].

Scranton Station was a product of the need for oil. Shortly after the turn of the millennium, Earth space agencies discovered enormous liquid hydrocarbon reserves on Titan.⁷ In preparation for the depletion of Earth's oil reserves, a multinational conglomerate of Earth's largest energy companies formed Space Exploration Organization, Inc. (SEO). SEO was created to develop economical ways to recover the oil on Titan, allowing SEO to eventually monopolize Earth's oil supply once Earth's reserves were depleted.

SEO's aggregation of wealth allowed it to undertake outer space endeavors without financial reliance on governmental space agencies. Through lobbying, SEO was able to stall the development of international outer space law, successfully ensuring no changes had been made to outer space law since 2020. Taking advantage of legal loopholes, SEO developed a comprehensive plan to establish space stations free from Earth-nation jurisdiction. It launched its initial, privately-owned spacecraft, Baron I, from stateless vessels in international waters. Once near Saturn, SEO mined resource-rich asteroids from Saturn's rings to build and provision Scranton Station. Often, as in the case of RA 983, smaller resource asteroids were towed near the station to expedite resource extraction.

As a result, Scranton Station and all of its components, provisions, and supporting spacecraft were fabricated entirely in space, with no part launched from Earth; Baron I was landed on Titan as a museum and decommissioned.

When staffing Scranton Station, SEO struggled to convince people to make the two to six-year journey to Titan to perform dangerous work isolated from Earth. Because of its limited supply of workers, SEO was forced to employ some of the more dangerous and seedier of Earth's population, often hiring those wanted for heinous crimes or otherwise are attracted to the insulation from Earth-nations Scranton Station provided.

Roy was one such individual. The United States stripped Roy's U.S. citizenship after he committed particularly nasty atrocities against the United States for some radical terror groups. He managed to escape from prison after his conviction for treason.⁸ As a stateless person, he sought employment on Scranton Station for the lucrative pay, to avoid earthly difficulties as a stateless person, and to escape governmental authority. Upon arrival to Scranton Station,

⁷ Carolina Martinez, *Titan's Surface Organics Surpasses Oil Reserves on Earth*, NASA (Feb. 13, 2008), https://www.nasa.gov/mission_pages/cassini/media/cassini-20080213.html.

⁸ See generally 8 U.S.C. § 1481(a)(7) (2018) (explaining that U.S. citizens lose nationality when voluntarily committing treason).

Roy was assigned to a resource recovery crew which was tasked with mining metals from RA 983.

Turning away from his porthole, Roy quickly dressed and carefully pushed himself through the microgravity into the corridor leading to his crew's extra-vehicular activity (EVA) ready room. There, he would meet with his crew and prepare to travel to RA 983 in order to collect the heavy metals necessary for Scranton Station's continued existence. During EVA maneuvers, all crewmembers were assigned to a partner for safety and redundancy to mitigate the extreme dangers of leaving the relative safety of Scranton Station. Roy's EVA partner was Jim.

Unlike Roy, Jim was born on Scranton Station. His father, a wealthy Monégasque, visited Scranton Station as a space tourist. While visiting the station, he and Jim's mother, a U.S. national employed by SEO, conceived Jim. Jim's father returned to Monaco some weeks later. Jim never obtained Monégasque citizenship as his parents were never married,⁹ and he never obtained U.S. citizenship due to his inability to adequately communicate with U.S. authorities and apply for citizenship through his mother.¹⁰

As Roy carefully navigated the maze of corridors, his anger built as he ruminated on his ongoing conflict with Jim. Some months ago, Roy began a relationship with Pam, another SEO employee. However, he recently discovered Jim began an affair with Pam. As a result, Roy felt his usual rage as he entered the ready-room and saw his EVA partner. Planning his revenge, he put on his EVA suit in silence.

Some hours later, Roy and Jim found themselves on the surface of RA 983. Roy waited until he and Jim were in the shadow of the space station, then quickly disconnected Jim from his air supply, opening Jim's suit to vacuum, causing Jim to asphyxiate and die.

Another SEO employee witnessed the killing and reported it to Scranton Station management. Unsure of how to handle the unprecedented situation, SEO quickly fired Roy and arranged for him to be sent back to Earth so someone else could figure out criminal proceedings.

⁹ See Zsolt Szemerszky, *Living in Monaco. Giving Birth in Monaco*, <https://livinginmonaco.com/family/expecting-a-baby/giving-birth-in-monaco/> (last accessed Oct. 19, 2020), ("...[I]n the case of [non-legitimate] natural offspring, [the] handing-on of [Monégasque] nationality only takes place if the child is recognized or legitimized by marriage of its parents.").

¹⁰ See *Citizenship Through Parents*, U.S. CITIZENSHIP AND IMMIGR. SERVS. (Apr. 17, 2019), <https://www.uscis.gov/forms/explore-my-options/citizenship-through-parents>.

After Roy's three-year journey, the United Kingdom agreed to take Roy into custody for Jim's murder. However, Roy's lawyer quickly pointed out jurisdictional issues with trying the "murder" in the United Kingdom, or anywhere. Neither Roy nor Jim were nationals of any country, and no country had a territorial claim over the "crime's" location. Finally, a centuries-old outer space criminal jurisdictional question had moved from hypothetical to reality: was there a basis in 2020's outer space legal authority to hold Roy accountable for killing Jim?

I. THE PROBLEM EXPLAINED

With human expansion comes human problems, including crime.¹¹ As evidenced by Ms. McCain, space is no exception.¹² In fact, "it is expected that there will be a high rate of criminal and deviant conflicts in any long-term human presence in outer space. . . ."¹³ This prediction is strengthened by disheartening results of experiments on Earth designed to test human responses to isolation in space.¹⁴ During a particularly disconcerting trial conducted by Russia over a period of 100 days, the commander of the mock space mission committed battery, assault, and attempted murder and tried to rape a female crewmember while drunk.¹⁵ Though classified, rumors exist regarding criminal acts in real outer space missions.¹⁶

This recalcitrant behavior by cosmonauts and astronauts is especially troubling: with the exception of seven paid space tourists,¹⁷ the approximately 550 people that have traveled to space thus far are arguably some of the most mentally stable people Earth has to offer.¹⁸ Because sending people to space is such an investment,¹⁹ "[a]stronauts are subject to a very rigorous recruitment process where they are evaluated from medical and psychological

¹¹ See Timothy Roufa, *The History of Criminology: Crime and Criminology, From the Ancients to the Renaissance*, THOUGHTCO. (Feb. 8, 2019), <https://www.thebalancecareers.com/the-history-of-criminology-part-1-974579> ("As long as there have been people, there has been crime.").

¹² See generally Baker, *supra* note 1.

¹³ Julian Hermida, *Crimes in Space*, 31 ANNALS AIR & SPACE L. 405, 405 (2006).

¹⁴ *Id.* at 408.

¹⁵ *Id.* at 408–09.

¹⁶ *Id.* at 409.

¹⁷ Marcia Wendorf, *7 Private Citizens Who Paid to Become Space Tourists*, INTERESTING ENG'G (May 16, 2019), <https://interestingengineering.com/7-private-citizens-who-paid-to-become-space-tourists>.

¹⁸ See Hermida, *supra* note 13, at 416.

¹⁹ See Jackie Wattles, *NASA Says Moon Rocket Could Cost as Much as \$1.6 Billion per Launch*, CNN BUS. (Dec. 9, 2019), <https://www.cnn.com/2019/12/09/tech/nasa-sls-price-cost-artemis-moon-rocket-scn/index.html>. The U.S. Office of Management and Budget estimates NASA's newest moon rocket will cost up to \$2 billion per launch. *Id.*

standpoints.”²⁰ Not only do they have to initially pass medical and psychological evaluations, they are reassessed annually.²¹ The psychological evaluations focus on both their mental ability to handle the stresses of spaceflight and their ability to perform in group settings while locked in close proximity to others for extended periods of time.²² Factors considered are their proclivity to commit crimes and their morals.²³ “This careful and competitive process only selects highly qualified individuals for human space programs.”²⁴

Further complicating the fact that such standards are not bulletproof in preventing recalcitrant behavior is the fact that such thorough vetting is not mandatory: these standards are applied individually by each space-faring entity, and there are no standards by which agencies *must* use when selecting people to go to space.²⁵

Despite the filtering process, space crime occurs. Conceivably, such space-travel criteria will degrade or be disregarded entirely when the floodgates of commercial space travel open.²⁶ Many more people will be entering the cosmos soon, and their space-worthiness will not be determined by the quality of their characters, but by the size of their wallets.²⁷ And if history has shown us anything, with people comes crime.²⁸ Since even stringent standards are not enough to prevent criminal activity in space, logic dictates that crime frequency will increase when such standards are discarded. Therefore, future space endeavors will require legal authority to address criminal acts committed in space.²⁹

Given the inevitability of outer space crime,³⁰ especially with looming commercial space flight and space tourism,³¹ one would think there would be a regime in place to address such wrongdoings. However, one would be mistaken.

²⁰ Hermida, *supra* note 13, at 416; see Lee Seshagiri, *Spaceship Sheriffs and Cosmonaut Cops: Criminal Law in Outer Space*, 28 DALHOUSIE L. J. 473, 489–90 (2005).

²¹ Hermida, *supra* note 13, at 416.

²² *Id.* In addition, they are selected on moral standards. *Id.*

²³ *Id.* 417, n. 91.

²⁴ *Id.* at 416.

²⁵ See generally Seshagiri, *supra* note 20, at 489.

²⁶ See Seshagiri, *supra* note 20, at 480.

²⁷ See P. J. Blount, *Jurisdiction in Outer Space: Challenges of Private Individuals in Space*, 33 J. SPACE L. 299, 302–03 (2007).

²⁸ See generally Hermida, *supra* note 13.

²⁹ See Taylor Stanton Hardenstein, *In Space, No One Can Hear You Contest Jurisdiction: Establishing Criminal Jurisdiction on the Outer Space Colonies of Tomorrow*, 81 J. AIR L. & COM. 251, 253–54 (2016).

³⁰ See Blount, *supra* note 27, at 303; Seshagiri, *supra* note 20, at 486 n. 33.

³¹ Seshagiri, *supra* note 20, at 477. See *infra* Section III.C. for a discussion of future space endeavors.

Not only are there questions of criminal jurisdiction and law with ambiguous answers, the current “criminal law” of outer space has gaps where there is simply no guidance.³² In fact, the entire “current legal regime in space is increasingly fragmented and inadequate to meet the challenges of the intensifying use of space.”³³ Simply put, there are a variety of behavior problems that are expected to occur as we get into outer space, and our current laws “. . . [do] not address or propose specific solutions to prevent the occurrence of criminal behavior in outer space.”³⁴

These weaknesses are products of the current “muddling through” scheme of outer space legal development that was adopted at the advent of space travel.³⁵ The international community operates under differing interpretations of vaguely stated, albeit shared, general principles.³⁶ “Rule creation . . . is ad hoc, incremental, and piecemeal.”³⁷ The framework reflects state-sponsored exploration of space³⁸ but does not reflect the evolving interests of permanent inhabitation and *use* of space.³⁹ Despite the fact this framework is designed to ensure “. . . no single power dominates and possibly jeopardizes access to space by others[,]”⁴⁰ it is simply insufficient to guarantee a stable international community with increasing travel to space.⁴¹

This instability is extremely problematic, as Earth’s international community has diverse and varied interests. There is no rationale for thinking this diversity will, absent international agreement, terminate above the Kármán Line (considered by most to be the boundary where Earth’s atmosphere ends and outer space begins).⁴² These varied interests are unlikely to be balanced by current laws regarding space; imbalance threatens a collapse of the current outer space legal regime.⁴³

³² Hardenstein, *supra* 29, at 262, 267.

³³ Tannenwald, *supra* note 5, at 370.

³⁴ Hermida, *supra* note 13, at 416.

³⁵ Tannenwald, *supra* note 5, at 378.

³⁶ *Id.*

³⁷ *Id.*

³⁸ *Id.*

³⁹ *See Id.* at 382 (“The major change in the exploitation of space over the decades is the large increase in commercial interest.”).

⁴⁰ *Id.* at 365.

⁴¹ *Id.* at 380.

⁴² *See* Stephanie Waldek, *Where Does Outer Space Start*, POPULAR SCI. (June 1, 2018), <https://www.popsci.com/where-does-space-begin/> (describing the Kármán Line as the most widely accepted definition for the edge of space). The Kármán Line, named for Hungarian physicist and engineer Theodore von Kármán, is 100 kilometers (approximately 62 miles) above Earth’s surface. *Id.*

⁴³ *See* Tannenwald, *supra* note 5, at 380.

Such a collapse may facilitate countries to establish a national dominance philosophy, where states selfishly exploit space for their own national self-interest.⁴⁴ We have already seen proof that at least one nation is preparing to militarize space.⁴⁵ On August 26, 2019, out of fears that “[s]pace will be a part of future conflicts on Earth,” U.S. President Donald Trump authorized creation of the United States Space Command (SPACECOMM).⁴⁶ SPACECOMM quickly evolved into the sixth branch of the U.S. military, the United States Space Force, on December 20, 2019.⁴⁷ The U.S. military’s entry into space could make international treaties and negotiations irrelevant, or sweep them away entirely.⁴⁸ Militarization could also inspire other countries to pursue their own outer space militarization.⁴⁹

This runaway system of national dominance of space would be disastrous for humanity and the current international cooperation of space exploration: “[a] contest over national superiority in space could extinguish the explicit equal right to use space that all nations enjoy, creating instead a de facto regime of control over access and use by the first nation to successfully deploy weapons based in space. . . .”⁵⁰ Not only would this arms race transform the cooperative culture in space into one of conflict, but also tarnish earthly international relations.⁵¹ The best case scenario in such a conflict may be non-spacefaring countries develop anti-satellite weapons to even the playing field, collaterally depriving us of convenience of necessities such as cell phones and Global Positioning Systems (GPS).⁵² The worst case could be another World War, but this time with a rain of nuclear, “kinetic-kill,” and laser weapons from outer space.⁵³

We need to forestall such a result, as discussed *infra* Part III, and an OSCS would solve criminal jurisdictional problems in space and be part of a comprehensive framework of international outer space regulation.

⁴⁴ See *id.* at 365.

⁴⁵ Katie Rogers & Helene Cooper, *Trump Authorizes a Space Command. Next, He Wants a Space Force*, N.Y. TIMES (Aug. 29, 2019), <https://www.nytimes.com/2019/08/29/us/politics/trump-space-command-force.html>.

⁴⁶ *Id.*

⁴⁷ UNITED STATES SPACE FORCE, ABOUT US, <https://www.spaceforce.mil/About-Us/FAQs/Whats-the-Space-Force>. The creation of the Space Force has been contemplated since the Reagan administration, but plans were disbanded with the United States shifting concern to battling terrorism in 2001. Rogers & Cooper, *supra* note 45.

⁴⁸ Tannenwald, *supra* note 5, at 378.

⁴⁹ *Id.* at 379.

⁵⁰ *Id.* at 367.

⁵¹ See *id.* at 369.

⁵² See *id.* at 379.

⁵³ See *id.* at 366, 369, 399.

II. BRIEF HISTORY LEADING TO THE CURRENT IMPETUS OF WIDESPREAD SPACE TRAVEL

Humans' trip to space began when early people started exploring Earth. Therefore, cursory discussion of our species' earliest days through modern extraterrestrial achievement is relevant.

A. Pre-Modern History

Humanity's first murder victim (that we know about) died approximately 430,000 years ago.⁵⁴ Our journey to outer space began much later, around 60,000 years ago, when humans began a series of permanent migrations from Africa.⁵⁵ At least 45,000 years ago, humans left *terra firma* for a one-way voyage to a "New World": Australia.⁵⁶ 15,000 years ago, humans reached the Americas,⁵⁷ and by 4000 B.C.E., ancient Egyptians developed the first sailing vessels and began exploring the Eastern Mediterranean.⁵⁸ In 325 B.C.E., Greek astronomer Pytheas sailed to England,⁵⁹ while in 1002 C.E. Leif Erikson "discovered" North America.⁶⁰ Between 960 and 1279 C.E., the first rocket was launched by the Sung Dynasty in China.⁶¹ Approximately 200 years later, in 1492 C.E., Christopher Columbus "rediscovered" North America.⁶² Almost immediately, he and his subjects began committing atrocities against the locals.⁶³

⁵⁴ Rachel Fobar, *This Ancient Skeleton May Be Humanity's First Murder Victim*, POPULAR SCI. (May 29, 2015), <https://www.popsoci.com/forensic-analysis-reveals-mankinds-first-murder/>; Michael Casey, *Could This be the World's First Murder?*, CBS NEWS (May 27, 2015), <https://www.cbsnews.com/news/could-this-be-the-worlds-first-murder/>.

⁵⁵ *Milestones in Human Evolution*, SMITHSONIAN NAT'L MUSEUM OF NAT. HIST. (Mar. 17, 2010), <https://www.si.edu/newsdesk/factsheets/milestones-human-evolution/>; *Map of Human Migration*, NAT'L GEOGRAPHIC, <https://genographic.nationalgeographic.com/human-journey/>. Humans initially left Africa hundreds of thousands of years ago but those pioneers were killed by the Ice Age, reducing the human population to approximately 10,000. *Id.*

⁵⁶ Sarah Gibbens, *Humans Arrived in Australia 18,000 Years Earlier Than We Thought*, NAT'L GEOGRAPHIC (July 20, 2017), <https://www.nationalgeographic.com/news/2017/07/australia-aboriginal-early-human-evolution-spd/>.

⁵⁷ SMITHSONIAN NAT'L MUSEUM OF NAT. HIST., *supra* note 55.

⁵⁸ *Ocean Exploration Timeline*, SEA & SKY, <http://www.seasky.org/ocean-exploration/ocean-timeline-5000bc-1bc.html>.

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ Frank Winter & Michael Neufeld, *The First Fireworks: Origins of the Rocket*, SMITHSONIAN NAT'L AIR & SPACE MUSEUM (July 3, 2013), <https://airandspace.si.edu/stories/editorial/first-fireworks-origins-rocket>.

⁶² Hardenstein, *supra* 29, at 255.

⁶³ Tink Tinker & Mark Freeland, *Thief, Slave Trader, Murderer: Christopher Columbus and Caribbean Population Decline*, 23 WICAZO SA REV. 25, 37 (2008).

B. *Recent Developments*

Our technological journey into space started in 1903, once the Wright brothers flew the first heavier-than-air controlled flying machine.⁶⁴ Less than forty years later, on October 3, 1942, a German V-2 rocket became the first known man-made object to reach outer space.⁶⁵ Earth leaders began contemplating sending people to outer space, and in preparation, U.S. President Eisenhower and Congress established NASA for the exploration of space in 1958.⁶⁶ Shortly thereafter, on April 12, 1961, Russian Cosmonaut Yuri Gagarin became the first human in space.⁶⁷ Throughout the 1960s and 1970s, Earth probes drifted by Mars and further into the Solar System.⁶⁸ We arrived on the Moon on July 20, 1969, when American astronaut Neil Armstrong first stepped onto the Earth's closest neighbor.⁶⁹ Our reach extended to Mars in 1976 when Viking 1 and Viking 2 reached the Red Planet.⁷⁰ In 1986 the United Soviet Socialist Republic completed Mir, the first modular manned space station.⁷¹ This started a period of constant human inhabitation of outer space, and was a pivotal step for international collaboration in space exploration, as Mir hosted 104 different people from 12 nations.⁷²

C. *Modern Developments*

Our modern extraterrestrial existence has recently included private commercial space exploration. On November 20, 1998, the ISS was launched.⁷³ NASA then successfully landed rovers on Mars in 2004, 2007, and 2012 and, as of 2020, is currently surveying the planet; other countries are also sending their own rovers.⁷⁴ The United States began accepting the prospect of civilian space

⁶⁴ Jeremy Hsu, *The First Flight: Wright Flyer*, SPACE.COM (June 17, 2019), <https://www.space.com/16596-wright-flyer-first-airplane.html>.

⁶⁵ Suzanne Deffree, *German Rocket is 1st to Reach Space, October 3, 1942*, EDN NETWORK (Oct. 3, 2019), <https://www.edn.com/electronics-blogs/edn-moments/4397678/German-rocket-is-1st-to-reach-space—October-3—1942>.

⁶⁶ Steven J. Dick, Chief Historian, *The Birth of NASA*, NASA (Mar. 28, 2008), https://www.nasa.gov/exploration/whyweexplore/Why_We_29.html.

⁶⁷ *A Brief History of Space Exploration*, AEROSPACE (June 1, 2018), <https://aerospace.org/article/brief-history-space-exploration>.

⁶⁸ Elizabeth Howell, *A Brief History of Mars Missions*, SPACE.COM (Apr. 08, 2019), <https://www.space.com/13558-historic-mars-missions.html>.

⁶⁹ AEROSPACE, *supra* note 67.

⁷⁰ Howell, *supra* note 68.

⁷¹ Matt Williams, *Mir: Russia's Space Station*, UNIVERSE TODAY, SPACE & ASTRONOMY NEWS (June 17, 2015), <https://www.universetoday.com/57063/mir-space-station/>.

⁷² *Id.*

⁷³ *History and Timeline of the ISS*, U.S. NAT'L LAB'Y, <https://www.issnationallab.org/about/iss-timeline/>.

⁷⁴ Howell, *supra* note 68.

travel in 2010 when Congress announced the general welfare of the United States requires NASA to seek and encourage the fullest commercial use of space.⁷⁵ Subsequently, the U.S. Federal Aviation Administration (FAA) issued regulations for the certification of private astronauts.⁷⁶ In 2001, American millionaire Dennis Tito became the first space tourist, flying with Roscosmos to the ISS for \$20 million.⁷⁷ On July 7, 2019, NASA announced it would allow astronauts from private commercial space companies, such as Blue Origin, Virgin Galactic, SpaceX, and Boeing, to stay and work on the ISS.⁷⁸ SpaceX has mentioned paid trips to the moon as early as 2023.⁷⁹ Japanese billionaire Yusaku Maezawa has already bought tickets for a weeklong trip with SpaceX around the moon in 2023.⁸⁰

Accomplishments in exploring outer space have provided an imminent trajectory of colonization of planetary bodies. SpaceX has an optimistic timeline of launching supplies to Mars by 2023, landing people on Mars in 2025, and completing a Mars base by 2028.⁸¹ NASA is planning a lunar base by 2030, and is researching ways to establish a permanent presence there.⁸² The FAA, which regulates the launch and recovery of spacecraft from the United States and spacecraft operated by U.S. companies and persons, predicted a 50% increase in commercial launches by 2021 and a 200% increase in commercial launches by 2024.⁸³

An increase in mankind's space population will, logically, catalyze the inevitable first true outer space crime. As discussed *infra*, humanity lacks a sufficient legal framework with which to prosecute criminal acts in space.

⁷⁵ 51 U.S.C. § 20102(c).

⁷⁶ 14 C.F.R. § 460.

⁷⁷ Roscosmos is the Russian Federation's national space agency. *Roscosmos General Information*, ROSCOSMOS, <http://en.roscosmos.ru/119/>; Jonathan O'Callaghan, *2019 is the Year that Space Tourism Finally Becomes a Reality. No, Really*, WIRED (Jan. 24, 2019), <https://www.wired.co.uk/article/spacex-blue-origin-space-tourism>.

⁷⁸ Meghan Bartels, *Private Astronauts Could Spend a Month in Space Under New NASA Plan*, SPACE.COM (June 7, 2019), <https://www.space.com/private-astronauts-nasa-commercial-space-station.html>; see O'Callaghan, *supra* note 77.

⁷⁹ O'Callaghan, *supra* note 77.

⁸⁰ Dave Mosher, *Elon Musk Says SpaceX is on Track to Launch People to Mars Within 6 Years- Here's the Full Timeline of his Plans to Populate the Red Planet*, BUS. INSIDER (Nov. 2, 2018), <https://www.businessinsider.com/elon-musk-spacex-mars-plan-timeline-2018-10>.

⁸¹ *Id.*

⁸² *Moon to Mars Overview*, NASA (Brian Dunbar ed., Apr. 5, 2019), <https://www.nasa.gov/topics/moon-to-mars/overview>.

⁸³ Federal Aviation Administration, *Stratight from Steve: A Visit with Wayne Monteith, FAA Associate Administrator for Commercial Space Transportation*, YOUTUBE (Oct. 18, 2019), https://www.youtube.com/watch?v=jcF7yTY_W8g&feature=youtu.be.

III. EXISTING LEGAL AUTHORITY FOR OUTER SPACE AND ITS LIMITATIONS

Unfortunately, there is not much law, especially criminal law, regarding outer space activities.⁸⁴ This problem is magnified because case law interpreting outer space authority is very limited.⁸⁵ Furthermore, due to the relatively short period of space exploration, there is inadequate human history in outer space to answer legal questions.⁸⁶

What existing authority exists is “characterized by broad principles . . . largely left open to unilateral interpretation” and is dominated by “the small number of nations with the capacity to exploit the domain.”⁸⁷ Because space law consists of multiple documents, states can pick and choose between treaties and adopt ones that benefit them.⁸⁸ And even read as a whole, the treaties, principles, and agreements are not comprehensive to cover criminal issues in space. Current space law does not provide sufficient authority for states to exercise criminal jurisdiction over all persons in outer space.⁸⁹ This will, predictably, preclude prosecutions for crimes, such as Jim’s murder in the introductory “Space Murder Story,” because a state must be enabled by international law, its own national law, and logistical realities, to exercise criminal jurisdiction.⁹⁰

A. The Unsuitability of International Bases of Criminal Jurisdiction for Outer Space

It is hard to define a precise international definition of jurisdiction.⁹¹ For the purpose of this article, jurisdiction is the extent to which a state is entitled to exert its power over controversies.⁹² If a state has jurisdiction, it may apply its laws to a situation and making binding decisions over the parties.⁹³

⁸⁴ Tannenwald, *supra* note 5, at 395

⁸⁵ See Hardenstein, *supra* 29, at 262.

⁸⁶ See *id.* at 262–63.

⁸⁷ Tannenwald, *supra* note 5, at 395.

⁸⁸ *Id.* at 395. Compare states parties to the Moon Agreement, *supra* note 6, with states parties to G.A. Res. 3235 (XXIX), Convention on Registration of Objects Launched Into Outer Space (Nov. 12, 1974) [hereinafter Registration Convention], and states parties to the OST, *supra* note 6.

⁸⁹ See Hardenstein, *supra* 29, at 262.

⁹⁰ See Hans P. Sinha, *Criminal Jurisdiction on the International Space Station*, 30 J. SPACE L. 85, 87, 92–93 (2004).

⁹¹ See Stacy J. Ratner, *Establishing the Extraterrestrial: Criminal Jurisdiction and the International Space Station*, 22 B. C. INT’L & COMP. L. REV. 323, 328 (1999).

⁹² See *Jurisdiction*, LEGAL INFO. INST., <https://www.law.cornell.edu/wex/jurisdiction>.

⁹³ See *Ruhrgas Ag. v. Marathon Oil Co.*, 526 U.S. 574, 577 (1999).

The scope of jurisdiction is normally “. . . determined by the extent of one sovereign’s power, preferably measured spatially, with one jurisdiction ending at a border or boundary of some sort as another begins.”⁹⁴ While this means a state’s jurisdiction is generally considered to extend to its borders and over its inhabitants,⁹⁵ jurisdiction can be appropriate when considering factors other than territorial location of events or parties; this is called “extraterritorial jurisdiction.”⁹⁶ While territorial jurisdiction is generally simple and uncontroversial, not every exercise of extraterritorial jurisdiction is acceptable because it opens the door for legal maladies.⁹⁷

First, extraterritorial jurisdiction often leads to international conflict.⁹⁸ Often, when one state exercises extraterritoriality, its jurisdiction overlaps with another state’s jurisdiction.⁹⁹ This overlap “may be perceived as particularly intrusive to foreign nations’ sovereignty,”¹⁰⁰ which in turn generates diplomatic hostility.¹⁰¹ As a result, extraterritoriality could “. . . pose severe consequences for both diplomatic relations and international law.”¹⁰²

Second, extraterritorial jurisdiction can lead to unfairness to the parties involved.¹⁰³ “Fairness in this context means upsetting the defendant’s expectations of the substantive law that she thought would apply to her conduct.”¹⁰⁴ Domestic legal systems generally require that persons knew their actions were illegal to be liable for criminal punishment.¹⁰⁵ And even for crimes

⁹⁴ Markus D. Dubber, *Criminal Jurisdiction and Conceptions of Penalty in Comparative Perspective*, 63 U. TORONTO L. J. 247, 262 (2013).

⁹⁵ See *id.* at 262–63.

⁹⁶ See Krzysztof Zaluki, *Extraterritorial Jurisdiction in International Law*, 17 INT’L COMM. L. REV. 403, 404 (2015). Extraterritoriality should not be confused with Exterritoriality. *Id.* When discussing jurisdiction, exterritoriality means “outside” of territory whereas extraterritoriality means “on a basis other than territory.” *Id.*

⁹⁷ Paul N. Stockton & Michele Golabek–Goldman, *Prosecuting Cyberterrorists: Applying Traditional Jurisdictional Frameworks to a Modern Threat*, 25 STAN. L. & POL’Y REV. 211, 230–31 (2014); Zaluki, *supra* note 96, at 411; see Michael Farbiarz, *Extraterritorial Criminal Jurisdiction*, 114 MICH. L. REV. 507, 509 (2016).

⁹⁸ Zaluki, *supra* note 96, at 411; Farbiarz, *supra* note 97, at 509; cf. Stockton & Golabek–Goldman, *supra* note 97, at 217.

⁹⁹ See Zaluki, *supra* note 96, at 411.

¹⁰⁰ Stockton & Golabek–Goldman, *supra* note 97, at 263 (internal quotation omitted).

¹⁰¹ See *id.* at 248.

¹⁰² See *id.* at 263.

¹⁰³ Farbiarz, *supra* note 97, at 509.

¹⁰⁴ *Id.* at 510.

¹⁰⁵ See David Luban, *Fairness to Rightness: Jurisdiction, Legality, and the Legitimacy of International Criminal Law*, 19–21 (Georgetown Univ. L. Cent., Faculty Working Paper, 2008), http://scholarship.law.georgetown.edu/fwps_papers/67. Professor Luban argues extraterritoriality rarely yields unfairness for *malum in se*, or universally morally wrong, offenses as the perpetrator inherently knows the illegality of such acts. *Id.* “[M]urder, rape, torture, and beatings are central domestic-law crimes in every legal system in the world.” *Id.*

that are universally condemned, such as murder and rape, the punishments for such crimes can vary substantially depending on the applicable criminal law.¹⁰⁶ Is it fair that someone gets blindsided by a criminal penalty they could not have predicted, for an act they may or may not have known illegal?

To mitigate these risks associated with application of criminal jurisdiction, states enter treaties and adopt jurisdictional principles, which are designed to provide a “sensible liaison” or “sensible relation” between the state and the controversy it wishes to act upon prior to exercising jurisdiction.¹⁰⁷ Often, treaties reflect and directly adopt jurisdictional principles to further clarify states’ jurisdictions.¹⁰⁸

So, can existing outer space treaties, or any treaty or principle, answer our question of whether there is a basis for state-jurisdiction over Roy for Jim’s death in our “Space Murder Story?” Unfortunately, no; as discussed *infra* Section IV.A.2.a-e, none of the five customary international legal jurisdictional principles, nor existing treaties, currently provide a suitable answer for whether Roy will be punished. Section IV.A.1 discusses the gaps in the current outer space treaties, Section IV.A.2. explores the jurisdictional principles and highlight their inapplicability to the question, and Section IV.A.3 elaborates on the shortcomings of international authority by analogy to the Antarctic Treaty.

1. *The Shortcoming of Outer Space Treaties*

Currently, the treaty-based authority specifically governing human activity in outer space consists of five United Nations (U.N.) treaties, five U.N. adopted principles, and the 1998 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 Operation on the Civil International Space Station (1998 IGA).¹⁰⁹ Of those, only two treaties, one principle, and the 1998 IGA have jurisdictional references that could be considered when contemplating criminal activity in space.¹¹⁰ These treaties are

¹⁰⁶ See Farbiarz, *supra* note 97, at 544; *infra* notes 158, 159 and accompanying text.

¹⁰⁷ Zaluki, *supra* note 96, at 409.

¹⁰⁸ See, e.g., *infra* Sections IV.A.1.a-d for elaboration on the treaties. “Convention,” “treaty,” and “international agreement” can and are often used interchangeably. See *International Conventions*, LEGAL INFO. INST., https://www.law.cornell.edu/wex/international_conventions.

¹⁰⁹ U.N. OFFICE FOR OUTER SPACE AFFAIRS, UNITED NATIONS TREATIES AND PRINCIPLES ON OUTER SPACE, U.N. Doc. ST/SPACE/11, U.N. Sales No. E.02.I.20, iii (2002); see generally 1998 IGA, *supra* note 4.

¹¹⁰ See U.N. OFFICE FOR OUTER SPACE AFFAIRS, UNITED NATIONS TREATIES AND PRINCIPLES ON OUTER SPACE, U.N. Doc. ST/SPACE/11, U.N. Sales No. E.02.I.20, at 5, 32, 40 (2002); 1998 IGA, *supra* note 4, art. 22.

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),¹¹¹ and the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Agreement),¹¹² the principle is the Declaration of Legal Principles Governing the Activities of State in the Exploration and Use of Outer Space (Outer Space Declaration).¹¹³ All are based on the same basic principles: 1) space is the “province of mankind,” is open to all nations and people, and no state can claim sovereignty over any celestial body; 2) all peoples enjoy freedom of scientific exploration and any and all findings should be shared; 3) states are responsible for their actions and their citizens’ actions, with a focus on financial liability; and 4) space should be used for peaceful purposes only, and military actions are discouraged.¹¹⁴ These principles are a double-edged sword: while they offer evidence that states who have already accepted these principles will be willing to form and ratify the OSCS,¹¹⁵ they provide gaps when trying to establish criminal jurisdiction in outer space.

a. The Outer Space Declaration

The Outer Space Declaration was adopted by the United Nations in 1963 in anticipation of the “great prospects opening up before mankind as a result of man’s entry into outer space.”¹¹⁶ In the Declaration, states hold themselves responsible for national and non-governmental activities in outer space, and non-governmental activities must still be registered with launching states.¹¹⁷ As far as jurisdiction is concerned, “[s]tate[s] on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and any personnel thereon, while in outer space.”¹¹⁸ Do states, therefore, automatically bear responsibility for crimes (as outer space activities)? Do states still have jurisdiction over personnel in space if the person is located outside of the spacecraft? Likewise, given that the Outer Space Declaration is only binding to states by their consent, how could it govern private entities, such as SEO in this article’s hypothetical “Space Murder Story?”

¹¹¹ See generally OST, *supra* note 6.

¹¹² See generally Moon Agreement, *supra* note 6.

¹¹³ G.A. Res. 1962 (XVIII), ¶ 7 (Dec. 13, 1963).

¹¹⁴ Henry Hertzfeld, *Current and Future Issues in International Space Law*, 15 ILSA J. INT. & COMP. L. 325, 327–28 (2009).

¹¹⁵ See *infra* Section V.B.C for elaboration.

¹¹⁶ G.A. Res. 1962 (XVIII), pmb., (Dec. 13, 1963).

¹¹⁷ *Id.* ¶ 5.

¹¹⁸ *Id.* ¶ 7.

These questions reflect ambiguities, which in turn provide the ingredients for international conflict, ironically one of the consequences the Outer Space Declaration was designed to avoid.¹¹⁹

b. The OST

The OST was formed to prevent the conflict from an outer space land grab after the United Soviet Socialist Republic launched Sputnik I into outer space in 1957.¹²⁰ The initial concern after this accomplishment was that satellites could be weaponized to rain nuclear death on Earth's nations.¹²¹ The concern then transformed into fear that celestial bodies, or even all of space, could be monopolized by a single nation's claim to sovereignty.¹²² Therefore, in 1967, less than six years after Yuri Gagarin's first spacewalk, the OST was adopted¹²³ to prevent international conflict.¹²⁴

One of the ways it prevents conflict is by establishing jurisdiction over persons in space.¹²⁵ In Article VIII, the OST adopts the principle of *corpus juris spacialis*, where states can exercise jurisdiction, including criminal jurisdiction, over all space objects recorded in their respective national space registries, and all personnel therein, regardless of nationality.¹²⁶ This jurisdiction continues indefinitely, regardless of landing on or being constructed on celestial bodies.¹²⁷ This principle was expanded by the Registration Convention, which established international registration of space objects.¹²⁸

Under the Registration Convention, states parties which are "launching states" are required to register their space objects with the U.N.¹²⁹ A launching state is the state which launches, or is responsible for the launching of a spacecraft, or a state from whose territory or facility a spacecraft is launched.¹³⁰ While the Registration Convention specifies that space objects jointly launched by more than one state must still be registered in a single state, additional

¹¹⁹ *Id.* at pmb1.

¹²⁰ *See* Hardenstein, *supra* 29, at 260, 261.

¹²¹ *Id.* at 261, 264.

¹²² *Id.* at 261.

¹²³ *See generally* OST, *supra* note 6.

¹²⁴ *See* Hardenstein, *supra* 29, at 260–61.

¹²⁵ OST, *supra* note 6, art. VIII.

¹²⁶ Hermida, *supra* note 13, at 409; *see* OST, *supra* note 6, art. VIII.

¹²⁷ OST, *supra* note 6, art. VIII.

¹²⁸ *See generally*, Registration Convention, *supra* note 88.

¹²⁹ *Id.* art. IV; Seshagiri, *supra* note 20, at 483.

¹³⁰ Registration Convention, *supra* note 88, art. I.

agreements between such states regarding jurisdiction and control will be accepted without prejudice.¹³¹

These jurisdictional principles are not nearly comprehensive enough to handle the possibilities of space crime. The OST does not cover private parties which launch spacecraft, spacecraft built in space from space materials, or persons outside of spacecraft.¹³² The OST also specifically precludes a basis of jurisdiction based on a land territoriality claim, as “[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.”¹³³

These limitations are highlighted when faced with a situation like that of the “Space Murder Story.” First, because no states parties to the OST were involved in the launch of Baron I, and it was launched from a stateless vessel in international waters, it would be hard to justify a state’s jurisdiction over personnel on the spacecraft on a basis of territoriality. Second, and more importantly, Roy and Jim resided on Scranton Station, a space object not affiliated with any nation, and was assembled in outer space, not launched from Earth. This means the basis of jurisdiction in the OST and the requirements of the Registration Convention do not apply to the station.¹³⁴ A third layer of difficulty lies in the fact that Jim’s death occurred on the surface of RA 983, jurisdiction over which seems to be precluded by the OST’s Article II prohibition of national appropriation of celestial bodies.

As a result of its limitations, the OST does not provide a sufficient basis for jurisdiction in cases like the fictional story of Jim’s “murder.”

c. The Moon Agreement

The Moon Agreement, signed in 1984, attempted to provide additional framework for activities conducted on planetary objects (except Earth) within the solar system.¹³⁵ It states, “States Parties shall retain jurisdiction and control

¹³¹ Seshagiri, *supra* note 20, at 483.

¹³² See OST, *supra* note 6, art. VIII. The OST states that activities of non-government organizations require authorization and continued supervision by the “appropriate State Party to the Treaty.” *Id.* art. VI. However, there is no guidance to non-governmental action for which there seems to be no “appropriate State Party” to supervise. See *id.* art. VIII. Furthermore, Article VIII only gives States jurisdiction over space objects launched on their registry.

¹³³ *Id.* art. II.

¹³⁴ See *id.* art. VIII; Registration Convention, *supra* note 88, art. IV.

¹³⁵ Moon Agreement, *supra* note 6, art. 1.

over their personnel, vehicles, equipment, facilities, stations and installations on the Moon.”¹³⁶

While it does specify that states parties are liable for any wrongdoing by non-governmental entities they supervise, it affords no liability to the actual non-governmental entity.¹³⁷ Similarly, there is no consideration for objects that aren't state-sponsored or launched from a state.¹³⁸ The Moon Agreement makes no mention of criminal jurisdiction; criminal jurisdiction can be inferred solely from jurisdictional provision under Article 12.¹³⁹

Its power is further diluted because only eighteen states are parties.¹⁴⁰ The major spacefaring nations are not included in this list.¹⁴¹ Therefore, its applicability is limited.

In the introductory story, the Moon Agreement, like the OST, would actually preclude any state from exercising jurisdiction on a territoriality basis as the incident occurred on an asteroid, and not in a state-launched space object.

Therefore, the same hurdles exist in both the OST and the Moon Agreement when trying to find a basis of jurisdiction over Roy and Jim. The Moon Agreement is insufficient to mitigate conflicts between spacefaring travelers.

d. The 1998 IGA

The 1998 IGA is an agreement between the Partner States of Canada, the States Parties of the European Space Agency (ESA),¹⁴² Japan, Russia, and the United States.¹⁴³ The 1998 IGA established a long term international cooperative

¹³⁶ *Id.* art. 12.

¹³⁷ *See id.* art. 14.

¹³⁸ *See id.* art. 12.

¹³⁹ *See id.*

¹⁴⁰ *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, U.N. TREATY COLLECTION (Feb. 2, 2020), https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXIV-2&chapter=24&clang=en.

¹⁴¹ *The 10 Countries Most Active in Space*, AEROSPACE TECH., <https://www.aerospace-technology.com/features/featurethe-10-countries-most-active-in-space-4744018/>. The top ten most active countries in outer space are Canada, China, France, Germany, India, Japan, Luxembourg, Russia, the United Kingdom, and the United States. *Id.*

¹⁴² 1998 IGA, *supra* note 4, at pmb1. As of 2020, the twenty-two member states of the ESA are Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, and the United Kingdom. *Welcome to ESA*, ESA (Oct. 16, 2019), http://www.esa.int/About_Us/Welcome_to_ESA/What_is_ESA. “Bulgaria, Croatia, Cyprus, Malta, Latvia, Lithuania, and Slovakia have cooperation agreements with ESA.” *Id.*

¹⁴³ 1998 IGA, *supra* note 4, at 1.

framework to design, develop, operate and use the permanently inhabited ISS.¹⁴⁴ Notably, because of the framework, the ISS is home to people from many different nationalities.¹⁴⁵ Luckily, the 1998 IGA contains a (relatively) comprehensive provision establishing criminal jurisdiction, at least while on the ISS.¹⁴⁶

Criminal jurisdiction is predominantly covered by Article 22 of the 1998 IGA, which provides: “Canada, the [ESA] States, Japan, Russia, and the United States may exercise criminal jurisdiction over personnel in or on any flight element who are their respective nationals.”¹⁴⁷ The 1998 IGA also provides complementary jurisdiction for Partner States whose nationals or flight elements are the victims of the wrongdoing or whose flight element is the location of the wrongdoing.¹⁴⁸ There is a caveat for when the perpetrator is from a different Partner State than the victim or if the perpetrator committed the violation in another Partner State’s module: the victim Partner State must consult with the perpetrator’s Partner State and can only exercise jurisdiction if the perpetrator’s Partner State concurs in the exercise or fails to assure it will submit the case to competent authorities for prosecution.¹⁴⁹ However, despite being the best international agreement regarding criminal jurisdiction in outer space, the 1998 IGA still has serious limitations in terms of establishing criminal jurisdiction.¹⁵⁰

First, and most importantly, the 1998 IGA applies to no one outside of the ISS, as it does not cover those not “in or on any flight element [of the station].”¹⁵¹ Even those temporarily stepping off the ISS will be outside the 1998 IGA’s reach. For example, in 1984, Bruce McCandless and Col. Robert Stewart made history by completing the first untethered spacewalk, “floating” about 320 feet from Space Shuttle *Challenger*.¹⁵² Conceivably, had the spacewalk taken place in 2006 and departed from the ISS, Stewart could have killed McCandless and the United States would not have been able to rely on the 1998 IGA to establish criminal jurisdiction over Stewart,¹⁵³ as the 1998 IGA’s criminal jurisdiction

¹⁴⁴ *Id.* art. 1.

¹⁴⁵ Mark Garcia, *Visitors to the Station by Country*, NASA (Sept. 25, 2019), <https://www.nasa.gov/feature/visitors-to-the-station-by-country/>. 239 individuals from nineteen countries have visited the ISS. *Id.*

¹⁴⁶ 1998 IGA, *supra* note 4, art. 22.

¹⁴⁷ *Id.* art. 22.; Seshagiri, *supra* note 20, at 484.

¹⁴⁸ 1998 IGA, *supra* note 4, art. 22; Seshagiri, *supra* note 20, at 484.

¹⁴⁹ 1998 IGA, *supra* note 4, art. 22.

¹⁵⁰ Seshagiri, *supra* note 20, at 484.

¹⁵¹ 1998 IGA, *supra* note 4, art. 22. Norway is a partner of the ESA; therefore, it is a Partner State. *See* 1998 IGA, *supra* note 4.

¹⁵² *First Untethered Spacewalk*, PHYSICS TODAY (Feb. 7, 2017), <https://physicstoday.scitation.org/doi/10.1063/pt.5.031412/full/>.

¹⁵³ 1998 IGA, *supra* note 4, art. 22. However, the Manned Maneuvering Unit used may very well have

provisions only apply to people in or on the ISS.¹⁵⁴ Nor would the 1998 IGA apply to Jim and Roy if they had been stationed on the ISS instead of Scranton Station.

Second, applying different criminal codes to people who live and work in the same spatial environment seems inherently unjust, as some wrongdoing may simply not be crimes in both Partner States.¹⁵⁵ Even more likely, the punishments for wrongdoings could differ widely. For example, if a Norwegian national goes on a rampage and kills the other five people aboard ISS (one of which being a U.S. national) while they are gathered in a Russian module, Russia and all Partner States who suffered a victim could claim jurisdiction under the 1998 IGA.¹⁵⁶ As long as Norway did not concur with the exercise of another Partner State's jurisdiction and Norway submitted the case to competent authorities for the purpose of prosecution, its national would be tried under Norwegian Law,¹⁵⁷ subjecting the murderer to a maximum sentence of twenty-one years' incarceration.¹⁵⁸ However, if the U.S. national was the perpetrator and/or the United States exercised jurisdiction, the perpetrator may very well face execution.¹⁵⁹ This disparity is inherently unjust and can trigger due process concerns.¹⁶⁰

qualified as a spacecraft under the OST, granting the United States Jurisdiction. OST, *supra* note 6, art. VIII.

¹⁵⁴ 1998 IGA, *supra* note 4, art. 22.

¹⁵⁵ Seshagiri, *supra* note 20, at 486 (2005); compare 21 U.S.C. § 844(a) (2018) (U.S. criminal law prohibits possession of cannabis as a controlled substance) 21 U.S.C. § 844(a) (2018), with Cannabis Act, S.C. 2018, c. 16 (Can.) (legalizing possession of recreational amounts of cannabis); see generally Keith Speights, *Where is Marijuana Legal*, MOTLEY FOOL (Aug. 27, 2019), <https://www.fool.com/investing/where-is-marijuana-legal.aspx>.

¹⁵⁶ 1998 IGA, *supra* note 4, arts. 3, 22.

¹⁵⁷ *Id.* art. 22.

¹⁵⁸ See The Penal Code pt. 1, ch. 14, § 79 (Nor.), https://lovdata.no/dokument/NLE/lov/2005-05-20-28/KAPITTEL_1#KAPITTEL_1; see also, e.g., Max Fischer, *A Different Justice: Why Anders Breivik Only Got 21 Years for Killing 77 People*, ATLANTIC (Aug. 24, 2012), <https://www.theatlantic.com/international/archive/2012/08/a-different-justice-why-anders-breivik-only-got-21-years-for-killing-77-people/261532/> (explaining that Anders Breivik only given twenty-one year sentence for a bombing and shooting spree killing seventy-seven people in Norway).

¹⁵⁹ See 18 U.S.C. § 1111 (2018); 18 U.S.C. § 3591 (2018); see also, e.g., Avalon Zoppo, *Charleston Shooter Dylann Roof Moved to Death Row in Terre Haute Federal Prison*, CBS (Apr. 22, 2017), <https://www.nbcnews.com/storyline/charleston-church-shooting/charleston-shooter-dylann-roof-moved-death-row-terre-haute-federal-n749671> (stating Dylann Roof was sentenced to death for the murder of nine churchgoers); *List of Federal Death-Row Prisoners*, DEATH PENALTY INFO. CTR., <https://deathpenaltyinfo.org/state-and-federal-info/federal-death-penalty/list-of-federal-death-row-prisoners> (noting that sixty-three people are facing federal execution in the United States).

¹⁶⁰ See Farbiarz, *supra* note 100, at 545–46.

A third less obvious issue lies in the 1998 IGA's liberal scheme of tying jurisdictional elements to Partner States and nationals of Partner States.¹⁶¹ Only Partner States have the power under the 1998 IGA to exercise criminal jurisdiction over Partner State nationals, and only Partner States are obliged to consult with another affected Partner State in regards to misconduct regarding nationals.¹⁶² Likewise, only Partner States are required to provide assurances they will submit the case to competent authorities for the purpose of prosecution.¹⁶³ Though these disparities have not yielded problems thus far, nationals from the non-Partner States of Brazil, South Africa, United Arab Emirates, Malaysia, South Korea and Kazakhstan have already visited the ISS,¹⁶⁴ revealing the possibility that these discrepancies could manifest in ugly international incidents.¹⁶⁵ Curiously, if a Brazilian national stole from a Malaysian national on the ISS, the 1998 IGA would not control at all, as neither Brazil nor Malaysia are Partner States.¹⁶⁶ The 1998 IGA only establishes jurisdiction by Partner States over nationals of Partner States.¹⁶⁷ It also lacks a provision enabling non-Partner States from exercising jurisdiction over any persons on ISS.¹⁶⁸ In this situation, the parties would be forced to defer to the OST, making it likely the owner of the module where the theft occurred would have jurisdiction.¹⁶⁹

A fourth ambiguity lies in the right of a Partner State whose flight element suffers damage due to the misconduct of a perpetrator who is a national of another Partner State. What if a Canadian astronaut throws a screwdriver at a Russian cosmonaut, but misses and pierces and short circuits a \$40,000 power cable in the Russian flight element, destroying the cable and also causing \$4 million in damage to a lab station powered by the cable in the U.S. flight module? Effectively the Canadian national has caused damage in both the Russian and United States' flight elements, giving them both a right to consultation in the prosecution of the Canadian national.¹⁷⁰ While Canada would have primary jurisdiction, the 1998 IGA allows "victim" partner states to exercise jurisdiction if the perpetrator's nation "fails to provide assurance that it will submit the case to its competent authorities for the purpose of

¹⁶¹ See 1998 IGA, *supra* note 4, art. 22.

¹⁶² *Id.*

¹⁶³ *Id.*

¹⁶⁴ Garcia, *supra* note 145.

¹⁶⁵ See Seshagiri, *supra* note 20, at 484.

¹⁶⁶ 1998 IGA, *supra* note 4, art. 22.

¹⁶⁷ *Id.* art. 22.; see Seshagiri, *supra* note 20, at 484.

¹⁶⁸ 1998 IGA, *supra* note 4, art. 22; see Seshagiri, *supra* note 20, at 484.

¹⁶⁹ OST, *supra* note 6, art. VIII.

¹⁷⁰ See 1998 IGA, *supra* note 4, art. 22.

prosecution.”¹⁷¹ In this case, if Canada fails to prosecute, and barring agreement, does the United States or Russia exercise criminal jurisdiction? This question could be even further complicated if damage occurred in an ESA-operated flight element, as the ESA is made of over a dozen Partner States but is entrusted with ownership of their respective flight elements.¹⁷² These ambiguities pave the way for an international diplomatic incident.¹⁷³

The 1998 IGA would not govern Roy or Jim, as their actions took place outside of the ISS, and neither are nationals of partners to the 1998 IGA. This reveals a simple fact: while the 1998 IGA is the best model for establishing criminal jurisdiction in outer space thus far, it does not extend beyond the ISS.¹⁷⁴ Even if this limitation is removed, the 1998 IGA as it stands now does not cover actions of many spacefaring states,¹⁷⁵ nor does it specify the procedures and criteria used when Partner States “consult” regarding the exercise of criminal jurisdiction.¹⁷⁶ It is *so* insufficient, after confidential deviant acts occurred during outer space missions, the Partner States had to draft an additional code of conduct.¹⁷⁷ For these reasons, we cannot rely on the IGA to establish criminal jurisdiction as it is insufficient as a universal governing document for the entirety of outer space.

2. *The Shortcomings of International Law’s Recognized Principles of Establishing Criminal Jurisdiction*

Space-faring nations have agreed “activities in space shall be carried out in accordance with international law” and are indisputably governed by international law.¹⁷⁸ Therefore, in order for any nation to exercise jurisdiction over activities occurring in space, it must comport with one or more jurisdictional principles found in international law.¹⁷⁹

The application of these principles is especially true for outer space, because there are insufficient treaties and no customs to regulate criminal activity in outer

¹⁷¹ *Id.*

¹⁷² *Id.* art. 6.

¹⁷³ See generally Ratner, *supra* note 91, at 344.

¹⁷⁴ 1998 IGA, *supra* note 4, art. 2. The 1998 IGA does apply in transit to and from the ISS. See *id.*

¹⁷⁵ *Id.* arts. 3, 22 (1998 IGA only applies to Partner States).

¹⁷⁶ *Id.* art. 22.

¹⁷⁷ Hermida, *supra* note 13, at 409. The ISS’s Crew Code of Conduct (CCOC) outlines guidelines regarding chain of command, operation procedures, and, most relevant to this Comment, supplements Article 22 of the IGA in determining rules of conduct while on the ISS and disciplinary procedures for violation of the rules. 33 C.F.R. § 1214.403 (2013).

¹⁷⁸ Sinha, *supra* note 90, at 92.

¹⁷⁹ *Id.* at 93.

space.¹⁸⁰ When treaties or customs are silent on a matter, general principles of law fill in the gaps.¹⁸¹

International law recognizes five principles that states consider reasonable bases for prescription of jurisdiction over cases.¹⁸² These are the principles of territoriality, nationality, passive personality, universality, and protection.¹⁸³ However, especially relevant to crimes in outer space, most principles are insufficient to justify prosecution of crimes that occur in overlapping jurisdictions, or in situations outside of traditional scopes.¹⁸⁴ Because the current relevant legal authorities are hinged on one or more of these principles, brief exploration is pertinent.¹⁸⁵ Furthermore, this discussion highlights that none of these principles justify criminal jurisdiction by any state over hypothetical future outer space wrongdoings, such as Jim’s hypothetical “murder.”

a. The Territoriality Principle

The most well-known and least controversial principle of jurisdiction is the principle of territoriality.¹⁸⁶ The principle of territoriality considers the state in whose territory an offense occurs to have jurisdiction over the event.¹⁸⁷ It is based on state sovereignty; states are considered to have dominion over acts in their sovereign territories.¹⁸⁸ A specific application of the territoriality principle, particularly relevant to outer space, is flag jurisdiction.¹⁸⁹ Flag jurisdiction is the concept that nations may extend territorial jurisdiction over incidents occurring on vessels on high seas and in international waters registered under their respective flags.¹⁹⁰ In fact, the territorial jurisdiction found in the OST, Moon

¹⁸⁰ Blount, *supra* note 27, at 301.

¹⁸¹ Corfu Channel Case (U.K. v. Alb.), 1949 I.C.J. 4, 22 (Apr. 9).

¹⁸² Stockton & Golabek–Goldman, *supra* note 97, at 230; Seshagiri, *supra* note 20, at 481; Sinha, *supra* note 90, at 93.

¹⁸³ United States v. Bellaizac-Hurtado, 700 F.3d 1245, 1259 (11th Cir. 2012) (Barkett, J. concurring); Stockton & Golabek–Goldman, *supra* note 97, at 230; Seshagiri, *supra* note 20, at 481.

¹⁸⁴ See Stockton & Golabek–Goldman, *supra* note 97, at 230.

¹⁸⁵ See 1998 IGA, *supra* note 4, art. 22 (noting that 1998 jurisdiction is based primarily on nationality and complemented by territoriality and passive personality jurisdiction); Moon Agreement, *supra* note 6, at art. 12 (stating that the Moon agreement jurisdiction is based on territoriality and nationality principles); OST, *supra* note 6, at art. VIII (describing that the OST jurisdiction is based on territoriality); The Antarctic Treaty art. VIII, Dec. 1, 1959, 12 U.S.T. 794, 402 U.N.T.S. 71 (explaining that jurisdiction is based on nationality principle).

¹⁸⁶ See Stockton & Golabek–Goldman, *supra* note 97, at 230.

¹⁸⁷ See *id.* at 230–31.

¹⁸⁸ See *id.* at 231.

¹⁸⁹ See Sinha, *supra* note 90, at 94.

¹⁹⁰ Lawrence Bruce Mandala, *Drug Enforcement on the High Seas: Stateless Vessel Jurisdiction over Shipboard Criminality by Non-Resident Alien Crewmembers – United States v. Alvarez-Mena*, 11 MAR. LAWYER 163, 167 (1986).

Agreement, and 1998 IGA, most closely resembles flag jurisdiction, since space objects are treated as extensions of their launching states' territories.¹⁹¹

Normally, the principle of territoriality, when applied to crimes on Earth, has many advantages when prosecuting traditional crimes.¹⁹² Since virtually all places on Earth are claimed by a state, the territoriality principle reduces the propensity for international conflict, as each state's sovereignty is respected.¹⁹³ This, in turn, fosters efficiency and forum predictability.¹⁹⁴ Furthermore, the nation in whose territory the crime occurred usually has the greatest capacity to investigate, collect evidence, interview witnesses, and apprehend perpetrators.¹⁹⁵

However, when it comes to the vast distances and isolation to outer space, these benefits become diluted. In the OST and Moon Agreement, states are strictly prohibited from incorporating anything outside Earth's atmosphere into their territorial claim, with the exception of spacecraft and space objects launched from Earth.¹⁹⁶ Since territory is the basis of territorial jurisdiction, this seemingly precludes its exercise outside of earth-launched space objects.

Furthermore, the relative distances from all of Earth's nations to solar bodies is the same; all are equally isolated.¹⁹⁷ No nation is in the best position to investigate and prosecute the incident by virtue of territorial proximity.¹⁹⁸

Even transport from outer space back to an earth state's territory does not justify that state's exercise of territorial jurisdiction, since the offense did not occur in the state's territory and subsequent presence does not justify extension of the state's jurisdiction.¹⁹⁹

The holes in territorial jurisdiction become apparent when applied to Roy's and Jim's hypothetical future interaction. Roy and Jim were located on an asteroid when Jim died. Even if they had been in Scranton Station, no state could

¹⁹¹ See 1998 IGA, *supra* note 4, art. 22.; Moon Agreement, *supra* note 6, art. 12; OST, *supra* note 6, art. VIII; see generally Seshagiri, *supra* note 20, at 481.

¹⁹² See Stockton & Golabek-Goldman, *supra* note 97, at 231.

¹⁹³ See *id.* at 231.

¹⁹⁴ See *id.*

¹⁹⁵ See *id.*

¹⁹⁶ See Moon Agreement, *supra* note 6, art. 11; OST, *supra* note 6, arts. II, VIII (OST jurisdiction based on territoriality).

¹⁹⁷ See Hardenstein, *supra* 29, at 282–83 (2016).

¹⁹⁸ See *id.*

¹⁹⁹ See S.S. *Lotus* (Fr. v. Turk.), Judgment, 1927 P.C.I.J. (ser. A) No. 10, ¶ 109 (Sept. 7) (dissenting opinion by Loder, J.); Roger O'Keefe, *Universal Jurisdiction, Clarifying the Basic Concept*, 2 J. INT'L CRIM. JUST. 735, 742 (2004).

have exercised flag jurisdiction over it because it is a stateless space object. Current treaties specifically prohibit any nation from claiming any territory in outer space, and since territory is the basis for territorial jurisdiction, territorial jurisdiction only has limited applicability to state-owned spacecraft.²⁰⁰

b. The Nationality Principle

The nationality, or active personality, principle grants jurisdiction based on the nationality of the offender, irrespective of where the crime took place.²⁰¹ This is justified by the conception states, as sovereigns are always able to exert jurisdiction over their citizens.²⁰² While considering the case of a U.S. citizen who lived in and committed a crime in France, the U.S. Supreme Court reasoned:

[regardless of his extra-territorial residence], it is undisputed that he was, and continued to be, a citizen of the United States. He continued to owe allegiance to the United States. By virtue of the obligations of citizenship, the United States retained its authority over him, and he was bound by its laws made applicable to him in a foreign country.²⁰³

In addition to consideration of national sovereignty, the nationality principle considers due process.²⁰⁴ Generally, defendants are more familiar with the laws of their home country.²⁰⁵ This familiarity provides more warning regarding the criminality of actions than the application of foreign law; such familiarity serves as a deterrent to criminal actions.²⁰⁶

However, these bases are not applicable to situations such as Roy's and Jim's in outer space. As neither were nationals of earthly states, no sovereigns as they exist today have claims over them, and no penal system exists that could be reasonably predicted to govern their actions.

c. The Passive Nationality Principle

The passive nationality, or passive personality, principle establishes jurisdiction based on the nationality of the victim.²⁰⁷ While such extension is rare, it is justified on the premise that states have a duty to protect their citizens

²⁰⁰ See Moon Agreement, *supra* note 6, art. 11, OST, *supra* note 6, art. II.

²⁰¹ Stockton & Golabek-Goldman, *supra* note 97, at 241.

²⁰² *Id.* at 241.

²⁰³ Blackmer v. United States, 284 U.S. 421, 436 (1932).

²⁰⁴ Stockton & Golabek-Goldman, *supra* note 97, at 242.

²⁰⁵ *Id.*

²⁰⁶ *Id.*

²⁰⁷ *Id.* at 243; Sinha, *supra* note 90, at 96-97.

when they are victims of a crime.²⁰⁸ Passive nationality is considered by many to be one of the most controversial bases for jurisdiction under international law.²⁰⁹ Nonetheless, it is incorporated into outer space law, as the 1998 IGA allows for complementary jurisdiction based on passive personality when an offense threatens or harms the safety of a national of a Partner State.²¹⁰

However, applying passive personality as a basis for jurisdiction can often lead to competing claims for establishing jurisdiction in cases where a criminal act affects people of different nations, such as a criminal act on the ISS.²¹¹ When someone does something to endanger one person aboard a spacecraft, it likely endangers everyone given the perilous nature of space travel.²¹² Because many space endeavors involve persons of different nationalities, the likelihood of these jurisdictional conflicts also increases.²¹³ Furthermore, in the hypothetical future when persons are born in space (such as Jim in the introductory story) or otherwise are stateless (like Roy), passive personality would not apply when such people are wronged. Therefore, passive nationality is not ideal for establishing criminal jurisdiction in outer space.

d. The Universal Principle

Another international law doctrine upon which states may rely to establish jurisdiction is the doctrine of universal jurisdiction.²¹⁴ Originally designed to prosecute piracy on the high seas,²¹⁵ universal jurisdiction is “jurisdiction over offences committed abroad by persons who, at the time of commission, are non-resident aliens, where such offences are not deemed to constitute threats to the fundamental interests of the prescribing state or . . . give rise to effects within its territory.”²¹⁶ “Historically, universal jurisdiction could be invoked in cases where the crime was committed outside the territorial jurisdiction of any state,

²⁰⁸ Stockton & Golabek–Goldman, *supra* note 97, at 243.

²⁰⁹ *Id.*

²¹⁰ See 1998 IGA, *supra* note 4, art. 22.; Sinha, *supra* note 90, at 97.

²¹¹ See Stockton & Golabek–Goldman, *supra* note 97, at 244.

²¹² See Seshagiri, *supra* note 20, at 478.

²¹³ See Rochus Moenter, *The International Space Station: Legal Framework and Current Status*, 64 J. AIR L. & COM. 1033, 1035 (1999).

²¹⁴ See Noora Arajärvi, *Looking Back from Nowhere: Is There a Future for Universal Jurisdiction over International Crimes?*, 16 TILBURG L. R. 5, 6–7 (2011).

²¹⁵ *Id.* at 10.

²¹⁶ O’Keefe, *supra* note 199, at 745. *Contra* Arrest Warrant of 11 April 2000 (Dem. Rep. Congo v. Belg.), Judgement, 2011 I.C.J. Rep. 3, ¶ 44 (Feb. 14) (dissenting opinion by Van de Wyngaert, J.) (“There is no generally accepted definition of universal jurisdiction in conventional or customary international law.”).

for example on the high seas or in other places *terra nullius* [(no man's land)].²¹⁷

On its face, this sounds like the perfect solution for establishing criminal jurisdiction over outer space as *terra nullius*. Unfortunately, exercise of universal jurisdiction is limited: modern exercise of universal jurisdiction hinges on the gravity of certain crimes.²¹⁸ Although international law considers twenty-seven categories of crime, the only crimes customarily considered *serious enough* to be subject to universal jurisdiction are crimes against all of mankind: slavery, piracy, genocide, crimes against humanity, crimes of aggression, war crimes, and torture.²¹⁹ Murder and rape, and other *malum in se* (“wrong in itself”)²²⁰ crimes, fall outside the scope of universal jurisdiction despite being universally condemned.²²¹ Though there has been contemplation of expanding the list of crimes prosecutable under the concept of universal jurisdiction, most “ordinary” crimes have not been considered.²²²

Because ordinary crimes do not fall into those categories of crimes over which universal jurisdiction has been exercised,²²³ nor do traditional domestic crimes turn one into an enemy of mankind, universal jurisdiction is not sufficient to be the primary doctrine through which to extend jurisdiction over outer space.²²⁴ In the “Space Murder Story,” Jim’s murder in itself is not a crime that customarily attracts the exercise of universal jurisdiction.²²⁵ Thus, universality

²¹⁷ Arajärvi, *supra* note 214, at 8; see *Terra Nullius Law and Legal Definition*, USLEGAL., <https://definitions.uslegal.com/t/terra-nullius/> (“*Terra nullius* is a Latin term that means land belonging to no one or no man’s land International sea, and celestial bodies would come under the term *terra nullius*.”).

²¹⁸ See Arajärvi, *supra* note 214, at 6.

²¹⁹ See *id.* 7; M. Cherif Bassiouni, *Universal Jurisdiction for International Crimes: Historical Perspectives and Contemporary Practice*, 42 VA. J. INT’L. L. 81, 106–09 (2001); PRINCETON UNIV., THE PRINCETON PRINCIPLES ON UNIVERSAL JURISDICTION 29 (Stephen Macedo ed., 2001). See generally Bassiouni, *supra* at 107 for a complete list of the twenty-seven crimes.

²²⁰ Gerald Hill & Kathleen Hill, *Malum in se*, LAW.COM LEGAL DICTIONARY, <https://dictionary.law.com/Default.aspx?selected=1201>. *Malum in se* is “Latin referring to an act that is ‘wrong in itself,’ in its very nature being illegal because it violates the natural, moral or public principles of a civilized society.” *Id.*

²²¹ *United States v. Bellaizac–Hurtado*, 700 F.3d 1245, 1257 (11th Cir. 2012). The U.S. Supreme Court specifically rejected the notion that murder was subject to universal jurisdiction. See *United States v. Furlong*, 18 U.S. 184, 187 (1820) (holding piracy against all nations and prosecutable by all nations, but “[n]ot so with the crime of murder.”).

²²² See *Bellaizac–Hurtado*, 700 F.3d at 1259–60 (Barkett, J., concurring); Arajärvi, *supra* note 214, at 7–8.

²²³ See generally Rome Statute of the International Criminal Court, arts. 6–8*bis*, July 17, 1998, 2187 U.N.T.S. 38544 [hereinafter Rome Statute] (providing detailed definitions of crimes against humanity, war crimes, genocide, and crimes of aggression).

²²⁴ See Sinha, *supra* note 90, at 114.

²²⁵ See Bassiouni, *supra* note 219, at 106–09; Rome Statute, *supra* note 223, arts. 6–8*bis* (noting that murder *can be* an element of genocide, crimes against humanity, or war crimes) (emphasis added).

would likely be a justification for an otherwise-unrelated state to prosecute Roy. For these reasons, universal jurisdiction is not a principle sufficient for nations to establish criminal jurisdiction over outer space wrongs.

e. The Protective Principle

The protective principle “provides jurisdiction over offenses committed wholly outside [a state’s] territory” and not committed by or against a state’s national.²²⁶ Under this principle, nations can “punish certain acts committed abroad which threaten the integrity of the nation’s governmental functions.”²²⁷ The acts must be against the state, such as demands against the state by terrorists or acts which threaten the national security of the state.²²⁸

The protective principle has very limited application to crimes committed in outer space. First, the principle has customarily been limited to use for prosecuting “espionage, counterfeiting, falsification of official documents, perjury before consular offices, and conspiracy to violate immigration or customs laws.”²²⁹ Second, while it is conceivable that wrongdoings in space could threaten the national security of Earth’s nations, it is unlikely an offense like Roy’s killing of Jim would yield such a threat justifying the use of the protective principle. Third, the protective principle was seemingly rejected by the Earth’s major spacefaring nations when considering the ISS.²³⁰

The current 1998 IGA, discussed *supra* in Section IV.A.1.d, was preceded by a 1988 IGA.²³¹ The 1988 IGA had a provision where the United States could “exercise criminal jurisdiction over misconduct committed by a non-U.S. national or on a non-U.S. element” of the ISS when the actions threatened any personnel or modules aboard the ISS, seemingly considering any crime aboard the United States’ ISS project as a crime against the United States itself.²³² Though the United States’ power under this provision was limited by concurrence or inaction by the Partner State of the perpetrator, the Partner States used Russia’s entrance to the ISS endeavor to eliminate the United States’

²²⁶ Ratner, *supra* note 91, at 329–30.

²²⁷ Sinha, *supra* note 90, at 96.

²²⁸ *Id.*

²²⁹ *Id.*

²³⁰ *See id.* at 96, 98–99.

²³¹ *Id.* at 104.

²³² *Id.* at 111 (quotations omitted).

special protective principle jurisdiction.²³³ As a result, the updated 1998 IGA does not include the provision giving the United States extra jurisdiction.²³⁴

The protective principles do not justify any state exercise of criminal jurisdiction over Roy in the “Space Murder Story.” Arguing Jim’s death, 1.2 billion km from Earth, is a crime against a state is nonsensical.²³⁵ Due to its rejection aboard the ISS and its impracticability, we must look elsewhere to establish criminal jurisdiction over Roy and outer space.

3. *Problems Highlighted by the “Analogy” of the Antarctic Treaty*

When humanity is faced with a new problem, “[t]he temptation . . . is to have recourse to analogy. When considering new problems, [legal experts] have an ingrained tendency to analogize from the known to the unknown”²³⁶ As a result, much of the aforementioned outer space legal authority was framed by airspace, high seas, and Antarctic analogies.²³⁷ While the latter still influence some arguments regarding outer space, all have limitations, making them unsuitable for direct application.²³⁸ Therefore, “for the future requirements of [outer] space, [the] tendency [to analogize] may have to be curbed.”²³⁹

Though we should avoid analogy when framing rules, analyzing the failures in the Antarctic Treaty is useful for highlighting pitfalls in the jurisdictional framework in *terra nullius* environments. The Antarctic Treaty was designed to prevent international discord regarding Antarctica, to promote international cooperation in its use, and to prevent additional territory claims in Antarctica.²⁴⁰ It is strikingly similar to the language in the OST.²⁴¹ One difference, however, is the Antarctic Treaty’s nationality basis for jurisdiction, as opposed to the OST’s territoriality basis.²⁴² Under the Antarctic Treaty, each states party retains

²³³ *Id.* at 104.

²³⁴ *Id.* at 115–16.

²³⁵ Jerry Coffey, *How Far is Saturn From Earth?*, UNIVERSE TODAY (June 30, 2008), <https://www.universetoday.com/15311/how-far-is-saturn-from-earth/>.

²³⁶ Hardenstein, *supra* note 29, at 273 (quoting FRANCIS LYALL & PAUL B. LARSON, SPACE LAW: A TREATISE 559–60 (2009)).

²³⁷ Tannenwald, *supra* note 5, at 374.

²³⁸ *Id.*

²³⁹ Hardenstein, *supra* note 29, at 273–74 (quoting FRANCIS LYALL & PAUL B. LARSON, SPACE LAW: A TREATISE 559–60 (2009)).

²⁴⁰ The Antarctic Treaty, *supra* note 185, pmb1., art. IV. sec. 2; *Antarctic Territorial Claims*, AUSTL. DEP’T. ENV. & ENERGY (Apr. 14, 2016), <http://www.antarctica.gov.au/law-and-treaty/history/antarctic-territorial-claims>. There are seven nations with territorial claims in Antarctica: Argentina, Australia, Chile, France, New Zealand, Norway, and the United Kingdom. *Id.* Some have overlapping claims. *Id.*

²⁴¹ See Hardenstein, *supra* note 29, at 269–70.

²⁴² Compare The Antarctic Treaty, *supra* note 185, art. VIII (stating that persons in Antarctica “shall be

criminal jurisdiction over its nationals.²⁴³ This nationality-based jurisdiction is necessary, as the Antarctic Treaty does not recognize territory or sovereignty claims arising after the creation of the treaty.²⁴⁴ If there is a dispute among nations regarding crimes involving persons between different nations, Article VIII includes a vague provision, providing, “[c]ontracting [p]arties concerned in any case of dispute with regard to the exercise of jurisdiction in Antarctica shall immediately consult together with a view to reaching a mutually acceptable solution.”²⁴⁵ Besides these provisions, the Antarctic Treaty makes no mention of criminal jurisdiction over personnel in Antarctica.²⁴⁶ Therefore, it provides no guidance on how nations must reach “mutually acceptable solution[s].”²⁴⁷ This lack of guidance “essentially guarantees jurisdiction and prosecution problems will occur should a crime occur [in Antarctica].”²⁴⁸

These jurisdictional conflicts have been highlighted through the death of Australian Dr. Rodney Marks.²⁴⁹ Dr. Marks was an astrophysicist at the Amundsen–Scott Pole Station, which was run by the United States.²⁵⁰ The station is located in the Ross-Dependency, a territorial claim of New Zealand.²⁵¹ Dr. Marks became increasingly ill and eventually died.²⁵² His body was finally transferred to New Zealand for autopsy.²⁵³ It was determined that Dr. Marks had been poisoned with methanol, and the most likely theory for its presence in Dr. Mark’s body was murder.²⁵⁴ The investigation should have been

subject only to the jurisdiction of the Contracting Party of which they are nationals in respect of all acts or omissions occurring while they are in Antarctica . . .”), with OST, *supra* note 6, art. VIII (noting that “[a] State Party to the [OST] on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body.”). The principles of nationality and territoriality in an international jurisdiction context are described *infra* Sections IV.A.2.a, b.

²⁴³ The Antarctic Treaty, *supra* note 185, art. VIII.

²⁴⁴ *Id.* at art. IV sec.2; Hardenstein, *supra* 29, at 270. However, states parties did not surrender existing territorial claims when signing the treaty. The Antarctic Treaty, *supra* note 185, art. IV.

²⁴⁵ The Antarctic Treaty, *supra* note 185, art. VIII.

²⁴⁶ Hardenstein, *supra* 29, at 270.

²⁴⁷ The Antarctic Treaty, *supra* note 185, art. VIII.

²⁴⁸ Hardenstein, *supra* 29, at 271–72.

²⁴⁹ *Id.* at 272.

²⁵⁰ *Id.*

²⁵¹ *Id.* New Zealand maintained its territorial claim in Antarctica as it was established prior to the Antarctic Treaty and the Antarctic Treaty did not obviate territorial claims in existence prior to its ratification. Nigel Roberts, *Antarctica and New Zealand- The Antarctic Treaty*, TE ARA- THE ENCYCLOPEDIA OF N.Z. (June 20, 2012), <https://teara.govt.nz/en/antarctica-and-new-zealand/page-5>; see generally The Antarctic Treaty, *supra* note 185, art. IV.

²⁵² Hardenstein, *supra* 29, at 272.

²⁵³ Katie Serena, *The Mystery of the South Pole’s Only Murder*, ATI (Nov. 17, 2017), <https://allthatsinteresting.com/rodney-marks>.

²⁵⁴ *Id.*

straightforward, as there were only forty-nine other people at the station at the time.²⁵⁵ However, international issues plagued the case.

Had there been a suspect, their nationality likely would have been dispositive as to which nation had jurisdiction over the criminal act.²⁵⁶ However, this jurisdictional gap led both the United States and New Zealand to attempt to establish their own jurisdiction over the incident; despite the only known involved party being Australian, and despite both nations being signatories to the Antarctic Treaty, both New Zealand and the United States investigated.²⁵⁷ The United States wished to establish jurisdiction because Dr. Marks was a U.S. contractor and died in a U.S.-run base.²⁵⁸ New Zealand's interest in investigating stemmed from the death occurring in its territorial claim.²⁵⁹ Since the identity of the purported perpetrator was unknown, some could argue Australia would possess heavy jurisdictional claim under the passive personality principles, and the Antarctic Treaty gives Australia jurisdiction over its nationals by explicitly stating, though "scientific personnel shall be exchanged in Antarctica between expeditions and stations[,]” they “shall be subject only to the jurisdiction of the Contracting Party of which they are nationals”²⁶⁰ Because the Antarctic Treaty fails to dictate how international parties shall work together when incident overlaps jurisdiction, the debacle remains unsolved.²⁶¹

Dr. Mark's death proves the Antarctic Treaty's ambiguous provisions dissolved investigation and subsequent prosecution with the jurisdictional issues they antagonized. Its structure and jurisdictional provisions pretty much assure controversy when crimes occur.²⁶² Because the Antarctic Treaty is so similar to outer space treaties, we can expect similar results if a crime occurs in outer space; therefore, another solution is needed to rule over crime in outer space.²⁶³

B. Limitations in States' Statutes Precluding Comprehensive Criminal Jurisdiction in Outer Space

Currently, regardless of the method by which a state justifies jurisdiction, offenses in outer space are determined by each nation's municipal criminal

²⁵⁵ *Id.*

²⁵⁶ *See* The Antarctic Treaty, *supra* note 185, art. VIII.

²⁵⁷ Serena, *supra* note 253.

²⁵⁸ Hardenstein, *supra* 29, at 272.

²⁵⁹ *Id.*

²⁶⁰ The Antarctic Treaty, *supra* note 185, arts. III, VIII.

²⁶¹ Hardenstein, *supra* 29, at 271–72.

²⁶² *Id.*

²⁶³ *Id.* at 274.

code.²⁶⁴ Even if states are empowered to exercise jurisdiction per international treaties, national authority is also required for a state to exercise criminal jurisdiction over extraterritorial persons. As a result, many, if not all, of space-faring states have passed some manner of outer space law.²⁶⁵ According to the United Nations Office for Outer Space Affairs (UNOOSA), there are twenty-five nations which have enacted national space legislation as of February 2020.²⁶⁶

However, at most, national statutes reflect jurisdictional provisions in outer space treaties, so many of the issues plaguing the OST infect national outer space laws. To highlight this, the national outer space laws of Canada, the United States, Russia, Sweden, and China are discussed *infra*.

1. Canada

Canada, for example, nationalized its jurisdiction granted under 1998 IGA in its criminal code.²⁶⁷ This jurisdiction, as a restatement of Canada's power and limitations under the 1998 IGA, only grants Canadian jurisdiction over Canadian personnel or those affecting Canadian nationals or Canadian property in relation to the ISS.²⁶⁸ This limitation would prevent Canada from prosecuting Roy in conjunction with Jim's death, as neither affected a Canadian space object, nor were Canadian nationals.

2. China

China, surprisingly, does not have a national law regarding outer space as of February 2020.²⁶⁹ It does, however, have an interim order for the licensing of space activity.²⁷⁰ Permitted persons and organizations are required to follow all Chinese laws, so those permitted by China are automatically subject to Chinese jurisdiction.²⁷¹ However, only the "general project manager" is the applicant;

²⁶⁴ Sinha, *supra* note 90, at 91.

²⁶⁵ See Seshagiri, *supra* note 20, at 485.

²⁶⁶ See generally *National Space Law Collection*, U.N. OFFICE FOR OUTER SPACE AFFAIRS, <https://www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/index.html>.

²⁶⁷ See Canadian Criminal Code, R.S.C. 1985 c C-46 sect. 7 (Can.).

²⁶⁸ See Seshagiri, *supra* note 20, at 485; Compare Canadian Criminal Code, R.S.C. 1985 c C-46 sect. 7 (Can.), with 1998 IGA, *supra* note 4, art. 22.

²⁶⁹ See Setsuko Aoki, *Symposium on the New Space Race: Domestic Legal Conditions for Space Activities in Asia*, 113 AJIL UNBOUND 103, 104 (2019).

²⁷⁰ *Id.* at 104; see generally Interim Measure on the Administration of Permits for Civil Space Launch Projects (Promulgated by the Comm. of Science, Technology, and Industry for National Defense, Dec. 21, 2002) (China).

²⁷¹ See Interim Measure on the Administration of Permits for Civil Space Launch Projects (Promulgated

there is no provision for others traveling to space as part of the project.²⁷² Furthermore, the penalty for violations of Chinese laws is possible suspension of the permit, not necessarily the penalties for the actual crime themselves.²⁷³

Luckily, however, the Chinese Criminal Code may provide a remedy for these issues.²⁷⁴ China has criminal jurisdiction over crimes in its territory, on its ships and aircraft, against or by its nationals, or which cause effects within its territory.²⁷⁵ Additionally, article 9 of China's code also states: "[t]his Law (sic) shall be applicable to crimes which are stipulated in international treaties concluded or acceded to by the People's Republic of China and over which the People's Republic of China exercises criminal jurisdiction within the scope of obligations, prescribed in these treaties, it agrees to perform."²⁷⁶ Therefore, China is automatically empowered to apply its criminal codes to crimes defined by treaties to which it is a party.

Despite the fact the OST does not actually specify crimes, it does require states parties to authorize and supervise their nationals, bear responsibility for nationals, and retain jurisdiction and control over their space objects.²⁷⁷ Because China is a party to and has obligations under the OST, this may activate Article 9 of its criminal code and allow it to exercise criminal jurisdiction over its nationals and space objects.²⁷⁸

However, even broad readings of China's criminal code or interim order do not help establish Chinese criminal jurisdiction over Roy. Because Jim and Roy were never on a Chinese spacecraft, were not required to obtain a space activity license from China, and never involved a Chinese national in their conflict, China has no claim by which it can establish criminal jurisdiction over Roy.

by the Comm. of Science, Technology, and Industry for National Defense, Dec. 21, 2002) art. 5 (China) [hereinafter Interim Measure], <http://www.asianlii.org/cn/legis/cen/laws/imotaopfcslp771/>.

²⁷² See *id.*

²⁷³ See *id.* art. 16.

²⁷⁴ Criminal Law of the People's Republic of China (Adopted at the Second Session of the Fifth Nat'l People's Cong., July 1, 1979; rev'd Mar. 14, 1997; promulgated Mar. 14, 1997, effective Oct. 1, 1997) art. 9 [hereinafter Chinese Criminal Code].

²⁷⁵ *Id.* art. 6–8.

²⁷⁶ *Id.* art. 9.

²⁷⁷ See OST, *supra* note 6, art. VIII.

²⁷⁸ *Id.* art. VIII, 296; see Chinese Criminal Code, *supra* note 277, art. 9.

3. *Russia*

The Russian Criminal Code fails to directly incorporate jurisdiction over outer space activities.²⁷⁹ While there is an argument that Articles 11 and 12 of the Russian Criminal Code *could* apply to space, Russia interprets its criminal statutes narrowly.²⁸⁰ Therefore, a better source for determining Russian criminal jurisdiction in outer space is its decree regarding outer space.²⁸¹

Accordingly, one must turn to the Law of the Russian Federation No. 5663-1 of August 20, 1993 on Space Activities (5663-1).²⁸² The Russian approach to establishing jurisdiction in outer space differs slightly from the Canadian and American approaches insofar that, as opposed to limiting its jurisdiction to persons actually aboard its space objects, Russia has jurisdiction over persons who launch from Earth on Russian spacecraft, even if they leave the spacecraft after launch.²⁸³ This jurisdiction also applies to nationals of other states who participate in a flight that ends up on a Russian manned space facility.²⁸⁴ In article 28.2 of 5663-1, Russia additionally applies Russian law to any situation in which a Russian national is involved, irrespective of the involvement of nationals of other nations.²⁸⁵ However, Russia defers to its international agreement obligations if there is a conflict between one of its international conventions and 5663-1.²⁸⁶

While Russia can exercise jurisdiction on persons outside of its spacecraft, could Russia prosecute Roy for Jim's death? Probably not: neither party was a

²⁷⁹ See Ugolovnyĭ Kodeks Rossiĭskoi Federatsii [UK RF] [Criminal Code] art. 11, 12 (Russ.).

²⁸⁰ Seshagiri, *supra* note 20, at 486; See generally Ugolovnyĭ Kodeks Rossiĭskoi Federatsii [UK RF] [Criminal Code] art. 11, 12 (Russ.).

²⁸¹ Seshagiri, *supra* note 20, at 486.

²⁸² See SOBRANIE ZAKONODATEL'STVA ROSSIISKOI FEDERATSII (Russian Federation Collection of Legislation) [SZ RF], Aug. 20, 1993, No. 5663-1 (Russ.).

²⁸³ Compare Law of the Russian Federation on Space Activities, SOBRANIE ZAKONODATEL'STVA ROSSIISKOI FEDERATSII (Russian Federation Collection of Legislation) [SZ RF], Aug. 20, 1993, No. 5663-1, (Russ.), with 18 U.S.C. § 7(6),(7) (2018). See Canadian Criminal Code, R.S.C. 1985 c C-46 sect. 7 (Can.). 5663-1 applies Russian federal law, presumably including the Russian Criminal Code, to outer space activities within its jurisdiction. SOBRANIE ZAKONODATEL'STVA ROSSIISKOI FEDERATSII (Russian Federation Collection of Legislation) [SZ RF], Aug. 20, 1993, No. 5663-1, art. 1 (Russ.). Russia seemingly is a modified concept of the nationality principle, where Russia is treating anyone who launches from Russia as a Russian national for the purposes of outer space. See *supra* Section IV.A.2.b. for a discussion of the nationality principle.

²⁸⁴ See Law of the Russian Federation on Space Activities, SOBRANIE ZAKONODATEL'STVA ROSSIISKOI FEDERATSII (Russian Federation Collection of Legislation) [SZ RF], Aug. 20, 1993, No. 5663-1, art. 20.5 (Russ.).

²⁸⁵ *Id.*, art. 28.2. This effectively incorporates both nationality and passive personality principles. *Infra* Sections IV.A.2.b, c.

²⁸⁶ See SOBRANIE ZAKONODATEL'STVA ROSSIISKOI FEDERATSII (Russian Federation Collection of Legislation) [SZ RF], Aug. 20, 1993, No. 5663-1, art. 20.4, 28.2 (Russ.).

Russian national, neither was involved on a mission involving a Russian space object, and neither launched from Earth aboard Russian spacecraft.

4. Sweden

The Swedish Act on Space Activities is representative of the most common type of national legislation regarding jurisdiction over persons in outer space.²⁸⁷ A license is required for anyone to launch spacecraft from Swedish territories or by Swedish nationals, wherever they live.²⁸⁸ Sweden's Space Agency is responsible for overseeing the licensing and activities of licensees.²⁸⁹ These principles are the closest Swedish laws get to commenting on outer space criminal jurisdiction and are not definite enough to solve jurisdictional problems.²⁹⁰ However, provisions in the Swedish Criminal Code may provide some insight.²⁹¹

As applicable to outer space, Swedish penal law applies to offenses committed abroad by Swedish nationals or offenses against Sweden or its nationals.²⁹² It also exercises flag jurisdiction over offenses on Swedish ships or aircraft.²⁹³ Despite not explicitly extending flag jurisdiction to spacecraft, Sweden conceivably would do so in order to fulfill its obligations as signatory to both the OST and IGA.²⁹⁴

Assuming this is true, we apply Swedish law to Roy and Jim. Because the killing occurred between two stateless persons outside of Swedish spacecraft and not against or otherwise affecting Sweden, it is unlikely Sweden could prosecute.

²⁸⁷ Blount, *supra* note 27, at 328.

²⁸⁸ 2 § LAG OM RYMDVERKSAMHET [Act on Space Activities] (Svensk författningssamling [SFS] 1982:963) (Swed.) (unofficial translation at https://www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspaceaw/sweden/act_on_space_activities_1982E.html).

²⁸⁹ 4 § FÖRORDNING MED INSTRUKTION FÖR RYMDSTYRELSEN [Regulation with Instructions for the Space Agency] (Svensk författningssamling [SFS] 2007:1115) (Swed.), <http://www.notisum.se/rnp/sls/lag/20071115.htm>.

²⁹⁰ Blount, *supra* note 27, at 328–29.

²⁹¹ *See generally* BROTTSBALKEN [BRB] [PENAL CODE] (Swed.).

²⁹² *Id.* at 2:2. The offense must be punishable under the law where the offense was committed. *Id.* If committed in an area belonging to no state, then the offense is only punishable under Swedish law if the penalty is more than a fine. *Id.* at 2:2–2:3.

²⁹³ *Id.*

²⁹⁴ *See* OST, *supra* note 6, art. VIII.

5. *United States*

In 1981, the United States amended its Special Maritime and Territorial Jurisdiction to specifically include acts occurring in outer space.²⁹⁵ While the United States can exercise jurisdiction over many crimes on the high seas outside the jurisdiction of all nations, it is limited by the principles of flag jurisdiction, nationality, and passive personality when considering crimes in outer space.²⁹⁶ Only persons on U.S. space objects, U.S. nationals, and those whose acts affect U.S. property or nationals are subject to U.S. criminal jurisdiction.²⁹⁷ Those outside of U.S. space objects are outside of the jurisdiction of the United States.²⁹⁸

With this limitation, the United States simply encapsulates its extraterritorial due process doctrine, “which allows a federal criminal law to reach an extraterritorial law only if that conduct has a connection or ‘nexus’ to the United States.”²⁹⁹ The nexus considerations are partially based on fairness concerns: would a person reasonably believe U.S. criminal law would apply to his or her conduct?³⁰⁰ For a nexus to be established, there must be “. . . a significant contact or significant aggregation of contacts [between the state and the person] creating state interests, such that choice of its law is neither arbitrary nor fundamentally unfair.”³⁰¹ “[The U.S. Supreme Court] assume[s] that Congress legislates against the backdrop of the presumption against extraterritoriality.”³⁰²

As a result of such limitations, it is unlikely the United States could exercise jurisdiction over Roy, as neither, Roy, Jim, nor the effects of the scenario share any nexus with the United States.

C. *Logistical Issues in Exercising Criminal Jurisdiction, Even If Justified by Current Legal Authority*

In addition to the copious legal hurdles of exercising jurisdiction over outer space activities is the logistical nightmare of actually prosecuting and trying a case of an outer space crime in an Earth-based national court. Many Earth

²⁹⁵ Sinha, *supra* note 90, at 89; *see generally* 18 U.S.C. § 7 (2018).

²⁹⁶ 18 U.S.C. § 7(1) (2018); *see* 18 U.S.C. § 7(6), (7). Registration of space objects discussed *supra* Section IV.A.1.b.

²⁹⁷ *See* 18 U.S.C. § 7(6), (7).

²⁹⁸ Blount, *supra* note 27, at 327.

²⁹⁹ Farbiarz, *supra* note 97, at 508–09.

³⁰⁰ *Id.* at 509–10.

³⁰¹ *Allstate Ins. Co. v. Hague*, 449 U.S. 302, 312–13 (1981) (plurality opinion).

³⁰² *Smith v. United States*, 507 U.S. 197, 204 (1993) (quotations omitted).

tribunals, such as U.S. Courts and the International Criminal Court (ICC), require the defendant present for at least the beginning of trial.³⁰³

Currently, just to get to the Moon, Earth's closest neighbor, takes two to four days depending on the fuel-efficiency of the method used, and each trip is projected to cost approximately \$175 million per person.³⁰⁴ For Mars, the journey takes approximately nine months if using the most effective launch window which occurs every twenty-six months, and may cost \$1.85 billion per trip.³⁰⁵ A direct trip to Saturn and its moon, Titan, would take two to four years, and just sending a probe to Saturn costs almost four billion dollars.³⁰⁶ Presumably, with increases in technology and efficiency, cost and time would decrease, but it will probably never be cheap or fast for people to travel between celestial bodies.³⁰⁷

In the "Space Murder Story," SEO already transported Roy to Earth. But what if it had not? Would a nation be willing to go get Roy? How much is a state willing to pay for each criminal case? What if the crime is battery or rape, and not murder? What happens if Roy is acquitted and wishes to return to Titan? Who pays for that? One may think these issues could be ameliorated by the recent advent of the use of video conferencing in criminal trials, but the sheer scale of outer space travel complicates even that.³⁰⁸

Electrical signals traveling at the speed of light take between three and twenty-three minutes to travel one-way between Earth and Mars, depending on the locations of the planets at the time.³⁰⁹ It takes between seventy-one and

³⁰³ See *Crosby v. United States*, 506 U.S. 255, 262 (1993); Rome Statute, *supra* note 228, art. 63.

³⁰⁴ See Matt Williams, *How Long Does It Take to Get to the Moon?*, UNIVERSE TODAY (Jan. 10, 2016), <https://www.universetoday.com/13562/how-long-does-it-take-to-get-to-the-moon/>; Rachel Becker, *How Much are SpaceX Tourists Actually Paying to Fly Around the Moon*, VERGE (Feb. 28, 2017), <https://www.theverge.com/2017/2/28/14763632/spacex-private-moon-flight-price-cost-estimate-nasa-space-adventures>.

³⁰⁵ Nola Taylor Redd, *How Long Does It Take to Get to Mars?*, SPACE.COM (Nov. 14, 2017), <https://www.space.com/24701-how-long-does-it-take-to-get-to-mars.html>; *What is Mars One's Mission Budget?*, MARS ONE, <https://www.mars-one.com/faq/finance-and-feasibility/what-is-mars-ones-mission-budget>. Note the estimate is for one-way trips for follow up mission after the establishment of a Martian human colony. *Id.*

³⁰⁶ Coffey, *supra* note 235; *Cassini Mission Quick Facts*, NASA (Sept. 4, 2018), <https://solarsystem.nasa.gov/missions/cassini/mission/quick-facts/>.

³⁰⁷ See *What is the Future of Space Travel?*, ROYAL MUSEUMS GREENWICH, <https://www.rmg.co.uk/discover/explore/future-space-exploration> (stating that future travel in outer space may cost between \$250,000 to tens of millions of dollars per person).

³⁰⁸ See Daniel Devoe & Sarita Frattaroli, *Videoconferencing in the Courtroom: Benefits, Concerns, and How to Move Forward*, SOCIALLAW.COM 1 <http://sociallaw.com/docs/default-source/judge-william-g.-young/judging-in-the-american-legal-system/04devoe-sarita-paper.pdf>; see generally *Maryland v. Craig*, 497 U.S. 836 (1990). The Supreme Court has allowed video conferencing was permissible when for testimony for child witnesses for their protection. *Id.* at 857.

³⁰⁹ Redd, *supra* note 305.

eighty-seven minutes for the same signals to travel between Earth and Saturn.³¹⁰ Therefore, if Roy was able to videoconference in for his trial, each communication would take over an hour between him and his earthly tribunal. This would make trial communication impracticable.

However, these logistical hurdles may be reduced if nations pooled resources to establish a single judicial body for outer space, created by an OSCS. Instead of each state weighing the costs and benefits of extraditing criminals back to Earth, or trying to individually establish national courts in outer space, they could accomplish either or both tasks more efficiently by working in the aggregate. Logistical issues plague all outer space activities; enforcing outer space laws will be no different. However, an OSCS may provide the most efficient solution.

IV. THE BENEFITS OF AN OSCS FOR ESTABLISHING OUTER SPACE JURISDICTION AND RESOLVING OUR “SPACE MURDER STORY” DILEMMA

As shown, a basis for establishing criminal jurisdiction over Roy in the “Space Murder Story” cannot be found in the customary international principles for establishing jurisdiction, international outer space treaties, or national statutes; the regulatory framework is simply ineffective for regulating criminal activity in outer space, especially with looming space tourism.³¹¹ However, an OSCS would be able to establish criminal jurisdiction.

As discussed *infra*, an OSCS would have the benefit of covering *all* gaps in criminal law regarding outer space *and* be a uniform standard sufficient to export to future outer space endeavors, states could be convinced to surrender sovereignty in regard to outer space, and an OSCS could provide impetus for a new era on general international cooperation.

A. An OSCS Fills in Gaps of Current Outer Space Criminal Law

The proposed OSCS would be applicable to *all people* above the Kármán Line, and states would ideally agree to surrender any national jurisdictional claims.³¹² As a fully fleshed criminal code, it would answer all questions of criminality. If there was a universal OSCS in effect when Roy killed Jim in the

³¹⁰ See *How Fast Does Light Travel from the Sun to Each of the Planets?*, NASA, <https://image.gsfc.nasa.gov/poetry/venus/q89.html>; Rachel Dragani, *Distances of the Planets from the Sun in Light Years*, SCIENCING (June 12, 2018), <https://sciencing.com/distances-planets-sun-light-years-8774149.html>.

³¹¹ Blount, *supra* note 27, at 302–03.

³¹² See Waldek *supra* note 42 and accompanying text.

“Space Murder Story,” then the question of jurisdiction becomes moot. An Outer Space Criminal Court (OSCC), presumably established by the OSCS, would have jurisdiction based on the applicability of the OSCS.

This OSCS could be loosely modeled after the Rome Statute.³¹³ Signed in 1998 and in force as of 2002, the Rome Statute formed the ICC and gives the ICC international legal personality.³¹⁴ The ICC provides detailed international definitions of crimes and lays out the elements of crimes under its jurisdiction.³¹⁵

However, the Rome Statute suffers from some limitations which should be omitted from an OSCS.³¹⁶ Under the Rome Statute, the ICC only has jurisdiction over crimes against humanity, genocide, war crimes, and crimes of aggression.³¹⁷ It can only exercise jurisdiction if an alleged crime was referred by a state party, by the U.N. Security Council, or by the ICC prosecutor after investigation.³¹⁸ The ICC also has complementary jurisdiction, which means it can only exercise jurisdiction if a state is unwilling or unable to investigate and prosecute crimes by its nationals or on its territory.³¹⁹

These limitations should be avoided when forming the OSCS. An OSCS should serve as a comprehensive criminal code and provide definitions in a scope as expansive as that of any national criminal code. It should establish an OSCC, whether based on Earth or outer space, to hear cases regarding alleged outer space crimes. The OSCC should have original jurisdiction for outer space crime. That way, all states parties under current outer space treaties and non-parties would be alleviated of the burden of regulating outer space criminal activity. A uniform OSCS also eliminates unfairness concerns for defendants; any due process violation and unfairness related to states’ different criminal codes and punishments would be dissolved.³²⁰

The OSCS will probably need to provide for a law enforcement branch, resources for which would be provided by member states. This obligation would not be novel; it would be similar to the requirement of states parties to the United

³¹³ See generally Rome Statute, *supra* note 223, art. 63.

³¹⁴ *Id.* art. 1, 4.

³¹⁵ See *id.* art. 6-8bis.

³¹⁶ *Id.* art. 5.

³¹⁷ *Id.*

³¹⁸ *Id.* art. 12.

³¹⁹ *Id.* art. 63.

³²⁰ See *supra* Section IV.A.1.d.

Nations to provide peacekeeping forces to the U.N. Security Council when the Security Council determines it needs to use military force to resolve conflict.³²¹

If such a statute is successfully created, this would serve to resolve all questions regarding jurisdiction in outer space. People would know what law applies when they act in outer space, and jurisdictional disagreements between nations would be dissolved. Roy would find himself in front of an OSCS for his actions in the “Space Murder Story,” and all the issues discussed in this Comment would be obviated.

B. Garnishing International Cooperation for and Creation of an OSCS Is Feasible

This Comment readily admits the process for making an OSCS will neither be simple nor expedient.³²² However, one should not be discouraged by international struggles plaguing the creations of international statutes such as the Rome Statute when considering the formation of an OSCS, because outer space law already has a solid cooperative foundational principle which “[] indicate[s] a willingness to compromise on the part of . . . countries, and also the depth of commitment . . . as a whole.”³²³

Though the Rome Statute was rejected by world powers such as the United States, China, and Russia, this should not be an issue with the OSCS.³²⁴ While the Rome Statute could be interpreted to pertain to bona fide state actions and therefore a threat to state sovereignty, an OSCS would target “traditional” crimes committed independently by ordinary citizens.³²⁵ And even if the OSCS *could* be used to prosecute state actors, it is hard to imagine a scenario where this is possible, as long as spacefaring nations follow their obligations under the OST to use space for peaceful purposes.³²⁶

Additionally, states may be more likely to accede to an OSCS because it offers limited intrusion to their independence. Nations are more likely to accept

³²¹ See U.N. Charter art. 43.

³²² See Blount, *supra* note 27, at 335.

³²³ Ratner, *supra* note 91, at 345.

³²⁴ See generally Rome Statute, *supra* note 223. Russia and the U.S. signed but not ratified the Rome Statute. *Id.* China never signed it. *Id.* In 2002, the U.S. sent the U.N. a letter announcing its intention to not become a party to the Rome Statute, despite its signature. *Id.* at n. 12.

³²⁵ See Armed Service Members’ Protection Act 22 U.S.C. § 7421 (2018); Caitlin Peruccio, *To Join or Not to Join the International Criminal Court: Arguments for and against American Ratification of the Rome Statute*, 29 CONN. J. INT’L L. 181, 195-96 (2013); see generally Rome Statute, *supra* note 223, at pmbl., art. 1.

³²⁶ OST, *supra* note 6, at pmbl., art. I, III, IV; G.A. Res. 1962 (XVIII), pmbl. (Dec. 13, 1963).

a treaty “. . . if it regarded it as merely manifestation of a pre-existing limitation rather than as a new erosion of sovereignty.”³²⁷

Because states have already agreed not to exert sovereignty over outer space territories,³²⁸ and OSCS only eliminates the minimal jurisdictional power granted to states party to the treaties discussed *supra*, it is unlikely the OSCS would face the same resistance the ICC faced, as the ICC prescribed jurisdiction over all of Earth, where nearly all territory is owned by one state or another.³²⁹

Furthermore, even detractors to concepts such as universal jurisdiction or the ICC admit international courts are better suited than national courts for adjudicating cases that fall out of the traditional purview of national courts.³³⁰ SPACECOMM’s *best case scenario* for a future for outer space was an extraterrestrial arena “protected as a free domain under a rules-based, international order with established norms of behavior that promote the philosophy of open trade and space as a commons for all of humanity.”³³¹

States will likely be willing to adopt an OSCS because it poses little threat to state sovereignty, would clarify and simplify states’ duties under the OST, and would pose little threat to state actions. The Nuremberg Tribunal, the Tokyo Tribunal, ad hoc Yugoslavia (ICTY), and Rwanda tribunals (ICTR) gained their jurisdiction from “collective action based on the inherent powers of all involved states as participants.”³³² Likewise, the likely participation of states will facilitate the conception of an OSCS.

C. An OSCS Ushers in Future of International Cooperation Generally and Encourages Evolution Beyond Nations

In the future, outer space is going to be ruled in one of two ways: international cooperation or national dominance.³³³ Luckily, the current legal regime hinges on the concept that space is an international endeavor and

³²⁷ Eugene Kontorovich, *The Piracy Analogy: Modern Universal Jurisdiction’s Hollow Foundation*, 45 HARV. INT’L L.J. 183, 210 (2004). “Behavioral psychologists have observed an ‘endowment effect’ whereby people value a thing more if they already have it than if they do not.” *Id.*

³²⁸ OST, *supra* note 6, art. II; G.A. Res. 1962 (XVIII) (Dec. 13, 1963).

³²⁹ See Hannah Smith, *No Man’s Land: 3 Territories That are Still Unclaimed*, PRI (June 26, 2013, 4:53 PM UTC), <https://www.pri.org/stories/2013-06-26/no-man-s-land-3-territories-are-still-unclaimed>. Only Bir Tawil near Egypt and Marie Byrd Land in Antarctica are unclaimed by any nation. *Id.*

³³⁰ See Henry A. Kissinger, *The Pitfalls of Universal Jurisdiction*, 80 FOREIGN AFF. 86, 92 (2001).

³³¹ DR. JOEL MOZER, U.S. AIR FORCE SPACE COMMAND, THE FUTURE OF SPACE 2060 AND IMPLICATIONS FOR U.S. STRATEGY: REPORT ON THE SPACE FUTURES WORKSHOP 7 (2019).

³³² Arajärvi, *supra* note 214, at 11.

³³³ Tannenwald, *supra* note 5, at 365.

“emphasizes the central role of law in preserving space for peaceful purposes and in promoting international cooperation in the use and exploitation of space for the benefit of all[;]”³³⁴ this spirit is reflected in nearly all international treaties and national laws regarding outer space.³³⁵ An OSCS would encourage the continued international cooperation that is at the forefront of international space exploration and hopefully be the first step in preventing monopolistic domination by the most powerful space-faring states.³³⁶

If we can establish an OSCS (and other civil outer space laws) now, it can accompany humans on future missions to Mars and beyond. This is relevant because it is conceivable that the future human population in the literally infinite area that is outer space may eventually exceed Earth’s population. Presumably, humanity may find itself in a situation where rule as a unified species is more practical than the international community of sovereigns we have today.

This may seem farcical, but one can simply look to the entertainment industry for a conceptualization of the future.³³⁷ Movies, television shows, and video games generally concur a permanently extraterrestrial human species would be ruled by a unified central Earth government.³³⁸ Star Trek has its Federation of Planets; Star Wars has the Galactic Empire; the television show *The Expanse* is split among three nations on Mars, Earth, and the Belt; *Altered Carbon*’s characters are governed by the United Nations Interstellar Protectorate; *Halo*’s Unified Earth Government, a fictional evolution of the real United Nations, protects humans under siege from aliens; and the human Systems Alliance joins other alien races to prevent extinction of all galactic sentient life in *Mass Effect*.³³⁹ It makes logical sense to avoid the bureaucratic

³³⁴ *Id.*

³³⁵ Hertzfeld, *supra* note 114, at 327–28; See 51 U.S.C. § 20102 (2018); Canadian Space Agency Act, S.C. 1990, c. 13 (Can.); SOBRANIE ZAKONODATEL’STVA ROSSIISKOI FEDERATSII (Russian Federation Collection of Legislation) [SZ RF], Aug. 20, 1993, No. 5663-1, art. 3, 4 (Russ.); 2, 3 § FÖRORDNING MED INSTRUKTION FÖR RYMDSTYRELSEN [Regulation with Instructions for the Space Agency] (Svensk författningssamling [SFS] 2007:1115) (Swed.), <http://www.notisum.se/rnp/sls/lag/20071115.htm>; 1998 IGA, *supra* note 4, art. 22.; Moon Agreement, *supra* note 6, at pmb.; Registration Convention, *supra* note 88, art. IV; OST, *supra* note 6, art. VIII; G.A. Res. 1962 (XVIII), pmb., (Dec. 13, 1963); Tannenwald, *supra* note 5, at 365 (2004); *Full Text of White Paper on China’s Space Activities in 2016*, THE STATE COUNCIL OF THE PEOPLE’S REPUBLIC OF CHINA ch. I, § 1, 3 (updated Dec. 28, 2016, 9:21 AM), http://english.www.gov.cn/archive/white_paper/2016/12/28/content_281475527159496.htm.

³³⁶ See generally *supra* Section II.

³³⁷ See *infra* text accompanying note 349.

³³⁸ *Id.*

³³⁹ *Altered Carbon: Out of the Past* (Netflix television broadcast Feb. 2, 2018); *The Expanse: Dulcinea* (Syfy broadcast Dec. 14, 2015); HALO: THE MASTER CHIEF COLLECTION (Microsoft Studios 2014); MASS EFFECT 3 (EA International 2012); STAR TREK: THE MOTION PICTURE (Paramount Studios 1979); STAR WARS EPISODE IV- A NEW HOPE (Lucasfilm 1977).

nightmare of different governments when dealing with the complexities of outer space existence. Ideally, the OSCS would be among a comprehensive list of international authorities for dealing with a new, unified human nation.

CONCLUSORY STATEMENTS

Outer space is already dangerous enough; humanity does not need a future “Wild West,” where outer space dwellers are largely immune from governmental authority and resort to self-defense and violence to address wrongful actions.³⁴⁰ To prevent this, the international community needs to adopt an OSCS to govern behavior.

Though “. . . travel in space is still a rarity and commercial spaceflight is only in its infancy[,]”³⁴¹ humanity should not let its likely slow and methodical transit to the cold void outside Earth’s atmosphere dissuade it from forming an OSCS.³⁴² During these initial stages, extension of terrestrial rules into space may be sufficient to cope with the novel legal issues presented.³⁴³ However, applying terrestrial rules is shortsighted, and may stymie willingness to shy from terrestrial rules once they are no longer feasible.³⁴⁴

When preparing for outer space projects, “the consequences of poor social planning for space missions can be as severe as those of poor engineering.”³⁴⁵ Eventually, some problem between two people will cause a criminal action, such as Jim’s murder.³⁴⁶ In the spirit of preparation, an OSCS should be implemented *before* it is actually needed. Ideally, when Jim’s “Space Murder Story” is no longer fictional, there will be hundreds of years of OSCS precedence to address the crime and enough state practice that the OSCS will itself be considered customary international law.

For the success of society’s more ambitious space projects, the international community needs to create legislation to handle the demands of larger space stations and manned settlements.³⁴⁷ “[O]uter space [] criminal jurisdiction must

³⁴⁰ See Guyora Binder, *Authority to Proscribe and Punish International Crimes*, 63 U. TORONTO L.J. 278, 293–94 (2013).

³⁴¹ Seshagiri, *supra* note 20, at 500.

³⁴² See Blount, *supra* note 27, at 331.

³⁴³ See *id.*

³⁴⁴ See Kontorovich, *supra* note 327 and accompanying text for discussion of “endowment effect.”

³⁴⁵ Hermida, *supra* note 13, at 423 (citation and internal quotations omitted).

³⁴⁶ Hardenstein, *supra* note 29, at 282.

³⁴⁷ Ratner, *supra* note 91, at 343.

be explicitly defined and established before any colonist leaves Earth.”³⁴⁸ This should be done in an Outer Space Criminal Statute, designed and ratified by all people.

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³⁴⁸ Hardenstein, *supra* note 29, at 282.

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