
ONE SMALL PLOT FOR A MAN, OR ONE GIANT EASEMENT FOR
MANKIND?: A NEW APPROACH TO THE OUTER SPACE TREATY'S
PROPERTY FOR MANKIND PRINCIPLE

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Since 1967, most activity in space has been governed by the Outer Space Treaty's 'Mankind Principle,' which states, in part, that all of space, including planets, moons, and asteroids, are the common property of humankind. The treaty was signed at the height of the Cold War in an attempt to minimize the likelihood of conflict over terrestrial objects in space. However, it has ultimately resulted in increasing the likelihood of conflict today. With the passage of the Commercial Space Launch Competitiveness Act in 2015, the United States has joined an increasing list of nations promoting the exploration and commercialization of space. Additionally, for the first time in human history, private companies like SpaceX and Blue Origin have the technological capacity for private space enterprise, including tourism and mining. As more nations and private companies seek to capitalize on the vast resources available in space, the likelihood increases that nations will shirk their obligations under the Outer Space Treaty and begin to allow companies to extract resources for their own benefit. These actions will then increase the likelihood of conflict between rival nations.

This Note explores the historical ways humans have divided land in the past and provides a background of the history of property law in space. It then identifies key areas where the Outer Space Treaty is holding nations and companies back and exposes several ways nations are already beginning to ignore the Treaty in order to promote domestic space industries. Finally, by analyzing prior failed Cold War treaties with similar 'Mankind' provisions, this Note promotes a comprehensive vision of colonization of space, aiming to divide land amongst nations in order to foster a uniform system of rules, while being permissive of private industry in space.

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I. INTRODUCTION

Chaos exists in the absence of strong legal structure.¹ For example, weak intellectual property rights create barriers for innovators, duplicative sovereign land claims have led to geopolitical clashes in the South China Sea, and the promise of land in the Wild West led to a mad dash to stake land claims.²

1. Jeff Spross, *What the Wild West Can Teach Us About the Final Frontier*, WEEK (Feb. 26, 2018), <https://theweek.com/articles/757111/what-wild-west-teach-about-final-frontier> ("The era of private space exploration is upon us. SpaceX thrilled recently by launching a roadster into a near-Mars orbit. Moon Express, Planetary Resources, Blue Origin, and other companies are gearing up their own projects. One thing they ostensibly agree on? They don't want space to turn into 'the Wild West,' as a Planetary Resources official put it.").

2. William Pesek, *Making Sense of the South China Sea Dispute*, FORBES (Aug. 22, 2017, 10:00 PM), <https://www.forbes.com/sites/outofasia/2017/08/22/making-sense-of-the-south-china-sea-dispute/#56890a1c1c3b>; John Rutwich, *China Must Enhance Protection of Intellectual Property Rights: Premier Li*, REUTERS (Nov. 22, 2017, 7:55 PM), <https://www.reuters.com/article/us-china-property-protection/china-must-enhance-protection-of-intellectual-property-rights-premier-li-idUSKBN1DN08C>; Spross, *supra* note 1.

In fact, space, the “final frontier,” is not all that unlike America’s Western Frontier.³ In space, the only property rights protected are for the extraction of trace amounts of natural resources for exclusively research purposes, and no private real property ownership is allowed.⁴ The natural fallout from these rules means that companies looking to conduct business in space are afraid to invest and grow because there is no way for them to know whether they will ever have any protected interest in the goods they produce.⁵

Until extremely recently, commercial space exploration has been relegated firmly to the realm of science fiction and fantasy.⁶ Aside from the technological deficit that prevented companies from developing the tools needed to enter space, the exorbitantly high costs of research and development has long prevented companies from attempting to commercialize anything further than the low orbit of Earth with satellites.⁷ In recent years, however, a multitude of companies have formed with the ultimate ambition of conducting various kinds of business in space despite a high degree of uncertainty regarding the future of international agreements.⁸

A major complicating factor is an outdated system of property law in space that was designed to minimize the effects of the Cold War but has failed to adequately protect corporations seeking to capitalize on space’s vast resources.⁹ The Outer Space Treaty, as it is referred to colloquially, states that humanity’s goal for space should be to secure the use of space as property for humankind.¹⁰ It has ultimately resulted, however, in holding humankind back.¹¹ Today, as the level of technology has increased, and the costs of development have dramatically decreased, property protections in space remain one of the largest remaining hur-

3. Spross, *supra* note 1.

4. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410 [hereinafter Outer Space Treaty].

5. Dominic Basulto, *How Property Rights in Outer Space May Lead to a Scramble to Exploit the Moon’s Resources*, WASH. POST (Nov. 18, 2015, 6:09 AM), https://www.washingtonpost.com/news/innovations/wp/2015/11/18/how-property-rights-in-outer-space-may-lead-to-a-scramble-to-exploit-the-moons-resources/?noredirect=on&utm_term=.6e5aa2480b78.

6. Alex Knapp, *With Virgin Galactic’s Latest Flight, Has Space Tourism Finally Arrived?*, FORBES (Dec. 14, 2018, 7:01 PM), <https://www.forbes.com/sites/alexknapp/2018/12/14/with-virgin-galactics-latest-flight-has-space-tourism-finally-arrived/#65fe15b843d9> (“Though more test flights remain, the company looks on track to carry its first paying customers into suborbital space in 2019. Those customers would be the first space tourists since 2009, when the Russian space agency took billionaire Cirque du Soleil cofounder Guy Laliberté to the International Space Station. In the year that followed, the Russian agency canceled its tourism program due to expanded crew sizes on the ISS. Virgin’s customers won’t need to be billionaires, but they will need to have access to a good amount of cash, as it’s been selling tickets for \$250,000.”).

7. See generally Ted Stevens, *Regulation and Licensing of Low-Earth-Orbit Satellites*, 10 SANTA CLARA COMPUTER & HIGH TECH. L.J. 401 (1994).

8. Alyssa Pagano, *How SpaceX, Blue Origin, and Virgin Galactic Plan on Taking You to Space*, BUS. INSIDER (Dec. 13, 2018, 10:55 AM), <https://www.businessinsider.com/spacex-blue-origin-virgin-galactic-space-tourism-2018-9>.

9. Blake Gilson, Note, *Defending Your Client’s Property Rights in Space: A Practical Guide for the Lunar Litigator*, 80 FORDHAM L. REV. 1367, 1369 (2011).

10. Outer Space Treaty, *supra* note 4.

11. Basulto, *supra* note 5.

dles that disincentivize companies from expending resources on space technology.¹² Namely, for companies to feel secure in spending time and money on research and development of spacefaring tools, there need to be reasonable assurances that their investments will be protected, and that they will have an opportunity to make a profit.¹³

The time to make such a change is now. Companies like SpaceX, Blue Origin, and a variety of space-mining companies have the money and technology to enter space now, but without a system of property rights that will ensure a return on their investment and protect their assets, there is little incentive for them, and others like them, to innovate and grow the industry into a meaningful part of human society.¹⁴ Without a more robust system of property rights, humanity may never realize the potential of space, not just commercially, but also politically and scientifically.¹⁵ While drastic changes likely will not occur overnight, it is, at a minimum, necessary to put in place stopgap measures to help move forward with existing technology and continue to spur investment and development.¹⁶

Disincentivizing business opportunities, however, is only one of the negative externalities of weak property protections. Perhaps more troubling is the fear that without a more robust framework that is rigidly enforced, while simultaneously permissive of companies to conduct activities in space, there is a high risk of conflict as nations scramble to protect sovereign interests in space militarily.¹⁷

This Note will address the problems with the current system of property law in space and propose a solution to properly advance human exploration, commercialization, and investment while reducing conflict. Part II of this Note will briefly introduce the various ways humans have divided land in the past, provide a background of the history of property law in space, address the current business landscape of companies seeking to enter space, and expose the militarization of space as a dangerous alternative to multilateral rulemaking.¹⁸ Part III will identify key weaknesses in the property law scheme that are hindering growth and opportunity, analogize the issues surrounding space property law to certain areas on Earth with similar problems, identify prior proposed solutions and why they do not go far enough to adequately protect companies' interests, and outline the key pros and cons of a historical solution to land claims: colonization.¹⁹ Part IV will outline the danger of humanity's current trajectory of private property own-

12. Kurt Anderson Baca, *Property Rights in Outer Space*, 58 J. AIR L. & COM. 1041, 1045–46 (1993).

13. *Id.* at 1045 (“The potential enterprise must contend with the uncertain state of the law in outer space, which makes the status of its interests in space uncertain, even if that interest should prove to be profitable.”).

14. Pagano, *supra* note 8.

15. Baca, *supra* note 12.

16. See discussion *infra* Section II.D.

17. David Pedreira, *The Race to Militarize Space is No Joke*, CNN (Mar. 28, 2018, 3:18 PM), <https://www.cnn.com/2018/03/28/opinions/race-to-militarize-space-pedreira/index.html>.

18. See *infra* Part II.

19. See *infra* Part III.

ership protected by militarization, and recommend a long-term vision of colonization of space, at least in the sense of dividing land amongst nations in a fair and equitable manner.²⁰ Part V will conclude.²¹

II. BACKGROUND

Property protections play an important role in the way society at large works.²² The proverbial varying “bundle of rights” that comes with property ownership shapes the goals and incentives surrounding anything from simple ownership of land for private enjoyment, to extraction of resources and investment.²³ Elements of these bundles of rights can be given or taken away to help properly incentivize land to be used in a way that society or the government deem productive.²⁴ For example, caps on the amount of ownership of land, licensing requirements, and leasing restrictions, among other tools, have a profound impact on the way in which land is acquired, used, and exchanged.²⁵

This is no different in space. At present, however, property rights in space are woefully inadequate in advancing the current state of technology and have served a counterproductive role in reducing investment, exploration, and commercialization while also dramatically increasing the potential for conflict.²⁶ This Part will provide an overview of the historical context that resulted in the current framework that exists in the regulation of space. It will also outline current problems with the existing system and analyze several industries that are being drastically hindered due to limited property protections in space.

A. *Humanity’s Prior Attempts at Dividing Land*

Throughout history, humans have faced the same problem: How should land be divided in order to best promote the needs of the time?²⁷ Typically, the process of divvying up land between nations involves the ceding of power to one nation or group, to the exclusion of all other nations and groups.²⁸ Provided the process is equitable, it is advantageous to all nations to control their own portion of land, which allows them to establish their own systems of laws that best suit

20. See *infra* Part IV.

21. See *infra* Part V.

22. Fred Kosmo, *The Commercialization of Space: A Regulatory Scheme That Promotes Commercial Ventures and International Responsibility*, 61 S. CAL. L. REV. 1055, 1056 (1988).

23. J.E. Penner, *The “Bundle of Rights” Picture of Property*, 43 UCLA L. REV. 711, 712–13 (1996).

24. *Id.* at 800–01.

25. Daniel Riesel & Steven Barshov, *When Does Government Regulation Go “Too Far”*, 6 FORDHAM ENVTL. L.J. 565, 594 (1995).

26. Basulto, *supra* note 5.

27. See generally Arthur Ripstein, *Property and Sovereignty: How to Tell the Difference*, 18 THEORETICAL INQUIRES L. 243 (2017).

28. *Id.*

their needs.²⁹ It also provides certainty and minimizes the likelihood of disputes.³⁰

In fact, most of the conflict that arises due to land disputes stems directly from unclear or unrecognized boundaries between nations, which leads to multiple countries claiming an interest.³¹ For example, many nations have a legitimate interest in the South China Sea due to the complex history of control over the region over the last several thousand years.³²

Ultimately, the methods used to divide land are dependent on the unique circumstances of the time and the needs of the parties involved. But one thing is constant, without clearly defined boundaries that are established with the consent of all parties, there is a drastically increased threat of conflict.³³ This trend is beginning in space.³⁴

B. *Brief History of Space Travel*

Prior to the last decade, private entry into space was extremely rare due to high barriers to entry such as high start-up costs and technological deficits.³⁵ Rather, for the few countries that had the means to support a space program, most manned and unmanned missions to space were predominantly done through governmental space programs.³⁶ Even now, almost all space missions are conducted by governmental entities of various spacefaring nations.³⁷ This has begun to change however, with companies like SpaceX beginning their own voyages to outer space, and even to resupply the International Space Station.³⁸

Conversely, the commercialization of low orbit has increased extensively over the last two decades.³⁹ Low orbit is the area around Earth that is still subject

29. *Id.*

30. *Id.*

31. *See, e.g.,* Rutwich, *supra* note 2.

32. *Id.*

33. *Id.*

34. Spross, *supra* note 1.

35. Michael Goldstein, *Will Space Tourism Ever Be a Viable Business?*, FORBES (Jan. 4, 2019, 8:24 PM), <https://www.forbes.com/sites/michaelgoldstein/2019/01/04/will-space-tourism-ever-be-a-viable-business/#23255ada6d63> (“SpaceShipOne was to be the precursor of Virgin Galactic’s SpaceShipTwo, unveiled in December 2009. At about 48,000 feet, the craft would detach from its ‘White Knight’ mothership. Two pilots would then fly the six space tourists on board for a brief trip to the edge of space, including six minutes of weightlessness. The craft would then glide to a landing on a giant runway. Although hardly mass-tourism, it was thought millions of people around the world could potentially afford what was projected as a \$250,000 flight. But as it’s turned out, there is an enormous difference between ‘space tourism’ and ‘private space flight.’”).

36. Catherine Clifford, *What It’s Like to Travel to Space, from a Tourist who Spent \$20 Million to Live There for 12 Days*, CNBC (Oct. 19, 2018, 11:17 AM), <https://www.cnbc.com/2018/10/19/what-its-like-in-space-from-a-tourist-who-spent-30-million-to-go.html>.

37. Goldstein, *supra* note 35.

38. Louis Casiano, *SpaceX Crew Dragon Docks at International Space Station*, FOX NEWS (Mar. 3, 2019), <https://www.foxnews.com/science/space-x-crew-dragon-docks-with-international-space-station>.

39. Michael S. Straubel, *Telecommunication Satellites and Market Forces: How Should the Geostationary Orbit Be Regulated by the F.C.C.?*, 17 N.C. J. INT’L L. & COM. REG. 205, 205–06 (1992) (“Domestic revenues for both telecommunication satellite services and satellite sales in the year 2000 are expected to be between \$8.8 and \$15.3 billion annually”).

to Earth's gravitational pull.⁴⁰ It is also the level where satellites are placed.⁴¹ Commercial satellite launches are now commonplace and are governed by their own treaties due to the proximity to Earth and the catastrophic potential for mishaps, including satellites crashing back to Earth, which happens with some frequency.⁴² These satellite launches and the treaties that govern them, however, are separate from the concerns of the Outer Space Treaty, because they do not concern the exploitation of real property in space, but rather of an area of space that is important to activities on Earth but is limited in scope due to the inherent geographic constraints of Earth and its near atmosphere.⁴³

C. Historical Underpinnings of the Current Scheme: The Outer Space Treaty

At the height of the Cold War, to counter the looming threats of the space race, the international community ratified several United Nations treaties to govern conduct in space.⁴⁴ These treaties included the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, the Moon, and Other Celestial Bodies of 1967 (also known as the Outer Space Treaty);⁴⁵ the Agreement on the Rescue of Astronauts, Return of Astronauts, and the Return of Objects Launched into Outer Space of 1968;⁴⁶ the Convention on International Liability for Damage Caused by Space Objects of 1972;⁴⁷ the Convention on Registration of Objects Launched into Outer Space of 1976;⁴⁸ and the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies of 1979.⁴⁹

Of these treaties, the Outer Space Treaty is the most significant in terms of its application to property ownership in space.⁵⁰ Essentially, this treaty established a system of common ownership of space material and land, and declared all celestial bodies in space to be, "common property for humankind."⁵¹ It was signed in the late 1960's, at the height of the Cold War-era space race between the United States and the Soviet Union, in order to minimize property disputes

40. Matt Williams, *What Is Low Earth Orbit?*, UNIVERSE TODAY (Jan. 6, 2017), <https://www.universetoday.com/85322/what-is-low-Earth-orbit/>.

41. *Id.*

42. George Dvorsky, *Earth's Low Orbit Needs Legal Protection Before It Becomes a Cosmic Junkyard*, GIZMODO (Mar. 7, 2019, 10:30 AM), <https://gizmodo.com/Earths-low-orbit-needs-legal-protection-before-it-be-com-1832997885>.

43. *Id.*

44. Lawrence L. Risley, *An Examination of the Need to Amend Space Law to Protect the Private Explorer in Outer Space*, 26 W. ST. U. L. REV. 47, 49 (1999).

45. Outer Space Treaty, *supra* note 4.

46. Agreement on the Rescue of Astronauts, Return of Astronauts, and the Return of Objects Launched into Outer Space, Apr. 22, 1968, 19 U.S.T. 7570.

47. Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 24 U.S.T. 2389.

48. Convention on Registration of Objects Launched into Outer Space, Jan. 14, 1975, 25 U.S.T. 695.

49. Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, *opened for signature* Dec. 18, 1979, 18 I.L.M. 1434.

50. *See generally* Outer Space Treaty, *supra* note 4.

51. *Id.*

that could proliferate as a result of land claims from rival nations.⁵² Chief among these issues were, “the prevention of the use of outer space and celestial bodies as bases for military infrastructure by one of the superpowers, and the prevention of military conflict over possession of outer space and celestial bodies.”⁵³ Thus, it was settled that private property ownership in space would not be allowed, and that space access was a right for all of humanity.⁵⁴ Essentially, the treaty provided for minimal amounts of resources to be extracted from space solely for research purposes.⁵⁵

D. Modern Development of Spacefaring Business Ventures

The number of companies seeking to enter space has grown at an increasing rate over the last decade. This problem has become more acute each year, as more and more companies vie for positions to be the first to capitalize on the extraordinary potential of space.⁵⁶ These companies take many forms, from tourism⁵⁷ to mining.⁵⁸ For example, Elon Musk recently announced plans for the first commercial trip around the Moon.⁵⁹ While this plan wouldn’t necessarily involve any interactions with property law, it is a recent example of a company that is close to being able to enter space and profit off it.⁶⁰

Companies have also recently been formed intending to mine the Moon for water, and asteroids for minerals.⁶¹ For example, one of Elon Musk’s companies, SpaceX, one of Jeff Bezos’s companies, Blue Origin, and Moon Express,⁶² plan

52. Gilson, *supra* note 9, at 1369.

53. *Id.*

54. Outer Space Treaty, *supra* note 4.

55. *Id.*

56. Aaron Pressman, *Financing for Private Space Companies Slipped in 2018, But Remains at a High Level*, FORTUNE (Jan. 10, 2019, 1:23 PM), <http://fortune.com/2019/01/10/space-startups-spacex-bezos-vcl/>.

57. Jeffrey Kluger, *Here’s What’s So Worrying About Elon Musk’s Latest Moon Plans*, TIME (Sept. 20, 2018), <http://time.com/5401923/elon-musk-spacex-moon/>.

58. Dan Boyce, *Space Mining—Learning How to Fuel an Interplanetary Gas Station*, NPR (Sept. 25, 2018, 5:03 AM), <https://www.npr.org/2018/09/25/648917308/space-mining-learning-how-to-fuel-an-interplanetary-gas-station>.

59. Kluger, *supra* note 57.

60. *Id.*

61. Anurag Kotoky, *The Quest to Find a Trillion-Dollar Nuclear Fuel on the Moon*, BLOOMBERG (June 26, 2018, 4:00 PM), <https://www.bloomberg.com/news/articles/2018-06-26/the-quest-to-find-a-trillion-dollar-nuclear-fuel-on-the-moon> (“The presence of helium-3 was confirmed in moon samples returned by the Apollo missions, and Apollo 17 astronaut Harrison Schmitt, a geologist who walked on the moon in December 1972, is an avid proponent of mining helium-3. ‘It is thought that this isotope could provide safer nuclear energy in a fusion reactor, since it is not radioactive and would not produce dangerous waste products,’ the European Space Agency said. There are an estimated 1 million metric tons of helium-3 embedded in the moon, though only about a quarter of that realistically could be brought to Earth, said Gerald Kulcinski, director of the Fusion Technology Institute at the University of Wisconsin-Madison and a former member of the NASA Advisory Council.”).

62. Arjun Kharpal, *Moon Express Says First Launch is ‘Definitely’ Happening in 2018*, CNBC (Nov. 30, 2017, 2:52 AM), <https://www.cnbc.com/2017/11/30/moon-express-says-first-launch-happening-in-2018.html> (“‘We are really looking good and we are still hoping to launch the lander next year. And when we launch and land on the moon, not only (do) we become the first company to do so, we actually symbolically become the fourth superpower. And imagine the entrepreneurs doing things that only the three superpowers have done before.’ Superpowers such as the U.S. and Russia have previously landed on the Moon. Moon Express is the first private

to eventually expand from space tourism into space mining and colonization.⁶³ They presently have the technological capacity to enter space, but the regulatory scheme has yet to catch up to the current state of technology and business to adequately promote their ideas.⁶⁴

In addition to space tourism, experts believe that space mining could be a multi-trillion-dollar industry.⁶⁵ Scientists and business leaders are specifically intrigued by the prospect of helium-3 deposits on both the moon and on asteroids.⁶⁶ Helium-3, a resource that is abundant on the Moon and on asteroids but is very rare on Earth, is believed to be a highly efficient fuel source that could be used both here on Earth, and as a fuel for rockets on voyages throughout space.⁶⁷ Many experts believe that there is enough helium-3 on the moon alone to fuel Earth's energy needs for the next 250 years.⁶⁸ Similarly, scientists believe that the moon has a large water supply that can be brought back to Earth.⁶⁹ Simultaneously, the mining of asteroids has also been the subject of intrigue amongst industry experts.⁷⁰ Scientists believe that these asteroids are likely rich with metals such as gold, silver, and platinum, in addition to rare Earth metals that are used to make cell phones.⁷¹ For the first time, companies now are nearing the technological capability to accomplish this goal, but the property law system currently in place does not provide adequate protection to companies hoping to harness these resources.⁷² Thus, many of these goals will have to go unrealized, as there are no current protections given to companies who seek to own property in space.⁷³

A final added benefit of increasing private investment in space is the prospect of greater sharing of information between scientists and businesses for research purposes.⁷⁴ A common property system will encourage cooperation and teamwork to advance the interests of humankind, just as the Outer Space Treaty envisioned sixty years ago.⁷⁵

company to get U.S. government approval to go to the Moon. Landing there would be a historic feat. The company is competing for the Google Lunar XPRIZE which has a \$20 million reward for the first private firm to put a spacecraft on the moon, travel 500 meters, and transmit high definition video and images back to Earth. The deadline for doing this is March 2018.”).

63. *Id.*

64. *Id.*

65. Kotoky, *supra* note 61.

66. *Id.*

67. *Id.*

68. *Id.*

69. *Id.*

70. *Id.*

71. Andrew Zaleski, *Luxembourg Leads the Trillion-Dollar Race to Become the Silicon Valley of Asteroid Mining*, CNBC (Apr. 16, 2018, 9:01 AM), <https://www.cnbc.com/2018/04/16/luxembourg-vies-to-become-the-silicon-valley-of-asteroid-mining.html>.

72. *Id.*

73. Kharpal, *supra* note 62.

74. Leonard David, *Mining Moon Ice: Prospecting Plans Starting to Take Shape*, SPACE (July 13, 2018), <https://www.space.com/41164-mining-moon-water-plans-take-shape.html>.

75. *Id.*

E. The Militarization of Space to Protect Assets and the Interaction Between the Outer Space Treaty and Domestic Space Law

At the time of passage, there was no way for the signatories of the Outer Space Treaty to contemplate the drastic growth of technology that would occur over the next sixty years, and that continues to happen today.⁷⁶ While this system adequately addressed the concerns of the time, it is wholly inadequate for today's needs.⁷⁷ Across the world, countries are realizing that the lack of property law to enforce corporations' rights to extracted material from space hinders economic growth and stifles the interest entrepreneurs have in exploring.⁷⁸ For example, in 2004, the United States passed the Commercial Space Launch Amendments Act.⁷⁹ This act enumerated an updated position on behalf of the United States government and its goal of "safely opening space to the American people and their private commercial, scientific, and cultural enterprises," and that the government should help foster this goal with, "Federal space investments, policies, and regulations."⁸⁰ Further, in 2010, after announcing a decrease in federal manned space flights, President Barack Obama articulated that:

A robust and competitive commercial space sector is vital to continued progress in space. The United States is committed to encouraging and facilitating the growth of a U.S. commercial space sector that supports U.S. needs, is globally competitive, and advances U.S. leadership in the generation of new markets and innovation-driven entrepreneurship.⁸¹

Any proposals to alter existing space laws, however, including the Outer Space Treaty, have yet to add any meaningful changes in the level of protection of investments in space technology.⁸²

Even more recently, the Trump Administration has expressed support for the development of a "Space Force."⁸³ While it would be a military endeavor, the major goal of a space force would be to protect American interests in space,

76. Erin C. Bennett, *To Infinity and Beyond: The Future Legal Regime Governing Near-Earth Asteroid Mining*, 48 TEX. ENVTL. L.J. 81, 84–85 (2018).

77. Michael J. Listner, *The Ownership and Exploitation of Outer Space: A Look at Foundational Law and Future Legal Challenges to Current Claims*, 1 REGENT J. INT'L L. 75, 87–90 (2003).

78. Zaleski, *supra* note 71 ("Luxembourg sees an opportunity to play host to entrepreneurs and start-ups with their sights on space, becoming the worldwide hub of the space mining industry in the process. Private space exploration is a brand new market with trillions of dollars in potential; the Federal Aviation Administration expects space tourism to be a \$1 billion sector over the next several years. Meanwhile, noted experts like Neil deGrasse Tyson has said that the world's first trillionaire 'will be the person who exploits the mineral content of metallic asteroids.' Asteroids, floating pieces of rock and metal that predominate between Mars and Jupiter, are veritable treasure chests, packed with gold, platinum, and alloys that are needed to produce modern technologies such as smartphones.").

79. Commercial Space Launch Amendments Act, 51 U.S.C. § 50901 (2018) [hereinafter Commercial Space Act].

80. *Id.*

81. NATIONAL SPACE POLICY OF THE UNITED STATES OF AMERICA 3 (2010).

82. See Kharpal, *supra* note 62.

83. Ryan Browne, *Pentagon Launches Development Agency Seen as Key to Future Space Force*, CNN (Mar. 13, 2019, 5:29 PM), <https://www.cnn.com/2019/03/13/politics/pentagon-space-force-agency/index.html>.

both commercially and geopolitically.⁸⁴ A space force would operate independently from the National Aeronautics and Space Administration (“NASA”), as NASA is primarily for research purposes, while a space force would be not only a source of military protection for assets here on Earth, but also as a source of protection of future interests in space, both militarily and commercially.⁸⁵ It is clear through the last three administrations that there is widespread bipartisan support to change the system in some way, even though there are major disagreements in how to do it.⁸⁶

Recognizing the potential business opportunities in space and frustrated with the lack of an international movement to change the law, several countries have started to pass their own laws permitting companies to conduct certain activities in space that are directly at odds with the Outer Space Treaty.⁸⁷ Luxembourg, an early leader in the 1980’s in the satellite communications movement, has continued to lead space innovation efforts by being among the first nations to pass a law allowing corporations to begin extracting resources from space mining.⁸⁸ In addition to providing for property ownership of resources extracted from space, they also became the first country to allow any foreign company with a business address in the country to take advantage of the new law.⁸⁹ The national government has also pledged nearly \$223 million of its national budget to providing seed-funding and grants for space mining companies on top of pledges to refund as much as 45% of such companies’ research and development costs.⁹⁰ Luxembourg hopes these policies together will spur both domestic and foreign investment in the country’s space mining industry and cement them as a global leader in the industry.⁹¹

Similarly, the United States passed the Commercial Space Launch Competitiveness Act, but it is limited to companies owned by United States citizens.⁹² Together, both the United States and Luxembourg have passed some of the first laws that directly violate the spirit of the Outer Space Treaty’s mandate of common property for humankind.⁹³ As evidenced by Luxembourg’s openness to investment from companies from foreign countries, there is increasing competition amongst nations to gain a hold on the industry.⁹⁴ It appears that this trend will not slow down, as each country with ambitions to enter the commercial space

84. *Id.*

85. Alex Zuckerman, *NASA Chief Explains the Need for a “Space Force,”* CBS NEWS (July 6, 2018, 6:00 AM), <https://www.cbsnews.com/news/nasa-chief-explains-the-need-for-a-space-force/>.

86. *Fact Sheet: The National Space Policy*, WHITE HOUSE (June 28, 2010), <https://obamawhitehouse.archives.gov/the-press-office/fact-sheet-national-space-policy>; Zuckerman, *supra* note 85.

87. Zaleski, *supra* note 71.

88. *Id.*

89. *Id.*

90. *Id.*

91. *Id.*

92. See Commercial Space Launch Activities Act, 51 U.S.C. §§ 50901–50923 (2018).

93. *Id.*; Zaleski, *supra* note 71.

94. Zaleski, *supra* note 71.

race will continue to pass laws providing for some form of domestic space industries, potentially in violation of the Outer Space Treaty, which could lead to conflicts.⁹⁵

In addition to nations scrambling to pass laws permitting domestic growth into space, there is also already a growing movement globally to militarize space to protect assets. For example, many countries, including the United States, Russia, and China, have all begun stationing strictly military, or dual use civilian/military satellites in orbit in order to effectively conduct surveillance and reconnaissance against foreign countries.⁹⁶ Additionally, China and the United States are already known to have tested anti-satellite weapons.⁹⁷ As the name suggests, anti-satellite weapons are designed to be mounted on satellites that then fire at other satellites.⁹⁸

Collectively, the militarization of space to protect assets and the looming threat of future conflict offer compelling reasons to create a more robust system of property law to prevent a land grab.

III. ANALYSIS

By analyzing the needs of businesses and gaining an understanding of the current status of space policy, it is easier to understand the contours of what any proposed system should look like. This Part will address the problems associated with the current scheme of property rights under the Outer Space Treaty. It will then examine two other treaties that were modeled after the Outer Space Treaty, identify their failures, and illuminate the potential for those failures to be replicated in space. Finally, it will look at a historical solution to land claims in newly discovered areas: colonization, its benefits and critiques, and how disputes were settled between the large numbers of colonizers who conquered lands in Africa, the Americas, and Asia.

A. *Problems with the Current Scheme*

Modern corporations are disincentivized from investment and development of space technology due to inadequate protections of their interests.⁹⁹ Under the current Outer Space Treaty, property rights are only granted for small amounts of extracted resources for strictly research purposes.¹⁰⁰ While the Outer Space Treaty is supposed to ensure the use of space for humankind, its effect has been to hinder the growth and opportunity that humankind has in space.¹⁰¹

95. See generally *id.*

96. Browne, *supra* note 83.

97. Gerry Doyle, *Factbox: Anti-Satellite Weapons: Rare, High-tech, and Risky to Test*, REUTERS, (Mar. 27, 2019, 4:40 AM), <https://www.reuters.com/article/us-india-satellite-tests-factbox/factbox-anti-satellite-weapons-rare-high-tech-and-risky-to-test-idUSKCN1R80UW>.

98. *Id.*

99. Listner, *supra* note 77, at 87–94.

100. Outer Space Treaty, *supra* note 4.

101. Basulto, *supra* note 5.

The potential for growth in spacefaring companies is tremendous.¹⁰² Companies cannot commit resources to such an expensive and time-consuming endeavor, however, if they have no reasonable assurance that their investments will be protected.¹⁰³ Thus, to incentivize and stimulate forward progress, a system must be created that helps companies to reliably predict how their investments will pay off. This will allow them to plan strategically for the future and encourage them to enter what can be considered a modern private space race.

Recognizing the potential business opportunities in space and frustrated with the lack of an international movement to change the law, several countries have started to pass their own laws permitting companies to conduct certain activities in space that are directly at odds with the Outer Space Treaty, including Luxembourg and the United States.¹⁰⁴ Luxembourg, a country that is known as a tax haven and as very pro-business, has become a leader in the space industry by pioneering new laws intended to increase foreign and domestic investment in the industry.¹⁰⁵ Within the last three years, Luxembourg passed laws allowing for private property ownership of extracted resources from space, and they also became the first country to allow any foreign company with a business address in the country to take advantage of the new law regardless of citizenship.¹⁰⁶ Additionally, as stated above, the national government has also pledged a significant portion of its national budget to providing seed-funding and grants for space-mining companies, on top of pledges to refund as much as 45% of such companies' research and development costs.¹⁰⁷ While these laws and policies will assuredly achieve the intended effect of increasing foreign and domestic investment, they will also likely cause substantial controversy amongst other countries for wantonly violating the Outer Space Treaty, while simultaneously taking away business from other countries by being the first to allow companies from foreign countries without the means to host a robust space program to begin operations in Luxembourg.¹⁰⁸

Similarly, the United States passed the Commercial Space Launch Competitiveness Act, but it is limited to companies owned by United States citizens.¹⁰⁹ Together, both the United States and Luxembourg have passed some of the first laws that directly violate the spirit of the Outer Space Treaty's mandate of common property for humankind.¹¹⁰ This is perhaps the largest problem with the current scheme. While the goal of the Outer Space Treaty was to ensure there was no dominion over property in space, it has instead created far more intense competition amongst countries seeking to monetize a budding industry

102. Zaleski, *supra* note 71.

103. *Id.*

104. *Id.*

105. *Id.*

106. *Id.*

107. *Id.*

108. *Id.*

109. See Commercial Space Launch Activities Act, 51 U.S.C. §§ 50901–50923 (2018).

110. *Id.*; Zaleski, *supra* note 71.

and provide support for fledgling space companies.¹¹¹ Essentially, it has created a situation that is the antithesis of its Cold War goal: stopping the proliferation of geopolitical arguments from arising due to issues that occur in space.¹¹²

B. Similar Case Studies on Earth: Antarctica and the United Nations Convention on the Law of the Sea

There are several places on Earth that have similar issues to the problems presented in space.¹¹³ Namely, Antarctica and the deep sea.¹¹⁴ Both regions are areas that are not subject to sovereign control, and thus need a uniform way to protect interests without creating conflict while still allowing for exploration and exploitation of resources there.¹¹⁵ Regulating both Antarctica and the deep sea were dealt with somewhat similarly.¹¹⁶ Specifically, both locations are areas on Earth with a lot at stake economically and scientifically, just like space.¹¹⁷ Also analogous to problems with property ownership in space is that both regions are currently uninhabitable by humans, meaning that property systems there are not necessarily required to allow for sovereign claims, as most problems can currently be addressed with a system of purely private property rights or research land grants.¹¹⁸ Both locations, particularly Antarctica, are also important geopolitically, as global powers around the world are acutely aware of potential militarization of these regions which has made countries wary regarding the way that the land is used.¹¹⁹ Finally, in both locations, without property law, there would be large-scale land grabbing and arguing over scarce resources, like the situation that is developing in space currently.¹²⁰

Sadly, the Outer Space Treaty is succumbing to the same issues that plagued the United Nations Convention on the Law of the Sea and the Antarctic Treaty: namely, to ensure fairness and minimize conflict, property rights were not granted to anybody.¹²¹ Interestingly, all three treaties mirror each other in terms of the provisions found within them.¹²²

For example, the Antarctic Treaty states, “it is in the interest of all mankind that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord.”¹²³

111. See generally 51 U.S.C. §§ 50901–50923; Zaleski, *supra* note 71.

112. See generally Gilson, *supra* note 9.

113. Cf. United Nations Convention on the Law of the Sea, Dec. 10, 1982, 1833 U.N.T.S. 397 [hereinafter LOS Convention]; Outer Space Treaty, *supra* note 4, art. II; Antarctic Treaty, Dec. 1, 1959, 12 U.S.T. 794.

114. LOS Convention, *supra* note 113.

115. *Id.*; Antarctic Treaty, *supra* note 113.

116. LOS Convention, *supra* note 113; Antarctic Treaty, *supra* note 113.

117. LOS Convention, *supra* note 113; Outer Space Treaty, *supra* note 4; Antarctic Treaty, *supra* note 113.

118. LOS Convention, *supra* note 113; Outer Space Treaty, *supra* note 4; Antarctic Treaty, *supra* note 113.

119. LOS Convention, *supra* note 113; Antarctic Treaty, *supra* note 113.

120. LOS Convention, *supra* note 113; Antarctic Treaty, *supra* note 113.

121. LOS Convention, *supra* note 113; Outer Space Treaty, *supra* note 4; Antarctic Treaty, *supra* note 113.

122. LOS Convention, *supra* note 113; Outer Space Treaty, *supra* note 4; Antarctic Treaty, *supra* note 113.

123. Antarctic Treaty, *supra* note 113.

The United Nations Convention on the Law of the Sea has a very similar provision that states:

All rights in the resources of the Area are vested in mankind as a whole, on whose behalf the Authority shall act. These resources are not subject to alienation. The minerals recovered from the Area, however, may only be alienated in accordance with this Part and the rules, regulations and procedures of the Authority.¹²⁴

Finally, the Outer Space Treaty has exactly the same kind of provision, stating:

[T]he exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind. Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies. There shall be freedom of scientific investigation in outer space, including the moon and other celestial bodies, and States shall facilitate and encourage international co-operation in such investigation.¹²⁵

The “mankind” provisions of these treaties are vague but have been interpreted to minimize private ownership of property and the claiming of resources.¹²⁶ This was okay for a long time.¹²⁷ Ironically, it is now this same provision that has led to conflict in the deep sea and Antarctica and will likely lead to conflict soon in space.¹²⁸ It is precisely this weakness in the law that is leading to exactly the opposite of the intent of the treaties: to ensure tranquility and minimize the threat of war over disputes arising from human activity in these areas.¹²⁹ While the Antarctic Treaty and the United Nations Convention on the Law of the Sea have been undermined in different ways, they are both good proxies for examining what is likely to occur soon if significantly more robust property law protections are not put into place.¹³⁰ In essence, a stricter property law regime will, perhaps counterintuitively, lead to greater expansion into space by providing predictability.¹³¹ It is also this same predictability that will minimize conflict in space, which is the supposed goal of the Outer Space Treaty, The United Nations Convention on the Law of the Sea, and the Antarctic Treaty.¹³²

124. LOS Convention, *supra* note 113.

125. Outer Space Treaty, *supra* note 4.

126. LOS Convention, *supra* note 113; Outer Space Treaty, *supra* note 4; Antarctic Treaty, *supra* note 113.

127. See LOS Convention, *supra* note 113.

128. *Id.*

129. LOS Convention, *supra* note 113; Outer Space Treaty, *supra* note 4; Antarctic Treaty, *supra* note 113.

130. See LOS Convention, *supra* note 113.

131. Gilson, *supra* note 9, at 1405.

132. LOS Convention, *supra* note 113; Outer Space Treaty, *supra* note 4; Antarctic Treaty, *supra* note 113.

The following two subsections will analyze these issues as they pertain to Antarctica and the deep sea. Specifically, it will address the challenges posed in these areas, outline the current legal framework, and analogize the issues to issues in space. Finally, it will analyze several of the other common proposals to property law in space and explain why they are not adequate, nor are they enough for properly incentivizing both corporate and sovereign investment in space technologies.

1. Antarctica

Antarctica is one of the last remaining places on Earth that is not subject to sovereignty claims.¹³³ The problems presented by potential territorial claims are unique when compared to other places on Earth because most of it is barren land.¹³⁴ Thus, like the current Outer Space Treaty, property rights in Antarctica are granted largely for research purposes only, with only small amounts of resources able to be extracted.¹³⁵

Specifically, property ownership in Antarctica is governed by the Antarctic Treaty.¹³⁶ The Antarctic Treaty, passed in 1961 around the same time as the Outer Space Treaty, was designed to prevent fallout from the Cold War.¹³⁷ As of today, it has been ratified by more than fifty countries including Russia, China, and the United States.¹³⁸ Its framework is also similar to the Outer Space Treaty, as there are strict prohibitions on prospecting for minerals, territorial claims, and military activity.¹³⁹ What is allowed is scientific studies, which is by far the largest use of the continent to date.¹⁴⁰

Several countries, however, including Britain, France, Norway, Australia, New Zealand, Chile, and Argentina, have all staked land claims to various portions of the continent, directly violating the Antarctic Treaty.¹⁴¹

Like the situation in space, it is believed that Antarctica is rich in valuable natural resources that are highly coveted by many nations today.¹⁴² Currently, there is vast speculation about what is under the ice, but some experts believe

133. Matthew Teller, *Why Do So Many Nations Want a Piece of Antarctica*, BBC (Jun. 20, 2014), <https://www.bbc.com/news/magazine-27910375>.

134. *Id.*

135. *Id.*

136. *Id.* (“Science drives human investigation in Antarctica today, yet there’s a reason why geologists often take centre-stage. Governments really want to know what’s under the ice. Whisper the word: oil. Some predictions suggest the amount of oil in Antarctica could be 200 billion barrels, far more than Kuwait or Abu Dhabi. Antarctic oil is extremely difficult and, at the moment, prohibitively expensive to extract - but it’s impossible to predict what the global economy will look like in 2048, when the protocol banning Antarctic prospecting comes up for renewal. By that stage, an energy-hungry world could be desperate. The Antarctic Treaty has put all territorial claims into abeyance, but that hasn’t stopped rule-bending. The best way to get a toehold on what may lie beneath is to act as if you own the place.”).

137. *Id.*

138. *Id.*

139. *Id.*

140. *Id.*

141. *Id.*

142. *Id.*

that there could be as many as 200 billion barrels of oil there, which would make it one of the largest oil deposits on Earth, exceeding Kuwait and Abu Dhabi.¹⁴³ Unfortunately, these large oil deposits are currently off limits until 2048, when the Antarctic Treaty expires.¹⁴⁴

This is especially unfortunate given the way that many countries have largely disregarded the military prohibition on Antarctica, which is the main reason for the treaty's existence today.¹⁴⁵ Currently, in addition to the seven sovereignty claims outlined above, there are sixty-eight supposed research bases scattered throughout the continent.¹⁴⁶ The fear, however, is that these research bases are covertly being used as dual purpose scientific and military outposts.¹⁴⁷ The main threat is the potential for unusually effective surveillance programs due to the low radio interference and clear skies.¹⁴⁸

Additionally, Chile and Argentina are known to have military bases there and maintain a permanent army presence on the main land.¹⁴⁹ This has led many in the political community to question the effectiveness of the treaty.¹⁵⁰ Essentially, if the purpose of the treaty is being ignored, why is it still allowed to hinder business development, which would help the entire world by helping to solve the global energy crisis?

A final concern over property rights in Antarctica is the balance of power between global superpowers.¹⁵¹ Because the treaty was originally negotiated largely between Cold War superpowers, it has the potential to put rising powers at a disadvantage in geopolitics.¹⁵² Thus, like space, any proposed solution to the problem will have to be dealt with in a way that provides equitable relief to countries who are unable to access the potential of the region right away.¹⁵³

2. *Deep Sea Treaty (United Nations Convention on the Law of the Sea)*

The United Nations Convention on the Law of the Sea was established primarily to encourage exploration of the sea floor for oil production.¹⁵⁴ The system set up a simple scheme for licensing of rights to certain areas in international waters for oil exploration and extraction.¹⁵⁵

Interestingly, the treaty contains almost identical word choice to the Outer Space Treaty by holding that the seabed should be used for the common heritage

143. *Id.*

144. *Id.*

145. *Id.*

146. *Id.*

147. *Id.*

148. *Id.*

149. *Id.*

150. *Id.*

151. *Id.*

152. *Id.*

153. *Id.*

154. LOS Convention, *supra* note 113.

155. *Id.*

of mankind.¹⁵⁶ The treaty, like the Outer Space Treaty and the Antarctic Treaty, was proposed originally in the 1960s to mitigate the effects of the Cold War.¹⁵⁷

In the early 1960s, mining of the sea floor finally became viable, and there was great fear that the most powerful nations of the time would dominate and control how resources were acquired and used.¹⁵⁸ In response, the Deep Sea Treaty created the International Seabed Authority, which set up a comprehensive set of licensing requirements to ensure that the most economically and technologically savvy nations were not able to assert dominion and control over large swathes of the seafloor.¹⁵⁹

Unfortunately, there has been substantial debate over the meaning of the treaty.¹⁶⁰ Specifically, one of the main provisions was that all resources acquired from the sea are to be equitably distributed.¹⁶¹ Some say that this means fair in the sense that every nation is entitled to the profit.¹⁶² Other experts say that the profits should be assigned according to the labor put into extracting it.¹⁶³

The United Nations Convention on the Law of the Sea was supposed to have created an authority power that would be tasked with enforcing these rules.¹⁶⁴ The Authority never fully grew into its power, however, and as a result there has been little done by way of enforcement of some of the terms of the treaty.¹⁶⁵ For example, many signatories of the United Nations Convention on the Law of the Sea, including Brazil, China, India, Malaysia, North Korea, Pakistan, and many others, have made claims to portions of the deep sea in violation of the treaty.¹⁶⁶ Not only does this show a blatant disregard for the treaty, but it

156. Carol R. Buxton, *Property in Outer Space: The Common Heritage of Mankind Principle vs. the First in Time, First in Right, Rule of Property*, 69 J. AIR L. & COM. 689 (2004).

157. *Id.*

158. *Id.*

159. *Id.*

160. *Id.*

161. *Id.*

162. *Id.*

163. *Id.*

164. LOS Convention, *supra* note 113.

165. Doug Bandow, *The Law of the Sea Treaty: Inconsistent with American Interests*, CATO INST. (Apr. 8, 2004) <https://www.cato.org/publications/congressional-testimony/law-sea-treaty-inconsistent-american-interests> (“The LOST’s fundamental premise is that all unowned resources on the ocean’s floor belong to the people of the world, meaning the United Nations. The U.N. would assert its control through an International Seabed Authority, ruled by an Assembly, dominated by poorer nations, and a Council (originally on which the then-U.S.S.R. was granted three seats), which would regulate deep seabed mining and redistribute income from the industrialized West to developing countries. The Authority’s chief subsidiary would be the Enterprise, to mine the seabed, with the coerced assistance of Western mining concerns, on behalf of the Authority. Any extensive international regulatory system would likely inhibit development, depress productivity, increase costs, and discourage innovation, thereby wasting much of the benefit to be gained from mining the oceans. But the byzantine regime created by the LOST is almost unique in its perversity. Unfortunately, the amendments made in 1994, which I discuss below, do not change the essential character of the treaty. For instance, as originally written, the treaty was explicitly intended to restrict, not promote, mineral development. Among the treaty’s objectives were ‘rational management,’ ‘just and stable prices,’ ‘orderly and safe development,’ and ‘the protection of developing countries from the adverse effects’ of minerals production. The LOST explicitly limited mineral production, authorizing commodity agreements (rather like OPEC). Further, the treaty placed a moratorium on the mining of other resources, such as sulphides, until the Authority adopted rules and regulations — which could be never.”).

166. *Id.*

has also served as a deterrent for other countries from signing the treaty.¹⁶⁷ For example, the United States never signed the treaty, claiming that it is against its interests.¹⁶⁸ Perhaps if there was a way to ensure no country cheats on the agreement, countries such as the United States would feel more comfortable becoming a signatory of the treaty, and attempting to enforce it against other nations as well.

The lack of a backbone has seriously undermined the effectiveness of the treaty.¹⁶⁹ If nothing else, the treaty's unenforceability has led to the proliferation of more and more disobeying of the treaty.¹⁷⁰ This is the same risk we run with the Outer Space Treaty.

Because of this dispute, several countries, including the United States, refuse to sign the treaty, and have set up their own system of property rules for minerals extracted by themselves.¹⁷¹ This has rendered the treaty effectively obsolete from a compliance perspective.¹⁷² This is also a real fear of any proposed rules governing space. Whatever system is adapted for space, it must be ensured that the system is adequate from the perspective of all countries involved. A careful balance must be struck between properly incentivizing countries to invest in space technology, while also protecting the rights of countries who are currently not able to reach space due to technological limitations.

3. *Prior Proposed Solutions to Property Protections in Space*

Many scholars agree that the current state of property law is inadequate in promoting human dominion and expansion into space.¹⁷³ Over the last several decades, there have been many proposals to fix the current system of property law.¹⁷⁴ Many do not come close to addressing the problem, particularly in light of the current state of spacefaring technology and the immediate necessity of private property rights at a minimum.¹⁷⁵ Other proposals go too far, and envision a bold sci-fi future, which, while likely to happen at some point in the future, provides no way to bridge the gap and get us to that point.¹⁷⁶

One of the common proposals is to base a new property law system on the United States common law property system.¹⁷⁷ This solution has been offered to maintain the Outer Space Treaty.¹⁷⁸ As noted above, the Outer Space Treaty, the

167. *Id.*

168. *Id.*

169. *Id.*

170. *Id.*

171. Buxton, *supra* note 156, at 695–96.

172. *Id.*

173. Brandon C. Gruner, *A New Hope for International Space Law: Incorporating Nineteenth Century First Possession Principles into the 1967 Space Treaty for the Colonization of Outer Space in the Twenty-First Century*, 35 SETON HALL L. REV. 299, 353–54 (2004); Davin Widgerow, *Boldly Going Where No Realtor Has Gone Before: The Law of Outer Space and A Proposal for A New Interplanetary Property Law System*, 28 WIS. INT'L L.J. 490, 494 (2010).

174. See generally Gruner, *supra* note 173; Widgerow, *supra* note 173.

175. Widgerow, *supra* note 173, at 491–92.

176. Gruner, *supra* note 173, at 319.

177. Widgerow, *supra* note 173, at 510–16.

178. *Id.*

United Nations Convention on the Law of the Sea, and the Antarctic Treaty all require that mankind as a whole be owner of the land governed by the treaty.¹⁷⁹ Under current interpretations of this provision, the mankind provisions mean that no nation has the power to exclude others from the use of the land, and nobody may stake claims. Some authors have posited that, if read in a different way, this provision of the treaty can be maintained while also providing for the private ownership of land.¹⁸⁰ For example, “the world community, through the United Nations (“U.N.”) or another similar body, can function as the ‘grantor’ in every facet of cosmic real estate. As such, the grantor can convey land to private entities for the purposes of exploration and/or extraction of natural and cosmic resources.”¹⁸¹ Essentially, proponents of this system would establish a U.N. body that would be tasked with the licensing or temporary granting of limited rights to certain portions of planets, asteroids, etc.¹⁸² In property terms, this means the granting of fee simples determinable, or leases. Simultaneously, these authors state that, “[b]ecause the Outer Space Treaty seems to condemn private ownership of outer space, fees simple absolute would contradict the very essence of that treaty’s principles—and the common heritage doctrine—by vesting total ownership of celestial property in private entities.”¹⁸³

This proposal, however, still does not reach the heart of the issue: licenses to produce can be taken away and fee simples determinable can be terminated.¹⁸⁴ While this may be okay in the immediate future, companies seeking to monetize space will need more robust protections in order to ensure their investments will pay off.¹⁸⁵ Additionally, granting only short-term rights to land will shape the way in which the land is treated.¹⁸⁶ For example, if a mining company is granted a short-term lease, there is no incentive for them to take care of the land to ensure its future viability for others.¹⁸⁷ Short-term rights may lead to short-term thinking, resulting in misuse of the land in the hunt for short-term profit.¹⁸⁸ Granting longer-term rights, such as outright ownership, or fee simples absolute, will incentivize companies and nations to use their land carefully, with an eye on long-term use.¹⁸⁹

Short-term leases can also lead to the tragedy of the commons.¹⁹⁰ If many small plots of land are granted to companies to extract, there is no incentive for

179. *See supra* Section III.B.

180. *See generally* Widgerow, *supra* note 173.

181. *Id.* at 513.

182. *Id.*

183. *Id.*

184. *Id.*

185. Basulto, *supra* note 5; Zaleski, *supra* note 71.

186. Basulto, *supra* note 5; Zaleski, *supra* note 71.

187. Widgerow, *supra* note 173, at 513–14.

188. *Id.*

189. *See id.* at 511.

190. *See id.* at 518.

these companies to work together to ensure productive use of the land.¹⁹¹ Granting more robust rights may solve this problem, by encouraging nations and companies to protect the highly valuable resources in the land in which they control.¹⁹²

Finally, as mentioned above, this exact system has failed on Earth in the United Nations Convention on the Law of the Sea.¹⁹³ The International Seabed Authority was supposed to be tasked with issuing licenses to nations seeking to mine the seabed.¹⁹⁴ They were also supposed to be in charge of enforcement.¹⁹⁵ The problem with this system arose when nations, realizing that there were no actual repercussions to violating the treaty, began to simply ignore the treaty and mine anyway.¹⁹⁶ This in turn prompted other nations to do the same thing, making the treaty essentially worthless.¹⁹⁷ This has also been seen in the Antarctic Treaty, with the mass militarization contravening the supposed purpose of the treaty and little to no enforcement action taking place.¹⁹⁸ This proposal would not work. History has shown that such weakly enforced rules are not followed.¹⁹⁹

In order to promote rule following, it is necessary that nations are given the tools to implement their own laws. This would incentivize them to enforce them, just as they are enforced on Earth.

Some proposals, however, may go too far and exacerbate the problems and create massive potential for conflict.²⁰⁰ For example, some authors have proposed what essentially amounts to a first-come, first-served land grab system.²⁰¹ A system such as this lacks the tactical precision needed to ensure equitable distribution and prevent conflicts from breaking out.²⁰² Ironically, some proposals claim that this is the best way to ensure the “equal access for mankind” provision is maintained.²⁰³ Under such a proposal, sometimes called *res nullius humanitatus*, people from all countries would have the ability to enter space in order to reap the benefits of commercialization.²⁰⁴ The argument follows that “outer space will be claimed by all of humanity and become part of mankind’s extraterrestrial Manifest Destiny,” thereby keeping with the spirit of the Outer Space Treaty.²⁰⁵

191. Garrett Hardin, *Tragedy of the Commons*, THE LIBRARY of ECONOMICS and Liberty, <https://www.econlib.org/library/Enc/TragedyoftheCommons.html> (last visited May 23, 2020).

192. *Id.*

193. LOS Convention, *supra* note 113.

194. *See id.*

195. *See id.*

196. Bandow, *supra* note 165.

197. *Id.*

198. Teller, *supra* note 133.

199. *Id.*

200. Gruner, *supra* note 173 at 352.

201. *Id.* at 356–57.

202. *Id.* at 338–39.

203. *Id.* at 334.

204. *Id.* at 354.

205. *Id.*

Unfortunately, this misses the real spirit of the treaty entirely. The premise of this position is that the treaty's mankind provision is intended to guarantee equal access to space, not equal profits from its commercialization.²⁰⁶ Advocating for a land grab system, however, undermines this position by creating a situation in which a large portion of the Earth's population is unable to access space at all. Even though all humans will theoretically be entitled to "equal access to the rewards offered by outer space, rather than a de facto equal share in the rewards reaped from such exploration and exploitation simply because they are human," in practicality, countries that already have the capability to enter space will be able to squeeze out developing nations before they even have a chance to try.²⁰⁷ This has the potential to exacerbate problems already seen on Earth in terms of global inequality. Even when colonization was commonly utilized on Earth, it did not work in this way. Perhaps the best way to see this is through historical examples.

4. *Historical Context: The Pros and Cons of Colonization*

In the modern era, countries trend toward skepticism of any proposal to colonize.²⁰⁸ This partially results from the years of deep-seated distrust of colonial powers, the damage they did to the world, and the lingering effects of these systems throughout the world today.²⁰⁹ The main criticism, however, was the effect the system had on the local populations subject to imperial control.²¹⁰ The system disregarded any prior rights of indigenous populations.²¹¹ As Reinstein writes, however, the difference in space "is that there are no (known) occupants native to outer space. The colonialist 'right of grab' policy was morally objectionable because it ignored the property rights (and other rights) of those already

206. *Id.*

207. *Id.* at 354, 357.

208. See, e.g., Sahar Khan, *The Case Against "The Case for Colonialism"*, CATO INST. (Sept. 19, 2017), <https://www.cato.org/publications/commentary/case-against-case-colonialism> ("The Third World Quarterly (TWQ), a reputable academic journal in international studies, is currently under fire by academics including Ducks. In its latest issue, it published an article titled 'The Case for Colonialism' by Dr. Bruce Gilley of Portland State University. In this article, Gilley calls for a return of colonialism, citing the benefits of a 'colonial governance' agenda over the 'good governance' agenda, which would involve overtaking state bureaucracies, recolonizing some areas, and creating new colonies 'from scratch.' He argues that this new colonialism will be: 1) beneficial because it will be chosen by 'the colonized,' and hence, will be legitimate; 2) attractive to Western conservatives because they are financially low-risk, and to liberals, because they will be just; and 3) effective because they will be designed like charter cities, which have proven to be efficient and effective at governance. At first glance, the article seems like a bad joke. Can someone, a scholar no less, actually make a case for colonialism? And advocate for its return? Also, considering that the TWQ is jointly involved in creating an award named after Edward Said, the founder of postcolonial studies, it is especially surprising that the journal would publish a poor quality article on the subject of colonialism. The response has been swift. Though there are some apologists, social media has exploded with criticism against the author and the journal, even sparking a petition calling for the article's retraction. Within a day, the petition gathered over 1500 signatures, with more signing on.").

209. *See id.*

210. *See id.*

211. *See id.*

occupying the ‘discovered’ lands.”²¹² Thus, the abhorrent parts of colonization do not exist in space, as there are no native people who would be subjugated under such a system if it is implemented in space.²¹³ Obviously, this takes away a huge portion of the morally objectionable perspective of colonization.

There is at least one other purported inequality problem, however, with a potential colonial scheme. The other main concern of such a system is the protection of the rights of less economically advantaged nations who are incapable of active participation in the space race.²¹⁴ The issue being that they will likely become further disadvantaged as nobody will look after their interests.²¹⁵ As Reinstein writes, “developing nations fear that by the time they gain the wealth and technology necessary to become players in the space game, the most readily available resources will have already been claimed as private property and be under sovereign control of other nations.”²¹⁶ This is a real fear of a system that is not carefully crafted to ensure the rights of all nations are protected, and to keep with the spirit of the Outer Space Treaty.²¹⁷ Further, if the interests of developing nations are not carefully looked after, there is potential that problems of inequality here on Earth will be exacerbated.²¹⁸ This argument “gains salience when one considers that the reason the developing nations are not yet space-capable may well be attributable to past wrongs the developed nations inflicted on them. The perpetuation of past wrongs thus makes the right of grab doubly objectionable in the eyes of developing nations.”²¹⁹ Thus, simply creating a free-for-all where land claims may be made is not feasible if the goal is to foster peace and minimize conflict while providing for equal access to all.

Further, to say that increasing space activities would enable these countries access to space over-simplifies the problem. Some authors claim that low-tech, developing nations may benefit from the opening of space to sovereign land claims.²²⁰ For example, Reinstein states that as property rights begin to accelerate ownership, the rights will “boost the incentive to exploit outer space’s resources, [and] more developers will jump at the chance. And the more people jumping at the chance and flying up into space to glean the space-borne profits, the cheaper and safer it will become to carry out such space projects.”²²¹ The argument follows that as space becomes a more profitable industry, technology will increase, costs will decrease, and it will be easier for all other nations to enter the industry.²²² This “all ships rise with the tide” mentality ignores the sim-

212. Ezra J. Reinstein, *Owning Outer Space*, 20 NW. J. INT’L L. & BUS. 59, 79 (1999).

213. *Id.*

214. *See generally* Kosmo, *supra* note 22.

215. Reinstein, *supra* note 212, at 79.

216. *Id.*

217. *Id.*

218. *Id.*

219. *Id.*

220. *Id.* at 66.

221. *Id.* at 97.

222. *Id.*

ple fact that, as stated above, in the time it takes for space travel to become feasible for developing nations, developed nations with a more developed space industry will already have the upper hand against all late bloomers. Thus, the argument that, “the prime beneficiaries of more accessible space travel will be those nations—the developing, low-tech nations—who are currently not space-capable,” is misleading, as it does not adequately provide protections in the interim quasi wild-west period of any proposed land grab system.²²³

Even though it may be true that developing nations will benefit from developed nations entering space, it still could be years before this becomes a reality. In the meantime, the countries that are allegedly making it easier for developing nations to reach space would be rapidly claiming land of their own, further increasing their standing on the world stage in unprecedented ways.

Thus, as stated above, any system that promotes a purely land-grab system ignores a major point of tension that could lead to future conflict.²²⁴ Any proposed system will have to grapple with the inherent fairness in order to promote long-term stability, which is necessary in order to avoid the exact problems we have right now, as well as promote the stated goal of the Outer Space Treaty.

Once again, history can be used in order to see how land was divided in the past.²²⁵ For example, post-World War II, Africa was divided up at the Berlin Conference.²²⁶ As stated above, the abhorrent aspects of colonization are not present in space, and thus only the aspects of the land itself are applicable to the space race.²²⁷ Perhaps the biggest takeaway from the Berlin Conference as it pertains to space colonization is who could participate.²²⁸ “Fourteen western nations attended the three-month session. Conspicuous by their absence were those who had the most at stake—the Africans. But there was little hypocrisy: no one pretended the lines were drawn for any interests other than those of the countries at the table.”²²⁹ With nobody there to protect their interests, African nations had no say in where the lines were drawn.²³⁰ They were then subjugated to rule by European powers for decades to come. The fallout from this system is still seen today, as the problem was made worse when the Europeans abruptly left, leaving these nations to fend for themselves with no resources or infrastructure, as they had already extracted them all for their own benefit.²³¹

A very similar situation occurred after World War I.²³² After the fall of the Ottoman Empire, the Middle East was divided up by Russia, the British, and the

223. *Id.*

224. *See generally* Reinstein, *supra* note 212; Kosmo, *supra* note 22.

225. Glenn Frankel, *How Europeans Sliced Up Africa*, WASH. POST (Jan. 6, 1985), https://www.washingtonpost.com/archive/opinions/1985/01/06/how-europeans-sliced-up-africa/e11265e9-6cd3-461d-a9ea-f764455829fa/?noredirect=on&utm_term=.a757eaa11992.

226. *Id.*

227. *See id.*

228. *Id.*

229. *Id.*

230. *Id.*

231. *Id.*

232. *Britain and France Conclude Sykes-Picot Agreement*, HIST. (Oct. 28, 2009) <https://www.history.com/this-day-in-history/britain-and-france-conclude-sykes-picot-agreement> [hereinafter *Sykes-Picot*]

French.²³³ The Sykes-Picot Agreement, as it is commonly referred to, “authored another secret agreement regarding the future spoils of the Great War. Picot represented a small group determined to secure control of Syria for France; for his part, Sykes raised British demands to balance out influence in the region.”²³⁴ Once again, the rights of Arab nations already inhabiting these lands were neglected, as the boundaries were drawn exclusively for the benefit of the developed nations seeking to control the abundant resources there.²³⁵ Like the situation that played out in Africa, these people were also subjugated under the treaty and had no ability to sway the outcome of the treaty as it was proposed.²³⁶ “The agreement largely neglected to allow for the future growth of Arab nationalism, which at that same moment the British government and military were working to use to their advantage against the Turks.”²³⁷

The failings of colonization in the Middle East and Africa are easily avoidable. Obviously, there are no prior inhabitants in space, so there is no chance that any group will be subjugated. The biggest fear is that countries that are currently unable to enter space (largely developing nations) will be left behind. Part IV will show how a colonialist system could work in space and ensure fairness for all nations on Earth, keeping in mind the goal of the Outer Space Treaty’s mandate of securing space for the use of mankind.

IV. RECOMMENDATION

As technology continues its slow but steady progression, it is becoming increasingly apparent that space commercialization is imminent.²³⁸ Colonization is the natural next step and society needs to think about how such a system would look. Ultimately, the solution to these problems will take a long time to realize, as negotiations between countries will need to take place to ensure fairness and prevent more advanced nations from creating a de facto monopoly over resource exploitation in space. Multilateral discussions, however, must begin now in order to stymie the current trajectory towards a land grab that is beginning already.

A. The Dangers of the Current Trend Towards the Militarization of Space

In the short-term, the international community is moving ahead with plans for the private commercialization of space, despite the prohibitions in the Outer

(“More than a year after the agreement with Russia, British and French representatives, Sir Mark Sykes and Francois Georges Picot, authored another secret agreement regarding the future spoils of the Great War. Picot represented a small group determined to secure control of Syria for France; for his part, Sykes raised British demands to balance out influence in the region. The agreement largely neglected to allow for the future growth of Arab nationalism, which at that same moment the British government and military were working to use to their advantage against the Turks.”).

233. *Id.*

234. *Id.*

235. *Id.*

236. *Id.*

237. *Id.*

238. Pagano, *supra* note 8.

Space Treaty. The allure of such a system is that the first nations to “win the space race” will be able to exclude all other nations.²³⁹ Therefore, in the interim, it is important that a short-term solution is passed that adequately protects interests that are currently in need of protection.²⁴⁰

Preferably, a system of purely private property protections will be implemented that allows companies to begin commercialization now, which will in turn help spur investment and development of space technology.²⁴¹ This system would allow companies to feel secure in their ability to realize a profit on their investments while also preventing international disagreements over territorial claims.²⁴²

Ideally, such a system would be designed with caps on resource extraction which would ensure that no land grabbing takes place. It could also include a ban on physical ownership of land on celestial bodies in favor of robust property rights simply for extraction purposes. The threat of not doing this is the increasing potential for countries to merely ignore the Outer Space Treaty and begin their own plans for extraction of resources. With a lack of enforcement power and no real repercussions, this has already happened in Antarctica under the Antarctic Treaty and in the deep sea under the United Nations Convention on the Law of the Sea.²⁴³ It is also beginning in space, as nations like Luxemburg and the United States have passed laws with the ultimate goal of providing for varying forms of commercialization of space.²⁴⁴ As this trend continues, the potential for conflict will rise because space will become a veritable free-for-all, with no authority having ultimate oversight and no way to resolve disputes.²⁴⁵ Luckily, we are still at a point where we can lead to predictability and stability before geopolitics get too complicated. By adopting a permissive attitude towards commercialization of space at the international level, the goal will be to disincentivize countries from skirting around international agreements and encourage use of the formalized system.

239. Reinstein, *supra* note 212, at 87.

240. Stephen DiMaria, Note, *Starships and Enterprise: Private Spaceflight Companies' Property Rights and the U.S. Commercial Space Launch Competitiveness Act*, 90 ST. JOHN'S L. REV. 415, 424–25 (“The United States and other spacefaring States opposed the agreement’s use of the *res communis* ‘common heritage of mankind’ principle, especially after that same principle caused UNCLOS to fail. Opponents of the Moon Agreement assert that the meaning of ‘common heritage of mankind’ is fixed in international law and dictates equitable resource sharing under the direction of an international organization, as was proposed in UNCLOS. Supporters counter that the language of Article 11(1) expressly limits the usage of common heritage doctrine to the provisions of the agreement itself. Further, the agreement likely does not bar private entities from harvesting and retaining space resources because that interpretation would contradict the ‘free exploration and use’ of the Outer Space Treaty”).

241. *Id.* at 438–40.

242. *Id.*

243. LOS Convention, *supra* note 113; Outer Space Treaty, *supra* note 4; Antarctic Treaty, *supra* note 113; Buxton, *supra* note 156, at 693–98.

244. Commercial Space Launch Amendments Act, 51 U.S.C. § 50901 (2018); Zaleski, *supra* note 71.

245. Basulto, *supra* note 5.

As stated above, this is where the Seabed Authority failed.²⁴⁶ It never had the proper ability to grant the licenses needed in order to foster compliance.²⁴⁷ Specifically, in the time it took for the Authority to be set up, too much time elapsed and countries urgently needed to begin to mine the seabed for resources.²⁴⁸ If too much time elapses, countries will continue to encourage domestic entry into space, and it will be too late to go back to fix any problems or disagreements resulting in the entry into space.²⁴⁹ At least under a governing body, a set of rules will be established for oversight, even if the rules are extremely permissive.²⁵⁰

Another potential benefit of an interim system of property rights governed by a governing body is that the accelerated rate of technology development that is likely to follow increased space travel will likely drive costs down. This in turn will support Reinstein's theory of space entry benefiting developing nations.²⁵¹ Once again, this theory only holds if those same developing nation's rights are protected, which is why the governing body is necessary to ensure fairness and oversee that the proposed rules are followed.

In the absence of clearly defined rules governing conduct in space, there is great potential for conflict as each country seeks to take as much as they can in the way that best suits them.²⁵² It is for this reason that the law must be strengthened to foster mutual understanding, a set of rules to follow, and a scheme of punishment for breaking them.²⁵³

B. One Small Step for Man, One Giant Leap for Mankind?: Colonization of Space as a Means to Incentivize Commercialization while Reducing Potential Conflict

The time to act is now. In the long-term, private property rights will not be sufficient to promote the effective use and exploitation of resources while also reducing the likelihood of conflict without some form of international oversight and cooperation.²⁵⁴

Sovereign control over land will also promote its use in an efficient, productive way. For example, mass over-production of resources is much more likely in weak property schemes in which rights are seen as a free-for-all and everybody is trying to maximize their earnings potential in a sea of competitors.²⁵⁵ By dividing up land amongst nations, sovereign nations will be incentiv-

246. Bandow, *supra* note 165.

247. *Id.*

248. *See id.*

249. Dvorsky, *supra* note 42.

250. *See id.*

251. Reinstein, *supra* note 212, at 64.

252. Basulto, *supra* note 5.

253. Kosmo, *supra* note 22, at 1056.

254. DiMaria, *supra* note 240, at 416.

255. Irma S. Russell, *A Common Tragedy: The Breach of Promises to Benefit the Public Commons and the Enforceability Problem*, 11 TEX. WESLEYAN L. REV. 557, 565-66 (2005) ("The failure of the common law to

ized to protect scarce resources and manage exploitation in a way that is systematic and unlikely to be abusive.²⁵⁶ This would solve the tragedy of the commons, a problem that permeates systems with weak property rights.²⁵⁷ Under the tragedy of the commons, high numbers of small property owners all competing against each other to generate profit all produce to the maximum extent possible in an effort to maximize their own profits.²⁵⁸ Ultimately, in the absence of network coordination, this results in highly inefficient uses of resources and overproduction, resulting in harm for all parties involved.²⁵⁹ It also tends to result in irreparable harm to the land being used to generate the resources, as the incentive to quickly realize a profit before other competitors outweighs the incentive to protect the limited resources.²⁶⁰ Thus, while limited property rights are necessary to promote short-term growth, stronger protections will be needed in order to incentivize the productive use of land and resources. Colonization (in terms of land ownership) will solve this problem by forcing sovereign nations to internalize the costs of any development proposed.

It will also allow for nations to align their property law systems with their interests on Earth rather than imposing a “one size fits all” rule on all countries.²⁶¹ Simply stated, if one uniform set of property laws is imposed on all nations seeking to colonize space, there will be no account for the nuanced needs of all parties. As a result, the potential for countries to skirt the rules of the treaty will once again increase as they seek to address their own pressing needs. Thus, in order to promote compliance with the rules, it is best to allow each nation to set up their own rules to govern the land that they control, in order to foster compliance and above-the-table deal making.

A system like this would also ensure civility and, so long as it’s done correctly, would limit conflict over land.²⁶² The main critique of this proposal is that disputes could arise over land claims. As stated in Part III, a major way to prevent this problem from occurring in the first place is to design a system at the time of negotiation to ensure the fair representation of all people, so that nobody is excluded, and nobody’s rights are ignored.²⁶³ While the design of this system is outside the scope of this Note, historical examples of the divvying up of Africa and the Middle East can serve as examples of what not to do, and guide discus-

enforce promises to benefit the public interest may flow from the same type of problem identified by Hardin in *The Tragedy of the Commons*.”).

256. *See id.* at 564.

257. *See id.*

258. *Id.* at 562.

259. *Id.* at 563.

260. *Id.*

261. *Id.*

262. Gruner, *supra* note 173, at 353 (“[I]t would interpret the Treaty’s ‘province of all mankind’ phrase broadly and implement its interpretation in the territory it can control. These interpretations should be accepted readily by the international community as consistent with sovereignty, given that the discovering nation can implement whatever laws it desires for territory it can control.”).

263. *See supra* Part III.

sion toward a system where all nations have a seat at the table and have an opportunity to obtain land, even if they may not have the ability to access it at the time the negotiations occur.²⁶⁴

Finally, a major benefit of a system like this is that it would provide a uniform way to deal with disputes. If space commercialization were to begin under the current scheme, there is very little in the way of dispute resolution. This is the same issue as that of the United Nations Convention on the Law of the Sea.²⁶⁵ In that treaty, the International Seabed Authority's Seabed Disputes Chamber was created and tasked with resolving disputes.²⁶⁶

These issues, however, are difficult to monitor in the first place. Even if an issue is brought to the attention of the Authority, the Authority has little ability to do anything to stop it. Thus, in the face of such blatant disregard of the rules, it may be best to simply adopt a set of rules that place the task of legal enforcement in a more local form of government, such as national governments of the sovereign nations to which they belong.

If this were to occur, countries would have a much greater incentive to enforce the rule of law that they set up in their own lands. A formal structure for dispute resolution can be set up much in the same way that it is done on Earth. Just as it happens on Earth, disputes in space are likely to arise. Therefore, it is best to have a predetermined way to deal with them, which cannot be ascertained if it is unclear who owns the land and what the rules are that govern it. Thus, a robust system of colonization will establish the rule of law, both domestically, and internationally, and put in place formalized structures of dispute resolution to lay the groundwork for how those disputes should be resolved when they enter the international arena.

Obviously, this solution will take a long time to implement. Negotiations would likely be hotly contested as many states have high stakes in ensuring they have a piece of the proverbial pie.²⁶⁷ Many questions would need to be raised. Who gets a seat at the negotiating table? What do we do about nations with no spacefaring capability at the time of the negotiations? How do we ensure equal access to sovereign territory? These questions are outside the scope of this Note. While they seem far off, however, it is inevitable that they will need to be answered someday, and society would be served well to begin thinking about them now.²⁶⁸

Stronger property mechanisms such as this proposed solution are the foundation of a system in which humans not only colonize space in a business sense, but also in the sense that humans will one day be able to live there. Perhaps counterintuitively, one of the major hinderances to this science fiction future is the property system. Therefore, in order to experience the future envisioned in popular media such as books and movies, the system must be radically changed.

264. Frankel, *supra* note 225; Sykes-Picot, *supra* note 232.

265. LOS Convention, *supra* note 113.

266. *Id.*

267. Gruner, *supra* note 173, at 332.

268. See generally Pressman, *supra* note 56.

In summary, a colonizing approach to opening space to commercialization is likely the best way to solve the varied, nuanced issues that come with large, revolutionary steps in the course of human civilization. In order to meet the dual goals of continuing to promote human exploration and exploitation of space, while simultaneously ensuring fairness and access for all, it is necessary that a formalized, international agreement allowing for private ownership of space to be passed. If such an approach is not adopted soon, there is a risk that nations will begin to disregard the Outer Space Treaty anyway, as seen in the Antarctic Treaty and the United Nations Convention on the Law of the Sea.²⁶⁹ Once this begins, it will become increasingly difficult to regulate, and the risk of conflict will skyrocket. In the long term, colonization is inevitable, and is likely the best solution to internalize costs associated with the development of space. Careful consideration of the rights of all people will simultaneously allow for human progress and keep with the goal of the Outer Space Treaty of maintaining space for all of mankind.

V. CONCLUSION

In order to keep up with the ever-increasing demand of technology, the property law system in space must be drastically altered. Under the current legal landscape, corporations and other investors are left with few protections and guarantees that their investments will be fruitful and yield a return on investment.²⁷⁰

While the prospect of humans living on other planets remains just out of reach, colonization in terms of sovereign ownership of land is within reach and is likely necessary in the long term to prevent land grabs and disputes. In the interim, it is necessary that we begin negotiations now to ensure companies have some sort of incentive to continue to research spacefaring technology while also providing for predictability in the international context.²⁷¹

Colonization will be necessary in the long term in order to minimize future disputes. While this may seem counterintuitive, it is the lack of formal legal structures that lead to property disputes, not sovereign land claims.²⁷² Sovereign land ownership, established in a formal procedure where all parties are fairly represented, will result in uniform expectations for those seeking to enter space, just as we have on Earth. It will also allow for more local governance among nations to be able to further their own interests. More localized sovereign control could help to solve over-production problems by providing greater incentives for nations to protect scarce resources.²⁷³

To colonize planets in this way will take time. If it is not done right, it could exacerbate the problems we see in other places on Earth with similar problems.

269. LOS Convention, *supra* note 113; Outer Space Treaty, *supra* note 4; Antarctic Treaty, *supra* note 113.

270. Basulto, *supra* note 5.

271. See Zaleski, *supra* note 71.

272. See DiMaria, *supra* note 240, at 416.

273. See Russell, *supra* note 255, at 564.

For example, violating the Outer Space Treaty and haphazardly beginning to extract resources without the say of other nations has the potential to lead to massive geopolitical problems. As stated above, this is already occurring.²⁷⁴ A new property law scheme is necessary to prevent a new space race; one that could be even more costly than the last one, which can result in further, more prolonged conflict.

A more robust system of property law also accomplishes the goal of enforcement. As seen in the Antarctic Treaty and the United Nations Convention on the Law of the Sea, there is a lack of enforcement that has resulted in widespread abuse of the rules.²⁷⁵ As countries begin to announce support for domestic entry into the space industry, this will become a real fear. It is best to nip this in the bud before it becomes too unruly a task, and the geopolitics become too complex.

It is for this reason that the best course of action to maximize efficiency and potential in the short term, while fostering cooperation and understanding in the long term, is to begin discussion on colonization now. In the short term, it is in the best interest of society at-large to eliminate the total ban on extraction of resources from the Outer Space Treaty and create a formalized process of land claiming. This would incentivize pre-existing companies to continue the development of important technology for spacefaring companies, while also fostering the growth and creation of new companies, that would now see space-related activities as a feasible and profitable enterprise.²⁷⁶

In turn, this period of significantly faster growth would accelerate the need for a more permanent form of governance in space. The best solution for long-term stability is colonization, at least in the sense of dividing up land for commercial exploitation. This would allow for maximum protection for companies and uniform expectations while also allowing an organized system for settling land disputes that will inevitably arise with an increased human presence in such a profitable sector of the economy.

Human entry into space is already occurring, and further growth is inevitable. It is for this reason that colonization of space is necessary to achieve the goals of economic expansion, human development, peace, and equality.

274. See, e.g., Basulto, *supra* note 5; Zaleski, *supra* note 71.

275. See generally LOS Convention, *supra* note 113; Antarctic Treaty, *supra* note 113.

276. See, e.g., Basulto, *supra* note 5; Zaleski, *supra* note 71.