

Star Trek, Star Wars, or Battlestar Galactica—the Occurring Privatization of Space Exploration, and the Need for “Global” Regulations

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I. INTRODUCTION

Richard Branson rocketed his billion-dollar self to the tip of space in an effort to showcase that privatized space travel is here, the technology is ready, and that for a very high price, individuals can travel where so few have traveled before.¹ Forget splurging on a trip to exotic white sand beaches and instead, soak in the ocean views from a bird’s eye prospective in space. One may have to sell a kidney to afford personal space travel, but this novel luxury is undoubtedly worth it.²

The impending movement toward privatized space travel begs the question—must society begin to globally regulate this new form of exploration?³ Unlike car travel, the “vastness” of space can be difficult to define,⁴ and no mega-corporation truly welcomes the idea of governmental interference.⁵ International governments saw similar issues with air travel.⁶ However, air travel is now globally regulated, to an extent, as private air companies are able to traverse between most countries using governmentally-directed Open-Skies-Agreements.⁷ The time is upon the international community to discuss the possibility of regulating space travel to ensure

1. Joey Roulette, *The Space Tourism Industry is Stuck in its Billionaire Phase*, THE VERGE (July 17, 2021, 8:00 AM), <https://www.theverge.com/2021/7/17/22573791/space-tourism-industry-bezos-branson-musk-billionaire-phase> [https://perma.cc/Z25Q-SLN4].

2. *Id.*

3. Lawrence L. Risley, *An Examination of the Need to Amend Space Law to Protect the Private Explorer in Outer Space*, 26 W. STATE UNIV. L. REV. 47, 47–70 (1999).

4. *Id.* at 50.

5. See Miriam Hechler Baer, *Governing Corporate Compliance*, 50 BOSTON COLL. L. REV. 949, 949–51 (2009).

6. *Air Service Agreements*, U.S. DEP’T OF TRANSP. (Sept. 1, 2017), <https://www.transportation.gov/policy/aviation-policy/international-relations/air-service-agreements> [https://perma.cc/8FQ5-7U76].

7. *Id.*

safer journeys and uniform standards.⁸ Alternatively, nations might leave regulations to their respective governments, much like current government-funded space travel.⁹ This is a course that is, perhaps naively, optimistic that individual countries' regulations could properly encompass privatized space travel, possibly relying on financial risks being absorbed by those willing to pay for the privilege of private space travel.¹⁰

The world is witnessing a quickly innovating global movement toward privatized space travel.¹¹ Casual space “hobbyist” billionaires are accessing space as a new form of luxury holiday.¹² The risk is high when placing individuals into orbit as, to put it briefly, “[o]uter space is cold, hot, and dangerous.”¹³ Space is a volatile environment with little room for error.¹⁴ The margin of error is so slim, that one slip of an air seal and the vacuum of space will literally take one’s breath away (by rupturing their lungs).¹⁵ Existing ratified treaties concerning space travel were created with the goal of regulating global governmentally-controlled space exploration.¹⁶ Take, for example, the United States:

Though treaties obligate the United States government to provide a certain level of supervision in space, the bulk of domestic US space regulation does not apply to actual human conduct in space. Rather, it takes the form of licensing launches and returns occurring within earth’s atmosphere.¹⁷

The international community must revisit existing global governance concerning space exploration while considering that the “final frontier” is

8. Christina Isnardi, *Problems with Enforcing International Space Law on Private Actors*, 58 COLUM. J. TRANSNAT’L L. 489, 489–530 (2020).

9. *Id.* at 515.

10. *Id.*

11. Christian Davenport, *As Private Companies Erode Government’s Hold on Space Travel, NASA Looks to Open a New Frontier*, THE WASH. POST (Feb. 25, 2021), <https://www.washingtonpost.com/technology/2021/02/25/nasa-space-future-private/> [https://perma.cc/3H89-SUDN].

12. *Id.*

13. Benjamin Perlman, *Grounding U.S. Commercial Space Regulation in the Constitution*, 100 Geo. L.J. 929, 930 (2012) (discussing the commercialization of human activity in space).

14. *Id.*

15. Mark Springel, *The Human Body in Space: Distinguishing Fact from Fiction*, SCIENCE IN THE NEWS, HARV. UNIV. BLOG (July 30, 2013), <https://sitn.hms.harvard.edu/flash/2013/space-human-body/> [https://perma.cc/8SCE-C9LZ].

16. *See* Isnardi, *supra* note 8.

17. Perlman, *supra* note 13, at 930.

now a new market ripe for commercialization.¹⁸ Regulations are needed now to protect global interests in space and safety as existing U.S. space law is inadequate in dealing with human commercial space activity.¹⁹ Using current air traffic Open-Skies-Agreements as a model, the U.S. and partner countries, can begin to develop a system that safely preserves the current rate of innovation in private space travel.²⁰

II. BACKGROUND

A. Historical Conflicts Lead to International Intervention

Initial space exploration innovation was fostered in the shadow of the “Space Race.”²¹ The international relations between Soviet Russia and the U.S. were fraught with tension due to the “arms race and the growing threat of nuclear weapons, wide-ranging espionage and counter-espionage between the two countries.”²² The tone was capitalism against communism and both players hoped to prove the superiority of their respective countries by being the “first:”²³ the first to enter space, the first to land on the moon, and the first to potentially employ space as the next platform for military arms protection.²⁴ Arising from this tension, space travel and exploration grew.²⁵ Accordingly, the international community saw a swift need for diplomacy and international cooperation before the growing threat of a nuclear war became a tangible reality.²⁶

B. Existing International Treaties and Agreements

Commercializing space is not new territory, but commercializing for the sake of hobbyist casual traveling is novel.²⁷ Scott Hubbard from the Department of Aeronautics and Astronautics at Stanford University stated

18. See Isnardi, *supra* note 8, at 529–30.

19. Brianna Rauenzahn et al., *Regulating Commercial Space Activity*, THE REGULATORY REVIEW (June 6, 2020), <https://www.theregreview.org/2020/06/06/saturday-seminar-regulating-commercial-space-activity/> [<https://perma.cc/X268-FX34>].

20. See *Air Service Agreements*, *supra* note 6.

21. *The Space Race*, HISTORY (Feb. 21, 2020), <https://www.history.com/topics/cold-war/space-race> [<https://perma.cc/Q9WU-TWCK>].

22. *Id.*

23. *Id.*

24. *Id.*

25. *Id.*

26. Debbora Battaglia, *Arresting Hospitality: The Case of the “Handshake in Space,”* 18 J. ROYAL ANTHROPOLOGICAL INST. S76, S76 (2012).

27. David Reeve, *Space Travel: The Final Frontier in Luxury Family Vacations*, FAMILY DESTINATIONS GUIDE (Oct. 21, 2021), <https://familydestinationsguide.com/space-travel-family-vacations/> [<https://perma.cc/CF54-E2MD>].

that “[f]irst, people should understand that about 75 percent of the worldwide space enterprise is already commercial . . . [w]hat’s new is the extension of that into the human realm.”²⁸

International investment in the pursuit of space travel to advance national interests took off in the 1900’s.²⁹ The 1960’s created an environment of international competition that spurred quick innovation in space travel to the point of generating conflict.³⁰ “The ‘Space Race’ was a superpower struggle for strategic advantage and national prestige,” as it was ripe with Cold War overtones from the Soviet Union and the United States battling to be the first to send a man to the moon.³¹ This rapid innovation grew outward to other international governments.³² Global superpowers saw a necessity in establishing guidelines for space exploration, especially considering the overall tone of international antagonism.³³ The United Nations General Assembly created the Committee on the Peaceful Uses of Outer Space (“COPUOS”) . . . [whose “chief aim . . . was—and still is— ‘to study legal problems arising from the exploration of outer space’ and devise U.N. programs in the outer-space field.”³⁴ The United Nations Office for Outer Space Affairs was organized in 1966 to act as COPUOS’s secretariat (“UNOOSA”).³⁵

28. Doris Elin Urrutia, *How Will Private Space Travel Transform NASA’s Next 60 Years*, SPACE.COM (Oct. 12, 2018), <https://www.space.com/42113-nasa-future-private-spaceflight.html> [<https://perma.cc/23PB-GR7E>].

29. Andrew Chatzky, Anshu Siripurapu & Steven J. Markovich, *Space Exploration and U.S. Competitiveness*, COUNCIL ON FOREIGN RELATIONS (Sept. 23, 2021, 11:15 AM), <https://www.cfr.org/backgrounder/space-exploration-and-us-competitiveness> [<https://perma.cc/F9FG-KSLE>].

30. James C. Moltz, *The Changing Dynamics of Twenty-First-Century Space Power*, 12 J. OF STRATEGIC SEC. 15, 18–19 (2019), <https://www.jstor.org/stable/10.2307/26623076> [<https://perma.cc/E8FV-ZAQT>].

31. See Risley, *supra* note 3, at 52; see also Rita G. Koman, *Man on the Moon: The U.S. Space Program as a Cold War Maneuver*, 8 RETHINKING THE COLD WAR 42, 42–50 (1994).

32. See Dale L. Hayden, *The International Development of Space and Its Impact on U.S. National Space Policy*, 11–19 (Airpower Rsch. Inst., Rsch. Paper No. 2004-01, 2004), <https://apps.dtic.mil/sti/pdfs/ADA422203.pdf> [<https://perma.cc/6RJ5-5KLL>].

33. Michelle L.G. Hanlon & Greg Autry, *Space Law Hasn’t Been Changed Since 1967 – But the UN Aims to Update Laws and Keep Space Peaceful*, THE CONVERSATION (Nov. 23, 2021), <https://theconversation.com/space-law-hasnt-been-changed-since-1967-but-the-un-aims-to-update-laws-and-keep-space-peaceful-171351> [<https://perma.cc/3ALA-HWD8>].

34. Perlman, *supra* note 13, at 931.

35. G.A. Res. 2222 (XXI), at 13 (Dec. 19, 1966) [hereinafter *Outer Space Treaty*], https://www.unoosa.org/pdf/gares/ARES_21_2222E.pdf [<https://perma.cc/FVD6-H2FJ>].

UNOOSA brought forth the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, deftly known as the “Outer Space Treaty.”³⁶ In 1967 the treaty was signed by the U.S., U.K., and the Russian Federation.³⁷ The treaty calls for:

Reaffirming the importance of international cooperation in the field of activities in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, and the importance of developing the rule of law in this new area of human endeavor. . . Requests the Committee on the Peaceful Uses of Outer space: (a) To continue its work on the elaboration of an agreement on liability for damages caused . . . and an agreement on assistance to and return of astronauts . . . (b) To begin at the same time the study of questions relative to the definition of outer space.³⁸

The treaty is three pages in length and is skillfully drafted to address traditional government-funded astronaut explorations with little mention of private activities.³⁹ A potential allusion to private actor space travel could be parsed out where the treaty states, “[p]arties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities.”⁴⁰ There is no additional mention of the responsibility of private actors in space.⁴¹

In one year’s time, the Committee recognized a need for an agreement that provided for “all possible assistance to astronauts in the event of accident, distress or emergency landing,” as well as “the prompt and safe return of astronauts, and . . . of objects launched into outer space” given that foreseeable space exploration was to be carried out by astronauts in shuttles.⁴² The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (“the Astronaut Agreement”) narrowly focuses on the safe return of astronauts that, “owing to accident, distress, emergency or unintended landing,” find themselves in another territory.⁴³ If such an emergency occurs, the Member State the foreign astronauts find themselves in “shall, if necessary, extend assistance in search and rescue operation for such personnel to assure their

36. *Id.* at 13.

37. *Id.*

38. *Id.*

39. *See id.*

40. *Id.* art. VI.

41. *Id.* at 13.

42. G.A. Res. 2345 (XXII), annex (Dec. 16, 1967) [hereinafter Astronaut Agreement].

43. *Id.* art. 2.

speedy rescue.”⁴⁴ The international community saw a need here for cooperative intervention to better serve the greater global community and space travel.⁴⁵

Shortly thereafter, the Convention on International Liability for Damage Caused by Space Objects (“the Liability Convention”) was affirmed and stated:

A launching State shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the earth or to aircraft flight. In the event of damage being caused elsewhere than on the surface of the earth to a space object of one launching State or to persons or property on board such a space object by a space object of another launching State, the latter shall be liable only if the damage is due to its fault or the fault of persons for whom it is responsible.⁴⁶

A “Launching State” is defined as, “[a] State which launches or procures the launching of a space object” and “[a] State from whose territory or facility a space object is launched.”⁴⁷ Logic follows that, in a privatized situation, once the location of the launch is determined, the Launching State (if the State is a Member State to the Liability Convention) will then have the duty of determining the liable parties and the process for establishing repercussions for damages.⁴⁸ Accordingly, the onus would be on individual nations to determine their own liability processes for privatized space travel.⁴⁹

Additionally, in the Convention on Registration of Objects Launched into Outer Space (“the Registration Convention”) the COPUOS General Assembly requested that Member States’ space programs “provide information on their launched space objects to the Secretary-General for inclusion in the UN Register of Objects Launched into Outer Space.”⁵⁰ The Registration Convention harkens back to the obligations of the Space Treaty and the Liability Convention which ask “that a central register of objects launched into outer space be established . . . [to] assist in their identification and . . . contribute to the application and development of international law governing

44. *Id.* art. 3.

45. *See* Astronaut Agreement, *supra* note 42.

46. G.A. Res. 2777 (XXVI), at 2–3 (Nov. 29, 1971) [hereinafter Liability Convention].

47. *Id.* art. 1.

48. *See* Liability Convention, *supra* note 46.

49. *Id.*

50. G.A. Res. 3235 (XXIX), at 2, 4 (Nov. 12, 1974) [hereinafter Registration Convention].

the exploration and use of outer space.”⁵¹ The definition given for the term Launching State follows that of the Liability Convention and again, the Member State is asked to police happenings within their territories regarding privatized space programs.⁵²

Twenty years later, in 1979, the subject of global space exploration was broached by the Committee Agreement Governing the Activities of States on the Moon and Other Celestial Bodies in the “Moon Agreement.”⁵³ This ratified treaty elaborates on the Outer Space Treaty to the extent that it, “reaffirm[s] the importance of international co-operation in the field of the exploration and peaceful uses of outer space, including the moon and other celestial bodies,” and “promot[es] on the basis of equality the further development of co-operation among States in the exploration and use of the moon and other celestial bodies.”⁵⁴ The focus of the treaty was to ensure that space and its contents are not used to further hostilities amongst nations.⁵⁵ However, the agreement has not gained much international traction as it was never ratified by the nations most active in space such as the United States, China, and Russia, and has been called on to be updated or discarded.⁵⁶

This is not a new call-to-action. Some have recommended that “[t]he parties should amend the five agreements . . . with the close of the Cold War and the demise of the Soviet Union, [as] interests in space have changed and the law should change with those interests.”⁵⁷ Further, the past few years have established that the modern era is witnessing a new “space race” with tensions between other global superpowers (of the non-governmental variety):⁵⁸ Jeff Bezos and Elon Musk’s space fight spans from patent litigation to twitter skirmishes.⁵⁹ Whilst their conglomerates battle to streamline privatized space travel, another billionaire is claiming to already be there.⁶⁰ The aforementioned Richard Branson propelled himself to the

51. *Id.* at annex; *see* Outer Space Treaty, *supra* note 35; Liability Convention, *supra* note 46.

52. *See* Registration Convention, *supra* note 50, at 33; Liability Convention, *supra* note 46, at 8.

53. G.A. Res. 34/68, (Dec. 5, 1979) [hereinafter Moon Agreement].

54. *Id.*

55. *Id.*

56. *What is the Moon Treaty and is it still useful*, FILLING SPACE (Jan. 17, 2020), <https://filling-space.com/2020/01/17/what-is-the-moon-treaty-and-is-it-still-useful/#:~:text=Many%20consider%20the%20Moon%20Agreement,China%2C%20Japan%2C%20and%20Germany> [https://perma.cc/4QYV-K3NX].

57. *See* Risley, *supra* note 3, at 52.

58. *See* Roelette, *supra* note 1.

59. Skyler Caruso, *A Timeline of Jeff Bezos and Elon Musk’s Feud*, PEOPLE (Sept. 7, 2022, 4:43 PM), <https://people.com/human-interest/elon-musk-and-jeff-bezos-feud-timeline/> [https://perma.cc/WXS8-QK2D].

60. Roelette, *supra* note 1.

outer reaches of our atmosphere, succeeding in being the first billionaire in space.⁶¹ Such private space travels are only regulated by outdated treaties, which essentially state.⁶² The current treaty arrangement blindly hopes that Member States will establish their own respective systems of checks and balances for privatized regulations and divisions of potential liability.⁶³ With ongoing private launches into our atmosphere, perhaps society must consider the potential ramifications of allowing wealth-driven corporation such freedom.⁶⁴

The introduction of new treaties, international agreements, or both, may be a relatively efficient method of enacting space travel regulations. Like Member States, US-based corporations must also bend to the will of federally enacted treaties and agreements. Accordingly, organizing such discussions is to the betterment of fast-paced international cooperation.

III. THE GOAL VS. THE REALITY: GLOBAL REGULATION OF PRIVATIZED SPACE TRAVEL

A. Privatized Space Travel is Here: Existing Privatized Space Projects Globally

Private space travel has already infiltrated social media advertisements.⁶⁵ Hannah Palmer's Instagram post provides a blatant example: "Click the link in my story to join me on this journey and reserve your seat today. Use code HannahP for 20% off your ticket."⁶⁶ Rocket ship emoji aside, if one was not already convinced that privatized space travel is a reality, social media influencers are readily available proof—currently hocking discount codes for space tickets.⁶⁷ This section will explore major, domestic,

61. *Id.*

62. *See* Outer Space Treaty, *supra* note 35, at 10; Moon Agreement, *supra* note 53.

63. *See* Outer Space Treaty, *supra* note 35, at 10; Moon Agreement, *supra* note 53; Registration Convention, *supra* note 50, at 32; Liability Convention, *supra* note 46, at 19.

64. *See* Nicholas Reimann, *Leaving a Planet In Crisis: Here's Why Many Say The Billionaire Space Race Is A Terrible Idea*, FORBES (July 12, 2021, 2:16 PM), <https://www.forbes.com/sites/nicholasreimann/2021/07/12/leaving-a-planet-in-crisis-heres-why-many-say-the-billionaire-space-race-is-a-terrible-idea/?sh=3a61dc8877c9> [<https://perma.cc/HNP9-86NW>].

65. Hannah Palmer (@hannah_cpalmer), INSTAGRAM (Oct. 5, 2021), http://instagram.com/hannah_cpalmer [<https://perma.cc/K66U-YKGE>].

66. *Id.*

67. *Id.*

private space-based corporations, their ambitious CEOs and programs, and projects in the foreign arena.⁶⁸

B. Domestic Programs

1. SpaceX and Elon Musk

For better or worse, CEOs have the resources to use corporations as vehicles for the aspirations.⁶⁹ Take for example an official statement from SpaceX:

You want to wake up in the morning and think the future is going to be great—and that’s what being a spacefaring civilization is all about. It’s about believing in the future and thinking that the future will be better than the past. And I can’t think of anything more exciting than going out there and being among the stars.⁷⁰

Elon Musk’s glossy SpaceX website also touts language such as “Dragon completes world’s first all-civilian mission to orbit,”⁷¹ “Dragon” here referring to SpaceX’s highly publicized rocket.⁷² Musk has expressed in interviews his deep passion and dream of exploring space.⁷³ His drive and desire to pursue the final frontier are not under fire.⁷⁴ But this is the same man who threw a baseball at a Cybertruck to prove it was bullet proof, shattering a window in the attempt.⁷⁵ CEOs are infallible, nor is their behavior a microcosm of our global society at large.⁷⁶

Private projects often reflect the goals and desires of their investors, and these motives must be kept in the forefront when balancing the costs of enacting more encompassing space travel legislation.⁷⁷ Musk’s projects

68. See Roelette, *supra* note 1.

69. See *id.*

70. Elon Musk, *Mission*, SPACEX, <https://www.spacex.com/mission/> [<https://perma.cc/5L2G-YFUY>].

71. *Dragon*, SPACEX, <https://www.spacex.com/mission/> [<https://perma.cc/D8X3-SFLT>].

72. *Id.*

73. Margaret Davis, *Elon Musk’s Inspiration for His Love of Space: Increasing the Scope, Scale of Human Civilization Beyond Earth*, THE SCIENCE TIMES (Sept. 27, 2021), <https://www.sciencetimes.com/articles/33657/20210927/elon-musks-inspiration-love-space-increasing-scope-scale-human-civilization.htm> [<https://perma.cc/CVL7-5DDN>].

74. *Id.*

75. Phil Helsel, *Elon Musk Unveils Tesla’s Cybertruck, a ‘Bulletproof’ Electric Pickup—But it Doesn’t Go Quite as Planned*, NBC NEWS (Nov. 22, 2019), <https://www.nbcnews.com/tech/tech-news/musk-unveils-bulletproof-electric-tesla-truck-shows-strength-window-cracks-n1089421> [<https://perma.cc/CR2R-FWDD>].

76. See *Entitled at The Top: Are Leaders More Selfish Than The Rest of Us?*, ASS’N. FOR PSYCH. SCI. (July 27, 2016), <https://www.psychologicalscience.org/news/minds-business/entitled-at-the-top-are-leaders-more-selfish-than-the-rest-of-us.html> [<https://perma.cc/XF2S-8HQG>].

77. See *id.*

have seen great financial success including corporate rocket launches and contracts with NASA.⁷⁸ However, his eccentric behavior and questionable tweets have called into question his fitness as CEO of his various corporations.⁷⁹ Musk, a man at the helm of sending people into orbit has tweeted, “[a]liens built the pyramids obv,” and “[n]uke Mars!”⁸⁰ If a person’s ability to lead is concerning, should not his decision-making regarding his space projects be subject to inquisition?

Musk is currently launching the next generation of his Starlink satellite network.⁸¹ “Starlink seeks to offer satellite-based broadband coverage across the planet . . . [s]o far, SpaceX has shipped over 100,000 satellite receivers to consumers.”⁸² NASA entered into a Safety Agreement concerning this project:

SpaceX has agreed its Starlink satellites will autonomously or manually maneuver to ensure the missions of NASA science satellites and other assets can operate uninterrupted from a collision avoidance perspective. Unless otherwise informed by SpaceX, NASA has agreed to not maneuver its assets in the event of a potential conjunction to ensure the parties do not inadvertently maneuver into one another. NASA and the Department of Defense have decades of experience in proactively managing collision risks, as well as potential impacts. Effective mitigation relies on inter-operator coordination, accurate data, a sound technical basis for risk analysis, as well as proactive processes for appropriate actions to mitigate risks. By working together through this agreement, the approach to collision avoidance can be improved for all users.⁸³

78. Kenneth Chang, *SpaceX Wins NASA \$2.9 Billion Contract to Builder Moon Lander*, THE N.Y. TIMES (Apr. 16, 2021), <https://www.nytimes.com/2021/04/16/science/spacex-moon-nasa.html#:~:text=Elon%20Musk's%20company%20bested%20Jeff,astronauts%20to%20the%20lunar%20surface.&text=Elon%20Musk's%20private%20space,day%20take%20people%20to%20Mars> [https://perma.cc/PJ62-G7XA].

79. Mark Matousek and Avery Hartmans *Elon Musk Tweeted That The Egyptian Pyramids were Built by Aliens. Here are 39 of The Most Outrageous Things He's Said Over The Years*, INSIDER (Aug. 5, 2020), <https://www.businessinsider.com/elon-musk-shocking-quotes-tweets-2018-10> [https://perma.cc/6C32-22HK].

80. *Id.*

81. Ray Crist, *Starlink Explained: Everything to Know About Elon Musk's Satellite Internet Venture*, CNET (Mar. 3, 2022), <https://www.cnet.com/home/internet/starlink-satellite-internet-explained/> [https://perma.cc/DC3L-XZSW].

82. Eric Mack, *SpaceX to Try Again Saturday to Launch Starlink Satellites After a Long Break*, CNET (Nov. 12, 2021), <https://www.cnet.com/science/spacex-to-try-again-saturday-to-launch-starlink-satellites-after-a-long-break/> [https://perma.cc/H6XY-FQEP].

83. Press Release, NASA, *SpaceX Sign Joint Spaceflight Safety Agreement*, NASA (Mar. 18, 2021), <https://www.nasa.gov/press-release/nasa-spacex-sign-joint-spaceflight-safety-agreement> [https://perma.cc/C3DY-JSVT].

Such an agreement is a singular case, but it displays that regulations or case-by-case agreements can be achieved with corporate buy-in and approval.⁸⁴ NASA has shown that entity cooperation is necessary to protect the interests of society and can be achieved if advantages are felt by either party.⁸⁵

Regulations can successfully rein in the concerning baser natures of wealthy.⁸⁶ Without such standards, there is no failsafe for protection from the wealthy giants and their whims.⁸⁷ Accordingly, until regulations and standards are made legally enforceable, Musk will continue to display on his site, “SpaceX also offers commercial flights to both Earth and Lunar orbit. To start planning your journey, please contact us at sales@spacex.com.”⁸⁸ As long as there are regulatory safeguards in place, we need not worry about the man’s personal decision-making as he fires off tweets about nuking planets in direct contradiction with existing treaties.⁸⁹

2. *Blue Origin and Jeff Bezos*

Jeff Bezos became a household name from the creation of the revolutionary e-commerce hub Amazon.⁹⁰ From the wealth and spoils of Amazon he created Blue Origin, and to his chagrin, he is often thought of as a contemporary and rival to Musk.⁹¹ The two have been embroiled in their own cold war of sorts, chronically centered around their goals of privatizing space travel.⁹² Musk has SpaceX, so Bezos needed to have Blue Origin — or at least that is the public’s perception.⁹³ Only furthering the similarities between the two CEOs, Bezos is no stranger to controversy as Amazon owes much of its own success and market power to its internal domination over underpaid, overworked employees.⁹⁴ Amazon has indicated

84. *Id.*

85. *Id.*

86. *See Entitled at The Top: Are Leaders More Selfish Than The Rest of Us?*, *supra* note 76.

87. *Id.*

88. *See* SPACEX, <https://www.spacex.com/human-spaceflight/> [<https://perma.cc/763J-TPX2>].

89. *See* Matousek & Hartmans, *supra* note 79; Outer Space Treaty, *supra* note 35; Moon Agreement, *supra* note 53.

90. Adam Minter, *Musk Soars While Bezos Sues In the New Space Race*, BLOOMBERG (Sept. 18, 2021), <https://www.bloomberg.com/opinion/articles/2021-09-18/in-the-new-space-race-elon-musk-soars-while-jeff-bezos-sues> [<https://perma.cc/5WKE-UNCX>].

91. *Id.*

92. *Id.*

93. *Id.*

94. Mitchell Clark, *Amazon’s Newest Euphemism for Overworked Employees is ‘Industrial Athlete,’* THE VERGE (June 2, 2021), <https://www.theverge.com/2021/6/2/22465357/>

a movement toward fair labor practices, but these efforts are lacking as they tell employees to change their mindset to that of “industrial athletes.”⁹⁵ Bezos’s history has established that he is willing to sacrifice the “lower” peon for the interest of better big business.⁹⁶

A study of Bezos’s actions is necessary to determine if his motivations and goals have the ability to supersede public safety during Blue Origin’s private space launches. The CEO has established that science, or the furtherance of mankind’s explorative objectives, is not truly his main pursuit as Bezos has been under additional media scrutiny for his attempts to undermine SpaceX patents and government contracts.⁹⁷ Blue Origin plugs its belief:

Blue Origin was founded by Jeff Bezos with the vision of enabling a future where millions of people are living and working in space for the benefit of Earth. In order to preserve Earth, Blue Origin believes that humanity will need to expand, explore, find new energy and material resources, and move industries that stress Earth into space. Blue is working on this today by developing partially and fully reusable launch vehicles that are safe, low cost and serve the needs of all civil, commercial and defense customers.

These goals will be pursued as long as they suit the needs of Bezos.⁹⁸ Blue Origin quickly spun the narrative and perception around their space program as the company hurtled William Shatner from Star Trek fame into the real stars.⁹⁹ The rhetoric around launching the original Sci-Fi star into orbit, a far-off place that Shatner’s role as Captain Kirk helped to make romantic and enticing, had both dissenters and supporters.¹⁰⁰ The launch was greatly dissected as any harm potentially done to Shatner would not have gone quietly into that sweet night.¹⁰¹ As far as safety is concerned, the event went off without a hitch, and Bezos successfully brought a beloved Star Trek legend full-circle—a reality his public relations team is

amazon-industrial-athlete-warehouse-worker-wellness-pamphlet [<https://perma.cc/2MGD-RJSS>].

95. *Id.*

96. *See id.*

97. *See* Minter, *supra* note 90.

98. *See* BLUE ORIGIN, <https://www.blueorigin.com/about-blue/> [<https://perma.cc/6D6A-RFBT>].

99. John Herman, *Bezos Reaches for The Stars*, THE N.Y. TIMES (Oct. 11, 2021), <https://www.nytimes.com/2021/10/07/style/shatner-bezos-blue-origin.html> [<https://perma.cc/SLV6-P8TL>].

100. *Id.*

101. *Id.*

greatly aware of.¹⁰² “I hope I never recover from this. I hope that I can maintain what I feel now . . . I don’t want to lose it,” stated Shatner after landing back on Earth.¹⁰³ However, this vanity project was swiftly criticized by global figures:

We need some of the world’s greatest brains and minds fixed on trying to repair this planet, not trying to find the next place to go and live. [We need to] be focusing on this [planet] rather than giving up and heading out into space to try and think of solutions for the future.¹⁰⁴

Privatized space travel may not be the priority as the world battles with the repercussions of the climate crisis.¹⁰⁵

Society needs to recognize the selfish histories and choices these billionaires have made to understand that leaving privatized space travel to their own devices is not the wisest course of action.¹⁰⁶ Should Bezos’s megalomaniac attitude be of concern where individual safety is at stake? Perhaps the savvy businessman will consider the safety of his consumers to be of paramount importance as they are the ones making him wealthy. But this hasn’t seemed to be the case with prior endeavors, as the backbone of Amazon’s success is their legion of employees unable to take bathroom breaks.¹⁰⁷ If the financial bottom line is Bezos’s only priority, individuals are wise to worry about the implications for the safety of the passengers on his space voyages.

3. *Virgin Galactic and Richard Branson*

Ironically, the first billionaire to enter space was neither Musk nor Bezos.¹⁰⁸ Virgin Galactic, founded by Richard Branson, hopes to, “fill[]

102. *Id.*

103. William Harwood, *William Shatner After Launching to Space: I Hope I Never Recover from This*, CBS NEWS (Oct. 13, 2021), <https://www.cbsnews.com/news/william-shatner-blue-origin-space-mission-comments/> [<https://perma.cc/ME3X-6HUU>].

104. George Bowden, *Prince William: Saving Earth Should Come Before Space Tourism*, BBC NEWS (Oct. 14, 2021), <https://www.bbc.com/news/uk-58903078#:~:text=Speaking%20about%20the%20current%20space,place%20to%20go%20and%20live> [<https://perma.cc/G7AL-YTQF>].

105. *Id.*

106. *Id.*

107. See Mitchel Clark, *Amazon’s Newest Euphemism for Overworked Employees is ‘Industrial Athlete’*, THE VERGE (June 2, 2021, 1:53 PM), <https://www.theverge.com/2021/6/2/22465357/amazon-industrial-athlete-warehouse-worker-wellness-pamphlet> [<https://perma.cc/U2MX-ZP4B>].

108. Morgan Brennan, *Richard Branson Becomes First Billionaire to Fly to Space on Own Craft*, CNBC (July 12, 2021, 9:08 AM), [https://www.cnbc.com/video/2021/07/12/richard-branson-becomes-first-billionaire-to-fly-to-space-on-own-craft.html#:~:text=\(%2D1.32%25\)-,Richard%20Branson%20becomes%20first%20billionaire%20to%20fly%20to%20space%20on,in%20a%20record%20test%20flight](https://www.cnbc.com/video/2021/07/12/richard-branson-becomes-first-billionaire-to-fly-to-space-on-own-craft.html#:~:text=(%2D1.32%25)-,Richard%20Branson%20becomes%20first%20billionaire%20to%20fly%20to%20space%20on,in%20a%20record%20test%20flight) [<https://perma.cc/L6LC-JZEA>].

the world with astronauts.”¹⁰⁹ Their revolutionary flight bellows loudly to society that if Virgin Galactic space travel is safe for Richard Branson, it is safe for anyone.¹¹⁰ Virgin Galactic’s space travel experience is fully operational and takes customers to the very edge of the atmosphere.¹¹¹ The corporation also boasts the “world’s first purpose-built commercial spaceport” —Spaceport America.¹¹²

This tip-of-space experience recently came under fire from the Federal Aviation Administration (“FAA”).¹¹³ The FAA grounded all Virgin Galactic flights after Branson’s flight deviated from its flight path.¹¹⁴ The corporation has since been cleared to continue their spaceflights.¹¹⁵ Here, the FAA could and did intercede as careful airspace regulation is crucial to protect other air-borne vehicles and traffic.¹¹⁶ Though that’s generally the limit of their abilities to regulate Virgin Galactic’s or any other corporation’s privatized space travel endeavors, as the FAA cannot ensure that the corporation’s development and engineering adheres to any particular safety procedures.¹¹⁷

109. Spencer Cook, *Virgin Galactic*, <https://www.spencernyecook.com/#/new-page-1/>, [https://perma.cc/G29L-AALM].

110. See Tania Steere, *Virgin Galactic Successfully Completes First Fully Crewed Spaceflight*, VIRGIN GALACTIC (July 11, 2021), <https://www.virgin.com/about-virgin/latest/virgin-galactic-successfully-completes-first-fully-crewed-spaceflight> [https://perma.cc/BU6R-WQXT].

111. Elizabeth Howell, *Virgin Galactic: Richard Branson’s Space Tourism Company*, SPACE (July 8, 2021), <https://www.space.com/18993-virgin-galactic.html> [https://perma.cc/CEK5-KZTX].

112. Spaceport America, *New Mexico’s Spaceport America Hosts Sir Richard Branson’s Spaceflight*, SPACEPORT AMERICA (July 20, 2021), <https://www.spaceportamerica.com/new-mexicos-spaceport-america-hosts-sir-richard-bransons-spaceflight/#:~:text=New%20Mexico%27s%20Spaceport%20America%20hosts%20Sir%20Richard%20Branson%27s%20spaceflight,-Featured%20News%2C%20Press&text=July%2011%2C%202021%20Sierra%20County,Sir%20Richard%20Branson%20on%20board> [https://perma.cc/XA3L-NGRZ].

113. Michael Sheetz, *FAA Clears Virgin Galactic After Completing Investigation of Branson’s Spaceflight, Stock Jumps 10%*, CNBC (Sept. 29, 2021, 5:45 PM), <https://www.cnbc.com/2021/09/29/faa-clears-virgin-galactic-for-flight-after-mishap-investigation.html> [https://perma.cc/28D3-D7TS].

114. *Id.*

115. *Id.*

116. Michael Sheetz, *FAA Grounds Virgin Galactic’s Spacecraft During Investigation of Branson’s Flight Issues*, CNBC (Sept. 2, 2021, 6:45 PM), <https://www.cnbc.com/2021/09/02/faa-ground-virgin-galactic-spacecraft-branson-launch-investigation.html> [https://perma.cc/5VW6-66UN].

117. *Id.*

Despite this run-in with the FAA, Virgin Galactic lived to see another day of commercialized space travel.¹¹⁸ As of late, the company has reported little to no earnings growth as the majority of their revenue is expected to generate from ticket sales.¹¹⁹ If they are relying on ticket sales to make their money, one would imagine that the provided service would need to be an acceptable experience by the standards of their consumers. Safety issues would certainly put a damper on consumer buy-in. Regardless, Virgin Galactic has sold 100 tickets for space tourism launches since August 2021.¹²⁰ A further 700 people wait in a pool to purchase the tickets at 450,000 dollars a seat.¹²¹ Current and prospective ticket purchasers hope to embark on life altering journeys, however, their safety and future is held in the hands of Virgin's Galactic's safety standards.¹²² Until further regulations are enacted, ticket holders will fly to space by the seat of their pants, and should disaster occur, the potential for injury and destruction is catastrophic.

The US portfolio of intrepid CEOs leaves much in the way of safety and precautions, they focus rather on the glory and triumph of entering the market of space tourism first. The US must regulate domestically with specified laws and agencies to protect consumer interests. From here, follows a need to engage in international corporation to maintain safety standards across the globe as society travels further from it.

C. Foreign Programs

1. Russia

The Russian space program is not yet at the same level of innovation as domestic privatized initiatives. In Russia, "private companies are designing microsatellites, light rockets and even Moon habitats."¹²³ Active private

118. *Id.*

119. Joel Baglole, *Virgin Galactic (And Its Stock) Likely Not Taking Off Anytime Soon*, NASDAQ (Feb. 2, 2022), <https://www.nasdaq.com/articles/virgin-galactic-and-its-stock-likely-not-taking-off-anytime-soon> [<https://perma.cc/HAN4-9WV4>].

120. Mike Wall, *Virgin Galactic Sells 100 New Tickets for Space Tourist Launches*, SPACE.COM (Nov. 10, 2021), <https://www.space.com/virgin-galactic-sells-100-space-tourist-tickets> [<https://perma.cc/B8VS-VXPQ>].

121. *Id.*

122. *Id.*

123. Alexander Ilyin, *Russian Business: A Long Road to The Stars for Private Space Initiative*, ROOM: SPACE JOURNAL OF ASGARDIA (2015), https://room.eu.com/article/Russian_business_a_long_road_to_the_stars_for_private_space_initiative [<https://perma.cc/3FLX-HKWA>].

projects in Russia include a movie that will be the first filmed in orbit,¹²⁴ and current estimates are anticipating that Russian private space tourism will experience a boom by 2025.¹²⁵ Accordingly, privatized space travel is not far from the minds of Russian developers and corporations. Lin Industrial (a small Russia-based corporation) has expressed that, unlike SpaceX's interest in Mars, they are focused primarily on travel to the moon and have, "designed a first-stage Moonbase with space for two crew members, and a second-stage Moonbase with space for four."¹²⁶ Further, Russian company CosmoCourse, "plans to use \$40.4 million from private investments to send people on commercial flights."¹²⁷

CosmoCourse received a license from the Russian equivalent of NASA, ("Roscosmos"), to engage in space tourism.¹²⁸ Russia has a broad level of regulatory involvement over privatized space travel commercial enterprises, and their national space laws are better defined than those of the US.¹²⁹

Space activity shall be carried out in conformity with the following principles: the equal right of the organizations and citizens of Russian Federation to participate in space activity; access to information about space activity; use of the results of space activity in the interests of customers with due regard to the rights of organizations and citizens participating in space activity; introduction of the achievements of space science and technology into national economy; restriction of monopolistic activity and the development of entrepreneurial activity; independence of expertise on issues of space activity; provision of safety in space activity, including protection of the environment; promotion of international cooperation in the field of space activity; international responsibility of the state for space activity performed under its jurisdiction.¹³⁰

124. Joey Roulette, *Russian Actress and Director to Start Making First Movie on Space Station*, THE NEW YORK TIMES (Oct. 26, 2021), <https://www.nytimes.com/2021/10/05/science/russia-space-launch.html> [<https://perma.cc/9SUF-XN4W>].

125. Ksenia Zubacheva, *5 Russian Space Companies That Could One Day Compete with SpaceX*, RUSSIA BEYOND (Apr. 25, 2019), <https://www.rbth.com/business/330284-space-companies> [<https://perma.cc/96UR-DT4D>].

126. See Ilyin, *supra* note 123.

127. See Zubacheva, *supra* note 125.

128. *Id.*

129. *Selected Examples of National Laws Governing Space Activities: Russian Federation*, UNITED NATIONS OFF. FOR OUTER SPACE AFFAIRS, https://www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/russian_federation/decreed_5663-1_E.html [<https://perma.cc/D9QN-L5KJ>].

130. *Id.*

Russian laws specify that entrepreneurial activities can be developed, and space activity must conform to their national safety provisions that follow in Article 22.¹³¹

Any space activity shall be carried out with the observance of the safety requirements laid down by the legislation of Russian Federation. Overall guidance of the work to ensure the safety of space activity shall be laid down upon the Russian Space Agency and the Ministry of Defence of Russian Federation . . . The bodies of state power and administration of Russian Federation and of subjects of Russian Federation, as well as organizations and citizens shall be obliged to take all necessary measures to ensure safety of space activity.¹³²

While Russian laws allow for an extended hand of regulations, foreign actors with interacting corporations may not need to conform to these standards. Such regulations should be disseminated to other foreign states to promote safety standards. Additionally, internal Russian standards of “safety” are not clear.¹³³ Space regulations must have specified standards pertaining to safety that are widely adopted by nations with privatized space programs.

For now, many Russian corporations are essentially small contractors engaged in agreements to create satellites or probes for Roscosmos.¹³⁴ As the industry is still emerging, there is ample time to engage in agreements between the US and Russia over standardized practices for privatized space travel. International governments must move now before private travel evolves to a point where the monster is untamable.

2. China

In the past, China faced a problem of not having large enough corporations to compete with the likes of Musk and Bezos.¹³⁵ Additionally, within the boundaries of China, these same corporations could not compete with, “China’s state-led space efforts.”¹³⁶ Recently, space-based startups have emerged to hopefully curb the competitive tide with an estimation, “that the space industry could be worth up to \$2.7 trillion by 2030.”¹³⁷ Further,

131. *Id.*

132. *Id.*

133. *Id.*

134. *See* Zubacheva, *supra* note 125.

135. Xinmei Shen, *To Compete With Elon Musk’s Starlink, China’s Private Space Ventures Must Work With Their State-Owned Competitors*, SOUTH CHINA MORNING POST (July 4, 2021), <https://www.scmp.com/tech/tech-trends/article/3139643/compete-elon-musks-starlink-chinas-private-space-ventures-must> [<https://perma.cc/C243-QSC3>].

136. *Id.*

137. Neel Patel, *China’s Surging Private Space Industry is Out to Challenge the US*, MIT TECH. REV. (Jan. 21, 2021), <https://www.technologyreview.com/2021/01/21/1016513/china-private-commercial-space-industry-dominance/> [<https://perma.cc/7TGC-2R5L>].

following the United States' lead, China is entering into government and corporate contracts.¹³⁸ Alternatively, private investor funding is bridging the gap with \$516,000,000 provided to private space corporations in 2018.¹³⁹ China also has a leg up as they are, “the manufacturing center of the world.”¹⁴⁰ This manufacturing dominance could swiftly bring their private space travel efforts up to a level to match the US.¹⁴¹ Unfortunately not much is known on Chinese space law:

[W]e have determined that China is a leading, but the only space state that does not have a special space law. These activities are governed by the international norms-principles, international treaties and by-laws of the government . . . We've noted that the signing of a Memorandum of Understanding on Space Cooperation with Luxembourg will have a positive impact on the exploration and utilization of mineral resources from the Moon and asteroids by Chinese space companies . . . The problems of Chinese national space law is the central one, because China is a leading space power, but does not have its own national space law.¹⁴²

Whether the lack of available space be from it simply not existing or from national protective practices, currently foreign actors are not aware of Chinese footing and potential space tourists have no protective standards.¹⁴³

Russia and China provide two examples of polar ends of space law regulations. Russia has more protections and enforcements than the US, while China has little, if any existing space law in general. US domestic law must advance to the level of that of Russia, but greater still, international governments must combine forces and agencies to enact more advanced treaties addressing modern concerns and safety standards.

D. Where the Current “Final Frontier” Treaties and Regulations Are Lacking

International existing treaties and regulations were created when space travel was in its infancy. NASA existed for a mere sixty-three years as established by the National Aeronautics and Space Act of 1958:

138. *Id.*

139. *Id.*

140. *Id.*

141. *See id.*

142. Olga Yeshchuk & Anna Vasina, *Chinese Space Law: Problems and Areas of Reforming*, 3 *ADVANCED SPACE LAW* 140 (2019), http://asljournal.org/journals/2019-3/ASL_vol_3_YeshchukVasina.pdf [<https://perma.cc/5DVN-6QVW>].

143. *Id.*

The Congress hereby declares that it is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all mankind. (b) The Congress declares that the general welfare and security of the United States require that adequate provision be made for aeronautical and space activities. The Congress further declares that such activities shall be the responsibility of, and shall be directed by, a civilian agency exercising control over aeronautical and space activities sponsored by the United States . . . (c) The aeronautical and space activities of the United States shall be conducted so as to contribute materially to one or more of the following objectives: (1) The expansion of human knowledge of phenomena in the atmosphere and space; (2) The improvement of the usefulness, performance, speed, safety, and efficiency of aeronautical and space vehicles . . .¹⁴⁴

The act has two mentions of safety, the first above, and the second dictating that safety shall be determined by NASA Administration.¹⁴⁵ Other than this text, the establishing act fails to specify safety standards or regulations on privatized space travel.¹⁴⁶

Following the creation of NASA, the varying Apollo missions changed history: children saw men walk on the moon for the very first time.¹⁴⁷ This is old news now as the novelty of moon landings has worn through time, and space travel has rapidly innovated in the decades since.¹⁴⁸ Past legislation was better equipped for the science-based projects of the past (and future, the US continues to explore to broaden its knowledge of the universe), however, with the introduction of space tourism, the US and the international community encounters new concerns.¹⁴⁹

The current ratified treaties and agreements provide a framework of protection centered around international relations.¹⁵⁰ With these international agreements, governments agreed to cooperate regarding the usage of space for scientific and peaceful advancement as opposed to warfare.¹⁵¹ Therefore, the moon and celestial bodies, such as Mars, are protected from being used as leverage in international conflicts.¹⁵² These terms were incredibly important

144. National Aeronautics and Space Act of 1958, PUB. L. NO. 85-568, § 102, 72 Stat. 426 (1958).

145. *Id.*

146. *Id.*

147. *July 20, 1969: One Giant Leap for Mankind*, NASA (July 20, 2019), https://www.nasa.gov/mission_pages/apollo/apollo11.html [<https://perma.cc/8Z74-Q54U>].

148. *Id.*

149. See generally Lawrence L. Risley, *An Examination of the Need to Amend Space Law to Protect the Private Explorer in Outer Space*, W. STATE U. L. REV. 47 (1999).

150. See Outer Space Treaty, *supra* note 35; see also Moon Agreement, *supra* note 53; see also Registration Convention, *supra* note 50; see also Liability Convention, *supra* note 46.

151. *Space Law Treaties and Principles*, UNITED NATIONS OFF. FOR OUTER SPACE AFFAIRS (last visited Aug. 22, 2022), <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html> [<https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html>].

152. *Id.*

during the Cold War when tensions were high and the global community felt the threat of nuclear war was a real possibility.¹⁵³ The agreements call for individual state accountability for the actions of their governmental and non-governmental activities in space, most likely continuing on the theme of softening international tensions.¹⁵⁴

Existing regulations speak little, if at all, on standardizing privatized space travel in other Member States.¹⁵⁵ Aside from the agreements and treaties' boundaries, there is no call for global cooperation regarding privatized space travel and safety standards for consumers of space tourism, and accordingly, the protections end there.¹⁵⁶

NASA exists for the preservation of US domestic interests in space exploration, but their regulatory reach does not extend to private undertakings.¹⁵⁷ The FAA has a hand in privatized space travel as it, "regulates private spacecraft and payload launches, reentries, and operations of launch sites," but this power is very limited as the FAA, "does not apply to orbital or in-space operations: anything done in outer space following completion of a launch and before reentry into Earth's atmosphere is not covered."¹⁵⁸ Domestic law has a palpable gap in regulations, uncovered by expansive regulation pertaining to safety and commercial activities.

Additionally, NASA-and-FAA-like regulations may not exist to the same standard in other nations as the international community leaves those protections to their individual governments.¹⁵⁹ Individuals have access to the regulations of some international actors, however, those laws capable of being examined are not always robust.¹⁶⁰ This system worked when space travel had minimal cross-interference in foreign policy. But, in modern times, "[d]ecentralized regulation . . . has created uncertainty about the exact rights and responsibilities of private space entrepreneurs."¹⁶¹ The global

153. *Id.*

154. *Id.*

155. *Id.*

156. *Space Law Treaties and Principles*, UNITED NATIONS OFF. FOR OUTER SPACE AFFAIRS (last visited Aug. 22, 2022), <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html> [<https://perma.cc/82AJ-K4RL>].

157. *Id.* at 14.

158. Thomas J. Herron, *Deep Spacing Thinking: What Elon Musk's Idea to Nuke Mars Teaches Us About Regulating the "Visionaries and Daredevils" of Outer Space*, 41 COLUM. J. ENVTL. L. 553, 589 (2016).

159. See Risley, *supra* note 3, at 59.

160. See Herron, *supra* note 158, at 608.

161. *Id.* at 589.

community must monitor safety and operating standards of US space-based corporations to adhere to respective promises in the Outer Space Treaty.¹⁶² The emerging commercial space travel market brings with it the possibility that corporations will encroach on existing delicate relationships with international powers. To further preserve foreign policy and consumer protections, multinational agreements must be created for uniform standards regarding boundaries of travel, safety measures, and action-plans for potential catastrophe.

E. Modeling Space Travel Regulations After Global Air Traffic Regulations

Most markets benefit from a basic level of standardization as the convenience and efficiency standardization provides ensures the market is effectively used by the consumer.¹⁶³ Consumers enjoy when expectations are met. This market synchronization is displayed in global air travel. International air travel is regulated through a balance of governmental agencies and private corporations.¹⁶⁴ For the most part, this has been to corporate, governmental, and consumer advantage. There is now a prevalent, thriving market for air travel that is widely used by the masses. The consumer has gained from standardized air travel regulations the ability to travel mostly everywhere on the globe using similar, familiar processes. Further, corporations feel the benefits of increased profits and market power.

The international air travel industry and governments accomplish this through Open-Skies-Agreements (“OSAs”) that are both multinational and bi-lateral understandings between foreign powers to allow foreign air traffic within their borders.¹⁶⁵ These agreements are not standard across the board, nor accepted by all nations, but they are a starting point for private space travel regulations.

OSAs are negotiated by governmental agencies to provide “provisions governing commercial opportunities, safety, and security,” whilst eliminating post-negotiation governmental involvement in, “airline decision-making

162. See Claudia Pastorius, *Law and Policy in the Global Space Industry's Lift-Off*, 19 BARRY L. REV. 201, 238 (2013).

163. *Internal Market, Industry, Entrepreneurship and SMEs*, EUR. COMM’N, https://ec.europa.eu/growth/single-market/european-standards/standardisation-policy/benefits-standards_en [<https://perma.cc/6GV5-T759>] (last visited Sept. 23, 2022).

164. Fed. Aviation Admin., *Int’l Travel*, U.S. DEPT. OF TRAVEL, https://www.faa.gov/travelers/international_travel [<https://perma.cc/6FM3-EXLB>].

165. *Air Service Agreements*, U.S. DEP’T OF TRANSP. (Sept. 1, 2017), <https://www.transportation.gov/policy/aviation-policy/international-relations/air-service-agreements> [<https://perma.cc/JE38-VYY5>].

about routes, capacity, and pricing in international markets.”¹⁶⁶ Through this manner of regulatory initial oversight, the “United States develop[ed] a procompetitive operating environment for US airline services between the United States and foreign countries.”¹⁶⁷

Commercial opportunities thrive under OSAs. The “Brookings Institution estimated in 2015 that OSAs yield approximately \$4 billion in annual economic gains to consumers.”¹⁶⁸ The State Department regularly confers with key industry stakeholders and foreign aviation partners to ensure, “these commitments set out in agreements are carried out in practice.”¹⁶⁹ Further, the OSAs specify that governmental interference is eliminated in “commercial air carrier decisions about routes, capacity, frequencies, and pricing, thereby freeing airlines to provide more affordable, convenient, and efficient air services to consumers and shippers.”¹⁷⁰ The OSA system has allowed the market to safely flourish with the correct balance of governmental oversight and independence.¹⁷¹

Global privatized space travel would benefit from a system similar to OSAs.¹⁷² The individual nations can have their own checks and balances, but they should engage with international states for peaceful and safe travel to the consumer’s benefit. The regulations need not be ironclad or all-encompassing. Safe travels can begin with corporations pledging to: prioritize safety for those in the air and on the ground; minimize environmental destruction and degradation in this enterprise; and actively engage with other competitors in the hopes that open communication does not further any hostilities. From this pledge, agreements similar to OSAs can come into fruition.

Corporations within domestic boundaries can first reach agreements concerning airspace, safety standards, etc. Then, domestic interests can engage with international, privatized space programs to reach cohesion in interests and standards. These fledgling agreements will pave the way for future international space travel that is standardized across the board and

166. *Id.*

167. *Id.*

168. Bureau of Economic and Business Affairs, *Open Skies Partnerships: Expanding the Benefits of Freer Commercial Aviation*, U.S. DEP’T OF STATE (Jan. 20, 2021), <https://www.state.gov/open-skies-partnerships-expanding-the-benefits-of-freer-commercial-aviation/> [<https://perma.cc/WL84-K753>].

169. *Id.*

170. *Id.*

171. *Id.*

172. *See id.*

engages with multiple corporations and national territories—similar to commercial international air flights currently. The goal would be to create a thriving, commercial market that is safely maintained for the benefit of corporate, consumer, and international interests.

Additionally, pledges allow for accountability in member states. As seen in the past, international actors can remove themselves from pledges if they feel so inclined due to the violations done by other foreign nations. Pledges are diplomatic tools to notify foreign nations of potential escalating tensions, whilst also maintaining peaceful relationship among member states.

Pledges, agreements and the like provide multi-functionality as checks and balances for consumer safety, maintenance of foreign relations, and preservation of our interests on Earth in ground safety during space launches.

IV. DO BENEFITS OF PRIVATE SPACE TRAVEL EXIST?

A. *The Space Travel Privilege Paradox*

Space travel prior to the last two decades was an honor earned by the very few, in fact, “[a]s of December 4, 2019, 565 people from 41 countries have gone into space.”¹⁷³ Highly decorated scientists and military officers compete for the coveted selection as an astronaut.¹⁷⁴ It is a dream that is aspired to by many and experienced by few.¹⁷⁵ The list of requirements from NASA is daunting, and inherently biased towards individuals with privileges such as: the ability to obtain a higher education, the physical capabilities, citizenship (if you’re launching from the US), and the flexibility to dedicate two years (at the minimum) to training.¹⁷⁶ Government-funded space travel regrettably is limited to a microscopic number of individuals.¹⁷⁷ Privatization will, at the minimum, ensure more people can experience space, even if it will still only be accessible to those who are exceedingly wealthy (which comes with its own set of privileges).¹⁷⁸

The hope is to one day be at the caliber of Star Wars and the science fiction movies individuals devour where space travel is commonplace.

173. Sabrina Stierwalt, *Do You Have What it Takes to Be an Astronaut?*, SCI. AM. (June 21, 2020), <https://www.scientificamerican.com/article/do-you-have-what-it-takes-to-be-an-astronaut/#:~:text=As%20of%20December%204%2C%202019,miles%20or%20about%20100%20kilometers> [https://perma.cc/6GGJ-TF9K].

174. *Id.*

175. *See id.*

176. *Id.*

177. *Id.*

178. Jeffrey Kluger, *With Private Space Flight on The Rise, Who Gets to Be Called ‘Astronaut’?*, TIME (Aug. 4, 2021), <https://time.com/6083954/who-is-an-astronaut-private-space-flight/> [https://perma.cc/4T7J-3NDR].

Consumers and corporations will benefit from a market that is booming with accessible options and customers flocking in droves.¹⁷⁹ Innovation and commercialization at that level will require that competitors begin to cooperate to innovate together and create standards to contribute to a thriving market.¹⁸⁰ A functioning market with competitors will contribute to more cost-effective space travel options becoming available to consumers.¹⁸¹ Of course, this will take decades to achieve, but the quickest route to achieve this is through pledges and agreements to standardize this industry with regulations.¹⁸²

B. Innovation Breeds Innovation

Commercial space travel has made significant strides in the science behind launching people into space.¹⁸³ Such innovation does not need to be limited to corporate entities. Billionaires, such as Musk, engaging in patent releases open the door for agencies that are invested in the advancement of science to use these inventions and developments for their own use. Space exploration for the sake of knowledge gathering can be equally as beneficial for scientific advancements to mankind—the caveat being that the commercial entities share in their discoveries.¹⁸⁴ Society has seen the effective execution of this principle with NASA's partnership with corporations such as SpaceX.¹⁸⁵

Musk's patent release benefited competitive innovation, and successful served his own interests.¹⁸⁶ It is likely that sharing its patents, and its trade secret code enabled Telsa to expand the market and innovate.¹⁸⁷ Additionally, market innovation generally leads to more product variations at wider

179. See *Internal Market, Industry, Entrepreneurship and SMEs*, *supra* note 163.

180. *Id.*

181. *Id.*

182. *See id.*

183. Seetha Raghavan, *The Impact of Innovation in The New Era of Space Exploration*, UCFTODAY (Aug. 4, 2021), <https://www.ucf.edu/news/the-impact-of-innovation-in-the-new-era-of-space-exploration/> [https://perma.cc/98QE-2RMV].

184. *Id.*

185. See *NASA, SpaceX Sign Joint Spaceflight Safety Agreement*, *supra* note 83.

186. Elon Musk, *All Our Patent Are Belong to You*, TESLA (June 12, 2014), <https://www.tesla.com/blog/all-our-patent-are-belong-you> [https://perma.cc/YY6C-GU22].

187. *Id.*

price points on the market.¹⁸⁸ Such options directly benefit consumers.¹⁸⁹ A similar phenomenon may be seen in privatized space travel. If egos can be set aside in favor of shared technology, then the industry will swiftly evolve and more people can experience space at a more realistic price point. Additionally, the market will become a thriving enterprise in much less time as the innovation will develop more rapidly.¹⁹⁰ The more launches into space, the more we can learn for further technological growth.

V. WARINESS OF PRIVATE SPACE EXPLORATION IS WARRANTED

Privatized space travel is not subject to criticism based solely on safety concerns. This emerging market has proponents and equally loud detractors with valid condemnations of the industry. This section will explore a variety of these trepidations, from environmental concerns to safety hazards, with potential solutions to these worries.

A. *We Have Bigger Problems*

Musk, Bezos, Branson and the like have been admonished for their outlandish spending from the United Nations Secretary-General.¹⁹¹ He stated recently, “[p]arents see a future for their children that looks even bleaker than the struggles of today,” juxtaposed against, “billionaires joyriding to space while millions go hungry on Earth.”¹⁹² This is widely disseminated messaging—the global community faces problems on Earth that can be fixed with funding, and yet individuals watch billionaires, who played a large role in these problems, funnel their money into space-glamor projects.¹⁹³

Our environmental crisis is global, and largely due to mega-corporations creating waste and releasing pollutants.¹⁹⁴ Millions go hungry whilst being paid pennies to man factories for corporations.¹⁹⁵ Corporations additionally

188. EMERITUS, <https://emeritus.org/in/learn/important-benefits-of-innovation-in-business/> [<https://perma.cc/8QX7-ELCD>].

189. *Id.*

190. *Id.*

191. Seth Borenstein, *Billionaires’ Space Trips Draw Ire of UN Chief*, THE TIMES AND DEMOCRAT (Sept. 21, 2021), https://thetandd.com/billionaires-space-trips-draw-ire-of-un-chief/article_f61e15d0-0689-5eb0-a20f-fdf2e6565227.html [<https://perma.cc/5ZQX-ZW6T>].

192. *Id.*

193. Bowden, *supra* note 104.

194. Anna Laura Huckelba & Paul A. M. Van Lange, *The Silent Killer: Consequences of Climate Change and How to Survive Past the Year 2050*, 12 SUSTAINABILITY 3757, 3762 (2020).

195. Matt Blomberg, *‘Going hungry’; garment workers cut back on food as pandemic hits wages*, REUTERS (Dec. 4, 2020), <https://www.reuters.com/article/global-fashion-workers-rights/going-hungry-garment-workers-cut-back-on-food-as-pandemic-hits-wages-idUSL8N2IK184> [<https://perma.cc/KRT6-DYN5>].

lobby for actions that support their financial bottom lines while destroying lives below (pipeline installations and oil drilling are prime examples).¹⁹⁶ Yet these same billionaires would rather channel their wealth and resources into leaving their legacy as “the first to do XYZ” in space.

Billionaires participating in privatized space travel would benefit from engaging in large-scale environmental conservation and rectification measures. Donations, installation of programming, pledges to fix a single environmental issue (ie. Flint water crisis) would endear public opinion and begin to quiet naysayers of privatized space travel. Environmental issues are not permanent, as has been shown in the past, with the right amount of funding, truly beneficial changes can be seen.¹⁹⁷ However, if such pledges or donations are not taken by billionaires, the court of public opinion will be rightfully against space tourism. Regardless of whether governments cannot preserve the equity of privatized space endeavors, nations must ensure that no further harm can be done by billionaires in their new playground—space. The global community must learn from the past and enact regulations so that space cannot be further polluted and destroyed through corporate greed and financial pursuits.

B. Space Junk—The Environmental Problem Doesn't End on Earth

Privatized space travel is already garnering massive criticism as the billionaires that caused the environmental crisis are ignoring their Earth-bound responsibilities and are not polluting space.¹⁹⁸ The environmental crisis does not end there—humans failed as stewards of the earth, but preservation of space can still be maintained.¹⁹⁹ “Space junk” (remnants from discarded rockets and satellites floating in our orbit) is already a pervasive problem.²⁰⁰ If society does not act proactively, space will likely

196. Malkie Wall et al., *Corruption Consultants: Conservative Special Interests and Corporations Hurt State Economies and Democratic Processes*, CENTER FOR AMERICAN PROGRESS (July 22, 2019), <https://www.americanprogress.org/article/corruption-consultants/> [<https://perma.cc/7F7X-4LDQ>].

197. See Helen Briggs, *Climate change: The environmental disasters we've almost fixed*, BBC (Oct. 25, 2021), <https://www.bbc.com/news/science-environment-58874831> [<https://perma.cc/Q9VN-W45L>].

198. E.g., Bowden, *supra* note 104.

199. Mike Wall, *Kessler Syndrome and The Space Debris Problem*, SPACE.COM (Nov. 15, 2021), <https://www.space.com/kessler-syndrome-space-debris> [<https://perma.cc/QPK2-AH56>].

200. See *id.*

be polluted as was done to Earth.²⁰¹ Space junk is additionally problematic as the free-floating debris poses a danger to space travelers.²⁰² On Earth, we are aided by gravity when rubbish must be cleared for human travel, what we gather into waste areas away from the human populous generally stays there.²⁰³ Space makes trash clean-up virtually impossible without great expense.²⁰⁴ Incoming launches out of the atmosphere have to account for free-floating debris to avoid catastrophic impacts.²⁰⁵ Trash in low-to-zero-gravity environments must be accounted for with complex math and predictive algorithms to avoid interacting with space launches.²⁰⁶ Accordingly, corporations must be completing similar functions to maintain safety on their launches.²⁰⁷

Corporations can combat the concern of further pollution by registering their rockets and accompanying technology with the Registration Convention as parties to the Member States participating in the convention.²⁰⁸ Once corporate-owned technology is registered, corporations are more accountable for any damages that may arise from errant technology left behind to become space junk.²⁰⁹ Additionally, they will be motivated to leave as little debris behind to avoid future expensive liability issues due to their registration. Registration is an easy, cost-effective solution until technology advances for retrieval of space junk that is left in the outer reaches.

C. *Advancements in International Espionage*

Cold War precedent establishes that the race to space is a breeding ground for international tensions.²¹⁰ The modern-day international fire has only been stoked with recent hacks into SpaceX and NASA by China.²¹¹

201. *See id.*

202. *See id.*

203. *See id.*

204. GOVERNMENT TECHNOLOGY, <https://www.govtech.com/question-of-the-day/how-much-is-the-esa-paying-to-remove-a-piece-of-space-junk.html> [<https://perma.cc/QWP2-8BDK>].

205. Mike Wall, *Kessler Syndrome and The Space Debris Problem*, SPACE.COM (Nov. 15, 2021), <https://www.space.com/kessler-syndrome-space-debris> [<https://perma.cc/QPK2-AH56>].

206. *See id.*

207. *See id.*

208. *See* Registration Convention, *supra* note 50, at 1.

209. *See* Outer Space Treaty, *supra* note 35, at 2; *see also* Registration Convention, *supra* note 50, at 1.

210. *See* Outer Space Treaty, *supra* note 35, at 13.

211. *See* Zulfikar Abbany, *Modern Spy Satellites in an Age of Space Wars*, MADE FOR MINDS (Aug. 25, 2020), <https://www.dw.com/en/modern-spy-satellites-in-an-age-of-space-wars/a-54691887> [<https://perma.cc/HH8S-C5EP>].

Are private entities ensuring that their systems are not vulnerable to international snooping?

An additional fear is the international ability to use private corporations to fund espionage and governmental agendas in space.²¹² Though this is a valid concern, countries and private entities already have satellites and the like in space—this is not a new foreign policy issue.²¹³ Further, contracting between private and governmental entities has the possibility of rapidly increasing innovation through the cooperation of agencies and resources.²¹⁴

Cooperation through pledges and agreements between foreign corporations and national powers can work to alleviate these worries.²¹⁵ The new agreements would harken back to the Outer Space and Moon Treaties, which, established no colonization and overtaking of areas in space would be allowed by participating Member States.²¹⁶ Further, pledges and agreements would use that same spirit to guarantee that corporations engaged in privatized space tourism will not intentionally engage in international espionage. Although, no treaty or agreement is truly fool-proof in negating espionage, this preventative measure would be a step in the correct direction. Member states would have an understanding of joint protective interests with the motivation to adhere to the terms of the agreements or risk igniting tension in foreign policy.

D. Further Dangers of Space Debris

A recent global nightmare, involving falling Chinese rocket debris, illustrated the danger posed from space junk entering our orbit.²¹⁷ Privatized space travel has large ramifications for the travelers and those on earth below. The odds are high now that falling debris will land in a body of water.²¹⁸ But as space travel becomes more widely used, the odds of potentially experiencing fallout on the earth's surface will rise.²¹⁹ Just as the widespread usage of cars bred car accidents and bystander dangers—

212. *See id.*

213. *See id.*

214. Press Release, NASA, SpaceX Sign Joint Spaceflight Safety Agreement, *supra* note 83.

215. *Id.*

216. *See* Outer Space Treaty, *supra* note 35, at 2–4; *see also* Moon Agreement *supra* note 53, at 6–8.

217. *See* Wall, *supra* note 205.

218. *See id.*

219. *Id.*

so will the creation of a thriving space travel industry. Will passengers on vehicles heading to space need to invest in insurance? These are questions that will need to be considered.

Ultimately, society will need to invest in preventive measures. Such measures are easily considered in emulations and agreements at the macro-corporate level. Additional protections can be created in insurance-like systems for at the individual consumer level: protection for those boarding spacecrafts and potentially even for concerned citizens on the ground below. Preventative measures are generally cheaper for all parties involved. Accordingly, corporations and legislators would benefit as well.

E. The Litigation Problem

Multinational corporations are no strangers to litigation, and their lawyers are paid top dollar to proactively protect corporate interests.²²⁰ “As more private actors seek to put more people into space, the range of in-space activity will increase—and so will the number of in-space disputes, commercial or otherwise.”²²¹ Travelers on commercial space flights will likely have to sign in-depth releases of liability. Blanket releases for services with such a high chance of catastrophe seem unethical. On one hand, will these giant corporations be able to contract away their liability for calamitous disasters? Further, individuals on the Earth’s surface who face the ramifications of a launch failure will not have signed liability releases. On the other hand, will corporations face endless litigation?

Rule 1 of the Federal Rules of Civil Procedure frames the purpose of the Rules: “the just, speedy and inexpensive determination of every action and proceeding.” Every day, corporate and defense counsel must confront the fact that although well-intentioned, the Rules are falling far short of this goal. The reality is that the high transaction costs of litigation, and in particular the costs of discovery, threaten to exceed the amount at issue in all but the largest cases . . . Litigation costs continue to rise and are consuming an increasing percentage of corporate revenue. Litigation transaction costs on average and as a percent of revenue have risen substantially over the past nine years.²²²

220. See Jeff Rindskopf, *These Companies Had to Pay Massive Sums to Settle Lawsuits Against Them*, CHEAPSIM (Mar. 2, 2022), <https://blog.cheapism.com/biggest-class-action-lawsuits/> [<https://perma.cc/9KAM-53KE>].

221. Goguichvili, Linenberger & Gilette, *The Global Legal Landscape of Space: Who Writes The Rules on The Final Frontier?*, WILSON CENTER (Oct. 1, 2021), <https://www.wilsoncenter.org/article/global-legal-landscape-space-who-writes-rules-final-frontier> [<https://perma.cc/6NML-F5ZG>].

222. *Litigation Cost Survey of Major Companies*, DUKE L. SCH. (May 10, 2020), https://www.uscourts.gov/sites/default/files/litigation_cost_survey_of_major_companies_0.pdf [<https://perma.cc/FW3W-EKQA>].

Without a specified system in place, the potential for inefficient, court-swamping litigation is high. The plaintiffs would be endless and the costs from the destruction would be astronomically high. Preventative measures must be in place from top to bottom to ensure that our judicial system can still effectively divvy out justice.

F. A Benefit to the Very Few

The final criticism of commercialized space travel—that it is a potentially disastrous endeavor that is only benefiting very few people—is virtually unsolvable in the near future. No scientific advancements are being carried out to enable technology to become cheaper for consumers, so the uber rich will continue to be the sole consumers enjoying the benefits of space travel. Global public interests are taking a backseat to the wide margin of profitability corporations are anticipating.

However, with small steps come great strides. A hobby for the select few can soon become accessible by the masses as technology innovates to produce this service quick and cheaper—such as seen with the invention of the car.²²³ The automobile was not a massive consumer item until the release of the Ford Model T. Ford revolutionized assembly line production so the product could be efficiently churned about by the millions.²²⁴ What once was coveted became available for the common man.²²⁵ A similar evolution was seen in computers, massive super computers were impossible for an average consumer to own, but as the tech advanced, became more compact and cheaper, individuals were able to acquire the technology on a global scale.²²⁶ Thus, advancement for the benefit of the market and consumers is not a new concept.²²⁷ Products can become cheaper and more available with increased innovation and consumer buy-in.²²⁸ Society would benefit from further pursuits that enables the individual to grow and learn that individuals are all but cogs in a large universe. An additional benefit would be illustrated in people learning to be less narrow-minded.

223. History.com Editors, *Model-T*, HISTORY (May 2, 2019), <https://www.history.com/topics/inventions/model-t> [<https://perma.cc/VR8H-KP6N>].

224. *Id.*

225. *Id.*

226. Matt Jancer, *The Computers That Changed The World*, SMITHSONIAN MAG. (Aug. 14, 2018), <https://www.smithsonianmag.com/innovation/computers-changed-world-180969987/> [<https://perma.cc/F482-U7U6>].

227. *See id.*

228. *See id.*

VI. REGULATIONS ARE BENEFICIAL, BUT CAN THEY BE IMPLEMENTED?

The need for regulations to preserve safety standards is apparent. As more humans travel beyond earth's atmosphere, more federal regulation of in-space commercial conduct will be necessary, either through the extension of existing laws to space or through the creation of new laws specifically applicable there.²²⁹ In every existing industry involving mass tourism and transit, regulations have been enacted to varying degrees.²³⁰ Tourism is a market that literally has moving and interacting parties, people being shuttled from one point to another naturally involving international tensions and safety concerns.²³¹

To put it lightly, regulations are undesirable to the money-churning corporations.²³² Regulations put dampers on corporate creativity, they stifle companies from making the most profitable decisions possible.²³³ Standards can effectively remove competitive advantages by maintaining a level of equity across the board of companies.²³⁴ However, such guidelines can preserve efficiency and competitiveness just as they do peace of mind.²³⁵ Through even playing fields, up-and-coming corporations can emerge from the shadows of giants. Accordingly, the corporate giants will have to create meaningful products and experiences so that the consumer will choose them over their competitors. The creation and enforcement of such standards is a potentially sticky situation, with the butting heads of corporate bottom-line financial goals and cross-international relationships and tensions. However, the consumer will benefit from more options on the market, and more importantly, safer standards for their space voyage adventures.²³⁶

The usage of modern treaties can potentially answer our concerns while maintaining individual national ideals and agendas. Such treaties need not be limited to universal ratification at UN Conventions—policy makers can design and enforce bi-lateral agreements between friendly nations. Bi-lateral agreements, modeled after Open Air Agreements employed by

229. See *Commercial Space: Federal Regulation, Oversight, and Utilization*, CONG. RSCH. SERV., <https://sgp.fas.org/crs/space/R45416.pdf> [<https://perma.cc/EF97-XG2T>].

230. See *id.*

231. *Id.*

232. John Stossel, *Regulation Kills Innovation. So These Entrepreneurs Didn't Ask for Permission*, REASON, <https://reason.com/2021/07/14/regulation-kills-innovation-so-these-entrepreneurs-didnt-ask-for-permission/> [<https://perma.cc/8R7B-NTHM>].

233. *Id.*

234. *Id.*

235. *Id.*

236. *Id.*

agencies such as the FAA, are potentially a faster way to create and win national buy-in to match the speed of private space travel innovation.

“The federal government’s authority over space settlement can be analogized to its authority over treaty matters, federal property and territory, interstate and foreign commerce, national defense, and the high seas.”²³⁷ Regulation in the US is possible as our Constitution provides the federal government with the power of enforcing ratified international treaties.²³⁸ “These constitutional powers permit the federal government to protect national security and the United States’ interest in improving life on Earth.”²³⁹ Treaties taken at the national level will be accepted by states as preemptive law.²⁴⁰

Of course corporations will make their objections heard loud and clear, as corporations are generally allergic to the concept of regulations potentially stifling internal innovation and financial profit.²⁴¹ Corporate lobbyist push back will provide a potential roadblock, but such strategies have been overcome in the past.²⁴² Litigation from corporations engaging in space travel will also occur, and there is a potential concern that corporations will pull-out and move their business into foreign territories. However, the overall goal is that other territories undertake such legislation as well, effectively limiting the options of corporate safe havens. Further, the potential of financial incentives and more can be provided to offset the irritation of staunch standards. As with many successfully implemented regulatory schemes—the side of a balance between governmental ideals and industry concerns will ultimately prevail.

If the US federal government begins this movement towards internal regulation, other countries may follow suit with more robust laws and authority.²⁴³ Further, the US can make efforts towards international corporation, thereby encouraging other countries to engage in agreement as well, as

237. Bradley D. Gallop, *The Final Frontier: A Proposed Legal Order for an American Space Settlement*, 14 HASTINGS CONST. L.Q. 715, 716 (1987), https://repository.uchastings.edu/cgi/viewcontent.cgi?article=1375&context=hastings_constitutional_law_quarterly [<https://perma.cc/7JR8-GH2W>].

238. *Id.* at 727–28.

239. *Id.* at 716.

240. *Id.* at 751.

241. *See id.* at 720–21.

242. *See id.*

243. *See* Rule of Law Talk, *Global Trends in The Rule of Law*, WORLD JUSTICE PROJECT, at 24:50 (Apr. 10, 2020), <https://worldjusticeproject.org/about-us/connect/podcast/global-trends-rule-law> [<https://perma.cc/MS8W-UVYM>].

evidenced by the signing of global powers at the original UN Convention concerning “space law.”²⁴⁴ Once international boundaries of powers are respected in officially recognized agreements, and individual governments implement similar safety measures—a successful thriving market for space travel will emerge, following the model of regulated air travel. This will not be overnight, this transition to global regulations will take years to realize into actuality. It is due to this timeline that the effort to create regulations is immediately necessary as private space travel is nigh, and a single catastrophe can spell disaster for millions.

VII. CONCLUSION

Privatized space travel is not innately bad because of its commercial nature. Commercialization leads to efficient innovation; and our scientific pursuits benefit from advancements in technology in every space-related industry. This is not to say that privatized space travel is not without disgust and dissenters. As a dissenter, Buzz Aldrin questioned Elon Musk’s Mars proposal by arguing, “Well, now, when your [rocket] lands on Mars with people, is there going to be anything down there for you to live in or do?” Buzz Aldrin is not alone in his questioning of the motives behind mega corporations’ space projects.²⁴⁵ Billionaire-funded space travel can be a viable new market, but there is a balance of ideals we must maintain—that of corporate profit and innovation, and global public interests.²⁴⁶ The global community cannot allow corporate giant egos to stifle valid criticisms regarding consumer safety and the global community, including international relations and foreign policy. Until international governments rethink current ratified treaties and agreements, nations will not be able to provide the security that may sway dissenters to the side of privatized space travel. Commercial space travel is here, let’s ensure regulations can meet it halfway.

244. United Nations Office for Outer Space Affairs, *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*, UNITED NATIONS OFF. FOR OUTER SPACE AFF’S. (October 1967), <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html> [https://perma.cc/HL82-S335].

245. Catherine Clifford, *Buzz Aldrin Says This is The Problem With Elon Musk’s Plan for Mars*, CNBC MAKE IT (Mar. 15, 2017), <https://www.cnbc.com/2017/03/15/buzz-aldrin-says-this-is-the-problem-with-elon-musks-mars-plan.html> [https://perma.cc/AK2M-UJBS].

246. See Bowden, *supra* note 104.