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TOURING OUTER SPACE: THE PAST, PRESENT, AND FUTURE OF SPACE TOURISM

ALEX S. LI*

ABSTRACT

For the space tourism industry, 2021 represented a giant leap forward: three different privately-developed commercial spacecrafts made their tourism debut. With space tourism launching to new heights, several legal issues surrounding this sector can no longer be ignored. The emerging industry is also raising new policy considerations. This Article fills this void by examining the pressing legal and policy issues that surround space tourism's coming-of-age.

The Article begins by looking at space tourism's *past*. It chronicles the companies, the missions, and the passengers that have formed the industry's foundation so far. The Article then shifts to space tourism's *present*. It focuses on three major legal issues facing this industry as it continues to develop: (a) the legal status of space tourists—where this Article argues that space tourists will not be entitled to the same status as “astronauts” or “personnel of a spacecraft;” (b) the applicability of aviation laws—where this Article concludes that the industry should only be governed by Outer Space laws; and (c) the passenger liability regime for space tourism—where this Article advocates for a transformation. After this discussion, the Article turns to space tourism's *future*. It suggests three policy areas that should be addressed as Outer Space travel becomes more mainstream: (i) standardization of passenger training; (ii) protection of outer space heritage sites; and (iii) promotion of this common province of humanity.

By highlighting these legal and policy areas, this Article hopes that space tourism will become safer and more accessible for all.

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I. SEEKING THE OVERVIEW EFFECT

The [Outer Space] experience exceeds all expectations and is something that's hard to put to words . . . it sort of reduces things to a size that you think everything is manageable . . . all these things that may seem big and impossible . . . we can do this. Peace on Earth? No problem. It gives people that type of energy . . . that type of power, and I have experienced that.

– *Anousheh Ansari*¹

The unique sensation that Ms. Ansari had is recounted by many who have ventured into Outer Space. After their literal out-of-this-world journey, many return to Earth with a renewed sense of unity after having experienced a phenomenon known as the “Overview Effect.”² A cognitive shift in their overall perspective that is an outcome of these space travelers being able to—for the very first time—see Earth as a universal whole;³ an overview of humanity’s only home as a singular “pale blue dot”⁴ in the foreground of a vast cosmic darkness that is only sporadically punctured by sparkling stars and hazy nebulas. After being transformed by the Overview Effect, these individuals return to Earth with an overwhelming desire to contribute to causes that will cultivate the importance and need to cherish Earth.⁵

¹ Ethan Siegel, *William Shatner Cried Upon Returning from Space. The “Overview Effect” Explains Why*, BIG THINK (Oct. 14, 2021), <https://bigthink.com/starts-with-a-bang/william-shatner-space/>.

² Author Frank White on the Overview Effect, THIS WEEK IN SPACE at 17:30 (Mar. 17, 2023), <https://www.youtube.com/watch?v=Ap5TaNPFTkk&t=1050s> (“It’s an experience people have when they see the Earth from space and in space—on a suborbital hop, or an orbital mission, or a lunar mission—and is a shift in awareness, and consciousness, and identity that they experience.”); Stacy Shaw, *The Overview Effect*, PSYCH. IN ACTION (Jan. 1, 2017), <https://www.psychologyinaction.org/psychology-in-action-1/2017/01/01/the-overview-effect> (“Termed ‘the overview effect’ by White (1987), he described this effect as ‘a profound reaction to viewing the earth from outside its atmosphere.’”).

³ See *Space and Climate Change*, MISSION: INTERPLANETARY, at 22:52 (Apr. 5, 2022), <https://podcasts.google.com/feed/aHR0cHM6Ly9mZWVkcY5tZWdhdGhvbmUuZm0vU0xUODQ1NTgyNDkwMQ/episode/Njk5OTJkOTYtOWVhMi0xMWVjLTgzNTUtMWJjM2JkYzgyZDZm?sa=X&ved=0CAUQkfYCahcKEwj4vb2Q3P72AhUAAAAAHQAAAAAQEw&hl=en> (“We really do have an overview effect We can be transformed by experience, when you look down on Earth and you see all of the interconnected: you see oceans, the land, the air and to then near-space and that’s just the holistic Earth; that’s our mothership, that’s spaceship Earth”); see also *Blue Origin Crew Returns from Edge of Space*, YOUTUBE (Oct. 13, 2021), <https://youtu.be/OTxbq7MTQYY?t=11> (An unvarnished look at how quickly, even just after a few minutes in Outer Space, someone—Mr. William Shatner—could be transformed by the Overview Effect).

⁴ *A Pale Blue Dot*, PLANETARY SOC’Y, <https://www.planetary.org/worlds/pale-blue-dot> (last visited Apr. 12, 2022).

⁵ See Sarah Wells, *Astronauts Hope to Share Space Experience with All Earthlings, Panel Says*, SPACE.COM (Apr. 7, 2019), <https://www.space.com/astronauts-beyond-the-cradle-panel.html> (noting how some astronauts turn to art so that people can experience the joy of the overview effect).

But as profound and life changing as the Overview Effect is, only a rare few have had exposure to this experience before the 2020s. Furthermore, this small group of individuals is made up almost entirely of professionals: members of a nation's space agency that often train for years before embarking on their heavenly journey into Outer Space. Yet, this is not a surprising result. After all, Outer Space started as essentially the exclusive province of governmental agencies; during the early days of human activities in Outer Space, the risk in this sector was simply too high and the cost too great for nonprofessionals.⁶ Thus, apart from a select few,⁷ everyday individuals did not have the opportunity to experience the Overview Effect. The lack of access to this profound experience is not only a missed opportunity for the general population but also society as a whole. If more people can experience such a life-changing journey, it very well could lead to more being done to improve the human condition, unite a sometimes-fractured world, and expand humanity's reaches in the stars.

But this heavenly realm's exclusive nature could be fading. Over the course of the last decade, access to Outer Space has become more democratized with the sector becoming increasingly commercialized.⁸ While the earliest private Outer Space projects were devoted to satellites,⁹ space entrepreneurs are now increasingly focusing on opportunities that will improve the accessibility of Outer Space to the public.¹⁰

One of these new areas of development is space tourism. While space tourism first officially took off shortly after the turn of this millennium,¹¹ this industry is making its mainstream debut in these early 2020s. To wit, while the number of space tourists can still be counted by one's fingers at the start of 2021, by the year's end, there were more than thirty.¹² In that year, three different commercial spacecrafts made their

⁶ *Space Exploration*, ENCYC. BRITANNICA, <https://www.britannica.com/science/space-exploration> (last visited Jan. 1, 2023).

⁷ See *infra* Parts II.B.1–7.

⁸ See Qasim Mohammad, *Opportunities and Challenges in Commercializing Space Privately*, TECHCRUNCH (Sept. 9, 2016, 2:00 PM PDT), <https://techcrunch.com/2016/09/09/opportunities-and-challenges-in-commercializing-space-privately/> (“In 2015, VC investment in the sector increased by 253 percent year-over-year, and a whopping 2,052 percent since 2012.”).

⁹ See Yun Zhao, *Space Commercialization and the Development of Space Law*, PLANETARY SCI. (July 30, 2018), <https://oxfordre.com/planetaryscience/view/10.1093/acrefore/9780190647926.001.0001/acrefore-9780190647926-e-42> (noting how the commercial satellite market began to flourish in the 2000s and 2010s).

¹⁰ See Michael Sheetz, *Super Fast Travel Using Outer Space Could be \$20 Billion Market, Disrupting Airlines, UBS Predicts*, CNBC (Mar. 18, 2019, 2:50 PM EDT), <https://www.cnbc.com/2019/03/18/ubs-space-travel-and-space-tourism-a-23-billion-business-in-a-decade.html> (“Even though space tourism ‘is still nascent,’ UBS said they believe the sub-sector ‘will become mainstream as the technology becomes proven and cost falls.’”).

¹¹ See discussion *infra* Part II.B.1.

¹² See discussion *infra* Part II.B.

successful tourism debut.¹³ Each of these launch vehicles also came with its own unique experience—enabling space tourists to have a panoply of options to choose from; for instance, some of these passengers experienced a vertical rocket launch while others took off horizontally in an airplane-like journey.¹⁴ Once in Outer Space, some felt a few minutes of weightlessness while others orbited around the Earth for several days.¹⁵

But no matter the type of journey, these space tourists were all transformed through their Outer Space experience. Much like the professionals before them, these private individuals were forever altered through exposure to the Overview Effect.¹⁶ Their descriptions of the experience were eerily similar to those awe-inspiring feelings that the professionals had recounted about their own Outer Space journeys. At long last, the space tourism industry finally got the reactions it was longing for: these missions fulfilled the long-awaited promise, hope, and dream of space tourism. Thus, the early 2020s is a giant leap forward for this sector.

While the space tourism industry is growing up, the laws surrounding this sector have remained largely stagnant.¹⁷ But with this type of adventure gaining popular traction, several legal issues surrounding this industry can no longer be ignored. Furthermore, this emerging industry is raising new policy implications that will soon need to be addressed.

This Article fills this void by examining the legal issues and the policy questions that surround space tourism industry's coming of age. Part II begins by looking at space tourism's *past*. This Part provides an overview of the rise of commercial activities in Outer Space. It then chronicles the companies, the missions, and the passengers that have formed the early foundation of the space tourism industry. Part III then shifts to space tourism's *present*. It focuses on the three major legal issues facing this industry as it further matures. Part IV turns to space tourism's *future*. It suggests three policy areas that the space tourism sector will need to address as Outer Space travel becomes mainstream.

By shining a spotlight on these matters, this Article hopes that the space tourism industry will be able to resolve its lingering challenges and enhance the safety as well as accessibility of the space tourism experience for all. Eventually, this will lead to more people getting to experience the Overview Effect and thereby, transform humanity into a more caring, collegial, and collaborative species ready to both protect Earth and further expand its reach across the galaxy.

II. THE PAST: THE RISE OF SPACE TOURISM

Before examining the emerging legal issues surrounding the space tourism sector, this Article will first provide a background on how the industry got to where it is today.

¹³ Jackie Wattles, *2021: The Year of Space Tourism*, CNN BUSINESS (Jan. 3, 2022), <https://www.cnn.com/2022/01/01/tech/space-business-year-in-review-scn/index.html>.

¹⁴ See *infra* Part II.B.

¹⁵ See generally *infra* Part II.B.

¹⁶ See generally *infra* Part II.B.

¹⁷ Inesa Kostenko, *Current Problems and Challenges in International Space Law: Legal Aspects*, 5 *ADVANCED SPACE L.* 48, 56 (2020).

This Part begins by surveying the rise of commercial activities in Outer Space. Then, it chronicles the companies, the missions, and the passengers in these early days of space tourism.

A. *The Rise of Commercial Activities in Outer Space*

Until recently, Outer Space has been the almost-exclusive playground of governmental entities.¹⁸ The lack of independent commercial activities during its beginnings can be attributed to both cost and uncertainty. Without a predictable and probable rate of return, private investors had shunned this field as an unattractive long-term investment opportunity.¹⁹ Thus while large defense conglomerates were involved in government-led contracts for Outer Space,²⁰ during those early days, commercial enterprises did not take a lead or solely specialize in Outer Space-related activities. Furthermore, because of the complexity and coordination needed to launch and operate an Outer Space mission, governmental agencies tended to be the only entities capable of undertaking such projects. Even in entrepreneurial-oriented societies such as the United States, there was a prevalent feeling that these enormous endeavors were not feasible for private companies to lead and accomplish.²¹

But while pure commercial activities did not exist during the early days of the first Space Age, it was nevertheless contemplated. In fact, the topic of commercial activities was discussed even in the 1960s.²² During the negotiations for the Outer

¹⁸ See Matt Murphy, *A New Age of Space Exploration is Beginning*, THE ECONOMIST (July 20, 2019), <https://www.economist.com/leaders/2019/07/18/a-new-age-of-space-exploration-is-beginning> (“Between 1958 and 2009 almost all of the spending in space was by state agencies, mainly NASA and the Pentagon.”); see also Sebastian Modak, *Moon Express will Go where no Private Company has Gone Before*, CONDE NAST TRAVELER (Aug. 4, 2016), <https://www.cntraveler.com/stories/2016-08-04/moon-express-will-go-where-no-private-company-has-gone-before> (“For 47 years, space travel has been the exclusive playground of governments.”).

¹⁹ See Christian Davenport, *Investors are Placing Big Bets on a Growing Space Economy. But Can They Reach Orbit?*, WASH. POST (Sept. 5, 2021 8:00 am EDT), <https://www.washingtonpost.com/technology/2021/09/05/space-finance-bubble-investors/> (“Hundreds of millions of dollars are now flowing to an industry long viewed as too risky for serious investment.”).

²⁰ See *Powering the Space Race*, LOCKHEED MARTIN, <https://www.lockheedmartin.com/en-us/news/features/history/space-race.html> (last visited Jan. 2, 2023) (“Many companies were contracted to design and build parts of the Apollo spacecraft . . .”); see also *Boeing Marks 30th Anniversary of Apollo 11; Built Major Components for Lunar Mission*, THE BOEING CO., <https://boeing.mediaroom.com/1999-07-14-Boeing-Marks-30th-Anniversary-of-Apollo-11-Built-Major-Components-for-Lunar-Mission> (last visited Jan. 2, 2023) (noting that Boeing built most of the major components of the Apollo spacecraft and the giant Saturn V rocket).

²¹ See Matthew Weinzierl, *Space, the Final Economic Frontier*, 32 J. ECON. PERSPS. 173, 173 (2018) [hereinafter *Space Economy*] (noting that NASA leadership thought “that national space policy should not be turned over to private firms”) (internal citations omitted).

²² Alex S. Li, *Ruling Outer Space: Defining the Boundary and Determining Jurisdictional Authority*, 73 OKLA. L. REV. 711, 716 (2021) [hereinafter *Ruling Outer Space*].

Space Treaty,²³ the United States and the Soviet Union debated whether activities in Outer Space should strictly be limited to governmental entities.²⁴ Thinking proactively, the United States wanted private enterprises to have a future in the exploration of Outer Space.²⁵ However, the Soviet Union felt that activities in this sector must be limited to governmental agencies.²⁶ Eventually, a compromise was reached in which commercial activities would be allowed as long as a nation-state has authorized such operations and is responsible for any damages that might result.²⁷ Hence, from the beginnings of human activities in this environment, commercial entities had the ability to operate in Outer Space. Thus, once investors become satisfied that the return on their investment could justify the risk, commercial activities could shed their earthly bonds and expand to the high heavens above.

Given this opportunity, an independent commercial Outer Space market eventually did develop. Since the retirement of the Space Shuttle Program, commercial activities in Outer Space have experienced exponential growth.²⁸ In fact, commercial expenditures have now taken a significant lead over public spending for this sector. By the beginning of this decade, commercial activities in Outer Space have grown to be about a \$357 billion industry, representing nearly eighty percent of the economic output for Outer Space.²⁹ With the commercial Outer Space sector maturing, a role reversal is also starting to occur; various public entities are now relying on private enterprises for some of their Outer Space projects.³⁰ For instance, in 2020, the commercial space industry reached a major milestone: for the very first time, a governmental agency used a commercially-owned and developed rocket system to

²³ See generally Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies art. 9, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

²⁴ *Ruling Outer Space*, *supra* note 22, at 716.

²⁵ *Id.*

²⁶ *Id.*

²⁷ See Paul Stephen Dempsey, *National Laws Governing Commercial Space Activities: Legislation, Regulation, & Enforcement*, 36 NW. J. INT'L L. & BUS. 1, 6 (2016) ("Ultimately, Article VI of the Outer Space treaty was drafted to allow private activity in outer space on the condition that the appropriate State exercises authorization and continuing supervision over is [sic] its non-governmental entities.").

²⁸ See Weinzierl, *supra* note 21, 177–80 (noting that the explosion in Outer Space commercial activities is because of "commercialization-minded reformers in both the public and private space sectors seiz[ing] their opportunity").

²⁹ Space Foundation Editorial Team, *Global Space Economy Rose to \$447B in 2020, Continuing Five-Year Growth*, SPACE FOUND. (July 15, 2021), <https://www.spacefoundation.org/2021/07/15/global-space-economy-rose-to-447b-in-2020-continuing-five-year-growth>.

³⁰ NASA, 19-044, NASA OPENS INTERNATIONAL SPACE STATION TO NEW COMMERCIAL OPPORTUNITIES, PRIVATE ASTRONAUTS (last updated Mar. 6, 2020), <https://www.nasa.gov/press-release/nasa-opens-international-space-station-to-new-commercial-opportunities-private>.

launch a manned mission to Outer Space.³¹ This accomplishment fulfilled the visions of those first Space Age negotiators who firmly believed that commercial enterprises will have a significant role to play in Outer Space.³²

Within this recent explosion of Outer Space commercial activities, space tourism is also making an appearance as well.³³ Recent reports have pegged the space tourism industry to reach a total market value of about \$3.4 billion by 2030, with about \$2.8 billion coming from suborbital tourism and about \$610 million coming from orbital tourism.³⁴ However, this *future* market value for space tourism would only represent less than one percent of the *current* total commercial space output.³⁵ Because it is still a very small slice of the overall commercial space pie, space tourism has not been on the radar for many. In fact, some have argued that while negotiators for the Outer Space Treaty contemplated commercial activities, none of them envisioned space tourism as a part of this vision.³⁶

But while space tourism might only represent a small portion of commercial space activities, it will always be a prominent piece that can punch above its weight. With its ability to grab media headlines,³⁷ space tourism can play a critical role in informing the public of the latest advancements and achievements in Outer Space technologies and innovations.

³¹ Matt Weinzierl and Mehak Sarang, *The Commercial Space Age is Here*, HARV. BUS. REV. (Feb. 12, 2021), <https://hbr.org/2021/02/the-commercial-space-age-is-here>.

³² See *Ruling Outer Space*, *supra* note 22.

³³ Counting the Cost, *Beyond Tourism, Who Will Dominate the \$1 Trillion Space Economy?*, ALJAZEERA (July 24, 2021), <https://www.aljazeera.com/program/counting-the-cost/2021/7/24/beyond-tourism-who-will-dominate-the-1-trillion-space-economy> [hereinafter Counting the Cost].

³⁴ Michael Sheetz, *How SpaceX, Virgin Galactic, Blue Origin and Others Compete in the Growing Space Tourism Market*, CNBC (Sept. 26, 2020, 12:18 PM EDT), <https://www.cnbc.com/2020/09/26/space-tourism-how-spacex-virgin-galactic-blue-origin-axiom-compete.html>.

³⁵ See Space Foundation Editorial Team, *Global Space Economy Rose to \$447B in 2020, Continuing Five-Year Growth*, SPACE FOUND. (July 15, 2021), <https://www.spacefoundation.org/2021/07/15/global-space-economy-rose-to-447b-in-2020-continuing-five-year-growth> (noting that commercial space activity is about a \$357 billion industry in 2020).

³⁶ See Steve Freeland, *Up, Up, and . . . Back: The Emergence of Space Tourism and its Impact on the International Law of Outer Space*, 6 CHI. J. INT'L L. 1, 4–5 (2005) (“It is clear from the terms of these treaties that, at the time they were finalised [sic], it had not been anticipated that humankind would engage in commercial space tourism activities and, as a result, they do not deal in any specific manner with such activities.”).

³⁷ See Counting the Cost, *supra* note 33 (“Space tourism has grabbed a lot of headlines recently . . .”).

In fact, the debut of three different types of space tourism adventures in 2021 significantly contributed to the public's renewed interest in Outer Space exploration.³⁸ Thus, it appears that the 2020s will be the decade that space tourism experiences its own coming-of-age moment.³⁹ It is very likely that by the end of this decade, space tourism will no longer be considered just a fanciful dream—if you have the financial capital then you could find yourself breathing rarified “air.”⁴⁰

With space tourism beginning to permanently stake its place in the commercial Outer Space sector, legal and policy concerns associated with this industry can no longer be ignored. But before analyzing these potential issues, it will be helpful to take a historical look at how space tourism became the promising industry it is today. The next Part will do this by chronicling the companies, the missions, and the passengers that have formed space tourism's early foundation.

B. *A Chronology of Space Tourism Missions*

As of the end of first quarter of 2023, fifty-one space tourists have visited humanity's final frontier. After highlighting the key facts, this Part will provide an overview of the missions that took these passengers up to this celestial realm.

But before starting on this chronology, two points of clarification are in order. While there is an ongoing debate over where Outer Space begins,⁴¹ to be inclusive, this Article considers any journey that reaches the lower threshold of eighty kilometers above mean sea level as a space tourism flight. However, this Article does not count any spaceflight that was simply an operational test such that only pilots were onboard or a flight where the primary goal was not focused on space tourism.⁴² Thus, spaceflights that were (i) government-sponsored for political reasons⁴³ or (ii) jointly sponsored for media and entertainment industry⁴⁴ or educational purposes⁴⁵ are excluded from this list.

LAUNCH DATE	FIRST TIME SPACE TOURIST(S) ON THE FLIGHT	ARRANGING COMPANY	MISSION	CAPSULE	DESTINATION IN OUTER SPACE	APPROX. TIME IN OUTER SPACE ⁴⁶
Apr. 28, 2001	Dennis Tito	Space Adventures	Soyuz TM-32	Soyuz	International	About 8 days

³⁸ See Joe Spring, *The Ten Most Significant Science Stories of 2021*, SMITHSONIAN MAG. (Dec. 23, 2021), <https://www.smithsonianmag.com/science-nature/the-ten-most-significant-science-stories-of-2021-180979278/> (counting Outer Space tourism as one of the top 10 significant science stories of the year); see also Jason Hiner, *5 Ways the World Will Change in 2022: CNET's Predictions for the Year Ahead*, CNET (Jan 4, 2022), <https://www.cnet.com/tech/cnet-predictions-for-2022-ways-the-world-will-change-year-ahead/> (noting that private companies in 2021 teased “the promise of a future of space tourism”).

⁴⁶ While this table lists a space tourist by such passenger's inaugural spaceflight, the cumulative duration is listed for individuals that made multiple trips to Outer Space.

LAUNCH DATE	FIRST TIME SPACE TOURIST(S) ON THE FLIGHT	ARRANGING COMPANY	MISSION	CAPSULE	DESTINATION IN OUTER SPACE	APPROX. TIME IN OUTER SPACE ⁴⁶
					Space Station	
Apr. 25, 2002	Mark Shuttleworth	Space Adventures	Soyuz TM-34	Soyuz	International Space Station	About 10 days
Oct. 1, 2005	Gregory Olsen	Space Adventures	Soyuz TMA-7	Soyuz	International Space Station	About 10 days

⁴⁰ See Christian Davenport, *You Are Now Free to Move about the Cosmos . . . If You Can Afford It*, WASH. POST (June 8, 2021 12:41 pm EDT), <https://www.washingtonpost.com/technology/2021/06/08/space-tourism-wealthy-bezos-musk-branson/> (“Forget luxury African safaris or Caribbean cruises on private chartered yachts. Space is quickly becoming the new destination for the wealthy[.]”).

⁴¹ See *Ruling Outer Space*, *supra* note 22, at 723–30 (explaining that “there is no official or universally accepted boundary for Outer Space”).

⁴² See *infra* note 46.

⁴³ *Florida Lawmaker Assigned to Flight on Space Shuttle*, N.Y. TIMES (Oct. 5, 1985), <https://www.nytimes.com/1985/10/05/us/florida-lawmaker-assigned-to-flight-on-space-shuttle.html>; Andrew Chartzky et al., *Space Exploration and U.S. Competitiveness*, COUNCIL FOREIGN RELS. (Sept. 23, 2021), <https://www.cfr.org/backgrounders/space-exploration-and-us-competitiveness> (noting U.S. government political motivations to fund spaceflight for competition in Cold War space race).

⁴⁴ Joey Roulette, *Russian Actress and Director to Start Making First Movie on Space Station*, N.Y. TIMES (Oct. 5, 2021), <https://www.nytimes.com/2021/10/05/science/russia-space-launch.html>.

⁴⁵ David E. Sanger, *Soviets Send First Japanese, a Journalist, Into Space*, N.Y. TIMES (Dec. 3, 1990), <https://www.nytimes.com/1990/12/03/us/soviets-send-first-japanese-a-journalist-into-space.html>; Chartzky et al., *supra* note 43.

⁴⁶ While this table lists a space tourist by such passenger’s inaugural spaceflight, the cumulative duration is listed for individuals that made multiple trips to Outer Space.

LAUNCH DATE	FIRST TIME SPACE TOURIST(S) ON THE FLIGHT	ARRANGING COMPANY	MISSION	CAPSULE	DESTINATION IN OUTER SPACE	APPROX. TIME IN OUTER SPACE ⁴⁶
Sept. 18, 2006	Anoush-eh Ansari	Space Adventures	Soyuz TMA-9	Soyuz	International Space Station	About 11 days
Apr. 7, 2007	Charles Simonyi ⁴⁷	Space Adventures	Soyuz TMA-10 Soyuz TMA-14	Soyuz	International Space Station	About 26.6 days
Oct. 12, 2008	Richard Garriott	Space Adventures	Soyuz TMA-13	Soyuz	International Space Station	About 12 days
Sept. 30, 2009	Guy Laliberté	Space Adventures	Soyuz TMA-16	Soyuz	International Space Station	About 11 days
Feb. 22, 2019	Beth Moses ⁴⁸	Virgin Galactic	VF-01	SpaceShipTwo	Higher than 80 kilometers	About 9 minutes

⁴⁷ Mr. Simonyi went to Outer Space again on March 26, 2009. William Harwood, *Tourist and 2 Others on Way to Space Station*, N.Y. TIMES (Mar. 26, 2009), <https://www.nytimes.com/2009/03/26/science/space/27soyuz.html>. Because he was the only space tourist on this flight, this table omits this trip but includes the time spent on the second flight as part of his cumulative duration in Outer Space.

⁴⁸ This Article excludes the pilots, Mr. David MacKay and Mr. Michael Masucci, from the list of space tourists given their roles. Because there was no passenger aboard, the first Virgin Galactic flight that reached the threshold of eighty kilometers above mean sea level has also been omitted. That flight was piloted by Mr. Mark Stucky and Mr. Frederick Sturckow. Jacey Fortin, *Virgin Galactic Sends a Rocket Plane to Space Again, in Its Highest Flight Yet*, N.Y. TIMES (Feb. 22, 2019), <https://www.nytimes.com/2019/02/22/science/virgin-galactic-space.html>; Matthew Haag, *Virgin Galactic Rocket Ship Reaches Space, a Milestone in Space Tourism*, N.Y. TIMES (Dec. 13, 2018), <https://www.nytimes.com/2018/12/13/science/virgin-galactic-spaceship.html>.

LAUNCH DATE	FIRST TIME SPACE TOURIST(S) ON THE FLIGHT	ARRANGING COMPANY	MISSION	CAPSULE	DESTINATION IN OUTER SPACE	APPROX. TIME IN OUTER SPACE ⁴⁶
					above mean sea level	
July 11, 2021	Sirisha Bandla Colin Bennett Richard Branson ⁴⁹	Virgin Galactic	Unity 22	SpaceShipTwo	Higher than 80 kilometers above mean sea level	About 4 minutes
July 20, 2021	Jeff Bezos Mark Bezos Oliver Daemen Wally Funk	Blue Origin	NS-16	New Shepard	Above the Kármán Line (100 kilometers above mean sea level)	About 4 minutes
Sept. 16, 2021	Hayley Arceneaux Jared Isaacman Sian Proctor Christopher	Mr. Jared Isaacman via SpaceX	Inspiration4	Crew Dragon	Low Earth Orbit	About 3 days

⁴⁹ This list excludes the pilots: Mr. David Mackay and Mr. Michael Masucci. Ms. Beth Moses was also a participant on this flight. However, since it is her second flight, she is not listed as a “first time space tourist.” Kenneth Chang, *Branson Completes Virgin Galactic Flight, Aiming to Open Up Space Tourism*, N.Y. TIMES (July 11, 2021), <https://www.nytimes.com/2021/07/11/science/richard-branson-virgin-galactic-space.html>.

LAUNCH DATE	FIRST TIME SPACE TOURIST(S) ON THE FLIGHT	ARRANGING COMPANY	MISSION	CAPSULE	DESTINATION IN OUTER SPACE	APPROX. TIME IN OUTER SPACE ⁴⁶
	Sembroski					
Oct. 13, 2021	Chris Boshuizen Audrey Powers William Shatner Glen de Vries	Blue Origin	NS-18	New Shepard	Above the Kármán Line (100 kilometers above mean sea level)	About 4 minutes
Dec. 8, 2021	Yozo Hirano Yusaku Maezawa	Space Adventures	Soyuz MS-20	Soyuz	International Space Station	About 12 days
Dec. 11, 2021	Cameron Bess Lane Bess Evan Dick ⁵⁰ Laura Shepard-Churchley Michael Strahan Dylan Taylor	Blue Origin	NS-19	New Shepard	Above the Kármán Line (100 kilometers above mean sea level)	About 4 minutes for all except for Evan Dick (About 8 minutes)

⁵⁰ Mr. Evan Dick went up a second time on NS-21. See *infra* Part II.B.16.

LAUNCH DATE	FIRST TIME SPACE TOURIST(S) ON THE FLIGHT	ARRANGING COMPANY	MISSION	CAPSULE	DESTINATION IN OUTER SPACE	APPROX. TIME IN OUTER SPACE ⁴⁶
Mar. 31, 2022	Marty Allen Gary Lai Sharon Hagle Marc Hagle Jim Kitchen George Nield	Blue Origin	NS-20	New Shepard	Above the Kármán Line (100 kilometers above mean sea level)	About 4 minutes
Apr. 8, 2022	Larry Connor Mark Pathy Eytan Stibbe ⁵¹	Axiom Space via SpaceX	AX-1	Crew Dragon	International Space Station	About 17 days
June 4, 2022	Katya Echazarrera Hamish Harding Victor Correa Hespánha	Blue Origin	NS-21	New Shepard	Above the Kármán Line (100 kilometers above mean sea level)	About 4 minutes

⁵¹ Axiom Mission 1 also had Mr. Michael Lopez-Alegria, a former astronaut, onboard. But because Mr. López-Alegría served as an employee of Axiom Space for this mission and has been to Outer Space before as a professional, he has been excluded from this list. *Meet the Team: Michael López-Alegria*, AXIOMSPACE, <https://tinyurl.com/yj7rkm2d> (last visited Jan. 2, 2022); see *infra* Part II.B.17.

LAUNCH DATE	FIRST TIME SPACE TOURIST(S) ON THE FLIGHT	ARRANGING COMPANY	MISSION	CAPSULE	DESTINATION IN OUTER SPACE	APPROX. TIME IN OUTER SPACE ⁴⁶
	Jaison Robinson Victor Vescovo ⁵²					
Aug. 4, 2022	Coby Cotton Mário Ferreira Clint Kelly III Vanessa O'Brien Sara Sabry Steve Young	Blue Origin	NS-22	New Shepard	Above the Kármán Line (100 kilometers above mean sea level)	About 4 minutes

Table 1: A List of Space Tourists by Their Inaugural Spaceflight

1. The First Space Tourist: Mr. Dennis Tito

Space tourism officially—and literally—took off on April 28th, 2001 when Mr. Dennis Tito hitched a ride onboard a Soyuz to the International Space Station (“ISS”).⁵³ For this vacation of a lifetime, Mr. Tito paid \$20 million.⁵⁴ Although his ISS experience was eventually made possible by a Virginia-based company called

⁵² 16Mr. Evan Dick was also on this trip, but it was his second time up, so he has been excluded from this specific listing. *See infra* Part I.B.17.

⁵³ Mike Wall, *First Space Tourist: How a U.S. Millionaire Bought a Ticket to Orbit*, SPACE.COM (Apr. 27, 2011), <https://www.space.com/11492-space-tourism-pioneer-dennis-tito.html>.

⁵⁴ *Id.*

Space Adventures,⁵⁵ Mr. Tito's journey of becoming the world's first-ever space tourist took some perseverance.⁵⁶

Ever since 1961, Mr. Tito had dreamt of going to Outer Space.⁵⁷ But until the early 2000s, the United States space agency, National Aeronautics and Space Administration ("NASA"), was firmly against the idea of space tourism.⁵⁸ Thus, when Mr. Tito first broached the subject of going up to Outer Space as a tourist in 1991, he was more engaged with the other space power at the time: the Soviet Union.⁵⁹ However, his timing was off as the Soviet Union collapsed shortly thereafter.⁶⁰ But in the late 1990s when the Russian space agency—which had taken over the Soviet Union space program—was strapped for cash, Mr. Tito restarted those conversations.⁶¹ These discussions eventually led to Russia agreeing to take Mr. Tito up to Outer Space on a Soyuz via a visit to the Russian space station Mir.⁶² Yet, Mr. Tito's hopes were soon dashed again when Russia decided to deorbit the Mir in late 2000.⁶³

Undeterred and determined to fulfill his lifelong dream, Mr. Tito eventually secured an agreement with the Russians to take him to Outer Space via a visit to the ISS.⁶⁴ However, because the ISS is jointly-owned and operated by several nations, this trip still needed the approval of all of the ISS's partners.⁶⁵ But as a leader among these ISS space agencies, NASA had significant concerns and worried that having an unqualified and untrained private individual onboard could jeopardize the safety of the ISS and its professional crew.⁶⁶ While negotiations took place among the ISS partners, Mr. Tito pressed forward and began training for his trip in Russia's Star City—the starting point of training for all cosmonauts since the days of Yuri Gagarin.⁶⁷

⁵⁵ *Id.*

⁵⁶ Francesca Street, *First Space Tourist Dennis Tito: "It was the Greatest Moment of My Life"*, CNN (July 20, 2021), <https://www.cnn.com/travel/article/space-tourism-20-year-anniversary-scn/index.html>.

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ *Id.*

⁶² Wall, *supra* note 53.

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ *Id.*

Eventually, the ISS partners came to a workable agreement.⁶⁸ With this complication resolved, Mr. Tito took off for the ISS on April 28th, 2001, in a Soyuz as part of Mission TM-32.⁶⁹ Upon entering Outer Space, he became the world's first ever space tourist. After spending "eight days of euphoria"⁷⁰ in Outer Space, Mr. Tito landed back on Earth on May 6th, 2001.⁷¹ While achieving his childhood dream, Mr. Tito also launched the tourism industry to new heights undreamt of. Furthermore, because Mr. Tito's historic ISS trip had no mishaps, it also fundamentally changed NASA's mindset about space tourism and successfully paved the path for future space tourists.⁷²

2. The First African in Outer Space: Mr. Mark Shuttleworth

Once Mr. Tito showed the world that a new form of tourism was possible, others quickly followed suit. Within a year, Mr. Mark Shuttleworth became the world's second space tourist and the first person born on the continent of Africa to go to Outer Space.⁷³ On April 25th, 2002, Mr. Shuttleworth began his journey to the ISS onboard a Soyuz as part of Mission TM-34⁷⁴ after spending an eight-month training stint at Star City.⁷⁵ Arranged by Spaces Adventures as well,⁷⁶ this trip reportedly cost Mr. Shuttleworth more than \$20 million.⁷⁷

Determined to be more than just a "guest" taking up room onboard the space station, Mr. Shuttleworth worked on several scientific studies during his eight-day ISS

⁶⁸ Jim Slade & Willow Lawson, *World's First 'Space Tourist' Lifts Off*, ABCNEWS (Apr. 28, 2001), <https://abcnews.go.com/Technology/story?id=98612&page=1>.

⁶⁹ Mark Wade, *Soyuz TM-32 ISS EP-1*, ENCYCLOPEDIA ASTRONAUTICA, <http://www.astronautix.com/s/soyuztm-32issep-1.html> (last visited Jan. 3, 2022).

⁷⁰ Street, *supra* note 56.

⁷¹ Wall, *supra* note 53.

⁷² *See id.* ("But Tito said all the drama and difficulties are water under the bridge, especially since the agency has been so supportive of the six other space tourists who have since flown to the orbiting lab—and so supportive of private spaceflight in general over the past decade.").

⁷³ Steve Ranger, *How Mark Shuttleworth Became the First African in Space and Launched a Software Revolution*, TECHREPUBLIC (Jan. 19, 2017), <https://www.techrepublic.com/article/how-mark-shuttleworth-became-the-first-african-in-space-and-launched-a-software-revolution/>.

⁷⁴ Mark Wade, *Soyuz TM-34 ISS EP-3*, ENCYCLOPEDIA ASTRONAUTICA, <http://www.astronautix.com/s/soyuztm-34issep-3.html> (last visited Jan. 3, 2022).

⁷⁵ Ranger, *supra* note 73.

⁷⁶ Dev1 SummerTree, *Mark Shuttleworth*, SPACE ADVENTURES, <https://spaceadventures.com/mark-shuttleworth/> (last visited Jan. 3, 2022).

⁷⁷ Warren E. Leary, *A South African With a Dream Ready for Launch Into Space*, N.Y. TIMES (Apr. 24, 2002), <https://www.nytimes.com/2002/04/24/world/a-south-african-with-a-dream-ready-for-launch-into-space.html>.

stay.⁷⁸ Having conducted experiments focused on stem cells, human health, and HIV soluble protein crystallization, Mr. Shuttleworth argued that he should be considered more than just a space tourist.⁷⁹ While his quest for the “astronaut” title was not successful, NASA was more receptive and accommodating to space tourism this time around.⁸⁰ After landing in Kazakhstan on May 5th, 2002, Mr. Shuttleworth attempted to buy the Soyuz capsule he landed in.⁸¹ But unfortunately, this offer was eventually rebuffed by the Russian space agency.⁸²

3. The Scientist Space Tourist: Mr. Gregory Olsen

After Mr. Shuttleworth’s flight, space tourism took a three-year hiatus before the next private individual took his ride into Outer Space. Inspired by Mr. Tito and Mr. Shuttleworth, Mr. Gregory Olsen—a successful scientist-businessman in the fiber optics and infrared sensor technologies industry—hatched the idea of going to Outer Space in 2003.⁸³ After paying about \$20 million and working with Space Adventures to arrange his trip, Mr. Olsen seemed to be on his way to becoming the world’s third space tourist.⁸⁴ But, Mr. Olsen’s space journey then hit a bump along the road; early on during his training, a personal health problem almost permanently grounded him.⁸⁵ But his tenacity paid off and having eventually resolved his issues, Mr. Olsen launched onboard a Soyuz as part of Mission TMA-7⁸⁶ on October 1st, 2005.⁸⁷

While on the ISS, Mr. Olsen made several solo broadcasts and conducted experiments for the European Space Agency (“ESA”).⁸⁸ After a nearly ten-day stay in Outer Space, Mr. Olsen landed back on Earth on October 10th, 2005.⁸⁹ Although he paid millions for this opportunity, Mr. Olsen firmly believes that the experience

⁷⁸ Mark Shuttleworth, *supra* note 76.

⁷⁹ Alan Boyle, *Space Passenger Senses Momentum*, NBC NEWS (May 13, 2002, 13:34 PM), <https://www.nbcnews.com/id/wbna3077958>.

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² *Id.*

⁸³ Alan Boyle, *Space Passenger Rides Out Highs and Lows*, NBC NEWS (Sept. 20, 2005, 11:30 AM), <https://www.nbcnews.com/id/wbna9313347> [hereinafter *Highs and Lows*].

⁸⁴ *Id.*

⁸⁵ Tariq Malik, *Liftoff! Third Space Tourist, New Crew Launches Toward Space Station*, SPACE.COM (Sept. 30, 2005), <https://www.space.com/1627-liftoff-space-tourist-crew-launches-space-station.html>.

⁸⁶ Amy Tikkanen, *Gregory Olsen*, BRITANNICA.COM, <https://www.britannica.com/biography/Gregory-Olsen> (last visited Jan. 3, 2022).

⁸⁷ *Id.*

⁸⁸ *Highs and Lows*, *supra* note 83.

⁸⁹ Tikkanen, *supra* note 86.

was worth every penny⁹⁰—so much so that Mr. Olsen actually spent a bit more money afterwards for a souvenir related to his trip: purchasing the Soyuz that took him home.⁹¹ Like Mr. Shuttleworth, Mr. Olsen objects to being called a “space tourist” because of the preparation needed for this journey.⁹² And while he does not believe he could lay claim to the title of astronaut, cosmonaut, or any other type of professional “-naut,”⁹³ he believes the term “spaceflight participant” would be much more appropriate given his training and the experiments he performed on his trip.⁹⁴

4. The First Female Space Tourist: Ms. Anousheh Ansari

On September 18th, 2006, Ms. Anousheh Ansari became the world’s first female space tourist after launching into Outer Space onboard a Soyuz via Mission TMA-9.⁹⁵ While Ms. Ansari was always likely to be the world’s first female space tourist,⁹⁶ her trip to Outer Space came unexpectedly early when Mr. Daisuke Enomoto—who was supposed to have gone up on this flight—was disqualified because of a health issue.⁹⁷ Since Ms. Ansari was Mr. Enomoto’s backup, she was already training for this trip and was easily slotted in.⁹⁸ Her almost eleven-day journey in Outer Space was also arranged by Space Adventures and cost about \$20 million.⁹⁹ Like several of the space tourists before her, Ms. Ansari performed several experiments while onboard the ISS.¹⁰⁰ After a “magnificent” ISS stay, Ms. Ansari landed near Arkalyk, Kazakhstan

⁹⁰ *Space Tourist: Worth Every Penny*, CBS NEWS (Oct. 13, 2005, 10:20 AM), <https://www.cbsnews.com/news/space-tourist-worth-every-penny/>.

⁹¹ *Soyuz TMA-6 Spacecraft Craned onto Intrepid*, INTREPID SEA, AIR & SPACE MUSEUM COMPLEX (Oct. 18, 2011, 12:26 PM), <https://www.intrepidmuseum.org/SOYUZTMA6Spacecraft.aspx>.

⁹² Associated Press, *Space Passenger Got His \$20 Million Worth*, NBC NEWS (Oct. 13, 2005, 1:55 AM), <https://www.nbcnews.com/id/wbna9686549>.

⁹³ See *Ruling Outer Space*, *supra* note 22, at 718 (noting “‘astronauts’—a largely American-centric term, ‘cosmonauts’—a largely Russian-centric term, and any other ‘-onauts’ term that might appear such as ‘taikonauts’—a Chinese-centric term”).

⁹⁴ Malik, *supra* note 85.

⁹⁵ Erik Gregersen, *Anousheh Ansari*, BRITANNICA.COM, <https://www.britannica.com/biography/Anousheh-Ansari> (last visited Jan. 3, 2022).

⁹⁶ Tariq Malik, *American in Line to Be First Female Space Tourist*, NBC NEWS (Aug. 10, 2006, 3:53 PM), <https://www.nbcnews.com/id/wbna14292758>.

⁹⁷ David Kushner, *The Space Tourist Who Wasn’t*, WIRED (Aug. 18, 2008, 12:00 PM), <https://www.wired.com/2008/08/ff-starcity-enomoto/>.

⁹⁸ *Id.*

⁹⁹ Ker Than, *Ansari, Expedition 13 Crew Return to Earth*, SPACE.COM (Sept. 28, 2006), <https://www.space.com/2957-ansari-expedition-13-crew-return-earth.html>.

¹⁰⁰ Gregersen, *supra* note 95.

shortly before dawn on September 28th, 2006, taking with her a cosmonaut badge and a Zero-G sensor teddy bear as parting gifts from her launch crew.¹⁰¹

Similar to Mr. Olsen before her, Ms. Ansari also takes issue with the “space tourist” title because of the amount of training and preparation needed for the trip.¹⁰² She believes that like an expedition to an inhospitable area of Earth such as Mount Everest or Antarctica, a trip to Outer Space “requires a lot more preparation, thinking, and studying or appreciation of the environment.”¹⁰³ But regardless of how the public feels about this issue, everyone agrees that Ms. Ansari made significant contributions to the space tourism industry. Prior to her Outer Space flight, Ms. Ansari was a major benefactor of the “Ansari X Prize,” a \$10 million competition to build the world’s first private reusable spacecraft that can launch twice into Outer Space within two weeks.¹⁰⁴ From this competition, the winning design, SpaceShipOne, was eventually licensed to and set the foundation for the now well-known space tourism company, Virgin Galactic.¹⁰⁵

5. The Twice Private Space Tourist: Mr. Charles Simonyi

On April 7th, 2007,¹⁰⁶ Mr. Charles Simonyi became the world’s fifth space tourist when he launched onboard a Soyuz with the crew of Mission TM-10.¹⁰⁷ But as exclusive as this club is, on March 26th, 2009, Mr. Simonyi literally one-upped the other space tourists by becoming the first—and currently only—space tourist to visit the ISS twice.¹⁰⁸ For these two trips arranged by Space Adventures, Mr. Simonyi paid a total of about \$60 million.¹⁰⁹ This figure does not include the extra \$5 million that Mr. Simonyi paid to join the Space Adventures’ Orbital Missions Explorers Circle program, which gave him priority access and enabled him to go up a second time

¹⁰¹ Than, *supra* note 99.

¹⁰² Sara Goudarzi, *Interview with Anousheh Ansari, the First Female Space Tourist*, SPACE.COM (Sept. 15, 2006), <https://www.space.com/2889-interview-anousheh-ansari-female-space-tourist.html>.

¹⁰³ *Id.*

¹⁰⁴ *Launching A New Space Industry*, ANSARI X PRIZE, <https://www.xprize.org/prizes/ansari> (last visited Jan. 5, 2022).

¹⁰⁵ *Id.*

¹⁰⁶ John Schwartz, *On the Launching Pad: A \$20 Million Childhood Dream*, N.Y. TIMES (Apr. 7, 2007), <https://www.nytimes.com/2007/04/07/science/space/07soyuz.html>.

¹⁰⁷ Amy Tikkanen, *Charles Simonyi*, BRITANNICA.COM, <https://www.britannica.com/biography/Charles-Simonyi> (last visited Jan. 5, 2022).

¹⁰⁸ Stephen Bates, *Microsoft Software Billionaire First Tourist to Go to Space Twice*, THE GUARDIAN (Mar. 26, 2009), <https://www.theguardian.com/world/2009/mar/26/space-tourist-simonyi>.

¹⁰⁹ *Id.*

ahead of others on the waitlist.¹¹⁰ With each stay onboard the ISS lasting more than a week, as of the end of first quarter 2023, Mr. Simonyi holds the record for the longest time spent in Outer Space as a space tourist: a little bit more than 26.6 days.¹¹¹

Although offered the opportunity to be the first space tourist to do a spacewalk, Mr. Simonyi declined this \$10 million upgrade for his second trip up.¹¹² After he landed for the second time and knowing his space travel days were behind him,¹¹³ Mr. Simonyi set about acquiring one of the Soyuz capsules that took him up to Outer Space.¹¹⁴ Finding success, Mr. Simonyi now has a permanent memento for his spaceflight days: Soyuz TMA-14—the space capsule that took him up on his second ISS trip.¹¹⁵ TMA-14 is now on permanent display at the Museum of Flight in Seattle.¹¹⁶

6. The Astronaut's Son: Mr. Richard Garriott

On October 12th, 2008, the world's sixth space tourist, Mr. Richard Garriott, blasted off for Outer Space onboard a Soyuz with the crew of Mission TMA-13.¹¹⁷ Unlike the space tourists before him, Mr. Garriott has a deep personal connection with the human spaceflight industry. He is the first space tourist who was raised in an astronaut family.¹¹⁸ Growing up, Mr. Garriott wanted to follow the footsteps of his

¹¹⁰ Tariq Malik, *Elite Club Lets Space Tourist Cut to Front of Line*, SPACE.COM (Oct. 6, 2008), <https://www.space.com/5932-elite-club-lets-space-tourist-cut-front-line.html>.

¹¹¹ Mark Wade, *Simonyi, Charles*, ENCYCLOPEDIA ASTRONAUTICA, <http://www.astronautix.com/s/simonyi.html> (last visited Jan. 6, 2022).

¹¹² Conor Humphries, *U.S. Mogul's Wife Calls Time on \$60 Million Space Hobby*, REUTERS (Mar. 5, 2009, 11:23 AM), <https://www.reuters.com/article/us-space-russia-simonyi/u-s-moguls-wife-calls-time-on-60-million-space-hobby-idUSTRE5244VT20090305>.

¹¹³ *See id.* (“I decided to fly before I got engaged and my wife agreed that I would be able to fly just once more, so I cannot fly a third time.”).

¹¹⁴ Alan Boyle, *Used Russian Spaceship Will Land in Seattle Museum*, NBC NEWS (Dec. 8, 2011, 9:34 PM), <https://www.nbcnews.com/science/cosmic-log/used-russian-spaceship-will-land-seattle-museum-flna6c10402605>.

¹¹⁵ *Soyuz TMA-14 Descent Module*, THE MUSEUM OF FLIGHT, <https://www.museumofflight.org/spacecraft/soyuz-tma-14-descent-module> (last visited Jan. 6, 2022).

¹¹⁶ *Id.*

¹¹⁷ Brian Dunbar, *Expedition 18 Lifts Off!*, NASA, https://www.nasa.gov/multimedia/imagegallery/image_feature_1195.html (last updated Nov. 7, 2017).

¹¹⁸ Alex Moore, *America's Only Second-Generation Astronaut was Told He'd Never Go to Space. He Made It Anyway.*, ROBB REPORT (July 24, 2021), <https://robbreport.com/lifestyle/news/richard-garriott-americas-only-second-generation-astronaut-1234625239/> [hereinafter *He Made It Anyway*].

father—one of NASA’s first scientist-astronauts—by joining NASA.¹¹⁹ But this dream was shattered because of his poor eyesight.¹²⁰ Undeterred, Mr. Garriott continued to pursue his dream and in 1998, he co-founded the first private company devoted to space tourism, Space Adventures.¹²¹ The company’s primary mission is to broker tourism rides into Outer Space via governmental space agencies.¹²²

While NASA rebuffed Space Adventures’ initial overtures, the Russian space agency—in need of money—readily accepted the partnership.¹²³ Mr. Garriott, as the co-founder, signed up to be his company’s first paying customer to go to Outer Space.¹²⁴ Unfortunately, right when Mr. Garriott was preparing to go up, the dotcom bubble burst and wiped out a significant portion of Mr. Garriott’s fortune.¹²⁵ No longer having the required funds, Mr. Garriott had to sell his seat to Mr. Tito, who then became the world’s first space tourist.¹²⁶ Devastated, yet still determined to go to Outer Space, Mr. Garriott was able to eventually book another seat for \$30 million.¹²⁷ After undergoing a risky surgery to remove a disqualifying health condition, he finally made it to Outer Space in 2008.¹²⁸ While onboard the ISS, he performed over thirty experiments, one of which, ironically, is a NASA study on his eyes.¹²⁹ Because of this experiment, others like Mr. Garriott will no longer be automatically disqualified from spaceflight for eyesight issues as long as they are laser-corrected.¹³⁰

119 *Id.*

120 *Id.*

121 Alex Moore, *The Medieval Knight Who Went into Space*, BBC NEWS (Feb. 3, 2020), <https://www.bbc.com/news/business-50757073>.

122 *Id.*

123 Catherine Clifford, *What It’s Like to Travel to Space, From A Tourist Who Spent \$30 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>.

124 *Id.*

125 *Id.* The dotcom bubble was a period in the late 1990s and early 2000s when the stocks of U.S. internet technology-oriented companies experienced exponential increases. This bubble finally burst between 2001 and 2002 when the investing frenzy died down which led to many technology companies becoming worthless in just a couple of months. Adam Hayes, *Dotcom Bubble*, INVESTOPEDIA (June 25, 2019), <https://www.investopedia.com/terms/d/dotcom-bubble.asp>.

126 *See supra* Part II.B.1.

127 Clifford, *supra* note 123.

128 *He Made It Anyway*, *supra* note 118.

129 *Id.*

130 *Id.*

7. The ‘Clown’ Space Tourist: Mr. Guy Laliberté

Wearing a clown’s red nose, Mr. Guy Laliberté became the world’s seventh space tourist as he flew toward the ISS on September 30th, 2009 with the crew of Mission TMA-16.¹³¹ A founder of the famous Cirque Du Soleil franchise, Mr. Laliberté paid \$35 million for his eleven-day trip in Outer Space—which he called “an amazing journey.”¹³² While Mr. Laliberté first learned of space tourism in 2001 and was all set to go up in 2007, he had to postpone the trip for family reasons but was lucky enough to be offered another seat onboard a Soyuz for 2009.¹³³ Although Mr. Laliberté at first rejected the offer, he changed his mind and decided to go through with the trip.¹³⁴ This proved to be a wise decision because with the retirement of the Space Shuttle program and NASA needing seats on the Soyuz, almost a decade would pass before the next space tourist would take flight.¹³⁵

With his background in the arts rather than “hard science,” Mr. Laliberté tapped into his entertainment roots and hosted from the ISS a performance featuring singers, acrobats, actors, and politicians around the world to raise awareness for clean water issues on Earth.¹³⁶ Like many others, Mr. Laliberté believes that more people should go to Outer Space because of the impact it would have on people’s perception of the world and the life living on it; that humanity would have “a better planet” if more had the opportunity to experience the Overview Effect.¹³⁷

¹³¹ Shavkat Rakhmatullayev and Shamil Zhumatov, *Canadian Circus Tycoon Makes Journey Into Space*, REUTERS (Sept. 29, 2009), <https://www.reuters.com/article/centerentertainment-us-space-kazakhstan-launc-idCATRE58T1EE20090930>; see also *Expedition 21 Prepare for Launch*, NASA, https://www.nasa.gov/mission_pages/station/multimedia/exp21_prelaunch_images.html (last visited Jan. 3, 2022).

¹³² Clara Moskowitz, *Billionaire Clown Lands After Space Mission*, SPACE.COM (Oct. 10, 2009), <https://www.space.com/7398-billionaire-clown-lands-space-mission.html>.

¹³³ Steven Bertoni, *Why Cirque Du Soleil Billionaire Guy Laliberté Traveled to Space*, FORBES (June 9, 2011 10:55 AM), <https://www.forbes.com/sites/stevenbertoni/2011/06/09/why-cirque-du-soleil-billionaire-guy-laliberte-traveled-to-space/?sh=44cd0a897cb2>.

¹³⁴ *Id.*

¹³⁵ Associated Press, *Circus Tycoon Guy Laliberté Becomes First Clown in Space*, THE GUARDIAN (Sept. 30, 2009 04:28 PM), <https://www.theguardian.com/science/2009/sep/30/guy-laliberte-clown-space-circus>.

¹³⁶ Moskowitz, *supra* note 132.

¹³⁷ Clara Moskowitz, *Earth’s Beauty From Space: Q&A With ‘Space Clown’ Guy Laliberté*, SPACE.COM (June 28, 2011), <https://www.space.com/12088-photos-earth-space-gaia-guy-laliberte.html>.

8. The First Virgin Galactic Space Passenger: Ms. Beth Moses

After Mr. Laliberté's trip up to Outer Space, it would be more than a decade before the next space tourist is able to reserve another seat on the Soyuz.¹³⁸ With the retirement of the Space Shuttle, NASA had to buy seats on the Russian Soyuz to transport it and its partners' personnel up to the ISS.¹³⁹ With NASA reserving the extra seats and providing a steady source of revenue, the Russian Space Agency no longer had the capacity or need to ferry space tourists.¹⁴⁰ With national space agencies' vehicles out of the picture, the space tourism industry had to rely on private enterprises to carry the baton forward. At that time, for many, the focus was on the most advanced of these commercial space tourism companies: Virgin Galactic.¹⁴¹

Founded by Sir Richard Branson, Virgin Galactic is a space tourism company with an atypical launch method.¹⁴² Instead of using a rocket to vertically propel a capsule upward, the company seeks to reach Outer Space through a traditional airplane takeoff via a combined air-and-space mothership before the spaceship portion is released midair.¹⁴³ After release, the spaceship then propels itself into Outer Space.¹⁴⁴ Upon entering this environment, passengers are able to experience a few minutes of weightlessness before the spaceship "feathers" itself by tilting its wings upward.¹⁴⁵ This allows the spaceship to glide back into Earth's atmosphere before a horizontal landing.¹⁴⁶ The company obtained this combined air-and-space mothership design through a license of Scaled Composite's Ansari X Prize winning design, SpaceShipOne.¹⁴⁷ At first, all intellectual property rights related to the spaceship were placed in a joint venture company, aptly named The Spaceship Company, between Virgin Galactic and Scaled Composite.¹⁴⁸ Eventually, Virgin Galactic acquired The

¹³⁸ See *infra* Part II.B.13.

¹³⁹ Alex S. Li, *Made in America: The Maiden Flight of NASA's Commercial Crew*, #THESPACEBAR (May 26, 2020), <https://alexqli.com/thespacebar/2020/5/26/made-in-america-the-maiden-flight-of-the-commercial-crew> [hereinafter *Maiden Flight*].

¹⁴⁰ *Id.*

¹⁴¹ Doug Adler, *Virgin Galactic: The Private Company with a Unique Approach to Spaceflight*, ASTRONOMY (May 21, 2021), <https://astronomy.com/news/2021/05/virgin-galactic-the-private-company-with-a-unique-approach-to-spaceflight>.

¹⁴² *Id.*

¹⁴³ *Id.*

¹⁴⁴ Kenneth Chang, *What is Virgin Galactic's Space Plane, and What Did It Do?*, N.Y. TIMES (July 11, 2021), <https://www.nytimes.com/2021/07/11/science/virgin-galactic-space-plane.html>.

¹⁴⁵ *Id.*

¹⁴⁶ Adler, *supra* note 141.

¹⁴⁷ See *supra* Part II.B.4.

¹⁴⁸ Courtney Howard, *Virgin Galactic Assumes Ownership of The Spaceship Company, Acquires Scaled Composites' Stake in Sister Company*, MIL. & AEROSPACE ELECTRONICS (Oct.

Spaceship Company by purchasing all of Scaled Composite's ownership stake in the joint venture.¹⁴⁹

During this unique design's development, Virgin Galactic encountered many difficulties and experienced several unfortunate fatal accidents.¹⁵⁰ However, the company persevered through these tragedies and on December 13th, 2018, Virgin Galactic reached Outer Space¹⁵¹ with VSS Unity, a craft based on its second-generation spaceship design known as SpaceShipTwo.¹⁵² On this passenger-less test flight, the two pilots, Mr. Mark Stucky and Mr. Frederick C.J. Sturckow, guided VSS Unity to an altitude of 82.7 kilometers above mean sea level.¹⁵³ With this successful mission, Virgin Galactic then planned for its first passenger-carrying test flight. On February 22nd, 2019, Virgin Galactic achieved this milestone when it reached Outer Space for the second time with its chief astronaut instructor, Ms. Beth Moses, onboard as a space passenger.¹⁵⁴ Designated VF-01,¹⁵⁵ this flight saw VSS Unity reach an altitude of 89.9 kilometers above mean sea level¹⁵⁶ and spend about five minutes in Outer Space.¹⁵⁷ Thus with this mission, Ms. Moses became the world's eighth space

8, 2012), <https://www.militaryaerospace.com/test/article/16720174/virgin-galactic-assumes-ownership-of-the-spaceship-company-acquires-scaled-composites-stake-in-sister-company>.

¹⁴⁹ *Id.*

¹⁵⁰ Adler, *supra* note 141.

¹⁵¹ While some consider 100 kilometer above mean sea level as the start of Outer Space, Virgin Galactic uses the "Astronaut Badge Line" as its Outer Space demarcation. This begins at an altitude of about fifty miles above mean sea level. *See Ruling Outer Space, supra* note 22, at 723–28 ("This Article refers to this fifty-mile line as the "Astronaut Badge Line" because it represents the threshold for the United States Air Force to award the astronaut badge.") (internal citations omitted).

¹⁵² Mike Wall, *Virgin Galactic's SpaceShipTwo Reaches Space for 1st Time in Historic Test Flight!*, SPACE.COM (Dec. 13, 2018), <https://www.space.com/42716-virgin-galactic-spaceshiptwo-unity-reaches-space.html>.

¹⁵³ *Id.*

¹⁵⁴ While Ms. Moses is a Virgin Galactic employee on this mission, this Article still considers her a space tourist because she was onboard as a passenger testing out the in-cabin experience for space tourists. *See* Meghan Bartels, *Virgin Galactic Reaches Space Again, Flies Test Passenger for 1st Time*, SPACE.COM (Feb. 22, 2019), <https://www.space.com/virgin-galactic-powered-flight-february-2019.html>.

¹⁵⁵ *VSS Unity V-01 SpaceShipTwo*, SPACE LAUNCH SCHEDULE, <https://www.spacelaunchschedule.com/launch/spaceshiptwo-vss-unity-vf-01/> (last visited Jan. 12, 2022).

¹⁵⁶ Virgin Galactic (@virgingalactic), TWITTER (Feb. 22, 2019, 1:38 PM), <https://twitter.com/virgingalactic/status/1099015608824258560>.

¹⁵⁷ *See* Jackie Wattles, *A Q&A with Beth Moses, the First Passenger Ever on Virgin Galactic's Space Plane*, CNN (Oct. 17, 2019 8:07 AM), <https://www.cnn.com/2019/10/16/tech/virgin-galactic-beth-moses-spacesuit/index.html> ("I had

tourist and the first woman to fly to Outer Space on a commercial spaceship.¹⁵⁸ Looking back, her most memorable part of the experience was when the flight reached apogee¹⁵⁹ and they “all sort of marveled at how [magical] it was.”¹⁶⁰

9. A Fuller Virgin Galactic Crew: Ms. Sirisha Bandla, Mr. Colin Bennett, and Sir Richard Branson

After VF-01’s success, many eagerly waited for Sir Richard Branson, the founder of Virgin Galactic, to make his way up to Outer Space via this vehicle. A successful trip with Sir Branson onboard would essentially prove to the world that the space tourism industry has matured to its next stage.¹⁶¹

However, because of several issues, more than two years would past before Virgin Galactic would reach Outer Space again with passengers onboard. First, the company had to deal with a seal on VSS Unity’s starboard wing that broke during the VF-01 mission.¹⁶² While the spacecraft landed safely, this incident triggered a safety audit.¹⁶³ Once SpaceShipTwo was cleared for spaceflights again, on VSS Unity’s subsequent test flight, an issue with electromagnetic interference caused the onboard computer to lose communication with the engine, resulting in a premature shutdown.¹⁶⁴ Luckily, the plane landed safely but this issue took several more months to resolve.¹⁶⁵ But the company persevered through these challenges and on May 22nd, 2021, Virgin Galactic made its first successful Outer Space test flight from New

a little bit less than five minutes in weightlessness, and that’s about what our customers will have as well.”)

¹⁵⁸ Virgin Galactic (@virgingalactic), TWITTER (Feb. 22, 2019, 6:20 PM), <https://twitter.com/virgingalactic/status/1099086657259679744>; see also Alex S. Li, *The First 20 Years of Space Tourism (2001-2021): A Chronology*, #THESPACEBAR (Feb. 1, 2022), <https://alexli.com/thespacebar/2022/2/8/the-first-20-years-of-space-tourism-2001-2021-a-brief-chronology>.

¹⁵⁹ Beth Moses, *Reflections of an Astronaut*, VIRGIN GALACTIC (Feb. 12, 2020), <https://www.virgingalactic.com/news/beth-moses-reflections-of-an-astronaut/>.

¹⁶⁰ Elizabeth Howell, *Virgin Galactic’s 1st Test Passenger Felt Like Spider-Man After Launch*, SPACE.COM (Feb. 28, 2019), <https://www.space.com/virgin-galactic-test-passenger-experience.html>.

¹⁶¹ Rebecca Heilweil, *Richard Branson’s Trip to Space is About Convincing Others to Come Along*, VOX (July 11, 2021 7:00 AM), <https://www.vox.com/recode/22570789/richard-branson-elon-musk-jeff-bezos-spacex-blue-origin-virgin-galactic>.

¹⁶² Justin Davenport, *Virgin Galactic Successfully Flies Six Person Crew Including Founder Sir Richard Branson*, NASA SPACEFLIGHT.COM (July 11, 2021), <https://www.nasaspaceflight.com/2021/07/virgin-galactic-fly-founder-branson/>.

¹⁶³ *Id.*

¹⁶⁴ *Id.*

¹⁶⁵ *Id.*

Mexico.¹⁶⁶ The company was then quickly granted a license for commercial spaceflight operations,¹⁶⁷ the final step needed before Virgin Galactic was operationally ready to send its founder into Outer Space.

Thus, on July 11th, 2021, Sir Branson along with three of his fellow Virgin Galactic colleagues flew to Outer Space as passengers on VSS Unity.¹⁶⁸ Piloted by Mr. David Mackay and Mr. Michael Masucci and named Unity 22—the mission was VSS Unity’s twenty-second flight and fourth trip to Outer Space—the vehicle reached an apogee of about 86 kilometers above mean sea level.¹⁶⁹ All those onboard enjoyed about four minutes of weightlessness before the spacecraft returned to Earth.¹⁷⁰

Sir Branson’s fellow passengers included Ms. Sirisha Bandla, Mr. Colin Bennett, and Ms. Beth Moses.¹⁷¹ Aside from Ms. Moses and the pilots, it was everyone’s first spaceflight.¹⁷² Each of the passengers had a different role to play. Ms. Moses’ primary responsibility was to oversee the flight’s safety operations.¹⁷³ Ms. Bandla, who is the Vice President of Government Affairs and Research Operations at Virgin Galactic, evaluated the flight’s research experience by conducting an experiment sponsored by the University of Florida.¹⁷⁴ Mr. Bennett, Lead Operations Engineer at Virgin Galactic, observed certain engineering aspects of VSS Unity’s interior cabin.¹⁷⁵ And last but not least, Sir Branson critiqued the flight experience as a space tourist.¹⁷⁶ Although some issues were discovered later on and the next Virgin Galactic space tourism mission will not come any time soon,¹⁷⁷ this “inaugural” flight represented a significant milestone in the history of commercial space tourism.

¹⁶⁶ *Id.*

¹⁶⁷ *Id.*

¹⁶⁸ *Id.*

¹⁶⁹ Tariq Malik, *Virgin Galactic’s SpaceShipTwo Unity 22 Launch with Richard Branson. See Video and Photos of the Flight*, SPACE.COM (July 11, 2021), <https://www.space.com/virgin-galactic-richard-branson-unity-22-launch-explained>.

¹⁷⁰ *Id.*

¹⁷¹ *Id.*

¹⁷² *Id.*

¹⁷³ *Id.*

¹⁷⁴ *Id.*

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ See 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> (noting that Virgin Galactic was grounded from flight operations while FAA investigated why VSS Unity deviated from its restricted airspace during the mission); see also Elizabeth Howell, *Virgin Galactic Pushes 1st Commercial Passenger Flight to Spring 2023*,

10. The First Blue Origin Human Spaceflight: Mr. Jeff Bezos, Mr. Mark Bezos, Mr. Oliver Daemen, and Ms. Wally Funk

With Sir Branson reaching Outer Space—at least according to one of the definitions, the billionaires’ space race entered a new phase.¹⁷⁸ Soon after Virgin Galactic’s launch, it was Blue Origin’s turn. Founded by Mr. Jeff Bezos in September 2000, Blue Origin is a company focused on several aspects of the commercial space industry.¹⁷⁹ One of these areas is space tourism with its signature New Shepard rocket system designed primarily for the purpose of taking passengers up to Outer Space.¹⁸⁰ Named after NASA astronaut Alan Shepard—the first American in Outer Space—New Shepard is a reusable autonomous launch system that can ferry six space tourists up to Outer Space at once.¹⁸¹ Using the traditional vertical takeoff method, New Shepard can launch passengers to an altitude of more than 100 kilometers above mean sea level.¹⁸² Hence unlike an adventure onboard Virgin Galactic’s SpaceShipTwo, a New Shepard spaceflight will clear all existing threshold for the start of Outer Space.¹⁸³

The New Shepard vehicle made its maiden launch on April 29th, 2015, but had a setback with its hydraulic system that caused the rocket to crash land.¹⁸⁴ But the problem was quickly resolved and a new version of the rocket system successfully performed a launch and landing on November 23rd, 2015.¹⁸⁵ A few more test flights later, the New Shepard rocket system advanced to version three and conducted its first non-experimental flight on December 12th, 2017 with a mannequin named Luke Skywalker and several revenue-generating experiments onboard.¹⁸⁶

SPACE.COM (Aug. 5, 2022), <https://www.space.com/virgin-galactic-first-commercial-flight-delay-spring-2023>.

¹⁷⁸ Alex S. Li, *The Tripartite for Outer Space Tourism*, #THESPACEBAR (Mar. 29, 2020), <https://alexli.com/thespacebar/2020/3/29/the-outer-space-tourism-tripartite> [hereinafter *Tripartite*]; see also *infra* Part C.

¹⁷⁹ Mike Wall, *A Lifelong Dream and 20 Years of Work: How Blue Origin and Jeff Bezos Arrived at Their 1st Astronaut Launch*, SPACE.COM (July 19, 2021), <https://www.space.com/jeff-bezos-blue-origin-spaceflight-history> [hereinafter *Lifelong Dream*].

¹⁸⁰ *New Shepard*, BLUE ORIGIN, <https://www.blueorigin.com/new-shepard/> (last visited Jan. 14, 2022).

¹⁸¹ *Id.*

¹⁸² Jeff Faust, *Bezos Emphasizes Altitude Advantage of New Shepard Over SpaceShipTwo*, SPACE NEWS (Feb. 20, 2019), <https://spacenews.com/bezos-emphasizes-altitude-advantage-of-new-shepard-over-spaceshiptwo/>.

¹⁸³ See *Ruling Outer Space*, *supra* note 22, at 723–28 (explaining that “there is no official or universally accepted boundary for Outer Space”).

¹⁸⁴ Elizabeth Howell, *New Shepard: Rocket for Space Tourism*, SPACE.COM (July 15, 2021), <https://www.space.com/40372-new-shepard-rocket.html>.

¹⁸⁵ *Id.*

¹⁸⁶ *Id.*

After some more tinkering of its version three, a fourth version of the Blue Origin rocket system was introduced.¹⁸⁷ Blue Origin named this version RSS First Step and built it to be its first rocket capable of carrying passengers.¹⁸⁸ RSS First Step made its maiden voyage and qualification flight on January 14th, 2021, and its verification flight on April 14th, 2021.¹⁸⁹ Successfully passing both tests, New Shepard was ready for its first official space tourism flight.¹⁹⁰

With Mr. Bezos' dream of going to Outer Space starting on the same day as Apollo 11's historic moon landing, Blue Origin timed its first official human spaceflight for the fifty-second anniversary of this iconic event.¹⁹¹ Named NS-16—after the sixteenth launch of the New Shepard rocket system—the mission successfully took four space tourists into Outer Space on July 20th, 2021.¹⁹² The spaceflight had an apogee of about 107 kilometers above mean sea level and its passengers experienced about four minutes of weightlessness.¹⁹³

Aside from Mr. Jeff Bezos, the founder of Blue Origin, and his brother, Mr. Mark Bezos, this pilotless flight also included Mr. Oliver Daemen and Ms. Wally Funk.¹⁹⁴ The latter pair made history by becoming the youngest and oldest person to reach Outer Space¹⁹⁵—though Ms. Funk would relinquish her record about three months

¹⁸⁷ Thomas Burghardt, *Blue Origin Tests New Shepard Capsule Upgrades on NS-14 Mission*, NASASPACEFLIGHT.COM (Jan. 14, 2021), <https://www.nasaspaceflight.com/2021/01/blue-origin-test-upgrades-ns-14/>.

¹⁸⁸ Stephen Clark, *Blue Origin Tests Passenger Accommodations on Suborbital Launch*, SPACEFLIGHT NOW (Jan. 14, 2021), <https://spaceflightnow.com/2021/01/14/blue-origin-new-shepard-ns-14/>.

¹⁸⁹ *Id.*; Michael Sheetz, *Jeff Bezos' Blue Origin Launches and Lands Rocket New Shepard, as It Prepares to Launch People*, CNBC (Apr. 14, 2021, 1:28 PM), <https://www.cnbc.com/2021/04/14/watch-jeff-bezos-blue-origin-launch-new-shepard-ns-15-livestream.html>.

¹⁹⁰ Jeff Foust, *Blue Origin Ready for First Crewed New Shepard Launch*, SPACENEWS (July 18, 2021), <https://spacenews.com/blue-origin-ready-for-first-crewed-new-shepard-launch/>.

¹⁹¹ See *Lifelong Dream*, *supra* note 179 (noting that Mr. Bezos was inspired by Apollo 11's moon landing and timed the mission as a tribute).

¹⁹² Austin DeSisto, *NS-16 | New Shepard*, EVERYDAY ASTRONAUT (July 21, 2021), <https://everydayastronaut.com/ns-16-new-shepard-2/>.

¹⁹³ Mike Wall, *Jeff Bezos Launches into Space on Blue Origin's 1st Astronaut Flight*, SPACE.COM (July 20, 2021), <https://www.space.com/jeff-bezos-blue-origin-first-astronaut-launch>; Denise Chow, *Amazon's Jeff Bezos Makes History with All-civilian Suborbital Flight*, NBC NEWS (July 20, 2021, 3:42 PM), <https://www.nbcnews.com/science/space/amazons-jeff-bezos-makes-history-civilian-suborbital-flight-rcna1436> [hereinafter *Blue Origin*].

¹⁹⁴ *Blue Origin*, *supra* note 193.

¹⁹⁵ *Id.*

later.¹⁹⁶ Mr. Daemen was actually a last minute addition to the flight;¹⁹⁷ Mr. Daemen's father was able to purchase the ticket after the anonymous bidder—who had originally won the seat (with a bid of \$28 million)—backed out because of scheduling conflicts.¹⁹⁸ For Ms. Funk, the spaceflight marked the end of a journey that began more than fifty years ago: she was a part of the first group of women—known as the Mercury 13—that had passed NASA's initial screening tests in secret.¹⁹⁹ Unfortunately, this group never made it to the cosmos because NASA would not consider female astronauts at the time.²⁰⁰

11. The First SpaceX Space Tourism Trip via Inspiration4: Ms. Hayley Arceneaux, Mr. Jared Isaacman, Dr. Sian Proctor, and Mr. Christopher Sembroski

With two of three competitors in the billionaires' space race finding success in space tourism, the last one, Mr. Elon Musk's Space Exploration Technologies Corporation—commonly known as 'SpaceX'—was not to be left behind. Founded by Mr. Musk in 2002, SpaceX aims to “improve rocket technology and space technology until [humanity] can send people to Mars and establish life on Mars.”²⁰¹ In order to achieve this goal, Mr. Musk and his early SpaceX employees knew that they needed to design and build a reusable rocket that will make the economics of Outer Space exploration more cost-effective.²⁰² Bringing such a rocket into reality was not an easy task, and SpaceX nearly failed.²⁰³ But after an extensive trial-and-error process along with a few design iterations, in 2015, its Falcon 9 rocket—named after Star Wars' Millennium Falcon²⁰⁴—made the world's first ever successful rocket landing after an orbital launch.²⁰⁵

¹⁹⁶ See *infra* Part II.B.12.

¹⁹⁷ *Blue Origin*, *supra* note 193.

¹⁹⁸ *Id.*

¹⁹⁹ Swapna Krishna, *The Mercury 13: The Women Who Could Have Been NASA's First Female Astronauts*, SPACE.COM (July 24, 2020), <https://www.space.com/mercury-13.html>.

²⁰⁰ *Id.*

²⁰¹ Jon Brodtkin, *15 Years of Ars: How Amazon, Twitter, and SpaceX Changed the World*, ARS TECHNICA (June 13, 2013, 9:00 AM), <https://arstechnica.com/information-technology/2013/06/15-years-of-ars-how-amazon-twitter-and-spacex-changed-the-world/3/> [hereinafter *15 years*].

²⁰² Eric Berger, *Inside the Eight Desperate Weeks that Save SpaceX from Ruin*, ARS TECHNICA (Sept. 21, 2018, 7:30 AM), <https://arstechnica.com/science/2018/09/inside-the-eight-desperate-weeks-that-saved-spacex-from-ruin/>.

²⁰³ *Id.*

²⁰⁴ *15 Years*, *supra* note 201.

²⁰⁵ Mike Wall, *Wow! SpaceX Lands Orbital Rocket Successfully in Historic First*, SPACE.COM (Dec. 21, 2015), <https://www.space.com/31420-spacex-rocket-landing-success.html>.

With a functioning reusable rocket system, SpaceX next worked feverishly to qualify its rocket system for human spaceflight operations.²⁰⁶ After all, while SpaceX does not have a program specifically focused on space tourism, human spaceflight is one of the primary reasons that the company was founded.²⁰⁷ On May 30th, 2020, SpaceX accomplished this goal—via its Falcon 9 and crew Dragon capsule—when it became the first private company to conduct a manned Outer Space launch for a governmental agency.²⁰⁸ After this historic event, SpaceX went on to launch several more manned flights to the ISS for NASA.²⁰⁹ With human spaceflights becoming routine for this commercial Outer Space darling,²¹⁰ SpaceX turned its attention to space tourism with the mission Inspiration4.

Organized and financed by Mr. Jared Isaacman, Inspiration4 is the culmination of Mr. Isaacman's childhood dream of venturing into Outer Space—inspired by the high resolution space shuttle pictures he saw while in kindergarten²¹¹—and making this environment more accessible for all.²¹² With no professional astronaut onboard and the mission designed as a fundraiser for St. Jude Children's Research Hospital, each member of the all-civilian crew was selected to represent one of four positive qualities of humanity: Generosity, Hope, Leadership, and Prosperity.²¹³ Mr. Isaacman, as the mission's founder and first crew member, took on the leadership role.²¹⁴ Next came Ms. Hayley Arceneaux, a physician assistant for St. Jude who is a pediatric cancer survivor and took on the Hope role.²¹⁵ Mr. Christopher Sembroski—an Air Force veteran and data engineer²¹⁶—took the third seat, Generosity, after one of his friends

²⁰⁶ See Daniel Oberhaus, *How NASA Certifies New Spacecraft Safe Enough for Humans*, (May 13, 2020, 7:00 AM), WIRED <https://www.wired.com/story/how-nasa-certifies-new-spacecraft-safe-enough-for-humans/>.

²⁰⁷ Eric Berger, *SpaceX is Beginning to Get the Hang of Human Spaceflight*, (Nov. 10, 2021, 11:05 PM), ARS TECHNICA, <https://arstechnica.com/science/2021/11/spacex-is-beginning-to-get-the-hang-of-human-spaceflight/> [hereinafter *SpaceX*].

²⁰⁸ *Maiden Flight*, *supra* note 139.

²⁰⁹ *SpaceX*, *supra* note 207.

²¹⁰ *Id.*

²¹¹ Elizabeth Howell, *Inspiration4: How Jared Isaacman's Kindergarten Space Dream Became a Pioneering SpaceX Mission*, SPACE.COM (Mar. 5, 2021), <https://www.space.com/inspiration4-spacex-mission-jared-isaacman>.

²¹² Vicky Stein & Scott Dutfield, *Inspiration4: The First All-Civilian Spaceflight on SpaceX Dragon*, SPACE.COM (Jan. 5, 2022), <https://www.space.com/inspiration4-spacex.html>.

²¹³ *Id.*

²¹⁴ Kenneth Chang, *How Were the Astronauts Selected?*, N.Y. TIMES (Sept. 15, 2021, 10:03 PM), <https://www.nytimes.com/2021/09/15/science/inspiration4-crew-astronauts.html>.

²¹⁵ *Id.*

²¹⁶ Chelsea Gohd, *Inspiration4's Hayley Arceneaux Will be Youngest American to Reach Space and 1st Spaceflyer with a Prosthesis*, SPACE.COM (Sept. 14, 2021),

won the charity raffle and decided to transfer the seat to him.²¹⁷ Finally, Dr. Sian Proctor, who had been a finalist in NASA's astronaut selection process, won the final seat representing Prosperity after winning a business competition hosted by Mr. Isaacman's company Shift4 Payments.²¹⁸

After a grueling training program, on September 15th, 2021, the four space tourists blasted off inside a crew Dragon capsule named Resilience on top of a Falcon 9 rocket.²¹⁹ For three days, the crew circled the globe in low earth orbit at about 590 kilometers above mean sea level—which is much higher than the orbit of the ISS.²²⁰ Making about fifteen orbits each day, the crew enjoyed many breathtaking views of Earth from a custom-installed dome window, a cupola, that replaced the capsule's in-space docking mechanism.²²¹ It was not all fun and games as the crew also performed several experiments that will help scientists and researchers gain insight into the effects that long-term microgravity and radiation might have on the human body.²²²

Although Inspiration4 had a slight hiccup with its toilet system,²²³ the mission's many firsts more than overshadowed its minor flaws. Ms. Arceneaux became the youngest American to reach Outer Space and the first person to fly with a prosthetic device.²²⁴ Ms. Proctor became the first black female spacecraft pilot.²²⁵ And on the

<https://www.space.com/hayley-arceneaux-spacex-inspiration4-first-spaceflyer-prosthesis> [hereinafter *Youngest American*].

²¹⁷ Chang, *supra* note 214.

²¹⁸ Tom Charlier, *She got Her 'Golden Ticket' to Space, not from NASA, but Through Inspiration4*, ST. JUDE (Mar. 29, 2021), <https://www.stjude.org/inspire/news/inspiration4-mission-prosperity-seat-sian-proctor.html>.

²¹⁹ Stein & Dutfield, *supra* note 212.

²²⁰ Alex S. Li, *Spinning in Outer Space: Common Orbits and Prominent Locations around Earth*, #THESPACEBAR (last updated May 11, 2019), <https://alexli.com/thespacebar/2019/4/21/spinning-in-outer-space-common-orbits-and-prominent-locations-around-earth>; Stein & Dutfield, *supra* note 212.

²²¹ Amy Thompson, *SpaceX Launches Four Civilians Into Orbit on Historic Inspiration4 Flight*, SPACE.COM (Sept. 16, 2021), <https://www.space.com/spacex-launches-inspiration4-civilian-orbital-mission>.

²²² Amy Thompson, *SpaceX's Private Inspiration4 Crew Returns to Earth with Historic Splashdown off Florida Coast*, SPACE.COM (Sept. 18, 2021), <https://www.space.com/spacex-inspiration4-returns-to-earth>.

²²³ Joey Roulette, *SpaceX's Latest Engineering Challenge: A Leaky Toilet*, N.Y. TIMES (Oct. 6, 2021), <https://www.nytimes.com/2021/10/26/science/spacex-toilet-nasa.html>.

²²⁴ *Youngest American*, *supra* note 216.

²²⁵ Chelsea Gohd, *Sian Proctor Makes History with SpaceX's Inspiration4 as First-Ever Black Female Spacecraft Pilot*, SPACE.COM (Sept. 15, 2021), <https://www.space.com/sian-proctor-inspiration4-first-black-female-spacecraft-pilot>.

entertainment side, Mr. Isaacman became the first individual to place bets on a sports game from Outer Space.²²⁶

12. Blue Origin Boldly Going into Outer Space Again: Dr. Chris Boshuizen, Ms. Audrey Powers, Mr. William Shatner, and Mr. Glen de Vries

With each of the billionaires' space companies having made its space tourism debut, the question quickly turned to which vehicle would perform its second tourism flight first. This question was quickly answered by Blue Origin. On October 13th, 2021, the New Shepard vehicle launched four more passengers into Outer Space via mission NS-18.²²⁷ On this mission, the passengers experienced about four minutes of weightlessness and reached an apogee of about 106 kilometers above mean sea level.²²⁸ For this crew of four, two were paying passengers (Dr. Chris Boshuizen and Mr. Glen de Vries) while two others were selected for the flight (Mr. William Shatner and Ms. Audrey Powers).²²⁹ The most recognizable space tourist on this mission was Mr. Shatner, who played Captain Kirk in the original Star Trek series.²³⁰ With this flight, Mr. Shatner finally achieved what his fictional character would have considered routine: a jaunt in Outer Space.²³¹ At age ninety, Mr. Shatner also became the oldest person to reach Outer Space, surpassing Ms. Funk's record of eighty-two, set just three short months before in the same vehicle.²³²

Along with Mr. Shatner, Ms. Powers also rode up for free in her role as a Blue Origin employee.²³³ Ms. Powers is well-versed in the Outer Space industry, having served as a flight controller for the ISS program and oversaw regulatory and legal matters for Blue Origin.²³⁴ Her fellow passenger, Dr. Boshuizen is also experienced in the Outer Space industry, having co-founded Planet Labs, an Earth observational satellite data company.²³⁵ The NS-18 crew was rounded out by Mr. de Vries—a co-

²²⁶ Mike Wall, *Inspiration4 Commander Jared Isaacman Places 1st-Ever Sports Bets from Space*, SPACE.COM (Sept. 17, 2021), <https://www.space.com/spacex-inspiration4-jared-isaacman-first-bets-from-space>.

²²⁷ Hanneke Weitering, *William Shatner and Crew of 3 Launch to the Final Frontier on Blue Origin Rocket*, SPACE.COM (Oct. 13, 2021), <https://www.space.com/william-shatner-blue-origin-crew-launch-success>.

²²⁸ *Id.*

²²⁹ *Id.*

²³⁰ *Id.*

²³¹ *Id.*

²³² *Id.*

²³³ *Id.*

²³⁴ Austin DeSisto, *NS-18 | New Shepard*, EVERYDAY ASTRONAUT (Oct. 14, 2021), <https://everydayastronaut.com/ns-18-new-shepard-2/>.

²³⁵ *Id.*; Author Frank White on the Overview Effect, THIS WEEK IN SPACE at 25:27 (Mar. 17, 2023), <https://www.youtube.com/watch?v=Ap5TaNPFTkk> (Dr. Boshuizen described his

founder of Medidata Solutions²³⁶—who described the entire experience as “incredible.”²³⁷ Unfortunately, Mr. de Vries was killed in a fatal plane crash shortly after this spaceflight.²³⁸

13. Space Adventures Back in the Game: Mr. Yozo Hirano and Mr. Yusaku Maezawa

Ever since SpaceX successfully certified its crew Dragon capsule and Falcon 9 rocket system for manned operations, NASA no longer needed to purchase seats on the Soyuz to transport personnel up to the space station.²³⁹ With room available on the Soyuz again, Space Adventures was able to resume its space tourism partnership with the Russian Space Agency. On December 8th, 2021, space tourism’s return to the ISS began with Mr. Yozo Hirano and Mr. Yusaku Maezawa launching onboard a Soyuz via Mission MS-20.²⁴⁰ This spaceflight also represented the first time that two space tourists went up to the ISS at the same time.²⁴¹ Both seats were paid for by Mr. Maezawa, with each costing somewhere between \$70 million to \$100 million.²⁴² A billionaire, Mr. Maezawa made his fortune through ZOZO, an online apparel company that he founded.²⁴³ Meanwhile, Mr. Hirano leads the team of photographers at ZOZO and helps to create content for Mr. Maezawa’s YouTube channel.²⁴⁴

overview experience as feeling “drawn out into it; [he] felt it in [his] chest. . . almost like [he] was drawn out into the cosmos”).

²³⁶ Austin DeSisto, *NS-18 | New Shepard*, EVERYDAY ASTRONAUT (Oct. 14, 2021), <https://everydayastronaut.com/ns-18-new-shepard-2/>.

²³⁷ Weitering, *supra* note 227.

²³⁸ Ben Evans, *NS-19 Launches Six Crew, Flies Shepard’s Daughter, Honors De Vries*, AMERICASPACE, <https://www.americaspace.com/2021/12/11/ns-19-launches-six-crew-flies-shepards-daughter-honors-de-vries/> (last visited Jan. 2, 2023).

²³⁹ *Maiden Flight*, *supra* note 139.

²⁴⁰ Jeff Foust, *Soyuz Launches Japanese Private Astronauts to ISS*, SPACENEWS (Dec. 8, 2021), <https://spaceneews.com/soyuz-launches-japanese-private-astronauts-to-iss/>.

²⁴¹ Although Mr. Maezawa and Mr. Hirano is the second duo to go to the ISS together, the trip for the first duo—Ms. Peresild and Mr. Shipenko—did not qualify as a space tourism flight as they went up for the primary purpose of shooting a movie. See Marcia Smith, *Two More Space Tourists for the ISS*, SPACEPOLICYONLINE.COM (Dec. 8, 2021, 3:05 AM), <https://spacepolicyonline.com/news/two-more-space-tourists-for-the-iss/>; see also n. 44 (explaining that the first duo went up for professional media purposes).

²⁴² Joey Roulette, *Japanese Billionaire Arrives at Space Station for 12-Day Tourist Trip*, N.Y. TIMES (Dec. 8, 2021, 11:41 PM), <https://www.nytimes.com/2021/12/08/science/yusaku-maezawa-space-station.html>.

²⁴³ *Id.*

²⁴⁴ Robert Z. Pearlman, *Japanese Billionaire Yusaku Maezawa Lifts Off for Space Station on Russian Soyuz*, SPACE.COM (Dec. 7, 2021), <https://www.space.com/soyuz-ms20-maezawa-space-tourist-launch>.

Taking only about six hours to arrive at the ISS after four orbits around Earth, Mr. Maezawa also made history by making the first ever Uber Eats delivery in Outer Space.²⁴⁵ On their stay onboard the ISS, Mr. Maezawa and Mr. Hirano made a series of videos posted to Mr. Maezawa's YouTube channel describing what daily life is like onboard a space station—everything from brushing your teeth, making tea, going to the bathroom, sleeping, and more.²⁴⁶ These two space tourists were also subject to a set of health experiments to study the effects of Outer Space on the human body.²⁴⁷ After a twelve-day stay onboard the ISS, both individuals landed safely back on Earth near Zhezkazgan, Kazakhstan.²⁴⁸ While this trip would have fulfilled a life-long dream for many, this likely will not be Mr. Maezawa's last adventure in Outer Space. Mr. Maezawa has already booked another trip that is even farther out in Outer Space: an orbit around the Moon that should launch via SpaceX's Starship rocket as part of his dearMoon project.²⁴⁹

14. The First Fully Crewed Blue Origin Flight: Mx. Cameron Bess, Mr. Lane Bess, Mr. Evan Dick, Ms. Laura Shepard-Churchley, Mr. Michael Strahan, and Mr. Dylan Taylor

On December 11th, 2021, Blue Origin wrapped up 2021—an eventful year for space tourism—with its third manned flight, NS-19.²⁵⁰ On this ten minute thirteen second flight,²⁵¹ the crew capsule reached an apogee of about 106 kilometers above mean sea level and the passengers experienced about four minutes of

²⁴⁵ Elizabeth Howell, *Japanese Billionaire Yusaku Maezawa Delivers First Uber Eats in Space*, SPACE.COM (Dec. 14, 2021), <https://www.space.com/japanese-space-tourist-delivers-uber-eats>.

²⁴⁶ Yusaku Maezawa [MZ], *Space Playlist*, YOUTUBE (Dec. 25, 2021), <https://www.youtube.com/playlist?list=PL7sPEIKafqa8DiyEm9Nukdtb7-MH5Nx4t>.

²⁴⁷ Elizabeth Howell, *Japanese Space Tourist Will Join Human Health Research Effort in Orbit*, SPACE.COM (Dec. 7, 2021), <https://www.space.com/maezawa-space-tourist-mission-health-research>.

²⁴⁸ Shamil Zhumatov, *Japan Billionaire Maezawa Lands in Kazakhstan After 12-Day Space Flight*, REUTERS (Dec. 20, 2021, 9:12 AM), <https://www.reuters.com/lifestyle/science/japan-billionaire-maezawa-set-land-kazakhstan-after-12-day-space-flight-2021-12-20/>.

²⁴⁹ Loren Grush, *Japanese Billionaire Launches to the International Space Station While Waiting for SpaceX Moon Ride*, THE VERGE (Dec. 8, 2021, 9:21 AM), <https://www.theverge.com/2021/12/8/22823838/space-tourism-yusaku-maezawa-russia-soyuz-iss; dearMoon: 8 Crew Members Wanted! For the Mission to the Moon in 2023>, DEARMOON, <https://dearmoon.earth/> (last visited Jan. 21, 2022).

²⁵⁰ Elizabeth Howell, *"I want to go back!" Michael Strahan Can't Get Enough of Space after Blue Origin Launch*, SPACE.COM (Dec. 12, 2021), <https://www.space.com/michael-strahan-blue-origin-space-launch-reaction> [hereinafter *Go Back*]; see Dylan Taylor, *Blue Origin NS-19 Inside Capsule Experience!*, YOUTUBE (Jan. 26, 2022), <https://www.youtube.com/watch?v=xvUOZ6n-lqI> (recording the entire experience).

²⁵¹ *Go Back*, *supra* note 250.

weightlessness.²⁵² A fully packed flight, this was also the first mission since the retirement of the Space Shuttle that a crew of six launched into Outer Space at the same time.²⁵³ The passengers included four self-paying tourists (Mx. Cameron Bess, Mr. Lane Bess, Mr. Evan Dick, and Mr. Dylan Taylor) and two invited guests (Ms. Laura Shepard-Churchley and Mr. Michael Strahan).²⁵⁴

Embarking to Outer Space in the New Shepard rocket system was especially poignant for Ms. Shepard-Churchley; her father being the namesake for this rocket system.²⁵⁵ Accompanying Ms. Shepard-Churchley as the other invited guest was Mr. Strahan, a former American football player who had reported on Blue Origin's first manned launch for the television show, *Good Morning America*.²⁵⁶ All four paying space tourists had a memorable experience as well. Mr. Taylor, the chairman and CEO of the space enterprise Voyager Space, thought it was "life-changing."²⁵⁷ Mr. Dick, a volunteer pilot for Starfighters Aerospace, thought the Outer Space trip was a dream come true.²⁵⁸ Finally, Mr. Bess—the founder of Bess Ventures and Advisory—and one of his children, Mx. Bess—a Twitch streamer²⁵⁹—also made history by becoming the first parent-child pair to travel into Outer Space together.²⁶⁰

15. 2022's First Tourism Mission: Mr. Marty Allen, Mr. Gary Lai, Ms. Sharon Hagle, Mr. Marc Hagle, Mr. Jim Kitchen, and Dr. George Nield

After closing out 2021 with the industry's final space tourism mission, Blue Origin continued its streak and conducted 2022's first space tourism launch. On March 31st, 2022, New Shepard rocket designated NS-20—the twentieth launch of the New Shepard vehicle—blasted off from West Texas with six passengers onboard.²⁶¹ This

²⁵² Evans, *supra* note 238.

²⁵³ *Id.*

²⁵⁴ *Go Back*, *supra* note 250.

²⁵⁵ Evans, *supra* note 238.

²⁵⁶ *Go Back*, *supra* note 250.

²⁵⁷ See David M. Livingston, *Broadcast 3832 Dylan Taylor*, THE SPACE SHOW, at 3:37 (Feb. 25, 2022), <https://www.thespaceshow.com/show/25-feb-2022/broadcast-3832-dylan-taylor> ("I had pretty high expectations and I would tell you they were completely smashed or demolished . . .").

²⁵⁸ *Go Back*, *supra* note 250.

²⁵⁹ *Id.*

²⁶⁰ Elizabeth Howell, *Pansexual Astronaut Cameron Bess on Launching with Blue Origin and Why Diversity Matters in Space*, SPACE.COM (Dec. 12, 2021), <https://www.space.com/blue-origin-astronaut-cameron-bess-pansexuality-diversity>.

²⁶¹ Mike Wall, *Jeff Bezos' Blue Origin Launches 6 People to Space in Fourth Crewed Flight*, SPACE.COM (Mar. 31, 2022), <https://www.space.com/blue-origin-space-tourism-launch-ns-20> [hereinafter *NS-20*].

was Blue Origin's fourth manned flight and second fully booked flight.²⁶² The flight reached an apogee of about 107 kilometers above mean sea level and had a maximum launch velocity of about 3,599 kilometers per hour (or 2,236 miles per hour).²⁶³ The total mission duration was ten minutes and four seconds, providing its passengers experiencing about four minutes of weightlessness.²⁶⁴

While no celebrity was onboard, NS-20 saw the chief architect of the New Shepard rocket, Mr. Gary Lai, finally getting to experience first-hand a ride in the rocket that he was primarily responsible for developing.²⁶⁵ Joining him were five paid passengers: Mr. Marty Allen—CEO of Party America, Mr. Marc Hagle—CEO of Tricor International, Ms. Sharon Hagle—founder of SpaceKids Global, Mr. Jim Kitchen—a professor, and Dr. George Nield—a former AST associate administrator.²⁶⁶ Like those before them, everyone was transformed by the journey. Mr. Allen found the experience to be “surreal.”²⁶⁷ Mr. Lai and Dr. Nield thought that words and pictures could not do the trip justice.²⁶⁸ A few records were also set with this flight. Mr. Kitchen became the first person to have travelled to Outer Space as well as all countries recognized by the United Nations.²⁶⁹ The Hagles became the first married couple to travel to Outer Space together in a commercial spacecraft (and second pair overall).²⁷⁰

16. The First Axiom Space Mission: Mr. Larry Connor, Mr. Mark Pathy, and Mr. Eytan Stibbe

With Inspiration4 mission ending as a resounding success,²⁷¹ SpaceX was ready for a more permanent space tourism partnership. This launch operator found such a

²⁶² *See id.*

²⁶³ Blue Origin (@blueorigin), TWITTER (Mar. 31, 2022, 10:39 AM), <https://twitter.com/blueorigin/status/1509540905635753988>.

²⁶⁴ Austin DeSisto, *New Shepard | NS-20*, EVERYDAY ASTRONAUT (Apr. 1, 2022), <https://everydayastronaut.com/new-shepard-ns-20-2/>; Mike Wall, *Watch Blue Origin's Fourth Crewed Flight, the NS-20 Space Tourist Launch, Today*, SPACE.COM (Mar. 30, 2022), <https://www.space.com/blue-origin-space-tourism-launch-ns-20-webcast>.

²⁶⁵ Tyler Gray, *Blue Origin Launches NS-20 Suborbital Crew Mission*, NASA SPACEFLIGHT.COM (Mar. 31, 2022), <https://www.nasaspaceflight.com/2022/03/blue-origin-ns-20/> [hereinafter *Blue Origin Fourth*].

²⁶⁶ DeSisto, *supra* note 264.

²⁶⁷ Janene Scully, *Santa Barbara Man Takes Flight to the Edge of Space on Blue Origin Rocket*, NOOZHAWK (Mar. 31, 2022, 9:22 PM), https://www.noozhawk.com/article/santa_barbara_man_takes_flight_to_the_edge_of_space_on_blue_origin_rocket.

²⁶⁸ NS-20, *supra* note 261.

²⁶⁹ *Id.*

²⁷⁰ Gray, *supra* note 265.

²⁷¹ *See supra* Part II.B.11.

partner in Axiom Space, a commercial space enterprise focused on developing the world's first private space station.²⁷² In order to obtain experience in managing a space station, Axiom Space reached an agreement with NASA to operate the first ever all-private crewed mission to the ISS with SpaceX providing the transportation services.²⁷³ This seventeen-day mission, known as Axiom Mission 1, became a reality on April 8th, 2022 when a crew of four hitched a ride to the ISS via SpaceX's crew Dragon capsule and a Falcon 9 rocket.²⁷⁴

Axiom Mission 1 was led by Mr. Michael López-Alegría, a former NASA astronaut, who served as the mission commander and is a vice president of business development at Axiom Space.²⁷⁵ Mr. Larry Connor, the founder of an investment management company called the Connor Group, served as the mission's pilot.²⁷⁶ The crew of four were then rounded off by two mission specialists, Mr. Mark Pathy—CEO of an investment company called MARVIK—and Mr. Eytan Stibbe—founding partner of Vital Capital impact investment fund.²⁷⁷ While Mr. López-Alegría flew on the mission for free as a representative of Axiom Space, each of the other three individuals likely paid about \$55 million for this experience.²⁷⁸

While onboard the space station, this all-private crew conducted research and performed many experiments.²⁷⁹ Because of these activities and the training that is needed for the trip, Mr. López-Alegría objects to any of his crew being called space tourists.²⁸⁰ In fact, Axiom Space's own website refers to these individuals as "private astronauts."²⁸¹

After spending about fifteen and half days on the ISS—with the return flight delayed because of bad weather conditions, the Axiom Mission 1 crew departed the

²⁷² Catherine Thorbecke, *What to Know about Axiom Space, the Company Behind the First All-Private Mission to the ISS*, CNN (Apr. 8, 2022, 6:26 AM), <https://www.cnn.com/2022/04/06/tech/axiom-space-spacex-launch/index.html>.

²⁷³ Sean Potter, *Axiom Agree to First Private Astronaut Mission on Space Station*, NASA (May 10, 2021), <https://www.nasa.gov/press-release/nasa-axiom-agree-to-first-private-astronaut-mission-on-space-station>.

²⁷⁴ Elizabeth Howell, *Axiom Space Ax-1 Mission: The First All Private Crew to the International Space Station*, SPACE.COM (Oct. 8, 2022), <https://www.space.com/ax-1-axiom-space-station-mission>.

²⁷⁵ *Id.*

²⁷⁶ *Id.*

²⁷⁷ *Id.*

²⁷⁸ Chelsea Gohd, *Don't Call Them 'Space Tourists' Says Former NASA Astronaut Commanding Private Ax-1 Mission*, SPACE.COM (Apr. 7, 2022), <https://www.space.com/nasa-astronaut-not-space-tourists-spacex-ax1-mission>.

²⁷⁹ *Id.*

²⁸⁰ *Id.*

²⁸¹ See, e.g., *Private Astronauts*, AXIOM SPACE, <https://www.axiomspace.com/private-astronauts> (last visited Jan. 2, 2023).

space station and landed off of the coast of Florida on April 25th, 2022.²⁸² Given Axiom Mission 1 was the first all-private crew mission to the space station, both Axiom Space and NASA learned a lot from this experience.²⁸³ Some of these lessons included the need for adaptation time in the crew's schedule and including a former NASA astronaut as the commander of all such missions, the latter requirement Axiom Space had originally planned to forgo.²⁸⁴ But none of these issues were significant enough to end this partnership as less than half a year after the end of Axiom Mission 1, Axiom Space and NASA reached a deal for a second mission, Axiom Mission 2, to the ISS that is currently slated to launch in second quarter of 2023.²⁸⁵

17. Blue Origin's Second Go Around in 2022: Ms. Katya Echazarreta, Mr. Hamish Harding, Mr. Victor Correa Hespanha, Mr. Jaison Robinson, and Mr. Victor Vescovo

Attempting to start a cadence, Blue Origin launched its second space tourism mission of 2022 on June 4th, 2022.²⁸⁶ Originally scheduled for May 20th, the flight was pushed back just days before launch because of an issue with the vehicle's backup system.²⁸⁷ But other than this brief delay, the actual mission itself was problem-free. The flight, NS-21, reached an apogee of 107 kilometer above mean sea level and lasted for a total duration of ten minutes and five seconds, giving its passengers about four minutes of zero-gravity time.²⁸⁸

Onboard were five first-time space tourists—Ms. Katya Echazarreta, Mr. Hamish Harding, Mr. Victor Correa Hespanha, Mr. Jaison Robinson, and Mr. Victor

²⁸² See Michael Sheetz, *SpaceX Returns Private Ax-1 Astronaut Crew to Earth after Extended Space Station Stay*, CNBC (Apr. 25, 2022, 1:21 PM), <https://www.cnbc.com/2022/04/25/spacex-ax-1-splashdown-private-axiom-astronaut-crew-returns-from-iss.html>.

²⁸³ See Anthony Colangelo, *T+231: The Future of Private Astronaut Missions to the ISS*, MAIN ENGINE CUT OFF, at 1:14 (Sept. 30, 2022), <https://mainenginecutoff.com/podcast/231> (“They jammed their schedule full of activities . . . they didn’t give themselves enough time to adapt to space . . . they quickly gone behind on the schedule they had . . . and tried to be too productive.”).

²⁸⁴ Jeff Foust, *NASA Revises Requirements for ISS Private Astronaut Missions*, SPACENEWS (Aug. 2, 2022), <https://spacenews.com/nasa-revises-requirements-for-iss-private-astronaut-missions/>.

²⁸⁵ Jeff Foust, *NASA Completes Agreement with Axiom Space for Second Private Astronaut Mission*, SPACENEWS (Sept. 2, 2022), <https://spacenews.com/nasa-completes-agreement-with-axiom-space-for-second-private-astronaut-mission/>.

²⁸⁶ Austin DeSisto, *New Shepard | NS-21*, EVERYDAY ASTRONAUT (June 6, 2022), <https://everydayastronaut.com/new-shepard-ns-21-2/> [hereinafter *NS-21*].

²⁸⁷ Justin Davenport, *Blue Origin Launches NS-21 Suborbital Flight with Six Passengers*, NASA SPACEFLIGHT.COM (June 4, 2022), <https://www.nasaspaceflight.com/2022/06/ns-21-launch/>.

²⁸⁸ *NS-21*, *supra* note 286; Davenport, *supra* note 287.

Vescovo—and one returning space tourist, Mr. Evan Dick.²⁸⁹ Whether it was their first or returning flight, all these participants were mesmerized by a perspective of Earth only a rare few have seen.²⁹⁰

The crew of NS-21 came from different walks of life. Ms. Echazarreta was chosen by the nonprofit organization Space Humanity out of a pool of 7,000 applicants.²⁹¹ Mr. Harding has an adventurous spirit and was the pilot of One More Orbit, a flight that set a world record for the quickest trip around the world over the Earth's poles.²⁹² Mr. Hespanha, who was sponsored by Crypto Space Agency, became the second Brazilian to travel to Outer Space and, unofficially, the world's first "cryptonaut."²⁹³ Mr. Robinson is the founder of a commercial real estate company called JJM Investments and was a former participant on the TV show *Survivor*.²⁹⁴ Mr. Vescovo, an avid explorer who had already visited the highest and lowest points on Earth, became the first member of Guinness World Records Explorers' Extreme Trifecta Club with this trip.²⁹⁵ Finally, Mr. Dick became the first "frequent flier" of the New Shepard rocket with his second trip up.²⁹⁶

18. New Shepard's Third Jaunt into Outer Space in 2022: Mr. Coby Cotton, Mr. Mário Ferreira, Mr. Clint Kelly III, Ms. Vanessa O'Brien, Ms. Sara Sabry, and Mr. Steve Young

Developing its cadence, Blue Origin went for its third space tourism mission of 2022 sixty-one days after NS-21.²⁹⁷ Almost mirroring the previous mission exactly, on August 4th, 2022, a New Shepard rocket—via Mission NS-22—carried six passengers to a height of 107 kilometers above mean sea level with a total mission time of ten minutes and twenty seconds.²⁹⁸

²⁸⁹ Davenport, *supra* note 287.

²⁹⁰ See Robert Z. Pearlman, *To Space and Back: Blue Origin's NS-21 Crew Wants to Go Again (and Again)*, SPACE.COM (June 6, 2022), <https://www.space.com/blue-origin-new-shepard-ns21-crew-reactions> (“[A]ll six space tourists agreed upon was how spectacular the view was from 66.5 miles (107 km) . . .”).

²⁹¹ Davenport, *supra* note 287.

²⁹² *Id.*

²⁹³ *Id.*

²⁹⁴ *Id.*

²⁹⁵ *First Person to Complete the “Explorers’ Extreme Trifecta” (male)*, GUINNESS WORLD RECORDS, <https://www.guinnessworldrecords.com/world-records/709910-first-person-to-complete-the-explorers-extreme-trifecta-male> (last visited Jan. 4, 2022).

²⁹⁶ Davenport, *supra* note 287; *see also* NS-21, *supra* note 286.

²⁹⁷ Joseph Navin, *New Shepard Launches Sixth Suborbital Crewed Flight*, NASA SPACEFLIGHT.COM (Aug. 4, 2022), <https://www.nasaspaceflight.com/2022/08/ns-22-launch/>.

²⁹⁸ Austin DeSisto, *NS-22 | New Shepard*, EVERYDAY ASTRONAUT (Aug. 6, 2022), <https://everydayastronaut.com/ns-22-new-shepard-2/> [hereinafter NS-22].

NS-22 was the first Outer Space trip for every member of its crew, which was made of Mr. Coby Cotton, Mr. Mário Ferreira, Ms. Vanessa O'Brien, Mr. Clint Kelly III—a driving force behind today's driverless car technology, Ms. Sara Sabry, and Mr. Steve Young—a telecommunications executive.²⁹⁹ Mr. Cotton, the YouTube creator of the channel Dude Perfect, was selected through a membership vote of a crypto organization called MoonDAO.³⁰⁰ Meanwhile, Mr. Ferreira and Ms. Sabry became the first Portuguese and Egyptian, respectively, to go to Outer Space.³⁰¹ Following in the footsteps of Mr. Vescovo,³⁰² Ms. O'Brien became the first woman to join the Guinness World Records Explorers' Extreme Trifecta Club.³⁰³

With space tourism missions dominating the commercial space scene these past few years, the early 2020s will likely mark a pivotal chapter for this industry. From now on, passengers who dream of going to Outer Space are no longer dependent solely on the Soyuz—three other rocket systems could be at their disposal. Seat constraint is also becoming less of a concern and flight costs for certain shorter trips are in reach for a greater percentage of wealthy individuals.³⁰⁴ Thus, space tourism is likely to experience significant growth in this decade.

With more private passengers going into Outer Space, certain legal issues surrounding space tourism can no longer be ignored. The next Part will discuss three major near-term legal hurdles facing this maturing industry.

III. THE PRESENT: EMERGING LEGAL ISSUES RELATED TO SPACE TOURISM

As space tourism develops, the legal landscape surrounding this industry must mature as well. With the sector likely to take on a deluge of paid customers this decade, some areas of legal uncertainty can no longer be ignored. This Part begins by discussing one of the more pressing legal issues surrounding space tourists: whether they are entitled to the same status as astronauts. While this Part concludes space tourists would not have the same legal status as professionals, it finds that this lack of status likely will not cause any practical risks. After this analysis, this Part then continues by arguing that aviation laws should not play a role in governing space tourism. Then, this Part concludes by discussing why the liability regime for space tourists will eventually need a significant transformation.

A. *What's in a (Space Tourist's) Name?*

One of the most discussed questions facing space tourism centers around the legal status of space tourists: whether private individuals that venture into Outer Space are

²⁹⁹ *Id.*

³⁰⁰ *Id.*

³⁰¹ *Id.*

³⁰² See *supra* Part II.B.17 (noting that Mr. Vescovo is the first member of the Extreme Trifecta Club).

³⁰³ NS-22, *supra* note 298.

³⁰⁴ Denise Chow, *To Cheaply Go: How Falling Launch Costs Fueled a Thriving Economy in Orbit*, ABC NEWS (Apr. 8, 2022 11:52 AM), <https://www.nbcnews.com/science/space/space-launch-costs-growing-business-industry-rcna23488>.

more than just mere tourists.³⁰⁵ While many space tourists themselves believe that they should be called “astronauts”—or something akin to that term,³⁰⁶ there is significant pushback to this idea.³⁰⁷ With space tourism still in its infancy, this issue remains unresolved. However, as this industry has been making heavenly strides in the past few years, the legal status of space tourists now needs to be more firmly defined.

Although some would balk at the necessity of resolving this seemingly trivial controversy, it can affect more than just someone’s pride. Whether space tourists could be considered “astronauts”—or something similar such as “personnel of a spacecraft”—could have significant legal implications.³⁰⁸ For instance, if space tourists are not considered “astronauts” within the meaning of the Outer Space Treaty of 1967³⁰⁹ or “personnel of a spacecraft” within the meaning of the Rescue Agreement of 1968,³¹⁰ then there is a possibility that space tourists are not entitled to assistance and/or rescue in the event of an emergency.³¹¹ This risk to their safety could disincentivize individuals from going to Outer Space. Hence, any ambiguities in a space tourist’s legal status could have a chilling effect on this industry’s growth. Thus, a closer look on this point is merited.

This Part begins by examining international treaties to determine whether the term “space tourists” is synonymous with the term “astronauts” or “personnel of a

³⁰⁵ Brandon Padgett, *Are Space Tourists Astronauts?*, GEO. WASH. INT’L. L. AND POL’Y BRIEF STUDENT BRIEF (Oct. 11, 2021), <https://studentbriefs.law.gwu.edu/ilpb/2021/10/11/are-space-tourists-astronauts/>.

³⁰⁶ See, e.g., Alan Boyle, *Space Passenger Senses Momentum*, NBC NEWS (May 13, 2002, 4:34 PM), <https://www.nbcnews.com/id/wbna3077958> (“Because of his scientific and educational work, Shuttleworth maintained that he shouldn’t be considered a ‘space tourist.’”); Goudarzi, *supra* note 102 (“In a way I take offense when they call me a tourist.”); Malik, *supra* note 85 (“Olsen, who prefers the term ‘spaceflight participant’ to ‘space tourist’ . . .”); Rick Tumlinson, *Private Astronauts are not ‘Space Tourists’ (op-ed)*, SPACE.COM (Sept. 15, 2021), <https://www.space.com/private-astronauts-are-not-space-tourists>.

³⁰⁷ See, e.g., Thomas Macaulay, *US Government to Space Tourists: You’re Not Astronauts*, TNW (July 22, 2021, 5:28 PM), <https://thenextweb.com/news/space-tourists-not-astronauts-faa-bezos-blue-origin-branson-virgin-atlantic>; Alex S. Li, *Are Space Tourists Astronauts?*, #THESPACEBAR (Nov. 12, 2017), <https://alexqli.com/thespacebar/2017/11/12/are-space-tourists-astronauts>.

³⁰⁸ See, e.g., Stephen Hobe, *Legal Aspects of Space Tourism*, 86 NEB. L. REV. 439, 455 (2007) (“The main question here is whether such passengers can be considered astronauts, or whether they should be granted a status similar to that of astronauts. This could have a considerable impact on passenger rights and obligations.”).

³⁰⁹ Outer Space Treaty, *supra* note 23.

³¹⁰ Agreement On the Rescue of Astronauts, the Return of Astronauts and Return of Objects Launched Into Outer Space, art. 1–4, Apr. 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119 [hereinafter Rescue Agreement].

³¹¹ See, e.g., Mark J. Sundahl, *The Duty to Rescue Space Tourists and Return Private Spacecraft*, 35 J. OF SPACE L. 163, 167 (2009) (“[T]he space treaties were drafted in a manner that creates uncertainty about whether the duty to rescue under the treaties reaches this ideal.”).

spacecraft.” Arguing that “space tourists” likely cannot hold themselves as “personnel of a spacecraft” or “astronauts,” this Part then continues by analyzing the practical effect of this lack of status. Finally, this Part concludes by offering potential solutions.

1. Space Tourists’ Legal Status Under Existing Frameworks

To determine whether space tourists should have the same legal status as “astronauts” or other “personnel of a spacecraft,” the first step would be to examine existing international laws related to Outer Space. For this analysis, the *sine qua non* starting point would be the five United Nations treaties that form the essential backbone for all Outer Space-related laws.³¹² Of these five treaties, three agreements—the Outer Space Treaty of 1967, the Rescue Agreement of 1968, and the Moon Treaty of 1979³¹³—provide clues that indicate “space tourists” would not have the same status as “astronauts” or “personnel of a spacecraft.”

a. Outer Space Treaty of 1967

As the first treaty of its kind, the Outer Space Treaty of 1967 is considered the fundamental legal foundation of Outer Space law.³¹⁴ As of January 1st, 2023, 112 countries are parties to the Outer Space Treaty, while another twenty-three countries have signed but not ratified the treaty.³¹⁵ With the treaty focused on the peaceful development and use of Outer Space,³¹⁶ the Outer Space Treaty has several provisions addressing human activities in this sector.³¹⁷ But given that manned activities in Outer Space was still in its infancy at the time of its negotiations, the treaty does not discuss “space tourists.”³¹⁸

However, the Outer Space Treaty does discuss the treatment of “astronauts.” Specifically, the treaty considers “astronauts” as “envoys of mankind in outer

³¹² See, e.g., Alex S. Li, *Opening Outer Space: Safety and Stability through Open Standards and Open Source*, 126 PENN. ST. L. REV. 667, 673 (2022) (noting these treaties became the first set of laws addressing Outer Space) [hereinafter *Opening Outer Space*].

³¹³ Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, *opened for signature* Dec. 18, 1979, 1363 U.N.T.S. 22 [hereinafter *Moon Treaty*].

³¹⁴ See Loren Grush, *How an International Treaty Signed 50 Years Ago Became the Backbone for Space Law*, THEVERGE (Jan. 27, 2017, 11:14 AM), <https://www.theverge.com/2017/1/27/14398492/outer-space-treaty-50-anniversary-exploration-guidelines>.

³¹⁵ See U.N. OFF. FOR OUTER SPACE AFFS., STATUS OF INTERNATIONAL AGREEMENTS RELATING TO ACTIVITIES IN OUTER SPACE AS AT 1 JANUARY 2023, at 12, U.N. DOC. A/AC.105/C.2/2023/CRP.3 (Mar. 20, 2023), https://www.unoosa.org/res/oosadoc/data/documents/2023/aac_105c_22023crp/aac_105c_22023crp_3_0_html/AC105_C2_2023_CRP03E.pdf [hereinafter U.N. TREATIES STATUS].

³¹⁶ See *Ruling Outer Space*, *supra* note 22, at 715 (“Hence, the treaty was drafted with the primary goal of ensuring that only peaceful activities shall take place in Outer Space.”).

³¹⁷ See Megan McCauley, *Astro-Not? How Current Space Treaties Could Fall Short of Protecting Future Space Tourists*, 50 U. PAC. L. REV. 453, 463 (2019).

³¹⁸ See *id.* at 465–66.

space.”³¹⁹ Therefore, it notes that astronauts are entitled to “all possible assistance.”³²⁰ Furthermore, the treaty protects astronauts through a provision mandating that all state parties must immediately notify other parties of any “phenomena they discover in outer space . . . which could constitute a danger to the life or health of astronauts.”³²¹ Thus, if space tourists have the same legal status as “astronauts,” they would be entitled to a significant degree of international safeguard.

b. Rescue Agreement of 1968

On the question of whether “space tourists” are equivalent to “astronauts,” the text of the Rescue Agreement of 1968 provides another avenue of exploration. As of January 1st, 2023, ninety-nine countries are parties to the Rescue Agreement, while another twenty-three countries have signed but not ratified the treaty.³²² As the shortest of the five United Nations treaties on Outer Space, the Rescue Agreement focuses solely on the protection and assistance that each nation should render to “astronauts” in the event of an emergency.³²³ But under this treaty, rather than using the Outer Space Treaty’s term “astronauts” in its articles, the Rescue Agreement opts instead to use the term “personnel of a spacecraft” when describing these individuals.³²⁴

While the agreement might have avoided the term “astronauts” as it is an American-centric term,³²⁵ this suggests that “personnel of a spacecraft” could be equivalent to how the term “astronauts” is used in the Outer Space Treaty. Importantly, the Rescue Agreement’s preamble notes that the purpose of the treaty is “to develop and give further concrete expression” to the duty of “rendering of all possible assistance to *astronauts* in the event of accident, distress or emergency landing, [as well as] the prompt and safe return of *astronauts*” as outlined in the Outer Space Treaty.³²⁶ Thus, the Rescue Agreement expresses its intent to elaborate on Article V of the Outer Space Treaty. Through this invocation, the treaty essentially suggests that the term “personnel of a spacecraft” is equivalent to how the term “astronauts” is being used in the Outer Space Treaty. Therefore if “space tourists” could be considered “personnel of a spacecraft,” they could be entitled to the protection afforded to “astronauts” under current international Outer Space laws.

However, through an analysis of Rescue Agreement’s different language versions, it is very likely that “personnel of a spacecraft” would not be broad enough to include

³¹⁹ Outer Space Treaty, *supra* note 23, art. V.

³²⁰ *Id.*

³²¹ *Id.*

³²² U.N. TREATIES STATUS, *supra* note 315, at 12.

³²³ See Outer Space Treaty, *supra* note 23, at art. V; see also Rescue Agreement, *supra* note 310, at pmbl. (noting that it expands on Outer Space Treaty’s rescue provisions).

³²⁴ See Rescue Agreement, *supra* note 310, at art. I–IV.

³²⁵ *Ruling Outer Space*, *supra* note 22, at 718.

³²⁶ Rescue Agreement, *supra* note 310, at pmbl. (emphasis added).

“space tourists.” In order to interpret the text of an international treaty, the rules set forth under the Vienna Convention on the Law of Treaties (“Vienna Convention”) are instructive.³²⁷ Under the Vienna Convention, if a treaty is “authenticated in two or more languages, the text is equally authoritative in each language.”³²⁸ The Rescue Agreement follows this convention by expressly indicating that its “Chinese, English, French, Russian and Spanish texts are equally authentic”³²⁹ Hence, under these rules, non-English versions of the Rescue Agreement can be informative in ascertaining the meaning of any ambiguity in its English version.

In the Rescue Agreement’s non-English versions, the phrase “personnel of a spacecraft” is written as: (i) “外空機人員” in the Chinese version;³³⁰ (ii) “l’équipage d’un engin spatial” in the French version;³³¹ (iii) “экипаж космического корабля” in the Russian version;³³² and (iv) “tripulación de una nave espacial” in the Spanish version.³³³ Translating these phrases into English, all of these versions would indicate that the word “personnel of a spacecraft” would be synonymous with the word “crew.”³³⁴ In fact all but the Chinese version—which is translated to “aircrew”—

³²⁷ Vienna Convention on the Law of Treaties, May 23, 1969, 1155 U.N.T.S. 331 [hereinafter Vienna Convention]; see Sundahl, *supra* note 311, at 174 (“The Vienna Convention sets forth the rules that govern the creation, operation, and interpretation of treaties.”).

³²⁸ Vienna Convention, *supra* note 327, at art. 33(1).

³²⁹ Rescue Agreement, *supra* note 310, at art. X.

³³⁰ 關於營救宇航員、送回宇航員和送回發射到外層空間的物體的協定 [Rescue Agreement, translated to Chinese], G.A. Res. 2345 (XXII), art. I, at 6 (Dec. 19, 1967) https://www.unoosa.org/pdf/gares/ARES_22_2345C.pdf.

³³¹ Accord Sur Le Sauvetage Des Astronautes, Le Retour Des Astronautes Et La Restitution Des Objets Lancés Dans L’espace Extra-Atmosphérique [Rescue Agreement, translated to French] G.A. Res. 2345 (XXII), art. I, at 6 (Dec. 19, 1967) https://www.unoosa.org/pdf/gares/ARES_22_2345F.pdf.

³³² Соглашение о спасении космонавтов, возвращении космонавтов и возвращении объектов, запущенных в космическое пространство [Rescue Agreement, translated to Russian] G.A. Res. 2345 (XXII), art. I, at 7 (Dec. 19, 1967) https://www.unoosa.org/pdf/gares/ARES_22_2345R.pdf.

³³³ Acuerdo Sobre El Salvamento y La Devolución De Astronautas y La Restitución De Objetos Lanzados Al Espacio Ultraterrestre [Rescue Agreement, translated to Spanish], G.A. Res. 2345 (XXII), art. I, at 7 (Dec. 19, 1967) https://www.unoosa.org/pdf/gares/ARES_22_2345S.pdf.

³³⁴ The Chinese version is translated to “aircrew.” 外空機人員, DEEPL TRANSLATOR, <https://www.deepl.com/en/translator#zh/en/%E5%A4%96%E7%A9%BA%E6%A9%9F%E4%BA%BA%E5%93%A1> (last visited Feb. 6, 2022). The French version is translated to “the crew of a spacecraft.” l’équipage d’un engin spatial, DEEPL TRANSLATOR, <https://www.deepl.com/en/translator#fr/en/l%C3%A9quipage%20d'un%20engin%20spatial> (last visited Feb. 6, 2022). The Russian version is translated to “spaceship crew[.]” экипаж космического корабля, DEEPL TRANSLATOR, <https://www.deepl.com/en/translator#ru/en/%D1%8D%D0%BA%D0%B8%D0%BF%D0%B0%D0%B6%20%D0%BA%D0%BE%D1%81%D0%BC%D0%B8%D1%87%D0%B5%D1%81%D0%BA%D0%BE%D0%B3%D0%BE%20%D0%BA%D0%BE%D1%80%D0%B0%D>

would suggest that “personnel of a spacecraft” would be synonymous with variations of the phrase “*crew of a spacecraft*.”³³⁵ With the English definition of “crew” denoting some form of professional-related affiliation or responsibility,³³⁶ “space tourists”—who would be considered “passengers”—clearly would not qualify. Thus, non-English versions of the Rescue Agreement would indicate that “space tourists” would not be considered “personnel of a spacecraft.” Because the term “personnel of a spacecraft” in the Rescue Agreement is synonymous with the term “astronauts,” this also means that space tourists would not be entitled to the same legal status as “astronauts.”

Furthermore, clues from the Rescue Agreement’s negotiations would support the conclusion that “space tourists” would not be considered “personnel of a spacecraft.” Under the Vienna Convention, “preparatory work of the treaty and the circumstances of its conclusion” could be used to “confirm the meaning” of a treaty.³³⁷ With the text of the Rescue Agreement indicating that “personnel” is synonymous with “crew,” the treaty’s negotiation records should be examined to see if they affirm this interpretation.

During the formulation of the Rescue Agreement, the French delegation expressed its position that the Rescue Agreement “applies in full only to *experimental and scientific flights*. The rights of the signatory States must be fully reserved with regard to the day when such flights may be utilitarian or *commercial*. When that happens, *it will doubtless be necessary* to negotiate a new convention.”³³⁸ This suggests that at least one signatory to the Rescue Agreement interpreted the treaty to be only applicable to non-commercial flights. When this intent is read alongside the French version of the Rescue Agreement—which expressly uses the English-translated phrase “the crew of a spacecraft”—it confirms that “personnel of a spacecraft” should exclude “space tourists” who would only be considered passengers on a commercial spaceflight.

Hence, this analysis shows that the Rescue Agreement would not confer on “space tourists” the same status as “personnel of a spacecraft.” And because “personnel of a spacecraft” is synonymous with the term “astronauts,” space tourists could be potentially denied the protections afforded to “astronauts” under the Outer Space Treaty.

0%B1%D0%BB%D1%8F (last visited Feb. 6, 2022). The Spanish version is translated to “spacecraft crew[.]” *tripulación de una nave especial*, DEEPL TRANSLATOR, <https://www.deepl.com/en/translator#es/en/tripulaci%C3%B3n%20de%20una%20nave%20espacial> (last visited Feb. 6, 2022).

³³⁵ *Id.*

³³⁶ See, e.g., *crew*, DICTIONARY.COM, <https://www.dictionary.com/browse/crew> (“[T]he people who *fly* or *operate* an aircraft or spacecraft . . .”) (emphasis added) (last visited Feb. 6, 2022); *crew*, MERRIAM-WEBSTER, <https://www.merriam-webster.com/dictionary/crew> (“[T]he persons who *have duties* on an aircraft in flight . . .”) (emphasis added) (last visited Feb. 6, 2022).

³³⁷ Vienna Convention, *supra* note 327, at art. 32.

³³⁸ U.N. GAOR, 22d Sess., 1640th plen. mtg. at 8, U.N. Doc. A/PV.1640 (Dec. 19, 1967) (emphasis added) [hereinafter *Verbatim Record*].

c. *The Moon Treaty of 1979*

The Moon Treaty also appears to support the conclusion that the status of “space tourists” is different from that of “personnel of a spacecraft.” Under the Vienna Convention, subsequent treaties can provide insights into the application of a treaty.³³⁹ Although the Moon Treaty is largely regarded as a failed agreement,³⁴⁰ it is still nevertheless considered a part of the initial set of United Nations treaties on Outer Space.³⁴¹ Hence, the Moon Treaty can provide contextual clues to aid in the interpretation of other agreements in this series of treaties.

Under the Moon Treaty, the drafters noted that all parties must “adopt all practical measures to safeguard the life and health of *persons on the Moon*.”³⁴² The agreement then clarifies that for such duty, all parties “shall regard *any person on the Moon as an astronaut* within the meaning of the [Outer Space Treaty] and as part of the *personnel of a spacecraft* within the meaning of the [Rescue Agreement].”³⁴³ While acting as a simple declarative statement, this provision provides additional justification that “space tourists” were not originally considered “astronauts” nor “personnel of a spacecraft.” This conclusion would be apparent from a two-fold analysis of this text.

First, this sentence confirms that the phrase “personnel of a spacecraft” is synonymous with the term “astronauts.” By noting that the phrase, “any person on the Moon,” should mean the same as both an “astronaut” and a “personnel of a spacecraft,” the Moon Treaty suggests that the term “personnel of a spacecraft” and the term “astronaut” have equivalent legal status. Otherwise, “person” as used in the treaty would have two different meanings, making the word vague. Under the Vienna Convention, interpretations that resolve ambiguities are strongly encouraged.³⁴⁴ Thus, the Moon Treaty further demonstrates how the use of the phrase “personnel of a spacecraft” in the Rescue Agreement is synonymous with how the term “astronaut” is used in the Outer Space Treaty.

Second, by noting that “any person *on the Moon*” should have the status of an “astronaut” or a “personnel of a spacecraft,” the Moon Treaty essentially indicates that the terms “astronauts” and “personnel of a spacecraft” would only represent a *specific subset of people in Outer Space*. If the ordinary meaning of the term “astronaut” and the term “personnel of a spacecraft” are synonymous with *anybody that is in Outer Space*, then this entire sentence would have been superfluous. An *individual on the Moon* would also clearly be a *traveler in Outer Space*. Thus, that individual should

³³⁹ Vienna Convention, *supra* note 327, at art. 31(3)(a).

³⁴⁰ *Ruling Outer Space*, *supra* note 22, at 722.

³⁴¹ See *Space Law Treaties and Principles*, U.N. OFF. FOR OUTER SPACE AFFS., <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html> (last visited Jan. 19, 2023) (“The Committee has concluded five international treaties and five sets of principles on space-related activities.”).

³⁴² Moon Treaty, *supra* note 313, at art. X.

³⁴³ *Id.*

³⁴⁴ See Vienna Convention, *supra* note 327, at art. 32(a) (noting to use supplementary sources if direct interpretation would render a meaning “ambiguous or obscure”).

automatically be considered an “astronaut” or a spacecraft “personnel” if these terms are broad enough to cover *everyone in Outer Space*. But then, there would be no need for this declaratory sentence—it would have been stating a fact made obvious by the circumstances.

Only by interpreting the terms “personnel of a spacecraft” and “astronaut” as representing a specific *subcategory* of people who are in Outer Space would this Moon Treaty provision retain its meaning—that this sentence is expanding the categories of “personnel of a spacecraft” and “astronauts” to now include *everyone on the Moon*. But it would logically follow from this expansion that the terms “astronauts” and “personnel of a spacecraft” were not *originally drafted* to include *all Outer Space travelers*—that is, the drafters contemplated that *some* individuals in Outer Space are neither “astronauts” nor “personnel of a spacecraft.” Thus, the existence of this provision could foreclose the argument that “space tourists” would be considered “astronauts” or “personnel of a spacecraft” simply because these terms should intuitively be defined as encompassing anyone in Outer Space.

d. Why Space Tourists Have a Different Legal Status

Putting “space tourists” in a different legal category would also make sense in context of the times when these treaties were negotiated.³⁴⁵ During those years, commercial space—while contemplated—was still not a feasible reality. Thus, provisions related to manned activities were likely drafted solely with professionals in mind; this is likely why idealistic adjectives such as “envoys of mankind” were used to describe astronauts.³⁴⁶ If the drafters had considered “space tourists” as “astronauts,” it is doubtful that they would add in these types of “pioneering” descriptions.

It should be noted, however, that some scholars have pushed back on this result. They argued that if “space tourists” do not have the same status as “astronauts” or “personnel of a spacecraft,” it would violate the Vienna Convention by rendering the duty to rescue absurd.³⁴⁷ But respectfully, one would only arrive at this result if these treaties were read with a contemporary mindset; this line of thinking would necessarily factor in current Outer Space developments—a sector that has matured and become safe enough to support more leisure activities such as space tourism.

However, these were not the circumstances under which the agreements were originally negotiated. At that time, Outer Space travel was still fraught and full of danger; anyone who ventured out into Outer Space had to accept a significant amount of risk and that any accident could be fatal.³⁴⁸ Thus, when reading these treaties in

³⁴⁵ See *supra* Part III.A.1.

³⁴⁶ Outer Space Treaty, *supra* note 23, at art. V.

³⁴⁷ See, e.g., Sundahl, *supra* note 311, at 189 (noting that it would create a situation where rescuers would only rescue the crew and not the passengers); McCauley, *supra* note 317, at 474 (indicating that a rescue crew can “rescue the crew and pilots, but would be free to leave the passengers behind”).

³⁴⁸ See, e.g., Elizabeth Howell, *Apollo 11 Moon Landing Carried Big Risks for Astronauts*, NASA, SPACE.COM (July 19, 2014), <https://www.space.com/26576-apollo-11-moon-landing-risks.html> (“You get on top of a Saturn V rocket with enough chemical energy to be the equivalent of a small atomic bomb.”).

light of those circumstances, it is clear that the provisions related to “astronauts” and “personnel of a spacecraft” were written to reduce the risk to these professionals in a dangerous field. Furthermore, this context would also help to clarify the French delegation’s comments to the Rescue Agreement.³⁴⁹ These treaties were intended to address the circumstances as they stood at the time; and when Outer Space becomes safer and feasible for commercial activities, then new provisions must be negotiated to address the availability of Outer Space to private individuals such as space tourists.

Thus, through a textual and contextual analysis of the fundamental treaties underlying Outer Space, it is likely that “space tourists” do not have the legal status of “astronauts” or “personnel of a spacecraft.” Therefore, space tourists might not be protected by a duty to rescue. With the legal status of space tourists still up in the air, it begs the question of how much impact this uncertainty could have on the industry. The next Part will address this concern.

2. Implications of Space Tourists’ Uncertain Legal Status

With their legal status in limbo, space tourists could face some practical uncertainties in Outer Space. For instance, if a capsule containing only space tourists were to experience an emergency in Outer Space, would other individuals and countries be legally bound to assist with their rescue? Given that an adventure in Outer Space is already more akin to a daredevil experience rather than a relaxing vacation, this additional legal risk might deter an otherwise would-be space tourist and, thus, hinder the growth of the space tourism industry.

Hence, there is an urgent need to ratify new provisions that will ensure that space tourists are entitled to a duty of rescue and assistance in the event of an emergency.³⁵⁰ But given that international treaties can take a while to draft and/or fail to gain popular traction,³⁵¹ it is still important to examine how this uncertainty in space tourists’ legal status could impact the industry in the near term.

But here, the analysis can be surgically focused on how space-faring nations that have manned launch capabilities—China, Russia, and the United States—would react.³⁵² Because if a need for rescue arises, only one of these countries would have the means to mount such an operation. Through an examination of these space-faring

³⁴⁹ See Verbatim Record, *supra* note 338, at 8.

³⁵⁰ See, e.g., Sundahl, *supra* note 311, at 192 (“Clarity can be provided by reforming the law to make explicit that the rights, duties, and obligations contained in the treaties apply to commercial ventures.”); Hobe, *supra* note 308, at 457 (“International space law has not yet reached a level where the legal status of commander, crew, and passengers are sufficiently defined.”); Verbatim Record, *supra* note 338, at 8 (“[If] such flights . . . [become] utilitarian or commercial [in character,] . . . it will doubtless be necessary to negotiate a new convention.”).

³⁵¹ See *Ruling Outer Space*, *supra* note 22, at 722 (noting that the Moon Treaty has failed to gain acceptance among space-faring nations).

³⁵² See Meghan Bartels, *Here’s Every Spaceship that’s Ever Carried an Astronaut into Orbit*, SPACE.COM (May 23, 2020), <https://www.space.com/every-crewed-spacecraft-human-spaceflight-history.html> (indicating that only the United States, Russia, and China have sent humans into Outer Space); see also *Maiden Flight*, *supra* note 139, at 8 (noting the success of the SpaceX commercial manned launch system).

countries' legal frameworks and Outer Space policies, this Article concludes that the practical risk of this lack of legal status might be limited.

a. Russia and United States

Although the legal status of space tourists might be uncertain under the United Nations treaties on Outer Space, country-specific laws and policies can provide clarity on how particular nations might treat space tourists in distress.

For Russia and the United States, clues on how they would treat space tourists in distress can be found in the ISS governing documents. With both countries taking a lead role on ISS's operations, they are bound by several multilateral agreements related to this space station.³⁵³ One of these documents, the main ISS governing agreement, acknowledges that the space station shall be “developed, operated, and utilized in accordance with international law including the Outer Space Treaty [and] the Rescue Agreement.”³⁵⁴ Thus, Russia and the United States reaffirmed the applicability of the rescue and assistance provisions of the Outer Space Treaty and the Rescue Agreement to their ISS activities.

While these United Nations treaties do not mention space tourists, this subject does come up in another ISS agreement.³⁵⁵ In the agreement that standardized the selection and training process for ISS personnel, a space “tourist” is specifically called out as a type of “spaceflight participant” and a “visiting crewmember” of the ISS.³⁵⁶ When reading these ISS agreements in conjunction with the Outer Space Treaty and the Rescue Agreement, it would suggest that all ISS partners should provide space tourists with the same status that is granted to “astronauts” or “personnel of a spacecraft” under the United Nations treaties; this is a result of space tourists being explicitly included as members of the ISS crew, which is synonymous with how the term “personnel of a spacecraft” is being used in the United Nations treaties.³⁵⁷ Thus, all ISS partners, including Russia and United States, would be duty-bound by their ISS obligations to rescue and assist space tourists in distress.

But some might argue that extending “personnel of a spacecraft” to include “space tourists” would violate the ISS governing documents. Specifically, this reading would conflict with the agreement's provision that ISS documents may not “modify[] the rights and obligations of the [nations] found in the [United Nations treaties on Outer

³⁵³ Yanal Abul Failat, *Space Tourism: A Synopsis in its Legal Challenges*, 1 Irish L.J. 120, 140 (2012).

³⁵⁴ Agreement Among the Government of Canada, Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America Concerning Cooperation on the Civil International Space Station, art. 2, Jan. 29, 1998, T.I.A.S. No. 12927, State Dep't No. 01-52, 2001 WL 679938 [hereinafter ISS Governance Document].

³⁵⁵ ISS Multilateral Crew Operations Panel, *Principles Regarding Processes and Criteria for Selection, Assignment, Training and Certification of ISS (Expedition and Visiting) Crewmembers*, Nov. 28, 2001, <https://esamultimedia.esa.int/docs/isscrewcriteria.pdf>.

³⁵⁶ *Id.* at art. III.

³⁵⁷ *See supra* Part III.A.1.

Space].”³⁵⁸ However, extending the rescue and assistance protections from the Outer Space Treaty and the Rescue Agreement to space tourists is more of a clarification rather than a modification. As previously discussed, the term “personnel of a spacecraft” is not clearly defined in these United Nations treaties.³⁵⁹ Thus, these ISS governing documents are merely clarifying how specific countries might interpret their obligations under ratified treaties in the same field. In fact, this technique of treaty interpretation is endorsed by the Vienna Convention where it concludes that other related instruments can be used for “the purpose of the interpretation of a treaty.”³⁶⁰

Since both the United States and Russia have executed the ISS agreements and ratified the Outer Space Treaty and the Rescue Agreement, this would strongly indicate that two of the three nations with manned spaceflight capabilities would extend the rescue protections offered under the United Nations treaties to space tourists. Thus, this should provide some level of reassurance to would-be space tourists.

b. China

With two of the three countries with manned spaceflight capabilities likely to offer space tourists rescue protections, the focus then turns to China. While China is not an ISS partner, its Outer Space public policy indicates that China will contribute to activities that make Outer Space safer for all. In its most recently updated white paper on Chinese Outer Space activities, China notes that it will seek to “address the challenges in ensuring long-term sustainability of outer space activities.”³⁶¹ Guided by this principle, China envisions itself working with other nations—specifically calling out Russia and United States—in achieving these sustainability goals.³⁶²

With China wanting to make Outer Space a safer environment for all, it is hard to imagine that this nation will not offer space tourists the same protections that it would offer to other individuals in Outer Space. By specifically noting its intent to cooperate with United States and Russia, it is very likely that China will rescue and assist space tourists in distress. Furthermore, this would enable China to compete in the space tourism industry by having policies that are similar to those offered by the United States and Russia—both of which seek to encourage further growth and development of this industry.³⁶³

³⁵⁸ ISS Governance Document, *supra* note 354, at art. II(2)(a).

³⁵⁹ *See supra* Part III.A.1.

³⁶⁰ Vienna Convention, *supra* note 327, at art. 31(2)(b).

³⁶¹ *China’s Space Program: A 2021 Perspective*, ST. COUNCIL INFO. OFF. OF CHINA, Sec. VI.3(1) (Jan. 28, 2022), <http://www.scio.gov.cn/zfbps/32832/Document/1719693/1719693.html>.

³⁶² *Id.*

³⁶³ *See* AFP, *Russia Ready to ‘Fight’ for Space Tourism Supremacy*, FRANCE24 (Dec. 19, 2021), <https://www.france24.com/en/live-news/20211219-russia-ready-to-fight-for-space-tourism-supremacy> (noting that for Russia, space tourism is about “national prestige” and is economically important for its Outer Space program); Marcia Smith, *NASA Embraces Space Tourism, More Commercial Activities on ISS*, SPACEPOLICYONLINE.COM (June 10, 2019, 8:08 AM), <https://spacepolicyonline.com/news/nasa-embraces-space-tourism-more-commercial->

Thus, this Part shows that although the legal status of “space tourists” is likely not synonymous with that of “astronauts” or “personnel of a spacecraft,” the practical risk to these private individuals in the event of an emergency in Outer Space is still relatively low. The three countries that can offer rescue and assistance in such circumstances would likely be willing to offer space tourists protections that are similar to those they would provide to “astronauts” or “personnel of a spacecraft.” Therefore, while the space tourism industry would benefit from additional clarity on the legal status of space tourists, the short-term risk to these Outer Space guests will likely be low while new multinational treaties are drafted, negotiated, and executed.

With these protections in place, private individuals should feel more comfortable with the idea of venturing into Outer Space as space tourists. However, as this industry matures and more people take their trip up, other legal issues are emerging as well. The next Part focuses on another significant legal issue for this industry: what type of legal regime should govern space tourism activities?

B. *The Applicability of Aviation Laws*

As space tourism enters its golden age, many see parallels to the glory days of its earlier cousin: air tourism. About a hundred years earlier, in the 1920s, air travel was more of a novelty experience rather than another form of common transportation.³⁶⁴ In many ways, space tourism is the modern-day equivalent of air tourism back in the Roaring 20s; instead of the sky being the limit, tourists can now go much farther where the atmospheric blue transitions to the spatial black.

But this new rendition does raise an interesting legal question: if space tourists must traverse through the domain of airspace before getting to their final destination in Outer Space, should aviation laws and regulations be applicable to space tourism as well? This Part begins by explaining why some scholars believe both air and space laws should govern Outer Space activities. It then continues by noting how this multidisciplinary approach could create issues as the space tourism industry matures. In order to eliminate these potential conflicts, this Part concludes by arguing that the space tourism industry should be solely governed by Outer Space laws.

1. Applicability of Both Air and Space Laws

Some scholars have suggested that aviation and Outer Space laws and regulations should be equally applicable to space tourism.³⁶⁵ In support of this perspective, they have pointed to two critical facts: (1) Outer Space does not have one singular widely accepted starting boundary; and (2) the space tourism industry currently uses both rocket-like vertical and airplane-like horizontal takeoff techniques.

activities-on-iss/ (noting that NASA’s thinking on space tourism has evolved from skepticism to enthusiasm).

³⁶⁴ See Joseph F. Clark III, *Flying in the 1920s*, 22 J. AVIATION/AEROSPACE EDU. & RSCH. 9, 11 (2012) (noting that the people would pay “\$3 to \$5 for a 10-minute ride around town”).

³⁶⁵ See generally Hobe, *supra* note 308, at 448 (“In summary, the aircraft used in an air launch, as well as the space vehicle prior to separation, would need to be registered according to air law.”) [hereinafter *Legal Aspects*]; Frans G. von der Dunk, *Space Tourism, Private Spaceflight and the Law: Key Aspects*, NEB. LAW. 21, 27 (2013) (“So while there may as yet be no international *space* law which applies in the area of certification, there are developments in international *air* law which are of impact.”) (emphasis in the original).

One of the primary justifications for the applicability of both air and space laws stem from the absence of one universal demarcation line for Outer Space.³⁶⁶ Without a clear boundary, it is difficult to know when a spacecraft has left a nation's airspace for the international realm of Outer Space. Thus, there is always a potential that a vehicle used for "space tourism" might not have reached the altitude needed to be in Outer Space.³⁶⁷ In these circumstances, to call this vehicle a "spacecraft" would be a misnomer. Because the vehicle never entered Outer Space, its passengers would not be under the jurisdiction of Outer Space laws. Thus, these tourists onboard should only be governed by general aviation laws. Therefore, the lack of a clear boundary means that both air and space laws must be capable of governing space tourism activities.

In addition, the fact that some space tourism vehicles take off horizontally like an airplane has led scholars to suggest that aviation laws should be applicable.³⁶⁸ While most spacecrafts used for space tourism launch vertically like a rocket, this is not the case for all. For example, Virgin Galactic's vehicle takes its passengers to Outer Space via a more traditional aviation mean: a horizontal launch.³⁶⁹ After taking off like an airplane and arriving at a certain altitude, Virgin Galactic's carrier-plane component releases the vessel's spaceship portion. The spaceship—containing the passengers—would then blast off into Outer Space. Under this scenario, because the mothership never enters Outer Space, some scholars see it as an airplane and argue for the applicability of aviation laws for its operations.³⁷⁰ According to this perspective, prior to separation, passengers would be considered as riding in a special type of airplane and, accordingly, would only be subjected to air laws.³⁷¹ Only until the spaceship is under its own power and blasting off to Outer Space would the passengers then be governed by Outer Space laws.³⁷² Thus, these scholars argue that some space tourism activities could be subjected to both air and space-related regulations.³⁷³

2. Confusion Resulting from Duality of Laws

But as the space tourism industry matures, having both air and space laws regulate this sector could create challenges. First, without a definitive Outer Space boundary,

³⁶⁶ See *Ruling Outer Space*, *supra* note 22, at 723 ("Although this seems like a trivial matter, there is no official or universally accepted boundary for Outer Space.").

³⁶⁷ See Hobe, *supra* note 308, at 442 ("On the other hand, the "spatial" approach attempts to determine a fixed boundary between airspace and outer space.").

³⁶⁸ See Thomas Cheney & Lauren Napier, *Policy Analysis: Air Versus Space, Where Do Suborbital Flights Fit Into International Regulation?*, 7 J. SCI. POL'Y & GOVERNANCE 1, 2 (2015).

³⁶⁹ See *supra* Part II.B.8.

³⁷⁰ See Hobe, *supra* note 308, at 443 ("Until separation, the combined vehicle has the characteristics of an aircraft in terms of technical functions such as flight pattern and maneuverability . . .").

³⁷¹ *Id.*

³⁷² *Id.* at 443–44.

³⁷³ *Id.* at 444.

the industry could get bogged down in determining whether a tourism vehicle is meant to be a spacecraft or an aircraft. Second, it could conflate two areas of laws that are based on distinctly different principles.

Without a clear demarcation line for Outer Space, the determination of whether air or space law would apply to a specific scenario could hinge on the vehicle's intent. For instance, if an Outer Space-bound vehicle reach an altitude of at least eighty kilometers above mean sea level but below the 100 kilometers Kármán Line, some might argue this is more of a high-altitude plane ride rather than a legitimate spaceflight. Because there is uncertainty on whether the vehicle actually reached Outer Space, both air and space law could apply—causing controversies if there are discrepancies between these two sets of laws.

To eliminate these conflicts and settle on a clear set of governing laws, a determination on the vehicle's intent might be necessary: specifically, whether the experience was meant to be a high-altitude flight or an Outer Space adventure. But this focus on an abstract element such as “intent” could lead to an abuse of the legal process. Different organizations would be incentivized to pick the legal regime most advantageous to them for the circumstances. Even when a ruling is made about the vehicle's intent, such decision could be controversial, uncertain, and always under the threat of reversal by higher courts.

Furthermore, while the two regimes are intertwined, air and space laws are predicated on two entirely different principles.³⁷⁴ Aviation laws are developed from the concept that countries have certain ownership rights over specific airspace whereas space laws are rooted in the principle that Outer Space is owned by none.³⁷⁵ Thus, the two sets of laws are fundamentally different: one based on facilitating international cooperation while respecting sovereign domain—aviation laws, while the other ensuring that there is freedom of movement and exploration by all without unnecessary constraints—space laws. Thus, the two areas of laws are trying to achieve separate policy goals.

If space tourism is governed by these two fundamentally different sets of legal regimes at the same time, it could create disjointed public policies as the industry grows.³⁷⁶ Participants would be forced to balance between two competing—and potentially conflicting—policy aims: whether these tourism activities should be primarily national-oriented while secondarily adhering to global norms (aviation laws-based) or primarily international-focused while secondarily obeying sovereign restrictions (space laws-based). This confusion could result in the space tourism sector being pulled apart before it can firmly cement itself as an industry of the future.

³⁷⁴ See Zhao Yun, *A Legal Regime for Space Tourism: Creating Legal Certainty in Outer Space*, 74 J. AIR L. & COM. 959, 963 (2009) (“The air transportation regime, characterized by state sovereignty over air space, substantially differs from the space travel regime where no state can claim sovereignty over outer space.”).

³⁷⁵ Outer Space Treaty, *supra* note 23, at art. II (“Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.”).

³⁷⁶ See FRANS G. VON DER DUNK, *The Regulation of Space Tourism*, in SPACE TOURISM: THE ELUSIVE DREAM, 177, 186 (Erik Cohen & Sam Spector eds., 2019) (“As to the areas of operation, the difference between the status of outer space and the underlying airspace starts already with the fundamentally different international legal status of the two realms.”).

3. Implementation of a Singular Legal Regime

Because of the thematic conflicts between air and space laws, it would be beneficial to the industry if space tourism were only governed by one particular type of legal regime. But this begs the question: which set of laws should govern? To find this answer, an analysis of how the space tourism industry is currently being managed and regulated would be beneficial. With all current space tourism-related entities based in either the United States or Russia, the focus can be narrowed to these countries' applicable regulations.

In Russia, space tourism is managed by Glavkosmos, a subsidiary of Roscosmos, the Russian space agency.³⁷⁷ Thus, Russian space tourism activities are clearly being regulated by its space agency rather than its civilian aviation authority. Meanwhile, in the United States, all commercial launch operations are licensed by the Office of Commercial Space Transportation ("AST") in the Federal Aviation Administration ("FAA").³⁷⁸ While the FAA also regulates aerospace operations in the United States, AST is a distinct sub-office and is the sole "space-related line of business" for the FAA.³⁷⁹ All activities being conducted by United States-based space tourism companies are licensed and approved by the AST—this would even include Virgin Galactic's horizontal airplane-like launches.³⁸⁰ Hence like Russia, all space tourism activities in the United States are governed by a special branch of the government focused solely on Outer Space operations.

Therefore, for the two countries that have active space tourism enterprises, all such activities are being managed by these countries' space agencies. This fact would strongly suggest that if only one set of governing laws would apply to the space tourism industry, then it should be space laws rather than aviation laws. Thus, as long as space tourism activities are being managed and licensed by a space agency, then the space tourism industry should solely be subjected to Outer Space regulations and laws.

Having only one set of laws governing space tourism will aid in alleviating confusion for this industry. It would become unnecessary to ascertain a vehicle's intended destination. As long as the vehicle and the mission were regulated by the country's Outer Space agency, then one can conclude that such activities were meant to be space-related. With certainty on the rules that would apply, the space tourism industry can continue to grow on a solidified legal foundation.

Thus, as space tourism matures, this industry should not be regulated by aviation laws and should be governed solely by space laws. But the elimination of aerospace laws raises another legal concern: If air-related laws no longer apply, what type of

³⁷⁷ See *Commercial Space Flights to the ISS*, GLAVKOSMOS, <https://www.glavkosmos.com/en/commercial-space-flights-to-the-iss/> (last visited Mar. 9, 2022).

³⁷⁸ *About the Office of Commercial Space Transportation*, FAA, https://www.faa.gov/about/office_org/headquarters_offices/ast (last visited Mar. 9, 2022).

³⁷⁹ *Id.*

³⁸⁰ See *Licensed Launches*, FAA, https://www.faa.gov/data_research/commercial_space_data/launches/ (last visited Mar. 9, 2022).

passenger liabilities should space tourism companies be responsible for? The next Part addresses this issue.

C. *Passenger Liability Regime for Space Tourists*

While space tourism is still in its early days, as this industry grows, it could eventually become another common form of vacation for the public. In that not-so-distant future, space tourism enterprises would operate much like how cruise ship companies function today. This means that space tourism operators will eventually be treated like common carriers, owing their passengers a heightened level of care.³⁸¹ However, this is not the standard in the industry today. So as space tourism soars, this industry's passenger liability regime will likely experience a dramatic shift.

But will the speed of this legal transformation stun space tourism's growth? This Part analyzes this issue by first providing an overview of the industry's current passenger liability regime. It then argues for changes in this liability regime as the sector matures. Finally, this Part explains how new insurance products will serve as a stopgap measure for this industry while the passenger liability laws are updated.

1. Space Tourism's Current Passenger Liability Regime

While maturing quickly, space tourism—and, for that matter, the general commercial space sector—is still very much in its infancy. Activities related to Outer Space travel are still rather dangerous. To grow this market, new technologies that will make Outer Space safer and more accessible must still be developed. Thus, regulators for this industry must balance regulations that will preserve public safety against policies that will encourage innovation through experimental activities.

With these two competing requirements, regulators have structured today's liability regime for space tourism into one that is focused primarily on protecting those who are not directly involved in such activities.³⁸² For instance, when United States Congress passed the Commercial Space Launch Amendments Act of 2004³⁸³ that enabled AST to regulate commercial space activities, Congress's focus was on the risk to the general public rather than the risk to the industry's own participants.³⁸⁴ The

³⁸¹ See Michael C. Mineiro, *Assessing the Risks: Tort Liability and Risk Management in the Event of a Commercial Human Space Flight Vehicle Accident*, 74 J. AIR L. & COMM. 371, 377–78 (2009) (stating that U.S. Courts have “imposed on common carriers a higher degree of care with respect to their passengers” and as Commercial Human Space Flight operations evolve, “operators of these space flights might be deemed common carriers.”).

³⁸² See David M. Livingston, *Broadcast 3837 Jim Muncy*, THE SPACE SHOW, at 1:16:09 (Mar. 6, 2022), <https://www.thespaceshow.com/show/06-mar-2022/broadcast-3837-jim-muncy> (stating that the FAA's focus “has been by law entirely on protecting the public's safety . . . because they are not participating and they are not benefiting from it, they should be protected . . . from the risky spaceflight activity”).

³⁸³ Commercial Space Launch Amendments Act of 2004, Pub. L. No. 108-492, § 1, 118 Stat. 3974, 3974.

³⁸⁴ George C. Nield et al., *Informed Consent in Commercial Space Transportation Safety*, FAA OFF. COM. SPACE TRANSP., No. IAC-13-D5.1.4, at 2, https://www.faa.gov/space/additional_information/international_affairs/media/Informed_Consent_paper_IAC_Sept_2013_FAAFinal.pdf (last visited Mar. 12, 2022) (“Because this was a new

thought was that this would ensure that early innovators in the industry will not be stymied by excessive regulatory safety oversights that can forestall innovation.³⁸⁵

Thus, as the sector stands today, space tourists would themselves largely bear the consequences of any harm that they might suffer during their journey. This outcome is a result of two aspects of the current passenger liability regime for space tourism: (1) informed consent and (2) cross-waivers of liabilities.

a. Informed Consent

With many commercial space activities still experimental in nature, space enterprises have looked to the government to ensure that the industry's development is not hindered by excessive liability requirements.³⁸⁶ In support of this effort, Congress—through the Commercial Space Launch Amendments Act of 2004³⁸⁷—established an “informed consent” standard for commercial spaceflight participants. This standard tries to balance between the need for minimal safety requirements and the developmental needs of an inherently dangerous industry.³⁸⁸

Under the “informed consent” standard, before a space tourist can venture into Outer Space, that participant must be informed of (1) the dangers and risks associated with such launch and reentry activities, (2) the safety record of the launch vehicle being used, (3) the lack of certain certifications for the launch vehicle, and (4) the ability to request information related to the launch vehicle's safety records.³⁸⁹ After being informed of these facts, space tourists must explicitly consent to their continued participation as well as agree to comply with any medical and/or training requirements that the Federal Government may issue.³⁹⁰

While the “informed consent” standard has been called a “duty to warn” by some,³⁹¹ others have argued that it is merely a rudimentary cognizant test to ensure

industry, Congress chose to allow the industry to develop with government oversight limited to the safety of the public, and not the persons on board, except in limited circumstances.”).

³⁸⁵ 150 CONG. REC. H10045–49 (daily ed. Nov. 19, 2004) (“Because this industry is at the stage when it is the preserve of visionaries and daredevils and adventurers . . . Such protection would only stifle innovation.”).

³⁸⁶ *Id.*

³⁸⁷ Commercial Space Launch Amendments Act § 2(b)(13).

³⁸⁸ See Nield et al., *supra* note 384, at 2 (indicating that Congress tried to limit regulations to “the safety of the public, and not the persons on board, except in limited circumstances” to preserve the ability for the industry to grow).

³⁸⁹ 14 C.F.R. § 460.45 (2022).

³⁹⁰ 51 U.S.C. § 50914(b)(1) (2022).

³⁹¹ Tracey Knutson, *What is ‘Informed Consent’ for Space-flight Participants in the Soon-to-Launch Space Tourism Industry?*, 33 J. SPACE L. 105, 110 (2007); see also Paul Alp, *Limitations on Liability as to Space Tourists*, ABA AVIATION & SPACE L. COMM. 7, 9 (Summer 2011), <https://www.crowell.com/files/2011-limitations-on-liability-as-to-space-tourists.pdf> (“It has been suggested that Congress’ choice of the term “informed consent” in the Act created an independent tort arising from a statutory duty to warn space flight participants of risks.”).

that space tourists know what they are getting themselves into.³⁹² For example, while Congress dictated broad categories of information that a space enterprise must provide, it did not lay out how much or what types of information must be accessible.³⁹³ Thus, some scholars suggest that space tourists are likely not armed with enough information to make an accurate risk assessment.³⁹⁴

On the flip side, the lack of specific requirements has also left the space tourism industry troubled as well. Without knowing what kind of resources it must provide, a space tourism company is vulnerable to the challenge that it has not satisfied the legal requirements needed to effectuate a proper consent. Thus, it was not clear whether the “informed consent” provision would be enough to fully protect these spacefaring enterprises from potential liabilities.

b. Cross-Waivers of Liabilities

To shore up the protection for this industry, Congress modified the Commercial Space Launch Act in 2015 to ensure commercial space operators will not be contractually liable to their customers.³⁹⁵ Under the Commercial Space Launch Competitiveness Act of 2015, Congress expanded the scope of the cross-waivers of liabilities to explicitly cover spaceflight participants as well.³⁹⁶ With this provision, all spaceflight participants must agree to be personally responsible for any harms that they might suffer as a result of their participation.³⁹⁷ With space tourists covered as a subcategory of “spaceflight participants,”³⁹⁸ space tourism companies obtained a nearly-impenetrable shield against passenger liability claims.

³⁹² See Alp, *supra* note 391, at 10 (“Instead, written consent and oral questioning of the operator are “clearly intended to achieve some type of ‘cognizance test’[.]” (internal citations omitted)).

³⁹³ Andrea Reed, *Space, the Final Frontier for Negligence Suits—Why Commercial Space Operators Should Be Liable for Personal Injuries to Space Flight Participants*, 84 J. AIR L. & COM. 477, 485–86 (2019) (“[M]ajor space operators expressed concern that some requirements lacked clear definitions and standards, raising the likelihood of litigation over the scope of the informed consent provision.”).

³⁹⁴ Tereza Pultarova, *Do Space Tourists Really Understand the Risk They’re Taking?*, SPACE.COM (Sept. 30, 2021), <https://www.space.com/space-tourism-risk-safety-regulations>.

³⁹⁵ U.S. Commercial Space Launch Competitiveness Act, Pub. L. No. 114-90 129, § 1(c), 129 Stat. 704–05 (2015).

³⁹⁶ *Id.* § 103(a), at 706.

³⁹⁷ 51 U.S.C. § 50905(b)(5)–(6) (2022).

³⁹⁸ A “space flight participant” is defined as “an individual, who is not crew or a government astronaut, carried within a launch vehicle or reentry vehicle.” 51 U.S.C. § 50902(20) (2022). “Crew” is defined as “any employee of a licensee or transferee, or of a contractor or subcontractor of a licensee or transferee, who performs activities in the course of that employment directly relating to the launch, reentry, or other operation of or in a launch vehicle or reentry vehicle that carries human beings.” § 50902(2). “Government astronaut” is defined as an individual who—(A) is designated by the National Aeronautics and Space Administration under section 20113(n); (B) is carried within a launch vehicle or reentry vehicle in the course of his or her employment, which may include performance of activities directly relating to the

2. The Need for Change

However, as space tourism companies become more mature, some are advocating for a directional shift in favor of more protections for space tourists.³⁹⁹ Advocates for this perspective argue that the industry today is very different from what it was two decades ago.

In 2004, when Congress first provided the commercial space industry with certain liability protections via the “informed consent” standard, the fledging space tourism industry was still trying to find its footing. Only two tourists had gone up to Outer Space.⁴⁰⁰ The most-advanced privately-developed spacecraft, the first version of the Virgin Galactic spaceship, had just won the Ansari X-Prize and was nowhere near ready to take on paid passengers.⁴⁰¹ Thus, regulators prioritized the industry’s need for innovation. This led to safety regulations that focused primarily on protecting nonparticipants—the general public—from the industry’s activities; the participants are generally left with a warning of “caveat emptor.”⁴⁰² Then in 2015, when the industry’s liability shield was strengthened with cross-waivers of liabilities, the space tourism sector was essentially in a standstill; Soyuz was not actively taking up any space tourists and American space tourism enterprises were all still in their research and development phase.⁴⁰³ At that time, shifting the regulations toward a liability regime that is more favorable for space tourists still seemed premature.

launch, reentry, or other operation of the launch vehicle or reentry vehicle; and (C) is either— (i) an employee of the United States Government, including the uniformed services, engaged in the performance of a Federal function under authority of law or an Executive act; or (ii) an international partner astronaut.

§ 50902(4). With space tourists going to Outer Space on their own volition and not as a part of any employment obligations, therefore it is clear from the definitions that they are “spaceflight participants.”

³⁹⁹ See Ankit Kumar Padhy & Amit Kumar Padhy, *Legal Conundrums of Space Tourism*, 184 ACTA ASTRONAUTICA 269, 272 (2021) (“It is important to have well defined principles and provisions dealing with the liability of such activities to ensure a good balance between the industry and the need to secure justice for the space tourists.”); see also Yun, *supra* note 374, at 968 (“The uncertainty concerning the liability issue can make potential investors hesitant because any unknown future regulation may kill the business they are investing in.”); Brian T. Musselman & Steven Hampton, *Factors Influencing the Emergence of Suborbital Space Tourism*, 7(2) INT’L. J. AVIATION, AERONAUTICS, & AEROSPACE 1, 7 (2020) (“There are legal details to address, though, with reference to informed consent and waiver of claims because they may not be applicable in all third-party legal situations.”).

⁴⁰⁰ See generally *supra* Part II.B.

⁴⁰¹ See generally *supra* Part II.B.

⁴⁰² See GEOFFREY I. CROUCH, TIMOTHY DEVINNEY & JORDAN J. LOUVIERE, *Developments in Space Tourism: Current and Future Research*, in ROUTLEDGE HANDBOOK OF TOURISM RSCH., 339, 340 (Cathy H. C. Hsu, William C. Gartner & Taylor & Francis Group eds., 2012).

⁴⁰³ See *supra* Part II.B.8.

But fast-forward to today, with the Soyuz coming back in service and three commercial space vehicles making successful tourism spaceflights,⁴⁰⁴ the passenger liability regime appears ripe for a change. With space tourists now having a menu of options, innovation is no longer an all-encompassing concern. Want a quick hop into Outer Space? Choose Blue Origin.⁴⁰⁵ Desire a combinational plane and space ride in one journey? Pick Virgin Galactic.⁴⁰⁶ Dream of a comprehensive suborbital experience? Select SpaceX or Soyuz.⁴⁰⁷ Thus, Congress seems to have achieved its objective in developing the industry and the industry's justifications for a liability shield is no longer as appealing.

Furthermore, in the United States, a hodgepodge of state-specific space tourism liability laws is starting to develop and sow confusion. While Congress set certain liability floors related to commercial space operators, it empowered states to set higher standards.⁴⁰⁸ Many states have taken advantage of this Congressional grant of authority and created different standards of liability for commercial space operators.⁴⁰⁹ But this has also created a variety of liability laws that commercial space companies need to navigate—a treacherous journey given that these state-based legal regimes can vary significantly.⁴¹⁰ During space tourism's early days, this was not a major concern because companies were all focused on research and development.⁴¹¹ But now with the sector's attention turned toward building strong customer base, contradicting passenger liability laws could stifle further industry growth.

Hence if not changed, the current passenger liability regime could sow confusion. With the status quo likely impeding the popularity of space tourism, this is creating an impetus for Congress to act. While not an easy task, the Federal government is in the best position to act because of a significant tool at its disposal: the Supremacy Clause. Through the Supremacy Clause, new federal laws could be enacted and bring order to this somewhat chaotic liability landscape.⁴¹² For these reasons, it is time for the

⁴⁰⁴ See generally *supra* Part II.B.8–16.

⁴⁰⁵ See generally *supra* Part II.B.10.

⁴⁰⁶ See generally *supra* Part II.B.9.

⁴⁰⁷ See generally *supra* Part II.B.13 and II.B.16.

⁴⁰⁸ See 51 U.S.C. § 50919(c)(2) (2022) (“A State . . . may adopt, or have in effect a law, regulation, standard, or order consistent with this chapter that is in addition to or more stringent than a requirement of, or regulation prescribed under, this chapter.”).

⁴⁰⁹ See Reed, *supra* note 393, at 487–89 (indicating how certain states have passed liabilities laws related to commercial space operators to “fill the federal regulatory gap”).

⁴¹⁰ See *id.* at 488 (“Significant difference exist across these state liability regimes.”).

⁴¹¹ See McCauley, *supra* note 317, at 464.

⁴¹² See *Preemption*, CORNELL L. SCH. LEGAL INFO. INST., <https://www.law.cornell.edu/wex/preemption> (last visited Mar. 22, 2022) (“When state law and federal law conflict, federal law displaces, or preempts, state law, due to the Supremacy Clause of the Constitution. U.S. Const. art. VI., § 2.”).

federal government to step in and streamline the passenger liability regime for this industry.

3. Stopgap Measures in the Meantime

While the liability regime for space tourists will not change overnight, Congress already has a plan in place that will force itself to enact changes soon. When Congress last strengthened the industry's liability shield, it put in a sunset provision: the industry's cross-waiver of liabilities will expire on September 30th, 2025.⁴¹³

Although some are worried about this slow change of pace—which will likely take at least a decade,⁴¹⁴ short-term risks here could be mitigated through other mechanisms. Specifically, space tourists could look to the private market and purchase insurance for their Outer Space journeys. While this product did not exist when Congress last passed amendments related to passenger liabilities,⁴¹⁵ space tourism insurance has since become a reality.

In late 2021, insurance provider Battlefront introduced a new policy that is tailored specifically for space tourists.⁴¹⁶ As a nod to commercial space industry's cousin, the commercial air industry, this space tourism policy is underwritten by Lloyd's of London—the same entity that had insured Mr. Charles Lindbergh's historic non-stop transatlantic flight in 1927.⁴¹⁷ Given that space tourism is inherently risky, this policy's insurance premium will likely be expensive. But these early days of space tourism will likely be dominated by the rich, so money should not be an issue. Thus, insurance policies could ensure that space tourists have some form of protection until the liability laws are changed to become more participant-favorable.

With space tourism finally taking off in 2021, it is likely that Congress's next look into the industry's passenger liability regime will shift from innovation-oriented to safety-focused. Thus, these laws will likely experience a significant transformation. Until that point, space tourists can depend on new insurance products to reduce their risk exposure in an exciting but dangerous endeavor.

⁴¹³ 51 U.S.C. § 50914(b)(1)(C) (2022).

⁴¹⁴ See Swati Ravi, *Space Tourism Needs Passenger Safety Regulations to Truly Take Off*, VIA SATELLITE (June 11, 2020), <https://www.satellitetoday.com/opinion/2020/06/11/commercial-spaceflight-needs-passenger-safety-regulations-to-truly-take-off/> (“But with the great strides in commercial spaceflight made in the past two decades, addressing passenger safety can no longer be delayed.”); see also Reed, *supra* note 393, at 505 (“If Congress fails to reform the liability regime before the first [space tourists] travel to space, the industry and its passengers must hope they beat the odds that a fatal accident will not occur during this period of regulatory uncertainty.”).

⁴¹⁵ See Jacob Sonenshine, *Travelers' Insurance for Space Travel Could Be on the Way*, BARRON'S (July 19, 2021, 8:42 AM), <https://www.barrons.com/articles/space-tourism-insurance-blue-origin-virgin-galactic-5162653505> (“Insurance experts say there is insurance against space-related mishaps for rockets and the like—but not for passengers.”).

⁴¹⁶ Ryan Smith, *Ground control to Major Tom: Sign your Coverage Forms and put your Helmet on*, INS. BUS. AM. (Sept. 2, 2021), <https://www.insurancebusinessmag.com/us/news/breaking-news/ground-control-to-major-tom-sign-your-coverage-forms-and-put-your-helmet-on-308782.aspx>.

⁴¹⁷ *Id.*

Alongside a reevaluation of its passenger liability regime, the space tourism sector will likely undergo changes in other aspects of its legal landscape as well. This Part summarized three significant legal areas that this industry will need to address. But as the industry's legal framework continues to evolve, public policies related to this industry will likely need to evolve as well. The next Part will introduce three policy areas that the space tourism sector must consider as it continues to develop.

IV. THE FUTURE: POLICY CONSIDERATIONS FOR SPACE TOURISM

As the space tourism industry continues its march toward mainstream adoption, commercial space enterprises will also play a role in shaping this sector's public policies. By operating in an environment that will be a critical part of humanity's future,⁴¹⁸ space tourism companies will likely need to take on an additional stewardship role. This Part advocates for three policy areas that these operators should focus on as the industry matures: (1) Standardization of Passenger Training; (2) Protection of Outer Space Heritage Sites; and (3) Promotion of this Common Province of Humanity.

A. *Standardization of Passenger Training*

Much like what air tourism did for the aerospace industry,⁴¹⁹ space tourism might herald the arrival of a new mode of public transportation. However, this means of transportation will always be inherently risky given that it takes place in an environment that is naturally inhospitable to human life. Thus, before each trip, it is important that all spaceflight participants receive proper training.

In the United States, while Congress passed laws empowering the federal government—via the Secretary of Transportation—to issue specific training guidelines,⁴²⁰ these requirements are rather generalized and vague. The regulations only require commercial space companies to ensure that their participants know generally what to do in emergency situations.⁴²¹ Without specific baseline requirements, training among different space tourism enterprises will likely vary depending on the type and duration of the experience they offer. For instance, some operators use a third-party provider to conduct extensive training for tourists that will

⁴¹⁸ See Tariq Malik, *Stephen Hawking: Humanity Must Colonize Space to Survive*, SPACE.COM (Apr. 13, 2013), <https://www.space.com/20657-stephen-hawking-humanity-survival-space.html> (“Famed British cosmologist Stephen Hawking sees only one way for humanity to survive the next millennium: colonize space.”).

⁴¹⁹ See *supra* Part III.B.

⁴²⁰ 51 U.S.C. § 50905(b)(6)(B) (2022).

⁴²¹ 14 C.F.R. § 460.51 (2022).

spend days in Outer Space;⁴²² others have quick instructional sessions for tourists that will only experience a few minutes of weightlessness.⁴²³

However, as space tourism becomes more mainstream, it is important to standardize a set of basic training requirements. Much like the aviation industry, when space tourism becomes more of an everyday and everybody experience, it essentially means that commercial space is on its way to become a new mode of public transportation. In that era, there undoubtedly will be many spaceships dotting the Outer Space landscape. In such an environment, it will be beneficial for all passengers to not only have basic knowledge of what to do in their own spaceship but also how to interact with other spaceships in the event of an emergency. That way, should there be an accident, passengers in distress can rely on both themselves as well nearby spacecrafts for assistance.⁴²⁴

By standardizing certain training procedures, the commercial space industry can ensure that everyone has a common understanding of the technologies and procedures that will come into play in the event of an emergency. These baseline requirements can be reinforced through a preflight briefing—much like the informational broadcast that airlines play before takeoff.⁴²⁵ The content of this briefing can be created and finalized through discussions among a consortium of commercial space companies or by regulators with advice and counsel from the industry. While companies can mandate more training, this baseline body of knowledge will ensure all space tourists have a basic level of preparedness, making Outer Space safer for all.

The implementation of these universal training requirements will ensure that passengers can not only rely on their own knowledge but assistance from other spaceflight participants around them in the event of an emergency, thereby increasing their survival odds. Hence, this policy will better protect passengers from Outer Space elements that are out of their control. But on the flip side, what about protecting the Outer Space environment as human activities increase in this sector? The next policy will address this concern.

B. *Protection of Outer Space Heritage Sites*

Learning from the past is essential to creating a brighter future. Humanity's development of Outer Space is no exception. Thus, as more and more individuals

⁴²² See John McCarthy, *How Much Training Do You Need to Visit Space? Private Astronaut Training Facility may Come to Brevard*, FLOR. TODAY (Mar. 6, 2022, 7:00 AM), <https://www.floridatoday.com/story/tech/science/space/2022/03/06/private-astronaut-training-facility-could-come-to-brevard/6800673001/> (indicating that a third party, NASTAR, provides training for Virgin Galactic, Axiom Space, and SpaceX—the latter of which's Inspiration4 crew trained for several months).

⁴²³ See Christian Davenport, *Everything You Need to Know About Going to Space*, WASH. POST (June 8, 2021, 2:15 PM), <https://www.washingtonpost.com/technology/2021/06/08/space-tourism-questions-answers/> (noting that Blue Origin's training "lasts only a day" and Virgin Galactic's training is "expect[ed] to last three days").

⁴²⁴ See *Opening Outer Space*, *supra* note 312, at 704 (noting that in an emergency situation in Outer Space, "nearby crews will be in the best position to provide aid").

⁴²⁵ 14 C.F.R. § 135.117 (2022).

venture into Outer Space, it is important that the space tourism industry do its part in helping to preserve humanity's historic firsts in Outer Space.

So far, humanity's heritage sites in Outer Space are very much limited to (a) the Moon—the site of humanity's first extraterrestrial landings and (b) Mars—the first foreign planet that humans have remotely explored. But more heritage sites are bound to spring up as humanity expands its Outer Space presence. While heritage sites on Earth are protected by the World Heritage Convention,⁴²⁶ this treaty does not apply to Outer Space.⁴²⁷ The closest Outer Space-related replica is the United States-led Artemis Accords, which include a provision on the preservation of Outer Space heritage.⁴²⁸ But, this one general provision is a lot less substantial than the comprehensive set of requirements dictated by the World Heritage Convention.⁴²⁹ Furthermore, because not all space-faring nations will likely join the Artemis Accords,⁴³⁰ these regulations protecting Outer Space heritage sites might be somewhat limited in their practical effect.

Thus, once Outer Space becomes more accessible, space tourism operators should play a role in the protection and preservation of Outer Space heritage sites. Working with other Outer Space-focused historical societies—such as For All Moonkind,⁴³¹ these commercial enterprises can inform the general public of humanity's Outer Space heritage. Additionally, these companies should enact safety measures to protect these heritage sites—once publicly accessible—from being disturbed by space tourists. This will ensure that sites of historic importance are not destroyed through carelessness, such as a tourist accidentally stepping on the first human footprint on the Moon. Through these efforts, future generations will get to experience and appreciate—with their own eyes—how far humanity has advanced. Furthermore, it might also inspire the next generation of explorers to further expand humanity's reach in the cosmos.

While preserving sites of historic importance will undoubtedly benefit these goals, space tourism companies can also further these objectives through another way. The

⁴²⁶ Convention Concerning the Protection of the World Cultural and Natural Heritage, art. 5, Nov. 16, 1972, 27 U.S.T. 37, 1037 U.N.T.S. 151, 152–53, <https://whc.unesco.org/en/conventiontext/> [hereinafter World Heritage Convention].

⁴²⁷ *Human Heritage in Outer Space*, FOR ALL MOONKIND, <https://www.forallmoonkind.org/moonkind-mission/human-heritage-in-outer-space/> (last visited Mar. 28, 2022).

⁴²⁸ See The Artemis Accords: Principles for Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids for Peaceful Purposes, § 9, Oct. 13, 2020, NASA, <https://www.nasa.gov/specials/artemis-accords/img/Artemis-Accords-signed-13Oct2020.pdf> [hereinafter Artemis Accords].

⁴²⁹ Compare Artemis Accords, *supra* note 428, at § 9 (heritage protection is one of twelve principles in the accords), with World Heritage Convention, *supra* note 426, at pmbl. (devoting the entire agreement to protection of heritage sites).

⁴³⁰ See *Opening Outer Space*, *supra* note 312, at 681 (noting that China will unlikely be a signatory to the Artemis Accords because of various regulations that forbid China's space agency to work with NASA).

⁴³¹ *The Organization*, FOR ALL MOONKIND, <https://www.forallmoonkind.org/about/the-organization/> (last visited Mar. 28, 2022).

next Part will focus on how these enterprises can achieve these goals via another policy: making the Outer Space experience more broadly accessible.

C. *Promotion of This Common Province of Humanity*

For the commercial space industry to truly take off, a significant amount of capital must be expended. Much like how yesterday's old money developed today's commercial aviation industry,⁴³² today's new money is growing tomorrow's commercial space industry.⁴³³ Space tourism is a prominent feature of this new industry, but one that is still very homogenous with all of the leading companies founded by billionaires.⁴³⁴ This has led some to call the pursuit of space tourism as the "billionaires' space race."⁴³⁵ While critics have argued that this race is a clear symbol of capitalism's excessive extravagance,⁴³⁶ others have countered by noting the long-term benefits that might result.⁴³⁷ With space tourism still in its early years, it is uncertain which side will eventually be right. But if the billionaires' space race can lead to a functioning commercial space sector, then the long-term benefits that space tourism can bring will more than overcome its short-term criticisms.

However, in order for space tourism—and commercial space sector as a whole—to truly take off, it must become more accessible. A service industry cannot succeed by solely relying on the richest among the rich. For space tourism enterprises to continue to grow and mature, they must ensure that a wide spectrum of humanity can experience the thrills and joys of Outer Space.⁴³⁸ As this multitude of customers share their Outer Space experiences with their friends and relatives, space tourism can gain

⁴³² See David M. Livingston, *Broadcast 3810 Dr. Malcolm Davis*, THE SPACE SHOW, at 51:02 (Jan. 4, 2022), <https://www.thespaceshow.com/show/04-jan-2022/broadcast-3810-dr-malcolm-davis> (“[T]he early commercial aviation in 1920s and the 1930s got started primarily because of wealthy millionaires wanting to develop it and look where it got us today [where] we find it extremely handy just to get on an airline and just fly.”).

⁴³³ See Andrew Tarantola, *In 2021, Billionaires Headed to the Stars*, ENGADGET (Dec. 20, 2021, 10:00 AM), <https://www.engadget.com/in-2021-billionaires-headed-to-the-stars-210013764.html>.

⁴³⁴ *Tripartite*, *supra* note 178.

⁴³⁵ See, e.g., Tarantola, *supra* note 433 (“Where once the two most powerful empires on the planet vied to be first to the moon, we now have corporations led by billionaire barons — Elon Musk’s SpaceX, Jeff Bezos’ Blue Origin and Sir Richard Branson’s Virgin Galactic — boasting a future filled with exo-planetary tourism.”).

⁴³⁶ Ollie A. Williams, *Billionaire Space Race Turns Into A Publicity Disaster*, FORBES (Dec. 21, 2021, 5:27 AM), <https://www.forbes.com/sites/oliverwilliams1/2021/12/21/billionaire-space-race-turns-into-a-publicity-disaster/?sh=2c665b395e4d>.

⁴³⁷ See CNBC International TV, *NASA Astronaut Nicole Stott on the Billionaire Space Race*, YOUTUBE, at 3:06 (Mar. 30, 2022), <https://www.youtube.com/watch?v=tf51wxwrhxA> (“Every single one of those people has a really wonderful motivation behind it, even if it is business-driven.”).

⁴³⁸ See *Broadcast 3810 Dr. Malcolm Davis*, *supra* note 432, at 51:35 (“If the space billionaires do not shift the goalposts in a way that makes it available to a broader cross-section of humanity, then it will fail.”).

popular traction through viral marketing. In turn, this can lead to more seat deposits, which will translate into more revenue for the industry.

But apart from financial considerations, the Outer Space experience should also become more accessible to all by principle. Enshrined in this environment's legal foundation is the concept that Outer Space is humanity's common province and that its exploration and use must be available for all "without discrimination of any kind, on a basis of equality."⁴³⁹ Thus, while Outer Space might only be currently available for billionaires, daredevils, and the lucky few, this must eventually change.

Space tourism companies can shape this change as the most visible guardians of the gateway to this new realm. As technologies and reusability improve, these enterprises should find ways to pass along some of the cost-savings to their consumers via lower ticket prices. Space tourism operators should also work together and finance foundations that can make this experience more accessible for those without monetary means.

These efforts will allow a broader segment of the population to experience the wonders of Outer Space and the Overview Effect. Perhaps, this will also make people more aware of how precious humanity's only home truly is. Not only will this help to inspire humanity's next generation to improve life on Earth and look farther beyond into the unknown, but it will also enable the industry to live up to the ideal that Outer Space is humanity's common province.

V. APPRECIATION FOR THE PALE BLUE DOT

Those who have ventured into Outer Space are often transformed by this gravity-defying adventure. While they might have entered this heavenly realm as citizens of a country, they often return feeling more like residents of Earth. Known as the Overview Effect, this sensation they experience in Outer Space changes their perspective forever. After returning, these space travelers often feel driven to impart this new sense of universal belonging to all those around them, ensuring that everyone realizes the importance of cherishing Earth as the cradle of humanity.

But for most of the existing course of human history, this life-changing experience has been only available to a rare few—with most of them being professionals of a nation's space agency.⁴⁴⁰ However, the early 2020s became a turning point for this sector with the space tourism industry making its mainstream debut through several new commercial vehicles.⁴⁴¹ This Article marks this occasion by chronicling the companies, the missions, and the passengers that have formed the foundation of this industry.

But while space tourism is finally becoming a practical reality, the laws and policies surrounding this industry is still in its nascency. This Article introduced several major legal questions that should be addressed as this industry continues to mature. Solving these problems should bring more certainty and safety to those individuals wishing to visit Outer Space. In addition, the Article also spotlighted

⁴³⁹ Outer Space Treaty, *supra* note 23, at art. I.

⁴⁴⁰ Nell Greenfieldboyce, *William Shatner is Bound for Space, but the Rest of Us Will Have to Wait*, NPR (Oct. 11, 2021, 5:00 AM), <https://www.npr.org/2021/10/11/1044496466/william-shatner-is-bound-for-space-but-the-rest-of-us-will-have-to-wait>.

⁴⁴¹ *Id.*

several policy areas that the industry should begin to work on. Resolving these challenges will allow space tourism companies to fulfill their stewardship role in Outer Space.

By working through and solving these legal and policy issues, the space tourism industry will become safer and more accessible for all. This will empower more of us to take that leap into Outer Space and become dazzled by our cosmic galaxy. At the same time, more of us will also have the opportunity to experience the Overview Effect: As we look back at Earth from this new perspective and become mesmerized by this “pale blue dot, the only home we’ve ever known.”⁴⁴² It is my hope that this sensation will make all of us recognize how special, precious, and fragile the human race truly is and that we all need to work together—as one—to collectively ensure the survival of our species.

⁴⁴² *A Pale Blue Dot*, *supra* note 4.