

5-7-2019

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Recommended Citation

Carson W. Bennett, *Houston, We Have an Arbitration: International Arbitration's Role in Resolving Commercial Aerospace Disputes*, 19 Pepp. Disp. Resol. L.J. 61 (2019)
Available at: <https://digitalcommons.pepperdine.edu/drlj/vol19/iss1/2>

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Houston, We Have an Arbitration: International Arbitration's Role in Resolving Commercial Aerospace Disputes

Carson W. Bennett*

I. INTRODUCTION

What goes up—hopefully—never comes back down. In the aerospace business, at least, that is the mission. Whether it is launching satellites or intergalactic telescopes or delivering supplies to the International Space Station, the goal is generally to launch something into orbit and to keep it there. But, as with every pioneering endeavor, missions fail. The payload does not reach orbit.¹ Launches are delayed.² Engines fail.³ The satellite is not in the right place.⁴ The rocket explodes.⁵

Launch service providers (and the companies and states that hire them) guard against these alleged contractual breaches with arbitration clauses.⁶ Arbitration has certain characteristics that are highly valued in the aerospace industry: strict confidentiality of the proceedings, finality of decisions, and the option of using highly-trained engineers to even adjudicate the case.⁷ This article explores the complimentary nature between the burgeoning private aerospace industry and international arbitration, as well as detailing how it could be advantageous to resolve these aerospace disputes in California.

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¹ *Russian Proton Rocket Suffers Launch Failure*, SPACE (Dec. 9, 2012), <https://www.space.com/18824-russian-proton-rocket-launch-failure.html>.

² *Launch of Inmarsat's Third Global Xpress Satellite Delayed Following Launch Failure of Centenario Satellite*, INMARSAT (May 18, 2015), <https://www.inmarsat.com/press-release/launch-inmarsats-third-global-xpress-satellite-delayed-following-launch-failure-centenario-satellite/>.

³ Christian Davenport, *Elon Musk's SpaceX Suffers a Rocket-Engine Failure During Testing*, WASH. POST (Nov. 8, 2017), https://www.washingtonpost.com/news/the-switch/wp/2017/11/08/elon-musks-spacex-suffers-a-rocket-engine-failure-during-testing/?utm_term=.a4dbc9760f53.

⁴ Marena Koren, *What Happened With SpaceX's Top-Secret Government Mission?*, THE ATLANTIC (Jan. 9, 2018), <https://www.theatlantic.com/science/archive/2018/01/spacex-zuma-satellite/550040/>.

⁵ Joanna Walters, *SpaceX Rocket Explodes on Launch Site in Florida During Testing*, THE GUARDIAN (Sept. 1, 2016), <https://www.theguardian.com/us-news/2016/sep/01/spacex-explosion-launch-site-florida>.

⁶ See Alexis Mourre, *Arbitration in Space Contracts*, 21 ARB. INT'L 37, 52 (2005) (“Arbitration seems to be the most frequent form of dispute resolution used in the field of space contracts.”).

⁷ See *id.* at 57 (“[U]nlike State court judges, arbitrators will have the expertise required to understand the technological and industrial issues involved.”).

Part II outlines the new space race. It begins with the Ansari XPrize and follows some of the industry's most significant developments, including the launch of the Falcon Heavy rocket, the successful test of Crew Dragon, and the successful suborbital test of SpaceShipTwo. This section also briefly describes the major players—SpaceX, Blue Origin, Virgin Galactic, Stratolaunch, and Bigelow Aerospace—and how their billionaire backers have created unique ways to commercialize space activity.

Part III explores the benefits of arbitration and how the characteristics of international arbitral proceedings cater to the common concerns of aerospace companies.

Part IV catalogues the initiatives arbitral institutions have taken to customize an arbitration for aerospace disputes. These include specialized rules and proposed tribunals devoted exclusively to resolving space disputes.⁸ The proposals, to date, have generally been designed for disputes involving states—not for private business-to-business disputes. Some scholars debate the need for any space-specialized institutions, suggesting that regular commercial arbitration institutions are enough.⁹ This article argues that a specialized institution could be useful in the future.

Part V discusses why California might be the best place in the world to resolve aerospace disputes. Besides being home to the Mojave Air and Space Port, California has the largest concentration of rocket expertise in the world.¹⁰ The state is also on track to become a major international arbitration hub with arbitral institutions opening up centers and regional offices across the state.¹¹ It is also worth noting that California was the first U.S. jurisdiction to adopt the United Nations Commission on International Trade Law (UNCITRAL) Model Law¹² and is open to third party funding.¹³ Finally, the state legislature just passed a law to make it easier for foreign and out-of-state companies to participate in international arbitrations conducted in California.¹⁴

⁸ See, e.g., OPTIONAL RULES FOR ARBITRATION OF DISPUTES RELATING TO OUTER SPACE ACTIVITIES, PERMANENT COURT OF ARBITRATION (2011), <https://pca-cpa.org/wp-content/uploads/sites/6/2016/01/Permanent-Court-of-Arbitration-Optional-Rules-for-Arbitration-of-Disputes-Relating-to-Outer-Space-Activities.pdf> [hereinafter Outer Space Rules].

⁹ Mourre, *supra* note 6, at 52.

¹⁰ Samantha Masunaga, *Southern California's Aerospace Industry, Long in Decline, Begins to Stir*, LOS ANGELES TIMES (July 22, 2016), <http://www.latimes.com/business/la-fi-social-aerospace-20160723-snap-story.html>.

¹¹ *JAMS to Open International Arbitration Centers in Los Angeles and New York*, JAMS (July 10, 2018), <https://www.jamsadr.com/news/2018/jams-to-open-international-arbitration-centers-in-los-angeles-and-new-york>; *KCAB and the Straus Institute Invest in the Future of International Commercial Arbitration*, PEPPERDINE LAW, <https://lawcomm.pepperdine.edu/kcab-and-the-straus-institute-invest-in-the-future-of-international-commercial-arbitration/>.

¹² *Status, UNCITRAL Model Law on International Commercial Arbitration (1985), with amendments as adopted in 2006*, UNCITRAL, http://www.uncitral.org/uncitral/en/uncitral_texts/arbitration/1985Model_arbitration_status.html; see also Albert S. Golbert & Daniel M. Kolkey, *California's Adoption of a Code for International Commercial Arbitration and Conciliation*, 10 LOY. L.A. INT'L & COMP. L. REV. 583 (1988).

¹³ See *PG&E v. Bear Stearns & Co.*, 50 Cal.3d 1118, 1136 (1990) ("[W]e have no public policy against the funding of litigation by outsiders.").

¹⁴ See CAL. CIV. PROC. CODE § 1297.186 (2018).

II. THE AEROSPACE INDUSTRY IN MODERN AMERICA

Space, once the exclusive domain of national space programs, is now becoming a crowded marketplace with ambitious businessmen seeking to change the world (and turn a profit). Private companies first began turning their eyes toward space in the late 1990s and early 2000s in order to chase the \$10 million USD Ansari XPrize created by Peter Diamandis and his XPrize Foundation.¹⁵ Diamandis first came up with the idea after reading about the Orteig prize, which motivated Charles Lindbergh to become the first person to fly across the Atlantic Ocean.¹⁶ Diamandis thought that “a space prize, might be just what was needed to bring space travel to the general public . . . [and] jump-start a commercial space industry.”¹⁷ Several teams around the world attempted the prize.¹⁸ Finally in 2004, a venture funded by Paul Allen (co-founder of Microsoft) launched SpaceShipOne out of the Mojave Air and Space Port.¹⁹ SpaceShipOne crossed the border into sub-orbital space and became the first completely privately funded enterprise to launch a reusable craft out of earth’s atmosphere.²⁰ After the SpaceShipOne launches, we are now living in an era of private space travel with civilian astronauts.

Today, a new group of “Space Barons” featuring Elon Musk, Jeff Bezos, and Sir Richard Branson, have started a new space race and raised the stakes.²¹ The initial vision of the XPrize was commercial space travel,²² but these young companies—Space Exploration Technologies (SpaceX), Blue Origin, Virgin Galactic, Virgin Orbit, and Vulcan Aerospace (now Stratolaunch)—have started exploring new ways to launch commercial satellites, send supplies (and crew members) to the International Space Station, and are even attempting to colonize Mars.²³

¹⁵ See generally MICHAEL BELFIORE, *ROCKETEERS: HOW A VISIONARY BAND OF BUSINESS LEADERS, ENGINEERS, AND PILOTS IS BOLDLY PRIVATIZING SPACE* (2009).

¹⁶ *Id.* at 22-26.

¹⁷ *Id.* at 25. Interesting to note that the vessel SpaceShipOne is now housed in the Smithsonian along with *The Spirit of St. Louis*. *SpaceShipOne*, SMITHSONIAN NATIONAL AIR AND SPACE MUSEUM, <https://airandspace.si.edu/collection-objects/spaceshipone>.

¹⁸ *Mojave Aerospace Ventures Wins The Competition That Started It All*, XPRIZE (2018), <https://ansari.xprize.org/prizes/ansari/articles/mojave-aerospace-ventures-wins-the-competition> (listing twenty-six teams from Argentina, Canada, Israel, Romania, Russia, the United States, and the United Kingdom).

¹⁹ *Id.*; see also Elizabeth Weil, *Rocketing into History*, TIME (June 23, 2004), <http://content.time.com/time/health/article/0,8599,657153,00.html>.

²⁰ BELFIORE, *supra* note 15, at 17-19.

²¹ CHRISTIAN DAVENPORT, *THE SPACE BARONS: ELON MUSK, JEFF BEZOS, AND THE QUEST TO COLONIZE THE COSMOS* (2018); Alan Yuhas, *The New Space Race: How Billionaires Launched the Next Era of Exploration*, THE GUARDIAN (Feb. 9, 2018), <https://www.theguardian.com/science/2018/feb/09/new-space-race-billionaires-elon-musk-jeff-bezos>.

²² BELFIORE, *supra* note 15, at 25.

²³ Dave Mosher, *SpaceX’s List of Competitors is Growing – Here are 9 Futuristic Rockets in the Pipeline for the New Space Race*, BUSINESS INSIDER (Mar. 7, 2018), <https://www.businessinsider.com/spacex-elon-musk-competition-companies-rockets-2018-3#blue-origin-3>.

The United States government has long encouraged the private aerospace industry, but with limited success. Over the years, Congress and several U.S. presidents have passed laws and executive orders to foster a private aerospace sector.²⁴ Though optimistic, these initiatives gained little traction until the Ansari XPrize spurred actual private-sector investment. That same year that Mojave Aerospace Ventures won the XPrize, President George W. Bush signed Executive Order 13326 that created the Commission on Implementation of United States Space Exploration Policy (Commission).²⁵ The Commission's final report recommended that "NASA's role must be limited to only those areas where there is irrefutable demonstration that only government can perform the proposed activity" and that "the preferred choice for operational activities must be competitively awarded contracts with private [companies]."²⁶ The Obama administration continued this goal and since 2015, NASA has awarded over a dozen public-private partnerships to design new propulsion technologies, small satellites, and deep space habitats that could be used in future Mars missions.²⁷ Soon after, NASA opened up bids for privately-owned spaceships to resupply the International Space Station ("ISS").²⁸ SpaceX and Orbital won the bids in 2008,²⁹ and four years later, SpaceX became the first commercial company to launch a resupply mission to the ISS.³⁰ With growing confidence in these companies' reliability, NASA has even contracted with SpaceX and Boeing to carry their its most prized possessions—its astronauts—to the ISS starting in 2019.³¹

Besides the flashy companies with billionaire backers, there are dozens of other companies endeavoring to claim other prestigious space awards, such as NASA's Centennial Challenges or the XPrize sponsored by Google.³² The Google Lunar XPrize offered \$20 million USD to the first private company to

²⁴ Commercial Space Launch Act 51 U.S.C. § 50901(a)(7) (1984) ("[T]he United States should encourage private sector launches, reentries, and associated services . . ."); Launch Services Purchase Act 42 U.S.C.A. § 2465d (1990).

²⁵ *Executive Order: President's Commission on Implementation of United States Space Exploration Policy*, THE WHITE HOUSE (2004), <https://georgewbush-whitehouse.archives.gov/news/releases/2004/01/20040130-7.html>.

²⁶ *A Journey to Inspire, Innovate, and Discover*, The President's Commission on Implementation of United States Space Exploration Policy (June 2004), https://www.nasa.gov/pdf/60736main_M2M_report_small.pdf.

²⁷ NASA Announces New Partnerships with U.S. Industry for Key Deep-Space Capabilities, NASA, <https://www.nasa.gov/press/2015/march/nasa-announces-new-partnerships-with-us-industry-for-key-deep-space-capabilities>

²⁸ *Commercial Orbital Transportation Services (COTS)*, NASA, <https://www.nasa.gov/commercial-orbital-transportation-services-cots>; see also *Commercial Resupply Services Overview*, NASA, https://www.nasa.gov/mission_pages/station/structure/launch/overview.html.

²⁹ *NASA Awards Space Station Commercial Resupply Services Contracts*, NASA (Mar. 30, 2015) https://www.nasa.gov/home/hqnews/2008/dec/HQ_C08-069_ISS_Resupply.html.

³⁰ *Dragon*, SPACEX, <http://www.spacex.com/dragon>.

³¹ *NASA Chooses American Companies to Transport U.S. Astronauts to International Space Station*, NASA (Sept. 16, 2014), <https://www.nasa.gov/content/nasa-chooses-american-companies-to-transport-us-astronauts-to-international-space-station>.

³² *Centennial Challenges*, NASA, https://www.nasa.gov/directorates/spacetech/centennial_challenges/index.html; *Google Lunar XPRIZE*, XPRIZE, <https://lunar.xprize.org/>

land a spacecraft on the moon that can travel 500 meters and transmit a video feed back to earth.³³ Even though no team met the March 2018 deadline, the Google Lunar XPrize spurred hundreds of millions of dollars in commercial aerospace research and development.³⁴

The business activity expands not only to transportation, but also to commercial space stations—essentially galactic hotels for space tourists. The competition is fiercest between Bigelow Aerospace (founded by Las Vegas’s hotel mogul Robert Bigelow)³⁵ and Axiom Space (led by Michael Suffredini, the former program manager of the International Space Station).³⁶ Bigelow is already testing an inflatable habitat on one of the International Space Station’s ports (shipped on one of the SpaceX supply trips)³⁷ and Axiom will test their prototypes on the International Space Station between 2020 and 2024.³⁸ While the Axiom module is docked at the International Space Station, the company plans to make it available to space tourists.³⁹ Axiom hopes to have its Axiom Commercial Space Station completed by 2024.⁴⁰ It remains to be seen who will achieve the first commercial space station and who will have the more successful business plan. Whoever wins will have significant advantage in “what could be a multibillion-dollar emerging market” for low Earth orbit habitats.⁴¹

Other companies have built their profit structure, not on what they can launch into space, but what they can harvest and carry back to earth. Companies like Deep Space Industries, Moon Express, and Planetary Resources were created to collect extra-terrestrial material and sell it.⁴² To encourage these creative ventures, Congress passed the “Spurring Private

³³ *Google Lunar XPRIZE*, XPRIZE, <https://lunar.xprize.org/>; see also Sam Howe Verhovek, *The Next Moon Landing Is Near—Thanks to These Pioneering Engineers*, NATIONAL GEOGRAPHIC (Aug. 2017), <https://www.nationalgeographic.com/magazine/2017/08/space-race-moon-google-lunar-xprize/>.

³⁴ Peter Diamandis & Marcus Shingles, *An Important Update from Google Lunar XPrize*, XPRIZE, <https://lunar.xprize.org/news/blog/important-update-google-lunar-xprize> (noting the prize generated over \$300 million USD in investments toward research and development); *The New Space Race*, XPRIZE, <https://lunar.xprize.org/prizes/lunar>.

³⁵ BIGELOW AEROSPACE, <http://bigelowaerospace.com/>.

³⁶ AXIOM SPACE, <https://www.axiomspace.com/>.

³⁷ *NASA Cargo Headed to Space Station Includes Habitat Prototype, Medical Research*, NASA (Apr. 8, 2016), <https://www.nasa.gov/press-release/nasa-cargo-headed-to-space-station-includes-habitat-prototype-medical-research>; see also *Bigelow Expandable Activity Module*, NASA, <https://www.nasa.gov/content/bigelow-expandable-activity-module>.

³⁸ *Space Tourism*, AXIOM SPACE, <https://www.axiomspace.com/space-tourism>; see also Leonard David, *Private Space Station Coming Soon? Company Aiming for 2020 Launch*, SPACE (Jan. 28, 2017), <https://www.space.com/35488-private-space-station-2020-axiom-space.html>.

³⁹ *Id.* The first space tourist to the ISS was Dennis Tito in 2001. *Dennis Tito*, WIKIPEDIA, https://en.wikipedia.org/wiki/Dennis_Tito. He reportedly paid \$20 million USD for the flight. See *Tito the spaceman*, BBC (Apr. 28, 2001), <http://news.bbc.co.uk/2/hi/science/nature/1297924.stm>.

⁴⁰ *Space Tourism*, *supra* note 38.

⁴¹ Lee Billings, *Who Will Build the World’s First Commercial Space Station?*, SCIENTIFIC AMERICAN (May 26, 2017), <https://www.scientificamerican.com/article/who-will-build-the-world-s-first-commercial-space-station/>.

⁴² See PLANETARY RESOURCES, <https://www.planetaryresources.com/>; DEEP SPACE INDUSTRIES, <http://deepspaceindustries.com/>; MOON EXPRESS, <http://www.moonexpress.com/>.

Aerospace Competitiveness and Entrepreneurship (SPACE) Act” in 2015, which expressly allows companies to commercialize space material.⁴³

The commercial activity has furthered innovation, including reusable rockets. This development significantly drops the operating costs of launch services.⁴⁴ In 2015, Blue Origin (Jeff Bezos’s company) was the first to achieve a vertical takeoff and landing of a rocket.⁴⁵ Since then SpaceX has tested similar technology and incorporated it into the Falcon 9 and Falcon Heavy rockets.⁴⁶ The maiden launch of the Falcon Heavy rocket at Cape Canaveral on February 6, 2018 “mark[ed] an important milestone in spaceflight, the first time a rocket this powerful has been sent into space by a private company rather than a government space agency.”⁴⁷ A *company* (not a national defense agency) had created the most powerful rocket in the world,⁴⁸ and other companies want to buy a ride.⁴⁹

As of 2018, the “space barons” are beginning to graduate from transporting cargo to transporting people.⁵⁰ Virgin Galactic’s SpaceShipTwo achieved an important milestone for space tourism when, on December 13, 2018, it crossed the 50 mile high altitude that the United States Air Force considers the threshold of space.⁵¹ With this first successful test flight under

⁴³ The SPACE Act of 2015, https://www.faa.gov/about/office_org/headquarters_offices/ast/media/US-Commercial-Space-Launch-Competitiveness-Act-2015.pdf. Not to be confused with the SPACE Act of 1958 that established NASA. Also, it should be noted that the 2015 SPACE Act (and the mining and extraction activities it is meant to promote) has created some controversy whether it violates the Outer Space Treaty of 1967, which forbids nations from appropriating celestial bodies. See Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, art. II, T.I.A.S. 6347 [hereinafter cited as Outer Space Treaty], <http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html>; see also Stephen Gorove, *Interpreting Article II of the Outer Space Treaty*, 37 FORDHAM L. REV. 349, 351 (1969), <http://ir.lawnet.fordham.edu/flr/vol37/iss3/2> (“[T]he Treaty in its present form appears to contain no prohibition regarding individual appropriation or acquisition by a private association . . . Thus, at present, an individual [company] acting on [its] own behalf . . . could lawfully appropriate any part of outer space, including the moon and other celestial bodies.”); Peter B. de Selding, *New U.S. Space Mining Law’s Treaty Compliance May Depend on Implementation*, SPACENEWS (Dec. 9, 2015), <https://spaceneews.com/u-s-commercial-space-acts-treaty-compliance-may-depend-on-implementation/>.

⁴⁴ Yuhas, *supra* note 21 (Falcon 9 launches costs \$60 million USD per flight, and a Falcon Heavy launch costs around \$90 million USD per flight, compared with NASA’s new rocket that will cost about \$1 billion USD or more per flight).

⁴⁵ *Blue Origin makes Historic Rocket Landing*, BLUE ORIGIN, Nov. 23, 2015, <https://www.blueorigin.com/news/news/blue-origin-makes-historic-rocket-landing>.

⁴⁶ *The Falcon Heavy’s creator is trying to change more worlds than one*, THE ECONOMIST, Feb. 10, 2018 (“Eight minutes after they had lifted the first SpaceX Falcon Heavy off its pad . . . two of its three boosters returned. Preceded by the flames of their rockets, followed by their sonic booms, the slender towers touched down on neighboring landing pads a fraction of a second apart. After such power, such delicacy.”).

⁴⁷ Kenneth Chang, *Falcon Heavy, in a Roar of Thunder, Carries SpaceX’s Ambition Into Orbit*, N.Y. TIMES, Feb. 6, 2018, <https://www.nytimes.com/2018/02/06/science/falcon-heavy-spacex-launch.html>.

⁴⁸ See *Falcon Heavy*, SPACEX, <http://www.spacex.com/falcon-heavy>.

⁴⁹ Dana Hull, *Elon Musk Just Sent His Tesla to Space*, TIME, Feb. 6, 2018, <http://time.com/5136400/spacex-elon-musk-tesla-space/> (including Arabsat, Inmarsat, Viasat, and the U.S. Air Force).

⁵⁰ DAVENPORT, *supra* note 21.

⁵¹ *Virgin Galactic tourism rocket ship reaches space in test*, ASSOCIATED PRESS (Dec. 13, 2019), <https://www.apnews.com/659f385710cc46fdb381c5f6dfbb6573>. But see, Christian

its belt, Virgin Galactic claims it is “on track to become the first private company in the world to take paying customers to space.”⁵² And people are already lining up to buy a seat; over 600 people have put down money for Virgin Galactic’s 90-minute flight and are willing to pay a cool \$250,000 USD for a ticket into space.⁵³ Meanwhile, Blue Origin has been testing its New Shepard rocket for its own sub-orbital space tourism flights from its West Texas launch site and is projected to start test launches with employees sometime in 2019.⁵⁴ Most audacious of them all, SpaceX has announced it is five years away from blasting travelers beyond Earth’s orbit in a loop shot around the moon, and it has already found its inaugural passenger in Japanese billionaire Yusaku Maezawa.⁵⁵

SpaceX and Boeing both won NASA contracts to deliver astronauts to the ISS.⁵⁶ In March 2019, SpaceX had its first successful launch, docking, and re-entry of the new Crew Dragon vessel.⁵⁷ The Crew Dragon capsule launched on a Falcon 9 rocket from pad 39A (the same historic site at Cape Canaveral that housed the Apollo missions and where Neil Armstrong and Buzz Aldrin launched to the moon fifty years prior).⁵⁸ The vessel docked at the ISS for five days and then survived 15 minutes of burning intensity to reenter earth’s atmosphere and later splash into the Atlantic off the Florida coast.⁵⁹ NASA Administrator Jim Bridenstine called the successful test of Crew Dragon the beginning of a “new era” in human spaceflight.⁶⁰ If things keep to schedule, the real missions will occur later this year. This is a monumental shift towards private integration with NASA’s launch operations

Davenport, *Richard Branson’s Virgin Galactic says it is on the cusp of flying humans to space. But where does space begin?*, WASH. POST (Dec. 11, 2018), https://www.washingtonpost.com/business/2018/12/11/richard-bransons-virgin-galactic-says-it-is-cusp-flying-humans-space-where-does-space-begin/?noredirect=on&utm_term=.9e6686e53633 (arguing that 62 miles (100km), also known as the “Karman line” is the better measure of the threshold of space).

⁵² Jackie Wattles, *Meet the pilots of Virgin Galactic’s first flight to space*, CNN BUSINESS (Dec. 15, 2018), <https://www.cnn.com/2018/12/15/business/virgin-galactic-pilot-forger-cj/index.html>.

⁵³ Erin Durkin, *Virgin Galactic launches SpaceShipTwo to the edge of space*, THE GUARDIAN (Dec. 13, 2018), <https://www.theguardian.com/science/2018/dec/13/virgin-galactic-spaceship-two-launch-california-edge-of-space>.

⁵⁴ Eric M. Johnson, *Exclusive: Jeff Bezos plans to charge at least \$200,000 for space rides – sources*, REUTERS (July 12, 2018), <https://www.reuters.com/article/us-space-blueorigin-exclusive/exclusive-jeff-bezos-plans-to-charge-at-least-200000-for-space-rides-sources-idUSKBN1K301R>; *see also*, *New Shepard*, BLUE ORIGIN, <https://www.blueorigin.com/new-shepard>.

⁵⁵ Christian Davenport, *Elon Musk’s SpaceX plans to fly a Japanese billionaire and several artists on a tourist trip around the moon*, WASH. POST (Sept. 17, 2018), https://www.washingtonpost.com/business/2018/09/17/elon-musk-show-continues-spacex-plans-introduce-worlds-first-private-passenger-fly-around-moon/?utm_term=.ff5e1b907481.

⁵⁶ *NASA Assigns First Crews to Fly Commercial Spacecraft*, NASA (Aug. 3, 2018), <https://www.nasa.gov/feature/nasa-assigns-first-crews-to-fly-commercial-spacecraft>.

⁵⁷ Mike Wall, *SpaceX Crew Dragon Splashes Down after Historic Test Flight*, SCIENTIFIC AMERICAN (Mar. 8, 2019), <https://www.scientificamerican.com/article/spacex-crew-dragon-splashes-down-after-historic-test-flight/>.

⁵⁸ Christian Davenport, *SpaceX successfully launches spacecraft designed for astronauts*, WASH. POST (Mar. 3, 2019), https://www.washingtonpost.com/business/2019/03/02/spacex-successfully-launches-spacecraft-designed-astronauts/?utm_term=.ac055e4e12fd.

⁵⁹ NASA, *SpaceX #CrewDragon Demonstration Flight Return to Earth*, YOUTUBE (Mar. 8, 2019), <https://www.youtube.com/watch?v=8aAe0GWIWGI>.

⁶⁰ Wall, *supra* note 57.

and will mark the first time that American astronauts have launched from U.S. soil since the Space Shuttle was retired back in 2011.⁶¹

With so much attention (and capital) focused on these enterprises, Jeff Bezos could well be right when he declares that “we are sitting on the edge of a golden age of space exploration. *Right on the edge.*”⁶² Market analysts are similarly optimistic.⁶³ Worth \$350 billion USD today, Morgan Stanley predicts the U.S. space industry will triple in size over the next twenty years, reaching an estimated \$1.1 trillion USD by 2040.⁶⁴ As private space enterprises grow in size and complexity, some mission failures and commercial disputes are inevitable. Thankfully, international arbitration is, and will continue to be, the best forum to resolve these future disputes.

III. ADVANTAGES OF ARBITRATION

From the onset, it is important to differentiate between *domestic* arbitration (usually found in employment, consumer, and healthcare contracts) and *international* arbitration (used in trans-national contracts). Both stem from arbitration clauses found in contracts and allow for private dispute settlement outside the court system. Typically, domestic arbitrations are the result of arbitration clauses embedded in contracts of adhesion where there is little or no negotiation over the elements of the arbitration clause. The consumer, employee, or patient simply accepts the clause as drafted.

International commercial arbitration, on the other hand, usually involves contracts between sophisticated business parties in different countries (hence, *international* arbitration). When companies sign cross-border contracts it is more commonplace for both sides to actively negotiate the elements of the arbitration clause: what law governs the contract, who will decide the case, if an arbitral institutional will be involved, and where the arbitration will be held.⁶⁵ Companies doing business across borders regularly turn to international arbitration to resolve their disputes and aerospace companies are no exception.⁶⁶

In fact, “[a]rbitration seems to be the most frequent form of dispute resolution used in the field of space contracts,”⁶⁷ and the trend only seems to be growing.⁶⁸ This is not surprising, seeing that arbitration is particularly well-suited for aerospace companies. The typical selling points for arbitration are exactly what aerospace companies value: results that are quick, less

⁶¹ Wattles, *supra* note 52.

⁶² Charles Fishman, *Is Jeff Bezos' Blue Origin the Future of Space Exploration?*, SMITHSONIAN (Dec. 2016), <https://www.smithsonianmag.com/innovation/rocketeer-jeff-bezos-winner-smithsonians-technology-ingenuity-award-180961119/> (emphasis in original).

⁶³ Michael Sheetz, *Morgan Stanley Predicts Space Industry Will Triple in Size: Here's How to Invest*, CNBC (Oct. 12, 2017), <https://www.cnbc.com/2017/10/12/morgan-stanley-how-to-invest-in-1-trillion-space-industry.html>.

⁶⁴ *Id.*

⁶⁵ See GARY BORN, INTERNATIONAL COMMERCIAL ARBITRATION 73-74, 473 (2014).

⁶⁶ Caroline Simson, *Why Aerospace Cos. Are Forgoing Courts for Int'l Arbitration*, LAW360 (Nov. 9, 2016), <https://www.law360.com/articles/859940/why-aerospace-cos-are-forgoing-courts-for-int-l-arbitration>.

⁶⁷ Moure, *supra* note 6, at 52.

⁶⁸ Simson, *supra* note 66.

intrusive (less discovery), can be decided by people with expert level knowledge of the subject matter, and can be resolved outside of the public eye.⁶⁹ These characteristics are particularly relevant for an aerospace company today that does not have the luxury of time nor is interested in having a lay jury resolve disputes about its sophisticated investments.

An aerospace company is better served by arbitration than litigation because arbitration can provide added protections for its valuable intellectual property and its reputation.⁷⁰ Arbitration rules generally ensure confidentiality.⁷¹ This can protect the company from embarrassing mission failures or accidents, especially in the aerospace industry where the clients are particularly risk-averse.⁷² In arbitration, discovery is limited and the opposing party is less likely to engage in “fishing expeditions” which could inadvertently disclose other sensitive intellectual property not related to the dispute at hand.⁷³ Additionally, the documents that are provided will be discussed with a tribunal of arbitrators who have a duty of confidentiality even if it is not expressly stated in the applicable rules.⁷⁴ Of course, nothing completely guarantees against leaks, but the closed system of an arbitration provides substantially more protection than public litigation in a national court.

Given the nature of the outer space companies, speed is also a top priority since “space activities often operate on precise and fixed schedules In these situations, only swiftly obtained final decisions are of any value.”⁷⁵ Arbitral institutions pride themselves on being a swifter alternative to traditional litigation.⁷⁶ Due to competition between arbitral institutions, arbitral institutions have a vested interest in swift awards, frequently

⁶⁹ BORN, *supra* note 65, at 73 (“[B]usinesses perceive international arbitration as providing a neutral, speedy and expert dispute resolution process, largely subject to the parties’ control, in a single, centralized forum, with internationally-enforceable dispute resolution agreements and decisions.”).

⁷⁰ Mourre, *supra* note 6, at 54 (“Whether guaranteed by the arbitration institution rules or provided for in the terms of reference, the confidentiality of arbitration is another clear advantage in cases which either concern accidents which can jeopardize an industrialist’s reputation, or involve classified information or even military secrets”).

⁷¹ See, e.g., ICC Rules, art. 22(3); LCIA Rules, art. 30; ICDR Rules, art. 37; SIAC Rules, rule 39; HKIAC Rules, art. 45.

⁷² Anthony Velocci, *A Conversation with Robert Stevens Executive Chairman, Lockheed Martin*, DASSAULT SYSTEMS (2014), <https://www.3ds.com/fileadmin/Industries/Aerospace-Defense/Pdf/articles/ad-Global-Leaders-Series-Stevens.pdf> (“[T]he environment in which the aerospace and defense industry operates has become more risk-averse. . . . In today’s climate, . . . any outcome that is not immediately perfect draws a huge level of public criticism”).

⁷³ MARGARET L. MOSES, *THE PRINCIPLES AND PRACTICE OF INTERNATIONAL COMMERCIAL ARBITRATION* 53 (2017) (“most parties do not want extensive discovery in arbitration”).

⁷⁴ Mark C. Hilgard, *Arbitrators’ Duties of Confidentiality*, 5 Y.B. INT’L ARB. 49, 51 (2017) (“It is generally accepted that an arbitrator contract justifies a duty of confidentiality for the arbitrators even if the contract does not contain any express confidentiality provisions.”).

⁷⁵ Fausto Pocar, *An Introduction to the PCA’s Optional Rules for Arbitration of Disputes Relating to Outer Space Activities*, 38 J. SPACE L. 171, 178 (2012), <https://pdfs.semanticscholar.org/264f/8846a04449c66b87fb75d65de83af918a79.pdf>.

⁷⁶ See *Measuring the Costs of Delays in Dispute Resolution*, AMERICAN ARBITRATION ASSOCIATION, <http://go.adr.org/impactsdelay.html> (calculating that arbitrations are resolved in half the time it usually takes in U.S. trial courts (11.6 months compared to 24.2 months) and only take one-third of the time if considering that a trial court’s decision will likely be appealed).

publishing the statistics of how long it typically takes to reach a binding award.⁷⁷

There are other strategic advantages, especially if a company's clientele includes states or state agencies. Private enterprises that have contracts with nation states or state agencies would be particularly interested in a dispute resolution method that bypasses a state's sovereign immunity.⁷⁸ In an industry where many of the private aerospace enterprises cater and sell machinery or services to foreign nations or an organ of that state (e.g., the Department of Defense),⁷⁹ it is vital to have a way to resolve disputes with a former business partner which could invoke sovereign immunity.

IV. RESPONSE OF ARBITRAL INSTITUTIONS

Business parties sometimes seek out specialized arbitral institutions,⁸⁰ and it is not surprising that arbitral institutions are responding to cater to the growing aerospace industry. In 2016, the International Centre for Dispute Resolution and the American Arbitration Association (AAA) created a new panel of arbitrators with expertise in aerospace and aviation.⁸¹ The Permanent Court of Arbitration also maintains a list of aerospace arbitrators.⁸² As will be discussed below, some institutions have gone as far as to create its own set of rules to conduct an arbitration involving outer space matters,⁸³ and even entire centers have been created exclusively devoted to resolving aerospace

⁷⁷ Compare LCIA Releases Costs and Duration Data, LCIA (Nov. 3, 2015), <http://www.lcia.org/News/lcia-releases-costs-and-duration-data.aspx> (noting the median duration of an LICA arbitration is sixteen months), with *SCC Statistics 2017*, SCC, <http://www.sccinstitute.com/statistics/> (last visited Sept. 14, 2018) (stating the majority of arbitrations under the SCC Arbitration Rules in 2017 had a duration of six to twelve months), and *SIAC Releases Costs and Duration Study*, SIAC (Oct. 10, 2016), http://www.siac.org.sg/images/stories/press_release/SIAC%20Releases%20Costs%20and%20Duration%20Study_10%20Oct%202016.pdf (specifying the median duration of an SIAC arbitration is 11.7 months).

⁷⁸ Pocar, *supra* note 75, at 182 ("It is generally understood that consent to arbitration constitutes a waiver of immunity to jurisdiction"); see also BORN, *supra* note 65, at 2296 n.945; MOSES, *supra* note 73, at 59–60 ("if a State has agreed to an arbitration clause in its contract, that agreement is generally considered a waiver of its immunity").

⁷⁹ Christian Davenport, *SpaceX Launches the X-37B, the Pentagon's Secretive Autonomous Space Drone*, L.A. TIMES (Sept. 7, 2017), <http://www.latimes.com/business/la-fi-spacex-space-drone-20170907-story.html>.

⁸⁰ See, e.g., SILICON VALLEY ARBITRATION & MEDIATION CENTER, <https://svamc.org/> (specializing in technology disputes); SHANGHAI INTERNATIONAL AVIATION COURT OF ARBITRATION, http://www.shiac.org/Aviation/aviation_news_detail_E.aspx?id=129 (specializing in disputes between airlines, aircraft manufacturers, and airports).

⁸¹ AAA Creates New Panel For Aerospace, Security Disputes, LAW360 (Oct. 21, 2016), [https://www.law360.com/articles/857522/aaa-creates-new-panel-for-aerospace-security-disputes; see also International Centre for Dispute Resolution / American Arbitration Association Creates Aerospace, Aviation and National Security Panel](https://www.law360.com/articles/857522/aaa-creates-new-panel-for-aerospace-security-disputes;see%20also%20International%20Centre%20for%20Dispute%20Resolution%20and%20American%20Arbitration%20Association%20Creates%20Aerospace,%20Aviation%20and%20National%20Security%20Panel_0.pdf), AMERICAN ARBITRATION ASSOCIATION (Oct. 28, 2016), https://www.adr.org/sites/default/files/document_repository/International%20Centre%20for%20Dispute%20Resolution%20and%20American%20Arbitration%20Association%20Creates%20Aerospace,%20Aviation%20and%20National%20Security%20Panel_0.pdf.

⁸² *Panels of Arbitrators and Experts for Space-Related Disputes*, PERMANENT COURT OF ARBITRATION, <https://pca-cpa.org/en/about/structure/panels-of-arbitrators-and-experts-for-space-related-disputes/>.

⁸³ OUTER SPACE RULES.

and aviation disputes.⁸⁴ Although some of these plans or proposals have not materialized, each of these developments represents a significant advancement in resolving future space-related disputes and may be the foundation for a future aerospace-specific arbitral institution.

A. *International Law Association*

The International Law Association (ILA) began discussing space-related disputes as early as 1978 and assembling scholars to design an appropriate dispute forum.⁸⁵ The ILA produced a draft convention in 1984,⁸⁶ with its Final Draft of the Revised Conventions on the Settlement of Disputes Related to Space Activities (Revised Convention) completed in 1998.⁸⁷ In these draft conventions, the ILA was the first to espouse the idea of an industry-specific International Tribunal for Space Law.⁸⁸ The proposed tribunal would not be the only avenue available,⁸⁹ but the International Tribunal for Space Law was intended to be a desirable innovation, consisting of space law experts representing “the principal legal systems of the world.”⁹⁰

Though not downplaying the ILA’s significant contribution, scholars have identified some criticisms of the Revised Convention. One complaint is that the proposed Convention does not give enough “accessibility and standing for individuals and small commercial enterprises engaged in space activities.”⁹¹ Though the ILA’s Revised Convention allows for private entities to participate, it presumes that state actors (either through space agencies or intergovernmental organizations) will be the dominant participants of the dispute resolution mechanism.⁹²

Another critique of the ILA’s draft proposal is that the Revised Convention does not “take into account the need for the inclusion of both law and non-law experts in the resolution of space disputes.”⁹³ The ILA envisions an International Tribunal for Space Law, whose expertise in law will not necessarily provide any insights into the highly technical dispute likely to be brought before it. In that case, non-legal experts will be essential to understanding the issues of any space-related arbitration, so special rules,

⁸⁴ VALÉRIE KAYSER, LAUNCHING SPACE OBJECTS: ISSUES OF LIABILITY AND FUTURE PROSPECTS 348 (2004) (“[T]he International Court of Air and Space Arbitration [was] established in 1994 by the Société Française de Droit Aérien et Spatial.”).

⁸⁵ GÉRARDINE MEISHAN GOH, DISPUTE SETTLEMENT IN INTERNATIONAL SPACE LAW: A MULTI-DOOR COURTHOUSE FOR OUTER SPACE 65–66 (2007).

⁸⁶ *Id.* at 66.

⁸⁷ Final Draft of the Revised Convention on the Settlement of Disputes related to Space Activities, in REPORT OF THE SIXTY-EIGHTH CONFERENCE OF THE ILA 239-273 (1998) [hereinafter Revised Convention].

⁸⁸ GOH, *supra* note 85, at 66 (“The scheme of instituting a novel, independent tribunal to manage space-related disputes was thus first considered by the ILA in 1984.”).

⁸⁹ Revised Convention art. 6(1), *supra* note 64 (the other two options being: the International Court of Justice or an arbitral tribunal).

⁹⁰ GOH, *supra* note 85, at 66.

⁹¹ *Id.* at 69.

⁹² *Id.* (“[The Revised Convention] should also provide some means of universal applicability instead of resorting to the traditional State and intergovernmental organization dichotomy.”).

⁹³ *Id.*

policies, and lists should be maintained to best incorporate these experts' insights.

In the end, the proposed International Tribunal for Space Law was never created. Though never realized, the ILA's efforts were the first significant, organized effort to tailor an arbitration for an aerospace dispute.

B. *International Court for Aviation and Space Arbitration*

The oldest aerospace center on record is the International Court for Aviation and Space Arbitration (ICASA) dating back to 1994.⁹⁴ Founded in Paris by the Société Française de Droit Aérien et Spatial, its mission is devoted to "the specificity and complexity (rather than the volume) of disputes arising from air and space activities."⁹⁵ However, ICASA has no website, its rules are not easily available, and, as far as anyone can tell, it has never heard a case.⁹⁶ Perhaps the fact that no one has heard of a case is an unfair assessment of its usefulness, because even if ICASA did arbitrate a case, no one could tell because all cases are bound to "absolute secrecy."⁹⁷ Though recognizing the need for an arbitral institution dedicated to the aerospace industry,⁹⁸ ICASA is "more idealistic than realistic" and does not seem a practical option.⁹⁹

C. *Permanent Court of Arbitration*

For parties seeking to resolve aerospace disputes today, the most practical set of tools currently available are the Optional Rules for Arbitration of Disputes Relating to Outer Space Activities ("Outer Space Rules") created by the Permanent Court of Arbitration (PCA).¹⁰⁰ The Outer Space Rules, published in 2011, were "tailored to the particularities of this unique area of economic activity."¹⁰¹ The Outer Space Rules are based on the United Nations Commission on International Trade Law (UNCITRAL) Arbitration Rules, but with certain modifications.¹⁰² Those modifications include: explicitly waiving sovereign immunity,¹⁰³ a broad scope available to private

⁹⁴ KAYSER, *supra* note 84, at 348.

⁹⁵ Preamble of the Statutes of the Court, INTERNATIONAL COURT FOR AVIATION AND SPACE ARBITRATION, *reprinted in* KAYSER, *supra* note 84, at 348, n.1039.

⁹⁶ Rachael O'Grady, *Star Wars: The Launch of Extranational Arbitration?*, 82 CIARB ARB. J. 5 (Nov. 2016), https://m.mayerbrown.com/Files/News/65d9148e-3117-4be0-9ca6-2777174a310d/Presentation/NewsAttachment/bf8d9bed-a660-40c4-af26-277f81502265/art_o'grady_star-wars_nov0416.pdf.

⁹⁷ The ICASA By-Laws and its Rules of Arbitration art. 3, *quoted in* O'Grady, *supra* note 96, at 5.

⁹⁸ KAYSER, *supra* note 84, at 348 n.1039 (noting that ICASA was created because there was "no international arbitration organization specifically for air and space [disputes]").

⁹⁹ Luping Zhang & Rita Sousa Uva, *The Role of Arbitration in International Civil Aviation Disputes* (Dec. 18, 2015), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2705459.

¹⁰⁰ Outer Space Rules.

¹⁰¹ Pocar, *supra* note 75, at 171.

¹⁰² Outer Space Rules; *see also* Jesse Baez, *The PCA's Optional Rules for Arbitration of Disputes Relating to Outer Space Activities: Bringing Arbitration to Infinity and Beyond*, 4 Y.B. ARB. & MEDIATION 218 (2012), <http://elibrary.law.psu.edu/cgi/viewcontent.cgi?article=1130&context=arbitrationlawreview>.

¹⁰³ Outer Space Rules, art. 1.

parties,¹⁰⁴ no set “outer space” definition to establish jurisdiction,¹⁰⁵ and added safeguards for confidentiality.¹⁰⁶

The Outer Space Rules also require the PCA to maintain a list of arbitrators with experience in aerospace disputes, as well as lists of technical experts who can be called upon as expert witnesses.¹⁰⁷

D. *A New Frontier, Renewed Calls for an Aerospace Institution*

The most recent advocate for an aerospace institution is Rachel O’Grady in her 2016 article, *Star Wars: The Launch of Extranational Arbitration?*¹⁰⁸ Focusing more on the potential conflicts between aerospace investors and sovereign states, O’Grady calls for an International Centre for the Settlement of Outer-Space Disputes (ICSOD) institution as a companion institution to the International Centre for the Settlement of Investment Disputes (ICSID).¹⁰⁹ O’Grady’s vision is to create a dedicated Centre “before which private companies and individuals could bring claims directly against states, who have unlawfully interfered with their outer space activities.”¹¹⁰ O’Grady advocates for this centralized, convention-based approach to commence a “coherent body of case law.”¹¹¹

This ICSOD proposal continues the presumption that space arbitration is primarily an investor-state model.¹¹² While states remain an essential consideration for any space-related arbitral solution,¹¹³ a space-specific dispute resolution forum should not overlook the growing number of private actors and the expected commercial disputes between aerospace investors themselves.¹¹⁴ As private entities continue to proliferate, their contracts with each other will be the basis for much of the subsequent litigation. O’Grady’s ICSOD proposal follows the same pattern of the PCA Outer Space Rules and the ILA Revised Convention, which mention private parties in their disputes against states, but say nothing of private-private commercial disputes, which could also benefit from the same provisions tailored for space-specific

¹⁰⁴ Pocar, *supra* note 75, at 181 (“In contrast to other dispute resolution instruments in international space law, the Outer Space Rules’ scope of application is maximally broad.”).

¹⁰⁵ *Id.* (“While the Advisory Group considered drafting a test for determining whether or not a particular dispute was related to outer space, it was decided that where parties to a contract or other legal relationship agree to use the Outer Space Rules, the geographic, technological or other factual particularities of the dispute should not frustrate the parties’ stated intent to proceed to arbitration.”).

¹⁰⁶ Outer Space Rules, art. 17 (allowing the tribunal to appoint neutral experts for the sole purpose of identifying the relevant documents to disclose); *see also* Baez, *supra* note 102, at 221–22.

¹⁰⁷ Outer Space Rules, arts. 10(4), 29(7); *Panels of Arbitrators and Experts*, *supra* note 82.

¹⁰⁸ O’Grady, *supra* note 96.

¹⁰⁹ *Id.* at 8–9.

¹¹⁰ *Id.* at 8.

¹¹¹ *Id.* at 9.

¹¹² *Id.* (frequently alluding to the ICSID Convention, investors’ disputes with sovereign states, and public international law).

¹¹³ GOH, *supra* note 85, at 164 (“States are still the predominant actors in international space law.”).

¹¹⁴ *Id.* at 165 (“In addition to states, a large number of private firms operate in space or provide space services to governments. Just as the interests of industry have been one of the major factors conditioning the development of ocean law, so the interests of industry will strongly influence policy in space.”).

arbitrations.¹¹⁵ These proposals attempt to solve one piece of the puzzle (the investor-state issue), but leave a black hole for the commercial space disputes.

1. *Is an Aerospace Institution Even Necessary?*

Perhaps these proposals avoid commercial disputes because they assume that business-to-business disputes within the aerospace industry can be resolved by the existing arbitral institutions. Alexis Mourre, now president of the ICC International Court of Arbitration, questioned the need for a specialized space institution, believing instead that the traditional institutions would be up to the task to handle such proceedings.¹¹⁶ Mourre's view is that space contracts suffer from the same types of problems that are latent in other large-scale contracts in other sectors.¹¹⁷ In this way, Mourre agrees that yes, there is specificity, "but that [specificity] is due more to the technicality of the issues at stake than to the legal rules applicable to the merits."¹¹⁸ The common contract considerations could be adequately resolved, the argument goes, by an experienced commercial arbitrator (so long as the technical aspect of the case was sufficiently explained).¹¹⁹

A large section of Mourre's article addresses the challenges particular to aerospace arbitration, namely how to select appropriate arbitrators with aerospace backgrounds, how to use expert witnesses during discovery, and how to involve non-lawyer experts on a tribunal.¹²⁰ Mourre immediately recognizes that in the aerospace industry "[m]ore than in any other field, the adage 'an arbitration is no better than the arbitrators' is pertinent."¹²¹ Further, arbitrators will need "sufficient knowledge . . . of the space industry," but Mourre does not suggest a curated list of qualified individuals to facilitate appointments.¹²² As for non-legal experts, Mourre recognizes their appeal, but waffles about how best to include their expertise.¹²³ Mourre warns against the parties selecting two non-legal experts as the wing arbitrators because that essentially regulates all questions of law to a sole arbitrator—the chair.¹²⁴ Nor does Mourre recommend selecting a non-lawyer as chair because it could lead

¹¹⁵ *See id.* at 87.

¹¹⁶ Mourre, *supra* note 6, at 52 (claiming that "disputes stemming from space contracts are not so specific that they cannot be dealt with by large, non-specialized institutions," then citing the ICC, AAA, and LCIA).

¹¹⁷ *Id.* at 51 ("[S]ome of [these disputes] are not fundamentally different from those which arise in other important industrial contracts.").

¹¹⁸ *Id.* at 38.

¹¹⁹ *Id.* at 57. Mourre even suggests a unique method of "witness conferencing" the expert witnesses' testimony. *Id.* Witness conferencing (also known as "hot tubbing") is where both sides' experts appear simultaneously and discuss (or debate) the technical issues rather than the sequential method of direct examination followed by cross examination. *Id.* ("Bringing the experts face-to-face often helps to clarify technical questions much more rapidly than a traditionally fashioned hearing.")

¹²⁰ *See id.* at 52–54.

¹²¹ *Id.* at 53.

¹²² *Id.*

¹²³ *See id.*

¹²⁴ *Id.*

to procedural irregularities that would confuse the parties and could lead the loser to question the validity of the award.¹²⁵

Each of these concerns raised by Mourre can be addressed in thoughtful arbitral rules. For instance, some of these concerns have already been incorporated into aerospace-specific rules published by the PCA.¹²⁶ In the case of space-trained arbitrators, the PCA's Outer Space Rules require the PCA to create and maintain a list of arbitrators with relevant backgrounds.¹²⁷ The AAA has also recently created a list to aid parties' appointments of knowledgeable arbitrators.¹²⁸ Four years after Mourre's dismissal of a specialized space institution (or rules), the PCA began investing significant resources into investigating the need for aerospace-specific considerations.¹²⁹ The PCA and AAA's willingness to facilitate aerospace arbitration show that even if business-to-business disputes gravitate towards the traditional institutions, these parties still want a more curated dispute resolution experience.

V. SOUTHERN CALIFORNIA: CENTER OF BUSINESS, WEALTH OF EXPERTS

As aerospace companies consider where to seat their arbitrations, California offers many advantages based on its the wealth of space-related experts in academia (Caltech), the national space program (NASA's Jet Propulsion Lab), and the private sector (SpaceX, Virgin Orbit, The Spaceship Company, Aerojet Rocketdyne, Masten Space System, and the Mojave Air & Space Port). As demand grows, a future institution is not out of the realm of possibility and California would be a logical location for any future aerospace arbitral institution.

A. *California: The Complete Seat for International Arbitrations*

California has all the makings of a great arbitral seat.¹³⁰ First off, California is a signatory to the New York Convention as one of the United States,¹³¹ so any arbitral award rendered by a tribunal in California will be

¹²⁵ *Id.*

¹²⁶ See generally Outer Space Rules.

¹²⁷ Outer Space Rules, art. 29; see also *Panels of Arbitrators and Experts for Space-related Disputes*, PERMANENT COURT OF ARBITRATION, <https://pca-cpa.org/en/about/structure/panels-of-arbitrators-and-experts-for-space-related-disputes>.

¹²⁸ AAA *Creates New Panel For Aerospace, Security Disputes*, *supra* note 81.

¹²⁹ Pocar, *supra* note 75, at 172–73.

¹³⁰ See Patrick T. Byrne, *California – The Next Major International Arbitration Seat?*, KLUWER ARBITRATION (July 25, 2017), <http://arbitrationblog.kluwerarbitration.com/2017/07/25/california-next-major-international-arbitration-seat/> (discussing the benefits of California becoming an arbitral seat).

¹³¹ *Status, Convention on the Recognition and Enforcement of Foreign Arbitral Awards*, UNCITRAL (1958), http://www.uncitral.org/uncitral/en/uncitral_texts/arbitration/NYConvention_status.html.

recognized and enforced in any of the other 157 Contracting States.¹³² Further, California has adopted the UNCITRAL Model Law, which is recognized as the international gold standard for a domestic arbitration law.¹³³ California was the first U.S. jurisdiction to adopt the Model Law in 1988.¹³⁴ The Model Law is incorporated into the California International Arbitration and Conciliation Act (“CIACA”).¹³⁵ California passed CIACA and other laws in the 1980s to develop “Los Angeles and San Francisco as leading international trade centers”¹³⁶ and “to permit the arbitration of international commercial disputes in California according to accepted international standards.”¹³⁷ The legislative history shows that the whole purpose of these laws was to solidify California as a neutral forum for foreign disputes and further “promote California as an international commercial arbitration center.”¹³⁸

In contrast, the other major U.S. commercial aerospace markets in Washington (headquarters of Blue Origin and Stratolaunch) and Virginia (headquarters of Boeing, ILS, and Orbital ATK) are not Model Law jurisdictions.

1. *Wealth of Experts*

In terms of expertise, Jim Cantrell, CEO of Vector Space Systems, has said, “There’s probably more rocket engine and launch vehicle expertise in Southern California than anywhere else in the United States or probably the world.”¹³⁹ When Cantrell was speaking, he was referring to the private sector, which boasts the headquarters of SpaceX (Hawthorne), Virgin Orbit (Long Beach), Aerojet Rocketdyne (El Segundo), and ViaSat (Carlsbad).¹⁴⁰ Several companies prefer their headquarters to be closer to the Mojave Air and Space Port (such as The Spaceship Company¹⁴¹ and Masten Space Systems¹⁴²) which also serves as important testing facilities for other leading companies

¹³² New York Convention art. III, *available at* <http://www.uncitral.org/pdf/english/texts/arbitration/NY-conv/New-York-Convention-E.pdf> (“Each Contracting State shall recognize arbitral awards as binding and enforce them.”).

¹³³ *Status UNCITRAL Model Law*, *supra* note 12 (adopted by 109 separate jurisdictions)

¹³⁴ *Id.*; see also Albert S. Golbert & Daniel M. Kolkey, *California's Adoption of a Code for International Commercial Arbitration and Conciliation*, 10 *LOY. L.A. INT'L & COMP. L. REV.* 583 (1988).

¹³⁵ Cal. Civ. Pro. Code § 1297.11 (2018).

¹³⁶ Senate Judiciary Committee, analysis of Assembly Bill No. 3223 (1985–86 Reg. Session) *as cited in* *Credit Lyonnais Bank Nederland, N.V. v. Manatt, Phelps, Rothenberg & Tunney*, 202 Cal. App. 3d 1424, 1434 (1988).

¹³⁷ *Analysis of S. B. 766*, CALIFORNIA LEGISLATIVE INFORMATION, (Cal. 2018), https://leginfo.legislature.ca.gov/faces/billAnalysisClient.xhtml?bill_id=201720180SB766, *quoting* Senate Judiciary Committee, analysis of AB 2667 (1987-1988 Reg. Session).

¹³⁸ Senate Judiciary Committee, analysis of Assembly Bill No. 3223 (1985–86 Reg. Session) *as cited in* *Credit Lyonnais Bank Nederland, N.V. v. Manatt, Phelps, Rothenberg & Tunney*, 202 Cal. App. 3d 1424, n.14 (1988).

¹³⁹ Masunaga, *supra* note 10.

¹⁴⁰ *Id.*

¹⁴¹ THE SPACESHIP COMPANY, <http://thespaceshipcompany.com/contact/>.

¹⁴² MASTEN SPACE SYSTEMS, <http://masten.aero/contact/>.

like Stratolaunch, Northrop Grumman, Lockheed Martin, and Boeing.¹⁴³ In addition to the private aerospace industry, the region is further infused with research universities like UCLA, USC, and Caltech.¹⁴⁴ NASA, also operates three separate facilities in California: the Jet Propulsion Lab (JPL), the Ames Research Center, and the Armstrong Flight Research Center.¹⁴⁵

This high concentration of world leaders in aerospace technology makes California (particularly southern California) an ideal location to arbitrate aerospace arbitration. As opposed to the PCA's list of experts, which only identifies fifteen people,¹⁴⁶ Los Angeles County is home to thousands¹⁴⁷ of highly trained aeronautical experts that could be available to assist a California-seated tribunal in a number of different tasks.

This surplus of non-legal aerospace experts solves a problem that Mourre identified—interested expert witnesses.¹⁴⁸ Mourre noted that it may be difficult to find competent witnesses who know the intricacies of the technical dispute as well as the parties' own engineers.¹⁴⁹ But in the greater LA area, the tribunal would likely find dozens of experts with comparable backgrounds, both in the private firms, academic research institutions, or NASA's JPL. Given the value of trade secrets, and the competition between the aerospace companies, it would probably be preferable that the tribunal first look to the academic institutions (Caltech, UCLA, and USC) and the public space agency (JPL) before allowing a competitor to become privy to a party's technical dispute.

Settling a dispute in California also potentially simplifies another matter that Mourre identified—site visits. Mourre mentioned that the tribunal might wish to visit a manufacturer's premises or the launch pad in question.¹⁵⁰ Though it is true that the specific disputes in hand may have happened elsewhere, a large portion of the commercial space industry is found in California: many spacecrafts are designed in California,¹⁵¹ manufactured in

¹⁴³ Masunaga, *supra* note 10.

¹⁴⁴ *Id.*

¹⁴⁵ *NASA Centers and Facilities*, NASA, <https://www.nasa.gov/about/sites/index.html>.

¹⁴⁶ *Specialized Panel of Scientific Experts*, PERMANENT COURT OF ARBITRATION, <https://pca-cpa.org/wp-content/uploads/sites/175/2016/01/Current-List-Annex-5-SP-Outer-Space-EXP-update-20180117.pdf>.

¹⁴⁷ Masunaga, *supra* note 10 (reporting that the private aerospace industry employed 92,361 people in southern California as in 2015).

¹⁴⁸ Mourre, *supra* note 6, at 53 (“In practice, [appointing a neutral expert for the tribunal] may prove difficult because those who have the required technical knowledge in the field of aerospace industry, are often engineers related to the parties in differing capacities”).

¹⁴⁹ *See id.* at 56 (recommending third-party experts, but wondering if “it is possible to find one with the required qualifications”).

¹⁵⁰ Mourre, *supra* note 6, at 57.

¹⁵¹ *E.g.*, SPACEX, <http://www.spacex.com/>.

California,¹⁵² and tested or launched in California.¹⁵³ If a tribunal were interested in making a site visit, it makes these visits more convenient if these facilities also happen to be within driving distance of where the hearings were taking place. For example, the Mojave Desert (with the Mojave Air and Space Port and all the testing facilities nearby) is just an hour-and-a-half drive from downtown Los Angeles.

In short, seating an arbitration in California gives the tribunal easy access to the aerospace knowledge community, which the tribunal needs to rely on to make its findings, as well as the physical infrastructure (manufacturing and launch facilities) likely at issue in the case.

2. Third Party Funding: Redirecting Funds to Research and Development

Another consideration for an aerospace company is the cost of the arbitration. Though generally cheaper than litigation, arbitration costs can be considerable.¹⁵⁴ Companies can shift the risk of the litigation to a third-party funder who will take up the costs of the arbitration for a percentage of the potential award.¹⁵⁵ The ethics and regulation of third party funding is currently being debated in the international arbitration community,¹⁵⁶ but third party funding indisputably provides economic advantages to parties that have a better return of investment by investing those funds in its own research and development projects.¹⁵⁷

Some jurisdictions regulate or ban third party funding,¹⁵⁸ but California does not.¹⁵⁹

¹⁵² Dan Hart, *Virgin Galactic Announces New Commercial Space Company Virgin Orbit Featuring Lancherone Small Satellite Launch Service*, VIRGIN ORBIT (Mar. 2, 2017), <https://virginorbit.com/press/2018/1/31/virgin-galactic-announces-new-commercial-space-company-virgin-orbit-featuring-lancherone-small-satellite-launch-service> (Virgin Orbit's manufacturing facility is in Long Beach).

¹⁵³ MOJAVE AIR AND SPACE PORT, <https://www.mojaveairport.com/>; *Capabilities & Services*, SPACE X, <http://www.spacex.com/about/capabilities>, (SpaceX launches from Vandenberg Air Force base in California specifically for high orientation and polar orbits).

¹⁵⁴ *Costs of International Arbitration Survey 2011*, CHARTERED INSTITUTE OF ARBITRATORS, <https://www.international-arbitration-attorney.com/wp-content/uploads/2017/01/CIArb-Cost-of-International-Arbitration-Survey.pdf> (noting an average cost of £1,348,000, which is roughly \$1.9 million USD).

¹⁵⁵ Alexander Gelbert, *Legal Protection for Small and Medium-Sized Enterprises through Investor-State Dispute Settlement: Status Quo, Impediments, and Potential Solutions*, in SMALL AND MEDIUM-SIZED ENTERPRISES IN INTERNATIONAL ECONOMIC LAW 304 (Thilo Rensmann ed., 2017) (“TPF shifts the financial risk of the proceedings largely to the funder”).

¹⁵⁶ See ICCA-QMUL Report on Third Party Funding, THIRD PARTY FUNDING OBSERVATORY, <http://third-party-funding.org/>.

¹⁵⁷ See *Tech talk in Palo Alto*, GLOBAL ARBITRATION REVIEW, Nov. 22, 2017, <https://globalarbitrationreview.com/article/1150774/tech-talk-in-palo-alto> (where Eric Z. Chang described the potential benefits of third party funding for tech companies that have a higher rate of return by investing money in their own research and development, while still pursuing their legal claims through an outside funder).

¹⁵⁸ See Paul Bond, *Making Champerty Work: An Invitation to State Action*, 150 U. PA. L. REV. 1297 (2002), http://scholarship.law.upenn.edu/penn_law_review/vol150/iss4/4 (giving a state-by-state evaluation of the jurisdiction's champerty laws).

¹⁵⁹ *PG&E*, 50 Cal.3d at 1136 (“[W]e have no public policy against the funding of litigation by outsiders.”).

In fact, the California Supreme Court has expressed public policy in favor of third-party funding, stating that “[o]ur legal system is based on the idea that it is better for citizens to resolve their differences in court than to resort to self-help or force. It is repugnant to this basic philosophy to make it a tort to induce potentially meritorious litigation.”¹⁶⁰ A local federal district court upheld a similar decision, confirming that “the California Supreme Court has directly sanctioned third-party funding of litigation.”¹⁶¹

As a result, California-seated arbitrations give companies more options to finance their disputes, which means that the company can redirect funds towards their more profitable projects, and let a third-party funder pay for the arbitration (shifting the risk to the outside funder rather than the aerospace company).

3. *Birbrower and Senate Bill 766*

The only criticism against California as an arbitral seat has been confusion over who can represent clients in an international arbitration seated in California.¹⁶² This confusion stems from the *Birbrower v. Superior Court* (“*Birbrower*”) decision from the California Supreme Court.¹⁶³ The Court ruled that only California-barred attorneys could represent clients in domestic arbitration seated in California.¹⁶⁴ Over the years scholars and practitioners debated how this impacts international arbitrations in California,¹⁶⁵ but that debate is now superseded since the California legislature passed Senate Bill 766 in July 2018.¹⁶⁶ The new law amended the California International Arbitration and Conciliation Act (CIACA) and explicitly allows foreign and out-of-state attorneys to represent clients in international commercial arbitrations seated in California.¹⁶⁷ With these new legislative changes, California has now become an even more attractive venue for international arbitrations, allowing companies to select counsel from practically anywhere in the world.

¹⁶⁰ *Id.* at 1137.

¹⁶¹ *Gen-Probe, Inc. v. Amoco Corp.*, 926 F. Supp. 948, 959 (S.D. Cal. 1996).

¹⁶² *Birbrower, Montalbano, Condon & Frank PC v. Superior Court*, 17 Cal. 4th 119 (1998).

¹⁶³ *Id.*

¹⁶⁴ *Id.* at 133–34.

¹⁶⁵ Compare Matthew Vafidis et al., *Birbrower was Right: Foreign Attorneys are Entitled to Appear in International Commercial Arbitrations held in California*, 70 DISP. RESOL. 50, 52 (2015) with Cedric Chao & Steven Smith, *Becoming a global center for arbitration*, LOS ANGELES DAILY JOURNAL (Sept. 2013) <http://files.dlapiper.com/files/Uploads/Documents/DLA-Piper-9-20-13-Daily-Journal.pdf>.

¹⁶⁶ *Senate Bill 766*, CALIFORNIA LEGISLATIVE INFORMATION, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB766.

¹⁶⁷ Cal. Civ. Proc. Code § 1297.185 (2018); see also Eric Z. Chang, *Golden Opportunities for The Golden State: The Rise of International Arbitration in California*, 31 CALIFORNIA LITIGATION 27 (2018).

VI. CONCLUSION

The new commercial space race deserves more attention from arbitral institutions. Some practitioners and scholars have made progress by providing aerospace-specific rules,¹⁶⁸ lists of space experts,¹⁶⁹ or arbitrators.¹⁷⁰ These are significant advances that facilitate an aerospace dispute, but more might be necessary as the sector triples in size in the coming years.¹⁷¹ While some solutions focus on the investor-state model, the real growth lies in commercial aerospace disputes, especially since companies are becoming less dependent on national space programs. In time, we may even see the rise of a specialized aerospace institution. When that happens, this aerospace arbitral institution will likely be founded in California. The Golden State is already home to many aerospace companies and thousands of space experts.¹⁷² California allows third-party funding, making the arbitration more cost efficient for the aerospace parties (which would rather spend their money on further research and development), and the state recently passed legislation to make it one of the most welcoming arbitral seats in the United States.¹⁷³

The aerospace industry's design, manufacturing, and testing facilities already gravitate towards California, so why not its dispute resolution forums? It is this author's opinion that whenever an aerospace company is prepared to launch an arbitration, California is the perfect launch site.

¹⁶⁸ Outer Space Rules.

¹⁶⁹ *Specialized Panel of Scientific Experts*, *supra* note 146.

¹⁷⁰ *AAA Creates New Panel For Aerospace, Security Disputes*, *supra* note 81; *see also Specialized Panel of Arbitrators*, PERMANENT COURT OF ARBITRATION, <https://pca-cpa.org/wp-content/uploads/sites/175/2016/01/Current-List-Annex-4-SP-Outer-Space-ARB-update-20180117.pdf>57 (last visited Sept. 20, 2018).

¹⁷¹ Sheetz, *supra* note 63.

¹⁷² *See, e.g.*, Masunaga, *supra* note 10.

¹⁷³ *PG&E*, 50 Cal.3d at 1136; Cal. Civ. Proc. Code § 1297.185 (2018); *see also* Chang, *supra* note 167.