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Sunset 2010: The Sunshine State, in Space

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I. INTRODUCTION

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The mere mention of “space law” sounds sort of far, far away and obscure, right? After all, nobody owns or controls outer space and, if the axiom that possession is nine points of the law is to be believed, then the topic of space law surely must be an esoteric satellite of the terrestrial work of lawyers and judges.¹ Practitioners unfamiliar with the subject matter may even dismiss space law as a species of science fiction, a fantastical, imaginative and precedent-less topic that exists outside the sphere of regular business and legal discourse. Among non-lawyers, too, there is scant first-hand knowledge about outer space.² Yet, the recent enactment of new laws in Florida and elsewhere, together with the emergence of a space tourism industry and burgeoning cadre of private aerospace entrepreneurs, means that space law has real gravity and presents serious economic opportunities for all Americans. This article focuses on the particular role Florida has played in national human spaceflight missions and expresses sincere concern about the state’s current and future direction as spacefarers look to different jurisdictions as platforms to support the next phase of space exploration and exploitation.

Florida has always been at the center of human spaceflight. At the dawn of the “Space Age,” in 1961, President John F. Kennedy called upon Congress and the country to send an


² Fewer than 500 humans have traveled to space, fewer than 120 humans have been to space more than once, and only 24 men have flown beyond low earth orbit. See, e.g., Tom Henricks, Letter from the President, AVIATION Wk. & SPACE TECH., Mar. 19/26, 2007, at 7.
American to the moon and back before the end of the decade. To implement this national goal, officials of the National Aeronautics and Space Administration (“NASA”) focused on Florida as a lunar launch site and selected Cape Canaveral, an Air Force missile test center at the time. Today, Florida’s “Space Coast” continues to be a vital global platform for the deployment of the Space Shuttle fleet and other reusable and expendable launch vehicles. The story of the manned lunar missions of course remains inspirational more than forty years later, but it is ancient history in the modern era of computer automation, GPS, high-definition imagery, the Internet, and “smart” technology.

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3 President Kennedy addressed a joint session of Congress just six weeks after the Soviet Union sent the first human (Yuri Gagarin) into orbit:

We go into space because whatever mankind must undertake, free men must fully share. I believe that this Nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to earth. No single space project in this period will be more exciting, or more impressive to mankind, or more important for the long-range exploration of space; and none will be so difficult or expensive to accomplish.


4 The federal government’s acquisition of private property for the lunar missions invited condemnation lawsuits by Florida residents. E.g., United States v. 2,353.28 Acres of Land, More or Less, Situate in the Counties of Brevard and Volusia, State of Florida, 414 F.2d 965 (5th Cir. 1969). Litigation also arose from operations at Cape Canaveral. See Grissom v. N. Am. Aviation, Inc., 326 F. Supp. 465 (M.D. Fla. 1971) (considering January 28, 1967 accident of Mercury astronaut Virgil I. (“Gus”), who died in a launch pad fire while engaged in a ground test on an Apollo 1 space capsule, and barring a wrongful death lawsuit by his wife as untimely under Florida law pursuant to a special statute of limitations for actions against professional engineers).
Against this background, this article endeavors to increase a general awareness of space law and the multibillion dollar commercial space launch industry, and to highlight the particular relevance of human spaceflight for Florida.\(^5\) Great efforts rightly are made by elected officials and other stakeholders to promote Florida as a unique geo-political gateway to the Caribbean, Latin and South America. Given the commercial and societal value of space activities, an equal amount of energy should be dedicated to the refinement of a legal regime that stimulates aerospace activity in Florida and positions the state as the world leader and preeminent originating point for pioneering public and private space enterprise.

II. EXISTING NATIONAL POLICY: LOST IN SPACE

America’s current space policy is adrift.\(^6\) The Space Shuttle fleet is scheduled to retire in 2010, creating an operational “gap” that will leave the country that won the “Space Race” without an independent means of human spaceflight until completion of the next generation of rockets in approximately 2015. Thousands of residents of Florida’s “Space Coast” who


\(^6\) But see John Kelly, World Awaits U.S. Decision on Space Exploration’s Future, FLA. TODAY, Dec. 21, 2009, at 2009 WL 25728916 (“Don’t let the political jawboning fool you. America is not falling behind because there is no space race. Indeed, the rest of the world is waiting for the U.S. to decide humankind’s next great adventure in space exploration. They’re waiting to follow.”). See also Edward Lu, Faster, NASA, Faster, N.Y. TIMES, Dec. 21, 2009, at A31.
contribute to the aerospace industry are losing jobs as a direct result. Meanwhile, putting aside the suspicious outer space programs of North Korea and Iran, other nations, including Brazil, China, French Guiana, and India, together with heavily-subsidized private competitors abroad, are fast-developing as viable, intensively competitive, cost-saving alternatives to aerospace assets in Florida, particularly in terms of human capital and expertise in the “STEM” areas of science, technology, engineering, and math.

True, in 2004, President George H. Bush proposed a “Vision for Space Exploration” involving a return to the Moon and to Mars and worlds beyond. Toward those destinations, the “Constellation” program and production of the Ares and Orion rockets and crew launch vehicles are ongoing. But “a big lesson of the race to the Moon was that it was a dead end” and, in any


10 Frank Morring, Jr., Down to Earth, AVIATION WK. & SPACE TECH., Mar. 19/26, 2007, at 52, 54 (“Once the U.S. won, its leaders found other ways to pursue the Cold War. Spaceflight was left without a clear objective.”).
event, a “Review of U.S. Human Space Flight Plans Committee” convened by President Barak Obama in late 2009 concluded that, given current budgetary constraints, the United States space program is on an “unsustainable trajectory” and will not be able to engage in human exploration beyond low earth orbit for the foreseeable future. The horizon for human spaceflight should be brighter and national space policy and Florida’s aerospace sector should have a more robust and less cosmetic mission than revisiting the moon. Embarking on an education campaign about the actual and mainstream business and legal issues of outer space may encourage that goal.

III. WHAT IS SPACE LAW?

A computer search of “space law” in legal databases produces several hundred court decisions, the overwhelming majority of which apply an almost humorous usage of “outer space” to refer to an unbelievable situation or person. In fact, however, space law is more substantive than that and there is a discrete set of international treaties, resolutions, domestic regulations, statutes, and decisional law that address aerospace activities, among other contexts, in terms of contract, tort, property, and patent law. Even the United States Tax Court gave cosmic


credence to Benjamin Franklin’s observation that “in this world nothing can be said to be certain, except death and taxes,”16 when, in May 2009, it opined that “[f]or Federal income tax purposes, income earned in outer space would be treated just like income earned in international waters or in international airspace.”17

Concededly, the uninformed view of space law as a marginal topic is perpetuated by some reported decisions arising from factual disputes that seem “out there.” For example, in O’Hair v. Paine,18 the Society of Separationists and other litigants who identified themselves as atheists, deists, and believers in the complete separation of church and state, complained that NASA ordered or authorized certain astronauts of the Apollo 8 and 11 lunar missions in the 1960s to engage in religious ceremonies, including allowing the astronauts to carry personal


16 Letter from Benjamin Franklin to Jean Baptiste LeRoy (Nov. 13, 1789), quoted in BEN FRANKLIN LAUGHING 57 (P.M. Zall ed., 1980).


religious items into space and to deposit religiously significant items on the moon, in an attempt to establish the Christian religion as the religion of the United States. They sued for an injunction restraining federal space regulators and authorities from doing any act whatsoever which restricts or abridges plaintiffs’ freedom from religion and specifically enjoining NASA and its administrator and personnel from further directing or permitting religious activities, or ceremonies and especially the reading of the sectarian Christian religion Bible and from prayer recitation in space and in relation to all future space flight activity.\textsuperscript{19}

The plaintiffs core complaint was that their First Amendment rights had been abridged because: (i) religious statements were made by the astronauts while in space; (ii) items of a religious nature were carried on the spacecraft, thus involving the expenditure of federal funds; (iii) certain religious items were deposited on the moon; and (iv) the timing of the Apollo 8 flight during the Christmas Season was chosen for religious reasons.\textsuperscript{20} They also contended that the Establishment Clause of the United States Constitution afforded them a right not to be exposed to religion as they were during the televised Apollo 8 mission.

Ultimately a federal district court in Texas dismissed the claim, reasoning that

\textsuperscript{19} Id. at 436.

\textsuperscript{20} Id.
The purpose of NASA is obvious: it is solely to accommodate the astronauts, a perfectly legitimate task especially when one considers the seriousness of the mission. Literally, a national effort, consisting of thousands of people, several billion dollars, and ten years, had been expended to achieve the goals of the space program. The astronauts were a key factor in the success of this program, and they were undertaking this mission at great risk to their own lives. It is approaching the ludicrous to hold that NASA could not have incurred this minor and incidental expense in order that the astronauts may attain a greater peace of mind in this serious undertaking.  

Beyond claims apparently arising outside of the Constitution’s penumbra, space law frequently concerns indeterminate property rights.

At the beginning of this century, in other litigation connected to the lunar missions, the United States District Court for the Southern District of Florida considered a civil forfeiture in rem action respecting the theft of lunar rock and a plaque that President Richard M. Nixon gifted to the people and government of the Republic of Honduras. Specifically, a businessman purchased moon rock and a plaque for $50,000 from a retired Honduran colonel who he believed

21 Id. at 437.

had obtained the items as a gift after a coup d’état sometime around 1973. In 1998, a warrant issued for the seizure of the moon rock and plaque as part of sting operation by NASA’s Office of the Inspector General and United States Customs to enforce NASA’s position that it is illegal for any person to own, buy, or possess any lunar material obtained during the Apollo missions. After hearing expert testimony on Honduran law, the trial court ordered the forfeiture of the moon rock and plaque on the basis that such items were indeed national Honduran property of public use and, because they apparently were stolen from the Honduran Presidential Palace, could not have been sold or alienated absent special legislation.

More recently, in Nemitz v. United States, a pro se plaintiff from Carson City, Nevada, complained that his private property right in an asteroid—asteroid 433, called “Eros”—had been infringed by the federal government. The plaintiff apparently registered the asteroid with the Archimedes Institute website and filed a Uniform Commercial Code security interest in California as both a debtor and creditor with the asteroid identified as collateral. The plaintiff sued for “parking” or “storage” fees of twenty cents per year from NASA when its spacecraft, NEAR, landed on the asteroid. The trial court granted the government’s motion to dismiss for failure to state a claim, explaining that

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23 Id. at 1369.

24 Id. at 1370-72.

25 Id. at 1375.


27 Id.
while Article 9 of the California Commercial Code sets forth a procedure for the regulation of security interests in property, it does not create a property interest in an asteroid. The Archimedes Institute registration on which [plaintiff] relies disclaims any authority to confer title or rights to property on its registrants. All the website does is create a registry. There is absolutely no legal basis for asserting that such a registry creates a property interest in the asteroid.28

Arguably, the precedential value of these legal decisions is limited, inviting readers perhaps to conclude that space law only involves eccentric or unusual claims that exaggerate the fault line between law and science and technology—a fracture that future space exploration undoubtedly will amplify.29 That would be an incomplete view of the universe of space law, though.

Ultimately, the seriousness with which the topic of space law is taken may turn upon the extent to which aerospace business itself ever is understood to be a “strategic industry” that impacts other upstream and downstream industries that are critical to national economic


strength. For example, take away the semiconductor, aviation, and steel industries and other areas of commerce would suffer or fail, including computer software or hardware manufacturing, cargo and tourism, and automobile, appliance, and armament production—all of which are defining features of modern commercial and military society. In contrast, for the last several decades, investment in space exploration too often has been justified in trite terms of spinoff benefits. Much of that may be mythology anyway as items like Tang, Teflon, and Velcro were not products of the Apollo lunar missions, but inventions predating NASA itself. In any event, some estimates have shown that every dollar earned in the space and aeronautics industry in Florida generated $2.83 in earnings for other sectors of the economy.

An economically and socially relevant outer space program depends upon a reformulation of government resources and the development of a domestic and international legal regime that matures beyond the antique laws developed during the 1960s and 1970s.

IV. THE PRESENT INTERNATIONAL LEGAL REGIME


31 Id. at 10.


Private interests in space are a new phenomenon. In October 1957, at the threshold of the Cold War with the United States, the Soviet Union shocked the West by launching the first artificial satellite, Sputnik. In doing so, U.S.S.R. Premier Nikita Khrushchev fueled his inflammatory rhetoric announced in 1956 (“We will bury you”) and triggered a “Space Race” with the United States. Sputnik “wasn’t about the peaceful uses of outer space. It was a matter of ballistic-missile throw weights and the strange nuclear-weapons game of deterrence. In 1957, if you could launch a satellite into orbit, you at least raised the question of whether you could use a missile to deliver an atomic bomb.” Unmistakably, space exploration began as an exclusively military and foreign policy competition between two sovereign superpowers under public international law.

Human spaceflight was the obvious end objective of the Space Race and the Soviet Union made its intentions clear in that regard when it launched a live animal—a dog named Laika—into space before the United States even managed to launch a rocket into orbit. The United States House of Representatives captured the nation’s reaction at the time:

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35 Frank Morring, Jr., *Down to Earth*, supra note 10, at 52-53 (recollecting the remarks of a high-ranking U.S. Navy officer a few days after the launch of Sputnik I: “If their satellite weighs 18.4 lb. they are ahead of us. If it weighs 184 lbs., I’m scared.” In fact, Sputnik weighed 184 lbs.).

The Soviet sputniks have been a visible symbol, warning that the United States may not be leading in the vital field of space research and in the development of astronautics. This country is not unmindful of what these Soviet achievements mean in terms of military defense, of international prestige, and of general scientific advance .... The United States must leapfrog these Soviet accomplishments. This will take some years, and will require a genuine mobilization, on a national scale, of the vast scientific and technical capabilities of this country. It would be a most serious mistake, and self-defeating in results, to choose some few isolated projects with the hope of influencing world opinion as to the superiority of our technology.37

Soon after the United States first launched its own rocket, Explorer I, into space in January 1958, the United Nations General Assembly created a permanent Committee on the Peaceful Uses of Outer Space ("COPUOS"), to blunt the fact that the genesis of spaceflight was a contest between Soviet Marxism and Western capitalism.38 Over the course of the following two decades, the United Nations adopted five general multilateral treaties that promoted the principles of non-appropriation, cooperation, and mutual and peaceful space exploration.39


39 In addition to the “Outer Space Treaty” and “Liability Treaty” discussed infra, among the five core treaties adopted by the United Nations at the outset of the era of human spaceflight were the Agreement on the
Notably, world policymakers in the late 1950s and early 1960s did not address the opportunity for private commerce in space.  

**A. THE OUTER SPACE TREATY**

In 1967, the United Nations announced its “Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space” as a first step in the creation of a legal framework for the peaceful use of outer space. The precepts expressed in that declaration were incorporated into one of the charter space treaties adopted in the same year, the “Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies” (“Outer Space Treaty”). Under the Outer Space Treaty, “[t]he exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.”

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43 Id. at Art. II.
Signed in the wake of the Cuban Missile Crises, the Outer Space Treaty established a property rights regime in which international peace and the “common heritage” of mankind transcended and curtailed national sovereignty. The hallmark of the Outer Space Treaty was and is its emphasis on the exploration rather than the exploitation of space, where astronauts are regarded as envoys of all humankind. Indeed, astronauts of all “State Parties” to the Outer Space Treaty are obligated to render all possible assistance to the astronauts of other State Parties in the event of accident, distress, or emergency landing.

Fundamentally, the Outer Space Treaty disallows military activities in space. The Outer Space Treaty specifically states that “[o]uter space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by means of exploitation, including by means of placing objects thereon or thereinafter.”

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45 Outer Space Treaty, supra note 42, at Art. V. Generally speaking, the term “astronaut” is associated with American spacefarers while a “cosmonaut” refers to an astronaut of Russian origin and a “taikonaut” is a Chinese astronaut. India is planning the launch of its first “vyomanaut” for lift off in 2015.

46 *Id.*

47 In January 2007, China drew the international community’s attention when it shot down and destroyed one of its own defunct weather satellites. In 2008, the United States intercepted one of its own failing spy satellites. *See generally* David Lague, *China Expresses Concern over U.S. Plans to Shoot Down a Faulty Spy Satellite*, N.Y. Times, Feb. 19, 2008, at A10. The United States and China plan to open talks in 2010 on human spaceflight cooperation. *See* Eric R. Sterner, *Viewpoint: Dragon in Sheep’s Clothing*, AVIATION WK. & SPACE TECH., Nov. 23, 2009, at 58 (cautioning that China’s human spaceflight program is a subsidiary of its nation’s army and “[s]pace cooperation presents an opportunity for China to acquire sensitive technologies [from the United States as] . . . [a]erospace technologies are high on China’s illegal shopping list.”).
Article IV of the Outer Space Treaty further bans nuclear weapons or other kinds of weapons of mass destruction in Earth orbit, on celestial bodies, or stationed in outer space in any manner. The same provision prohibits military bases, the testing of weapons, and military maneuvers on celestial bodies, excepting the use of military personnel for scientific research or other peaceful enterprise. To the extent a party to the Outer Space Treaty establishes stations, installations, equipment, or space vehicles on the Moon or other celestial body, those facilities and objects must be accessible and “open to representatives of other States Parties upon reasonable advance notice of a visit.”

While promoting a collaborative, non-military approach to space exploration, the Outer Space Treaty represents a striking departure from the norms of public international law in that it imposes “international responsibility” for national space activities upon both governments and non-governmental entities. Typically a private entity bears responsibility for its intentional

48 Outer Space Treaty, supra note 42, at Art. II.


50 Outer Space Treaty, supra note 42, at Art. XII.
wrongdoing or negligence in a foreign territory independent of its government. For example, in international aviation law, the American owner of an airplane that crashes in a foreign jurisdiction may be liable for the accident but not the United States and its taxpayers, too. In space, however, nations are responsible for the actions of their nationals.\footnote{Goldman, \textit{The Maturing Law of Outer Space}, supra note 36.} Indeed, under the Outer Space Treaty, nations are required to authorize and supervise all space activities and thus are subject to liability for their own conduct and that of their nationals.\footnote{Outer Space Treaty, \textit{supra} note 42, at Art.VI, VII.}

\section*{B. THE LIABILITY CONVENTION}

The 1973 “Convention on International Liability for Damages Caused by Space Objects” (“Liability Convention”) expanded the concept of “international responsibility” in the Outer Space Treaty by establishing concrete international rules and procedures concerning liability for damage caused by a “launching State.”\footnote{Mar. 29, 1972, 961 U.N.T.S. 187, at Art. II [hereinafter Liability Convention]. A “Launching State” is a state that launches or procures a launch of a space object, or a state from whose territory or facility a space object is launched. Liability is fault based in the event of damage “elsewhere than on the surface of the Earth to a space object … or to persons on board such a space object by a space object of another launching State.” \textit{Id}. at Art. III.} Procedurally, nations present damage claims to the putatively responsible launching State through diplomatic channels or through the Secretary-General of the United Nations within one year from the date damage occurs or the
date the claimant identifies the liable launching State. Jurisdictionally, Liability Convention claimants may pursue their compensation claims through the treaty’s own mechanisms or in the courts of a launching State, but not both.

The Liability Convention imposes strict or “absolute” liability upon a nation whose launch or attempted launch of a “space object” causes personal injury, death, or property damage on the surface of the Earth or to aircraft in flight. For example, if among the approximately 19,000 objects in space a Japanese satellite collides with and causes a United States satellite to crash onto Brazilian soil or to impact a Brazilian airplane in flight, the United States and Japan each would be absolutely and jointly and severally liable for damages. Brazil could seek the entire amount of damages from either Japan or the United States. In a different scenario, where the collision of a Japanese and American satellite collide and cause damage to a Brazilian “space object or to persons or property on board that space object elsewhere than on the surface of the Earth,”

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54 Id. at Art. IX, X. For a discussion about the role of alternative dispute resolution in the context of outer space disputes see ARBITRATION IN AIR, SPACE AND TELECOMMUNICATIONS LAW (Kluwer Law Int’l ed. 2002).

55 Liability Convention, supra note 53, at Art. XI. In American courts, common law negligence or strict product liability based on design defect are possible damage theories for injury caused by space objects. If a claim is not settled through diplomatic channels, the Liability Convention details a process by which adverse parties may establish a three-member Claims Commission to decide the merits of the claim for compensation and to determine the amount of compensation payable, if any. Id. at Art. XIII-XIX.

56 Id. at Art. I. Falling space debris is a real occurrence. See, e.g., Space Junk, FIN. TIMES, Aug. 17, 2009, at 2009 WLNR 17644989; Residents of Altai will not Receive Compensation for Rocket Fragments that Fall on Them, DEFENCE & SECURITY, Oct. 22, 2008, at 2008 WL 20068750.

Earth” (e.g., in outer space), the liability of the Japanese and American government would be apportioned on the bases of the fault of either government or the fault of any person for whom either government was responsible.

The Liability Convention exonerates a space faring nation from absolute liability upon proof that damages were caused, in whole or in part, by gross negligence or the intentional act or omission of another nation or the “natural or juridical persons” it represents. There is no exception for absolute liability where the damage is the result of activities of the launching State that violate international law, however. In any event, damages under the Liability Convention are “determined in accordance with international law and the principles of justice and equity, in

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58 In February 2009, a dead Russian military spacecraft collided with an Iridium communications satellite, scattering at least 2,000 pieces of hazardous debris around the earth. E.g., James Clay Moltz, Space Jam, N.Y. TIMES, Feb. 19, 2009, at A27. The need to stabilize the accumulation of space debris and junk has some authorities recommending requiring satellite operators to pay a pre-launch deposit that is refunded when a spacecraft or satellite is removed after its operations terminate. E.g., Damage Deposit, AVIATION WK. & SPACE TECH., Dec. 14, 2009, at 24. See also Frank Morring, Jr., Rules of the Road, AVIATION WK. & SPACE TECH., May 4, 2009, at 34.

59 Liability Convention, supra note 53, at ¶ 1(b). As a matter of standing, nationals of a launching State cannot make a claim under the Liability Convention for damages caused by a space object of their own government. Id. at Art. VII, ¶ (a). Similarly, foreign nationals participating in the operation of a space object that causes damage are barred from making a claim under the Liability Convention from launch-to-descent of the space object that causes damage, or while in the launch or recovery area by invitation of the launching state. Id. at ¶ (b).

60 Id. at Art. V, ¶ 1.

61 Id. at Art. VI, ¶ 2.
order to provide such reparation in respect of the damages as will restore the [claimant] to the condition which would have existed if the damage had not occurred.”

While functional, both the Liability Convention and the Outer Space Treaty are dated in that they represent the product of a compromise between an American view that promotes private enterprise in space exploration and a Soviet philosophy to restrict space activity to state actors. Over time, and given that no treaty has been ratified by the major powers since 1976, a pro-commerce body of domestic law and regulations has emerged and should be fortified.

C. **Domestic Space Law and the Commercial Launch Sector**

Many nations around the world have augmented the international space law framework with their own internal rules for private commercial space activities. Australia, Belgium, Sweden, and the United Kingdom, for example, supervise the licensure, permitting, registration, and accident investigation of private space objects. Other nations, too, have established commissions or space agencies to develop and coordinate and harmonize extraterrestrial policy,

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62 *Id.* at Art. XII.

including Argentina, Canada, Chile, Norway, and South Africa. The United States of course developed its own set of outer space laws with the “National Aeronautics and Space Act of 1958.”

As a precursor to the United Nations Outer Space Treaty and Liability Convention discussed above, Congress expressed a national policy “that activities in space should be devoted to peaceful purposes for the benefit of all mankind.” Congress also promoted the exploitation and not just the exploration of outer space, stating that “the general welfare of the United States requires that the National Aeronautics and Space Administration … seek and encourage, to the maximum extent possible, the fullest commercial use of space.” To that end, in its current form, federal law identifies bioengineering research and development as an objective of national space operations, funds a cash prize program to stimulate innovation in basic and applied research and technology, and establishes NASA’s the Space Shuttle system for government and commercial space missions.

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64 For a discussion of the domestic space law frameworks of other nations see Francis Lyall & Paul B. Larsen, Space Law (Ashgate 2009).


66 Id. at 42 U.S.C. § 2451(a) (2009).

67 Id. § 2451(c) (2009).

68 Id. §§ 2459f-1, 2465a, 2466, 2472(a)-(b) (2009). To the extent the Space Shuttle carries payloads for commercial or foreign users, the National Aeronautics and Space Act of 1958 establishes, with limited exceptions, “a base price of not less than $74,000,000 for each flight of the [United States] Space Transportation System in 1982 dollars.” Id. § 2466c (2009).
First launched in April 1981, the government’s Space Shuttle program has been the centerpiece of the country’s space program for three decades and made Florida’s Space Coast and the Kennedy Space Center an education destination for several generations of tourists and space enthusiasts. As proposed, the Space Shuttle represented an engineering marvel, a reusable space plane that would make space travel routine—literally a shuttle operating regularly to-and-from space. Today, despite its many accomplishments and international regard, the complex program represents a policy failure.\textsuperscript{69} The fleet will have flown 131 successful missions over 30 years, well short of the planned 580 flights over 12 years.\textsuperscript{70} Two orbiters and their crew were lost in catastrophic disasters that horrified the national psyche much like the assassination of President John F. Kennedy and the terrorism of September 11, 2001.\textsuperscript{71}


\textsuperscript{70} Craig Covault, \textit{Blame it on Nixon}, \textsc{Aviation Wk.} \& \textsc{Space Tech.}, Mar. 19/26, 2007, at 85.

\textsuperscript{71} In a national address following the explosion of the Space Shuttle Challenger 73 seconds after liftoff, President Ronald Reagan eulogized the Challenger crew, including Christa McAuliffe, who was to be the first teacher in space: “The crew . . . honored us by the manner in which they lived their lives. We will never forget them, nor the last time we saw them, this morning, as they prepared for their journey and waved goodbye and ‘slipped the surly bonds of earth’ to ‘touch the face of God.’”). Address to the Nation on the Explosion of the Space Shuttle Challenger, 1986 Pub. Papers Book I, 94, 95 (Jan. 28, 1986). \textit{See also} JOH N GILLESPIE MAGEE, JR., HIGH FLIGHT, IN \textsc{FAVORITATE POEMS} 203 (Helen Ferris Tibbets ed., 1957). The second shuttle tragedy occurred on February 1, 2003, when Space Shuttle Columbia burned up and disintegrated during earth re-entry, killing seven astronauts. \textit{See generally} Marcy Darsey, Comment, “To the Stars, Despite Adversity,” \textit{Liability for the Columbia Space Shuttle Tragedy}, 42 \textsc{Hous. L. Rev.} 457 (2005).
Despite frequent technical setbacks and irregular launch timetables, the federal government manufactured justification for the shuttle fleet by making it the dominant delivery system of civilian, scientific, commercial, and military satellites. In doing so, lawmakers effectively excluded private sector launch providers from the payload business. Ironically, the Space Shuttle fleet’s operational shortcomings presented opportunities for the private sector, whose need to satisfy contractual obligations to reliably deploy communications and other equipment into orbit went unsatisfied. Indeed, after the Space Shuttle Challenger exploded on its ascent in 1986, Congress finally acknowledged the prohibitively high risk to astronauts’ lives in placing commercial satellites into orbit.

Following the Challenger disaster, lawmakers encouraged private initiative in national space operations. Congress proposed the removal of commercial communications satellite launches—the most profitable launch market—from Space Shuttle missions, altogether. That decision complemented the enactment of the Commercial Space Launch Act of 1984 (amended in 2004), “[t]he goal [of which was] safely opening space to the American people and their private commercial, scientific, and cultural enterprises [which] should guide Federal space investments, policies, and regulations.” Now, through the United States Department of

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Transportation’s Office of Commercial Space Transportation, regulators oversee private sector launches, reentries, and related space services, including the investigation and enforcement of safety procedures.\textsuperscript{75} In this environment, even (or especially) without the Space Shuttle fleet, the new space era presents dynamic opportunities for Florida.

D. \textbf{SPACE TOURISM AND THE \textit{“FLORIDA INFORMED CONSENT FOR SPACEFLIGHT ACT”}}

In 2004, Scaled Composites won the $10 million Ansari X Prize when it successfully launched Burt Rutan’s SpaceShipOne, the first privately funded and operated reusable space launch vehicle. In many ways, SpaceShipOne epitomized the inevitable role of non-government, entrepreneurial actors in effecting commercial objectives in outer space. Congress specifically prompted authorities to “encourage, facilitate, and promote commercial space launches and reentries by the private sector, including those of space flight participants.”\textsuperscript{76} Now, the law recognizes and a private industry has evolved to serve a fresh classification of space traveler, the public “space flight participant.”\textsuperscript{77}


\textsuperscript{77} Id. § 70102(17) (2009) (A spaceflight participant is “an individual, who is not crew, carried within a launch vehicle or reentry vehicle.”). Under applicable regulations, spaceflight participants must execute a reciprocal waiver of claims with the Federal Aviation Administration and the Department of Transportation in connection with private outer space missions. 14 C.F.R. § 460.49 (2009).
In 2001 Dennis Tito became the first public space traveler or “space tourist,” purchasing a ticket for space travel aboard the Russian Soyuz spacecraft bound for the International Space Station.\(^7\) Earlier, in 1998, Virginia-based Space Adventures, Ltd. entered the marketplace as a broker of space flight for private citizens, envisioning a $10 billion industry. Today, the company advertises suborbital spaceflight for $102,000 (inclusive of $4,000 cancellation insurance) and a private expedition to the moon for $100 million.\(^7\) Meanwhile, amid the introduction of private launch companies like SpaceX, Sir Richard Branson’s Virgin Galactic has signed up hundreds of people for $200,000 suborbital flights,\(^8\) and the European Aeronautic and Defense Company is studying the feasibility of a space hotel.\(^8\) Industry forecasters predict that space tourism, like early airline travel, initially will be reserved for wealthier individuals, but that nearly 13,000 passengers may participate in orbital and suborbital space tourism by 2021, creating approximately $700 million in revenue.\(^8\)


Indeed, Florida law is at the forefront of space tourism. Effective October 1, 2008, the Florida Legislature enacted the “Florida Informed Consent for Spaceflight Act”\(^\text{83}\) to regulate spaceflight operators. To avoid liability, private space operators (i.e., “spaceflight entities”) must provide a minimum statutory warning statement to outer space passengers:

**WARNING:** Under Florida law, there is no liability for an injury to or death of a participant in a spaceflight activity provided by a spaceflight entity if such injury or death results from the inherent risks of the spaceflight activity. Injuries caused by the inherent risks of spaceflight activities may include, among others, injury to land, equipment, persons, and animals, as well as the potential for you to act in a negligent manner that may contribute to your injury or death. You are assuming the risk of participating in this spaceflight activity.\(^\text{84}\)


Space tourists who sign a consent form acknowledging this warning will release their spaceflight carrier from liability for injury or death arising from the “inherent risks of spaceflight activities.” Of course a spaceflight entity cannot escape liability if it commits an act or omission that constitutes gross negligence or willful or wanton disregard for the safety of the space tourist that proximately causes injury, damage, or death.

In all, the convergence of public, private, and commercial space initiatives, supported by a corresponding albeit nascent set of space tourism laws, evidences an inflexion point in human space activity and potentially the beginning of a democratization of space travel for the global community. Indeed, to date, the Federal Aviation Administration has licensed five commercial “spaceports,” including Cape Canaveral. Florida has an outstanding opportunity to lead a new era in space and aerospace commerce and the expectation of a commercial space tourism industry that is comparable to that of commercial aviation is not unreasonable.

E. “SPACE FLORIDA”

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86 Id. § 331.501(3)(b) (2009).

87 Frank Morring, Jr. & Guy Norris, Tourist Plan, Aviation Wk. & Space Tech, Sept. 7, 2009, at 62. Currently sixteen states specially accredit space agents to find space flights for clients, with California (11), Florida (6), and Texas (6) accrediting the most space agents to date. See, e.g., Joe Wilhelm, Jr., Local Travel Agent Selling Tickets to Space, Dec. 31, 2009, Daily Rec. (Jacksonville) available at http://www.jaxdailyrecord.com/showstory.php?Story_id=529937&searchtext=tickets to space (quoting North Florida agent: “I had heard of someone mortgaging a house to be able to make the trip, so it’s not just the wealthy who are interested in the experience.”).
The infancy of space tourism today is reminiscent of the Wright Brothers’ historic first flight of a powered airplane at Kitty Hawk, North Carolina in 1903. Only 11 years later, the first scheduled airline passenger flight in the United States departed—an 18-mile, 23-minute, one-passenger journey between Tampa and St. Petersburg for $5 one-way. Today, Miami, Fort Lauderdale, Jacksonville, Orlando, and Tampa, among other locations around the state, are muscular staging areas for state-of-the-art cargo and commercial airplanes to quickly and routinely and safely transit hundreds of passengers and thousands-upon-thousands of pounds of goods at a time over domestic, transcontinental, and international routes for less than several hundred dollars. Florida is uniquely positioned to boost the next mode of human travel and to lead the space travel and tourism industry just as it was at the outset of commercial aviation.

The space, aeronautics, and aviation industries account for nearly 150,000 high-value jobs and more than $7 billion in wages that typically exceed the state average by 40 percent. 88 Florida Governor Jeb Bush recognized as much when he created the “Commission on the Future of Space and Aeronautics in Florida” in 2005 to “assess and make recommendations on how to strengthen Florida’s role as a leader in space and aeronautics and to maximize the economic development and job creations opportunities throughout the state.” 89 One year later, in May 2006, the state Legislature formally recognized Florida’s unique national role as a platform for global, private aerospace activities by enacting the “Space Florida Act,” declaring “the aerospace industry of this state [to be] integral to the state’s long-term success in diversifying its economy


89 Executive Order No. 05-120 (2005).
and building a knowledge-based economy that is able to support the creation of high-value-added businesses and jobs.”

As important, the Space Florida Act created “Space Florida,” the face of state aerospace activities and a single point of contact for federal and state agencies, the military, universities, and the private sector. Through its president, board of directors, and committees, Space Florida is charged with attracting, retaining, and growing a healthy space and aeronautics industry in Florida, and enjoys significant authorities and economic development powers to execute its responsibilities to this end. Space Florida has achieved some milestones to date, including preliminary steps to refurbish and commercialize the Kennedy Space Center to house jets that will train would-be space tourists. However, significant work remains to be done if Florida is to compete meaningfully with space tourism infrastructures that are developing throughout the United States, i.e., Alabama, Alaska, California, Colorado, New Mexico, and Texas.

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80 Laws 2006, c. 2006-60, § 2, eff. May 30, 2006. The Space Florida Act repealed two statutory space entities, the Florida Space Research Institute and the Florida Aerospace Finance Corporation, some of whose duties were incorporated and retained as part of the newly formed Space Florida. See Fla. Stat. § 331.3011(1) (2009).


In charting a strategic and marketing plan for Floridians in the post-Shuttle era, Space Florida must overcome the perception of Florida as a limited player in the value chain of space operations. Indeed, as a logistical matter, Florida is seen as a space launch and processing site with limited ability to recruit commercial space industry activities such as satellite and vehicle manufacturing.\(^{93}\) Geographically, commercial customers find operating on a federal range and complying with Air Force regulatory and safety requirements burdensome.\(^{94}\) In addition, to the extent that investment follows talent, Florida is disadvantaged by the fact that its students rank in the bottom half of national rankings in math and science.\(^{95}\) Although these matters are by their nature business and political concerns, Florida lawyers have a clear and substantial role to play in encouraging space commerce in Florida.

V. CONCLUSION

In 1997, Congress enacted the “50 States Commemorative Coin Program Act” to “promote the diffusion of knowledge among the youth of the United States about the individual States, their history and geography, and the rich diversity of the national heritage.”\(^{96}\) As to the coin that commemorates their state, Floridians voted among competing design concepts for quarter pieces that feature the inscription “Gateway to Discovery” and a depiction of a 16th-century Spanish galleon and a space shuttle. Indeed, Florida represented the New World for

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\(^{93}\) SPACE FLORIDA, STRATEGIC BUSINESS PLAN, supra note 33, at § 2.1, at 4.

\(^{94}\) Id. at 31.

\(^{95}\) Id. at 34.

Spanish explorers searching for the Fountain of Youth centuries ago and today symbolizes the starting point for modern expeditions to new worlds. The fact that this history is reflected on currency should not be lost.

The aerospace industry is a vital part of Florida’s history and future. Whether Florida is the right atmosphere for new business clients in the emerging spaceport and space tourism industry depends upon resolution of several outstanding legal issues. Among other things, operators at the Cape Canaveral Spaceport will need aerospace counsel to license commercial horizontal and vertical launch and recovery sites with the Federal Aviation Administration. Lawmakers have yet to develop a liability scheme that encourages public safety without also exposing private actors to staggering verdicts arising from an accident or catastrophe. At the federal level, too, advocacy is needed to loosen existing technology transfer restrictions and export controls and to free rocket manufacturers from a competitive straightjacket that artificially inhibits the sale of space lift components and systems and limits the insurability of aerospace companies. Finally, aerospace operators will require counsel to navigate them through the

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98 SPACE FLORIDA, STRATEGIC BUSINESS PLAN, supra note 33, § 4.1, at 31. Alternatively, contractors could own and operate launch ranges subject to federal government public safety oversight. Id. § 4.2.1.2.3, ¶ 1, at 41.

99 Senate Extends Protection from Catastrophe for Launch Events, ORLANDO SENTINNEL, Dec. 25, 2009, at B2 (reporting measure approved by the United States Senate re-authorizing the federal government potentially to indemnify commercial launch operators against third-party claims for launch-related damages that exceed $500 million, up to a total of $1.5 billion, until 2012).

100 Rockets and launch vehicles are listed on the United States Munitions List under 22 C.F.R. Pt. 121 et seq. (2009). See also Export Administration Act of 1979, 50 U.S.C. app. §§ 2401 et seq. (2009); Arms Export
current patchwork of space law, *i.e.*, dated international treaties, “soft law” resolutions, different state laws, multiple executive national space policy statements, and conflicting government instructions and directives.

In the final analysis, no matter the challenges ahead, one matter is settled: Outer space no longer is the private domain of sovereign super powers but increasingly will be the realm of authorized nationals around the globe. Aerospace is and will be a wealth generator and the next chapter of human spaceflight will be guided by free-market principles. This article calls for all Floridians, lawyers and non-lawyers alike, to recognize the particular business and legal relevance of an ongoing revolution in global, national, and local outer space initiatives in the immediate-term. While space exploration ultimately is motivated by an eternal metaphysical question (“Are we alone in the universe?”), its purpose is quite practical: Though perhaps hard to fathom, outer space is where humans may one day live and work by necessity.\(^\text{101}\) Until that final sunset, Florida lawmakers should work vigilantly to fortify Florida’s self-described status as the gateway to discovery.

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\(^{101}\) Frank Morring, Jr., *Minding the Gap*, AVIATION WK. & SPACE TECH., Aug. 3, 2009, at 28, 30 (quoting Massachusetts Institute of Technology Professor: “If [moving human beings into the solar system for good] is not [the goal], what the hell are we doing?”).