

LESSONS FROM “THE LITTLE PRINCE” ON SPACE FLIGHT^o

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Abstract

Space flight by private parties, whether “space travel” or “space tourism”, for centuries seems to have had a certain fascination for humans, and in our times, what once was myth, has become reality. In 2004, the Ansari Prize was awarded to “SpaceShip One”, for achieving two sub-orbital flights within a designated time period. This feat seems to have opened the doors to other entrepreneurs seeking to expand on these achievements: at least one other prize (worth US \$50 million) has been established, and “Virgin Galactic” has been incorporated to provide sub-orbital commercial space flights in the future.

While these accomplishments are bringing down the barriers to access the “final frontier”, perhaps we can learn some lessons from other sources, from other unsung heroes, like St. Exupéry’s “Little Prince,”¹ in regard to private endeavors in outer space and space law.

Introduction

Humans seem to have a certain fascination with flying, perhaps even a little envy of birds (from whom it is alleged that we are descendants), and with other ethereal flying objects, including angels. Throughout the ages, one goal of mankind has been to travel in space, to the stars, or at least to the Moon and other planets. Early myths² and many science fiction stories³ and TV programs, such as “Star Trek”, deal with flights to outer space, which became reality in the 1960s, when the space age and space race began in earnest.

Since the first space trips of Soviet cosmonauts, and later, with American astronauts landing on the Moon on 20 July 1969, mankind has sought to enhance and expand his activities in space; many an

astronaut has taken a “space walk”, albeit usually remaining tethered to the space shuttle. These early trips to outer space, these scientific and technological exploits were of great importance from a technical viewpoint, but also from a human one: legal provisions were made early on, to rescue stranded astronauts and objects launched to outer space.⁴ Until the late 1980s, however, launches were carried out by governmental entities, whether the US NASA, the former USSR, or the European Space Agency (ESA).

In the 21st century, space flights funded by private parties have become reality, the fulfilment of childhood dreams and aspirations of many scientists, engineers and inventors. Their tenacity and perseverance has paid off. Their ideals have

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materialized, perhaps because, like the “Little Prince”, they have had a different kind of vision. This point will be elaborated upon later.

Competition in Space Activities – the 1980s

In the 1980s, the US opened the door to greater activity as well as to competition in outer space. One major accomplishment was the 1981 launch of the first reusable spacecraft, the Columbia Shuttle. Another major step was the enactment of the Commercial Space Launch Act in 1984⁵, allowing for corporations like Lockheed Martin, General Dynamics, and McDonnell Douglas to provide launches on a “commercial” basis, while using government facilities to do so.⁶ Simultaneously, the Europeans were promoting the Ariane launch vehicle for commercial (non-military) launches.⁷

In 1986, the US Government also authorized the establishment of private satellite communication systems separate⁸ from the existing international satellite organizations (ISOs), such as INTELSAT, INMARSAT, and INTERSPUTNIK. PANAMSAT became the first corporation to launch a “separate satellite system,” providing TV and voice services, in competition with INTELSAT.⁹ In Europe, SES Astra was prepared to provide broadcast services, in competition with EUTELSAT, while on the other side of the world, ASIASESAT also was being developed.

Perhaps as a result of these “chinks” in the governments’ control of space-based communications and launch activities, the private sector’s interest in space flights was also awakened, though not achieved until recently.

The First Years of the 21st Century

In 2001, a real space odyssey¹⁰ took place, namely, the space flight of a US private citizen, Dennis Tito, to the International Space Station on board a

Russian spacecraft. In 2002, Mark Shuttleworth became the “first African in Space.” Space Adventures Ltd., a US corporation, organized these space flights for the world’s first private “space explorers” and has scheduled another space flight for October 2005, with the third “space tourist” planning to visit the International Space Station.¹¹

These pioneers inaugurated the era of space flights by *paying private parties*, rather than by government agents and agencies only. Whether their activity is called “space flight”, “space travel”, or “space tourism”¹² may not matter to most people, but the designation may have different legal and regulatory consequences.

In October 2004, another “first” in private space flight was achieved: “SpaceShip One”, the civilian rocket created and developed by Burt Rutan, accomplished two sub-orbital flights within a designated time period, and was awarded the Ansari Prize, worth US \$10 Million. This feat was enthusiastically received by most of the space community, and by others, including entrepreneurs, seeking to capitalize on these achievements. Another prize (worth US \$50 million) has been established, and at least one company has been set up to provide sub-orbital commercial space flights in the future.¹³

Sir Richard Branson established “Virgin Galactic,” and together with Rutan recently formed a joint venture, “Spaceship Company”, to manufacture commercial sub-orbital spacecraft, based on the design of SpaceShip One and its carrier aircraft, “White Knight Two.”¹⁴ Virgin and Scaled Composites will jointly own the “Spaceship Company”, with Rutan leading its technical development team. Virgin Galactic already has placed orders for five spacecraft and two carrier aircraft, and plans to start commercial operations in 2008, offering sub-orbital space tourist flights.¹⁵

The Russians seem to have realized early on that satisfying the cravings of space

tourists would be good business, and together with the US-based Space Adventures, they plan to offer commercial flights around the moon.¹⁶ Japan and China are also making plans to fly humans to space, even to the dark side of the Moon. Will the Spaceship Company be offering similar flights?

Thus, in later decades of the 21st century we are likely to witness even more spectacular achievements in space flight / travel or tourism on the part of private parties, regardless of the nationality or the launch venue of those involved in them.

Private versus Government Interests in Space Tourism

The US Government, which was less than enthusiastic about Tito's space flight in 2001, seems to have reconsidered its position, realizing that space flights by private citizens are going to happen, whether or not they receive official US sanction. Thus, in March 2004, the Commercial Space Launch Act was amended again, to take into account the budding space tourism industry, i.e., private flights by private citizens (civilians). The Department of Transportation has crafted standards for re-entry vehicles and their landing sites, and the Federal Aviation Administration (FAA) has drafted one set of guidelines for "Commercial Sub-orbital Reusable Launch Vehicle Operations with Space Flight Participants" and another set for operations with flight crew.¹⁷ While the new legislation is meant to encourage market-based approaches to space services, the 2004 legislation and 2005 Guidelines still entail much government involvement.¹⁸

While privately financed space flights, for the pleasure of the civilians who can afford to pay for them, may lead to less official funding and involvement in these endeavors,¹⁹ they could lead to the dominance of economic interests of a handful of individuals or corporations in these activities. Thus the current economic

"globalization" trend could result in economic "spacialization."²⁰ Spacialization could be defined as activities in space, including sub-orbits, governed by private interests. Thus, it could become the next phase in the continuum of economic globalization, which has led to the blurring of national borders, and the dominant position of corporate interests in many endeavors and jurisdictions, together with the concomitant diminishing influence of public international law, in favor of private contractual arrangements.

Despite the private sector's growing investments and influence in outer space activities, existing international space legislation must be taken into account. After all, private parties are still nationals of some country, and the governments that have ratified the Outer Space Treaty are still obligated to authorize and supervise activities in outer space carried out by the non-governmental entities under their jurisdiction.²¹ Furthermore, under the terms of the Liability Convention, the launching State "shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the Earth or to aircraft flight."²² What is comprised by "launching State", however, is being questioned, and may even be subject to re-interpretation with the increase in private launches, launch sites and space flights.²³

Once private space flights become more commonplace, will these activities lead to the drafting of new regulations, exonerating the governments from liability, and placing responsibility – and liability—on the private sector willing to take the risk of flying in space? Will these regulations hamper the development of space tourism, as some authors fear, or will they lead to greater, bolder actions on the part of the private sector?

Several authors have noted that about 100 years ago, flying in aircraft was considered a dangerous activity, and was also restricted to a few persons—the brave,

and the wealthy, and yet, aviation has developed into a huge industry. While some persons may disagree with the assertion that space tourism cannot be compared to early aviation, except that both were /are considered risky and costly,²⁴ there are many similarities, but an analysis of these is beyond the scope of this paper.

Suffice it to say that like aviation, private space flights are likely to be heavily regulated, due to a number of factors, such as their inherent risk, liability insurance costs, and national security issues, among others. But without the willingness to take risks, space tourism /travel is unlikely to become the dynamic sector that some foresee.²⁵

One author speculates that the development of space tourism will follow the normal course of development seen for most consumer technologies and services, noting that tourism itself began as something undertaken only by the very rich.²⁶ Eventually, the price of a space ride or flight will decrease, and will be more accessible to more people. Another author cautions that space tourists should not plan on bringing back souvenirs from outer space, and reminds us that according to Art. VIII of the Outer Space Treaty, spacecraft and their component parts remain under the control and jurisdiction of the launching party (i.e., national governments). Thus, "salvaging pieces of wrecked or abandoned spacecraft isn't permitted without the consent of the original owner."²⁷

While lawyers may be kept busy drafting new regulations for private space flights, we should also take a look at the visionaries who have made them happen.

Space Visionaries and "The Little Prince"

Thanks to some daring dreamers whom we know about and many other unsung heroes/ entrepreneurs, outer space, the seeming last frontier, is opening up to tourism, or at least to flights by civilians

willing and able to pay for the ultimate "joyride."²⁸

These idealists seem to share some character, if not personality traits: chief among them are their perseverance and tenacity, despite the many odds they have faced. Rutan's successful flights in 2004 were the result of years of designing, redesigning, developing and perfecting his spaceship and its carrier aircraft. Many other engineers, inventors and entrepreneurs, have had to desist in their endeavors, stalled by bureaucracy, lack of funds and other support, or because they simply gave up hope.

The Little Prince²⁹ seems to share the spirit of adventure, a willingness to take risks, to explore the unknown, which characterizes those who have made their dreams come true, people like Dennis Tito, Shuttleworth, Rutan, and even Branson. From what is stated in the press, since childhood, they have dreamed of building rockets, of going to space, of accomplishing something significant. And so they have.

While we know that these humans have begun to attain their objectives, we know very little about the Little Prince (LP), or how he arrived on Earth, after visiting a number of other planets, each with one sole inhabitant. The narrator of the story, an aviator who has crashed in the Sahara, far from any semblance of civilization, becomes acquainted with the LP, when he hears his little voice, telling him to draw him a sheep. (The LP doesn't answer questions, but demands that his be answered, and that his instructions be carried out.) The narrator / aviator speculates that the LP migrated to Earth on the wings of birds, but the LP tells him he fell to Earth. The first living organism the LP meets in the desert is a snake, which warns him that its bite is lethal. Yet that lethal bite will become the Little Prince's means of returning to his planet /asteroid.

The second creature the LP meets is a fox, which imparts a most valuable gift /

lesson to the Little Prince: “One sees clearly only with the heart. Anything essential is invisible to the eyes.”³⁰ In other words, one has to have dreams, ideals, and have a heart, since, as the LP says, “...eyes are blind. [To find what you’re looking for] you have to look with the heart.”³¹ Dreams, ideals are invisible, but fundamental to sustaining life, and persistence is necessary to make those dreams become reality.

The Little Prince comments several times that one has to remain childlike – i.e., open, trusting, and also daring. Like our space travellers, the Little Prince has been willing to take risks, to travel in the galaxies, not knowing where he would land, nor what he would find there. In some respects human space tourists have an easier journey ahead of them: they know where they will be going, and that they will be returning to Earth by the same means, the same vehicle, which carried them to outer space.

Our space travellers, like the Little Prince, seek to expand their horizons, not only for commercial reasons, like Branson, but for other purposes as well. For example, the Ansari or X Prize, helped foster the public’s interest (and private investment) in space activities; it inspired scientists and engineers, and has served to educate students, as well as to create new careers and enterprises.

Like the first landing on the Moon, these recent space flights have changed our world, our way of looking at outer space and at the stars, (one of which is the Little Prince’s home.) As the narrator /aviator says, “nothing in the universe can be the same [anymore]...”³² Fulfilment of dreams is what changes our lives, and helps us to advance, and to improve them. These changes are brought about by people with a certain kind of vision; they see with their hearts.

Future Regulations, Future Private Activities in Space

Perhaps the time has come to examine the national legislation of those countries providing launch sites for space flights to private parties, to ensure that their laws incorporate the provisions of the space treaties which they have ratified, particularly in regard to their liability / responsibility, as set forth in the OST,³³ and the Liability Convention.³⁴

Further, does existing national legislation regarding space activities take into account the increase in space debris that may affect low earth-orbit flights, let alone travel to the Moon? These spaceships’ trajectories are likely to be through areas where there is already considerable space debris, which could have a negative impact on their chosen trajectories as well as on their spacecraft.³⁵

Another question arises: whether private paying passengers should be considered “envoys of mankind,”³⁶ or should this designation be reserved for government-employed *astronauts*? The Outer Space Treaty states that *astronauts* of one State Party “shall render all possible assistance to the *astronauts* of other State Parties,”³⁷ an obligation that is at the core of the Rescue Agreement.³⁸ Since it was drafted at a time when this kind of activity was not contemplated, the Rescue Agreement seems to be silent as to providing assistance to private parties, like the ones that will be taking space flights on board the Branson-Rutan spaceships.

Should they be considered “envoys of mankind,” and therefore, worthy of ambassador status, with its accompanying privileges and immunities? Or should private parties be designated as merely passengers, and perhaps come under the jurisdiction of air law?

Should the Rescue Agreement be amended, or new regulations drafted to cover private space flights and paying passengers, to ensure that private space activities will fall within the scope of the ARRA and of other space treaties, in the

event of a mishap in space? Should national regulations clearly address and spell out responsibility, indemnification and liability issues, as the US' Commercial Space Launch Act seems to do?³⁹

These are but some of the issues raised - and which should be resolved - given the greater involvement of private parties in space flights and other space-related activities. Lawyers should work closely with professionals in technical fields, since a good understanding of the physical aspects of space activities will lead to their drafting better regulations.

Conclusions and Recommendations

Private space flights are just beginning to take off (no pun intended), and hold the promise of enhancing all sorts of new endeavors in space, from sub-orbital flights and tourism, to other adventures in near space and outer space. Current legislation, particularly the outer space treaties, may need some updating, to include the private sector's greater involvement in, and ability to pay for these activities. At the same time, the public sector, i.e., the taxpayer, should not have to be held economically liable for damages or accidents that these activities could cause.

On the one hand, governments should continue to encourage private space initiatives, particularly those that may lead to new scientific discoveries that will benefit mankind, and not only activities that will benefit entrepreneurs. On the other hand, the universe should retain its aura of mystery, so that we don't lose our sense of adventure, and of awe at its immensity. While this wonderment should lead to further exploration of outer space, it may also lead to re-consideration of some of our past achievements and future goals.

For example, some people have suggested the possibility of setting up "colonies", or at least "space motels" for travellers in outer space, which is a rather inhospitable environment, with no

inhabitants, similar to the desert where the Little Prince fell. At present, the only human "outpost" in space is the International Space Station (ISS), which has become an expensive proposition, and whose completion is in doubt. Perhaps one way of making the ISS less of an economic drain, and more appealing to private investors, would be to convert it from a scientific laboratory, into the first "space motel."

Space Adventures' clients / passengers have already set a precedent, in that they have been willing to pay much money to go to the ISS. Perhaps future space travellers could be "housed" at the ISS, on condition that they make some scientific or other tangible (non-monetary) contribution to space studies or activities while they are on the ISS. Thus, the continued operation of, and work on the ISS could be justified, maybe even paid for in part by the space tourists.

In regard to the space environment, Like the Little Prince, who tends his rose and his volcanoes, we need to pay attention to it; we need to take care of our planet and of

outer space, and endeavour to mitigate space debris. More flights to space are likely to create more debris, even if reusable launch vehicles are used. Therefore, persons involved in space activities should be encouraged to devise new means of mitigating it, thereby making space travel less hazardous.

Increased private activities in space should not lead to the "privatization" of space. We need to remain mindful of Art. II of the OST, which does not allow for appropriation, or claims of sovereignty of outer space or any celestial bodies. (The Little Prince reminds the "serious businessman" who thinks he owns the stars and that they will make him rich, simply because he has counted them, that the stars (and outer space) don't belong to anyone.)⁴⁰

We need to remain open to innovations, regardless where they come from, or who is suggesting them, and approach the future with child-like innocence, like the Little Prince, without pre-judging the possible outcome or results.

And we need to bear in mind the lesson from the Little Prince, that the most important things in life (ideals, dreams) are invisible to the eye. It is in attempting to carry out those dreams that mankind advances, that our lives are enriched and also fulfilled.

¹ Antoine de Saint Exupéry, "The Little Prince"; Harvest Book, Harcourt, Inc. Translation from the French by Richard Howard; English translation copyright 2000.

² A Greek myth provides us with one of the first "space flights" (and accidents): Icarus, son of the god Zeus, wanted to fly in space. His father indulged him, and made him a pair of wings, but also warned him not to get too close to the sun; otherwise, the wax on the wings would melt, and Icarus would fall. Like many a teen-ager, Icarus disregarded his father's advice, flew too close to the sun, the wings melted, and he fell back to Earth, into the ocean.

Zeus is in the news again —this time as the name of the Holdings Company that acquired Intelsat in December 2004.

³ Jules Verne, "From The Earth to The Moon" talks about launching a missile to the Moon. Sir Arthur Clarke's numerous "sci-fi" books have provided the seed of inspiration for many space activities, including communications via satellite.

⁴ In 1968, the UN General Assembly adopted the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space. UNGA Res.2345 (XXII); entered into force 1968. [Cited hereinafter as the Rescue Agreement, or ARRA].

⁵ Commercial Space Launch Act, P.L. 98-575, 30 Oct. 1984; 49 USC, Section 2601-23. This

Act has been amended several times, most recently in March 2004, to include commercial space launches for space tourism. According to the AST/FAA, the 2004 amendments to the Act provide details regarding safety approval procedures for the purpose of protecting the health and safety of crews and space flight participants. (See Commercial Space Launch Amendments Act of 2004, Public Law 108-492, Dec. 23, 2004, 118 STAT. 3975.) [Cited hereinafter as the Commercial Space Launch Act, or CSLA.]

⁶ 49 USC - Commercial Space Transportation; Chapter 701 deals with Commercial Space Launch Activities.

⁷ Many space activities came to a standstill with the Columbia shuttle accident, and the failure of several launches in 1986. These activities resumed in 1989, with the successful launch of PANAMSAT's satellite on board an Ariane launch vehicle. Since 1986, the Shuttle carries only US payloads.

⁸ In 1986, President Reagan signed an Executive Order, permitting Panamsat to launch a communication satellite in competition with INTELSAT, which at that time was one of three providers of international satellite telecommunications.

⁹ In August 2005, the press announced that Intelsat was acquiring Panamsat, thus making Intelsat the owner of the largest fleet of satellites -53 in all- and the owner of its first rival. See New York Times, 29 Aug. 2005.

¹⁰ About 50 years ago, Sir Arthur Clarke published a book, "2001- A Space Odyssey" that later became a film with the same title.

¹¹ Like the previous 2 launches, this one will take place from the Baikonur Cosmodrome in Kazakstan, according to *Space Future Journal*, 31 July 2005.

¹² The American Heritage Dictionary of the English Language provides the following definitions: "*Flight*": the motion of an object in or through a medium, especially through the earth's atmosphere or space, that is characterized by lack of contact with any other object, especially the earth. "*Tourism*": ...travelling for pleasure"; "*travel*" is "to journey from one place to another."

¹³ One source states that “sub-orbital’ generally refers to an *up-and-down* (i.e. mostly vertical) flight that reaches an altitude of around 100 km or more, but does not go into orbit around the earth.” www.hobbyspace.com/Tourism/index.html.

¹⁴ Even the popular press has taken notice of the potential impact of the Branson-Rutan joint venture. The January 2005 issue of *Wired* magazine features Branson on its cover, as well as an article (“Rocket Man”) on him. The April 2005 issue of *National Geographic*, in turn, has an article on Rutan, “Rocket for the Rest of Us.”

¹⁵ www.spacetoday_net/special_section_space_tourism.html, 29 July 2005. Will this kind of flight qualify as “space tourism”? See definitions, *supra*, note 12.

¹⁶ AstroExpo.com Top Weekly News, 22 August 2005.

¹⁷ See www.ast.faa.gov, for texts of the FAA’s Draft Guidelines, Version I, February 2005.

¹⁸ See U.S. Space Transportation Policy Fact Sheet; January 6, 2005. www.ast.faa.gov.

¹⁹ “[P]rivate industry has begun to develop commercial launch vehicles capable of carrying human beings into space and greater private investment in these efforts will stimulate the Nation’s commercial space transportation industry as a whole;...” Para. 11, CSLA., *supra*, note 5.

²⁰ While Art. II of the Outer Space Treaty states that “outer space...is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means”, some persons believe that private (not national) appropriation may be allowed. Perhaps they ignore the last phrase, “...by any other means,” which could include private claims of any kind.

²¹ Art. VI, Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies. Entered into force 1967. [Cited as the Outer Space Treaty, or OST hereinafter.] See also the FAA’s Draft Guidelines, note 17, and the US Space Transportation Policy, note 18, *supra*, which reiterate the US’s adherence to its international treaty obligations.

²² Art. II, Convention on International Liability for Damage Caused by Space Objects. Entered

into force 1972. [Cited as the Liability Convention hereinafter.]

²³ See discussions held at recent sessions of the UNCOPUOS Legal Sub-Committee.

²⁴ See Space News, 25 May 2005, for differing views on space tourism, and Space News, 2 May 2005, p.11 on the value of taking risks; also see Space Future - Space Tourism.html.

²⁵ For some “space geeks,” private space activity is “where the action is, not at NASA.” See “Thrillionaires--The New Space Capitalists,” by John Schwartz, The New York Times, 14 June 2005.

²⁶ www.hobbyspace.com/Tourism/index.html.

²⁷ Lawrence D. Roberts, “Planning A Trip Into Space? Bring Your Lawyer Along For the Ride”. *Ad Astra*, the magazine of the National Space Society, May/June 1998.

²⁸ “Joyride” is defined by the American Heritage Dictionary of the English Language as “a hazardous and often costly venture”. Certainly Space Adventures’ flights qualify as “space joyrides for the rich”, as they are called by one author. (See www.hobbyspace.com.)

²⁹ “The Little Prince”, *supra*, note 1.

³⁰ *Ibid.*, Chapter XXI.

³¹ *Ibid.*, Ch. XXV.

³² *Ibid.*, Ch. XXVII.

³³ OST, *supra*, note 21, *supra*.

³⁴ Liability Convention, *supra*, note 22.

³⁵ The International Academy of Astronautics (IAA) is engaged in a study on “Space Traffic Management”, which includes data on space debris, and also projections of future space activities. Its findings should be available at the 2005 International Astronautical Congress in Fukuoka, Japan.

³⁶ Art. V, OST, *supra*, note 21, declares that “States Parties to the Treaty shall regard astronauts as *envoys of mankind* in outer space and shall render to them all possible assistance in the event of accident, distress or emergency landing...” [Emphasis added.]

³⁷ *Ibid.* [Emphasis added.]

³⁸ See opening paragraph (“Noting”) of the Rescue Agreement, *supra*, note 4.

³⁹ CSLA, *supra*, note 5.

⁴⁰ The Little Prince, *supra*, note 1, Ch. XIII.