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## Contention One: Inherency

### The US space tourism industry is budding, but current ITAR regulations stunt its growth

Dinerman 2004 [Taylor Dinerman, expert in space journalism, specifically military and civilian space since 1983, The Space Review, “Space Tourism Meets ITAR,” http://www.thespacereview.com/article/245/1]

As the excitement over Burt Rutan’s big win dies down, it’s worth asking a few questions about where the budding space tourism industry goes from here. Judging from what has been published so far, the plan is for Virgin Galactic to finance the construction of five SpaceShipTwo vehicles, capable of carrying four or five passengers to the edge of space, flying from Mojave on a regular schedule. For the moment, it is also clear that these craft cannot be exported, or even flown, outside the US. As supersonic rockets, they naturally fall under the International Trade in Armaments Regulations (ITAR). Thus, the export of these vehicles or their subsystems will inevitably involve a difficult and expensive process in order to comply with these laws. In theory, these craft are about as dangerous as an ordinary executive jet, which, after all, could be transformed into a military reconnaissance aircraft or even a bomber. However, since their performance is so much greater and since the technology is not well understood by the regulators at the State Department, any attempt to take one of these craft out of the country will probably involve some difficult negotiations and, probably, some policy decisions that the government will not find easy. Let us suppose that Burt Rutan wants to take an operational version of SpaceShipOne to next year’s Paris Air Show. Scaled Composites would need to get an export license but, even before they could do that, they would need to register and begin to track all their proprietary company information, even if it were not classified. Even worse are the difficulties in dealing with non-US companies, and other possible problems if they have non-US citizens on their payroll. Fulfilling the legal obligations of ITAR, for a small company such as Scaled Composites or XCOR Aerospace, are almost impossible. To some extent, this is by design. Too often in the past vital military technology has been lost overseas because a small or medium-sized company was unable to realize what it was doing. Big companies, of course, have had their own problems with ITAR, but no one believes that Boeing or Lockmart are going to go out of business because they have trouble complying with the regulations. The FAA’s Office of Commercial Space Transportation (AST), the Commerce Department, the State Department, and the Department of Defense should consider setting up a coordinating body to deal with these issues before they become a threat to the delicate health of the infant suborbital space tourism industry. If, as seems quiet possible, the Commercial Space Transportation Amendments Act is dead for this year, next year’s version can be modified to include a simplified set of regulations covering, at least, the temporary export of space tourism vehicles. It may also turn out that these vehicles are covered by the Missile Technology Control Regime (MTCR). This was originally intended to keep Scud-type rockets out of the hands of people like Saddam and Kim Jong Il. We can all see how successful it’s been at that job. It has, however, complicated other efforts. For example, the export of the Israeli/American Arrow II anti-missile missile from Israel to the US for testing was almost prohibited by those in the US government whose job it is to protect the MTCR. The US has also found itself trying to stop India from buying Russian cryogenic rocket engines for its GSLV launch vehicle. The MTCR could very well apply to SpaceShipOne’s successors, for the simple reason that they will have to have far better flight controls than the vehicle that won the X Prize. They could conceivably be modified into air-launched ballistic missiles, similar to the ill fated Blue Streak of the early 1960s. A few years from now, one rich man’s suborbital space yacht could easily be turned into another man’s long-range ballistic missile. Considering that Rutan’s craft and the White Knight carrier plane were apparently designed and built for about 25 million dollars—the fly away price of an F-16 or a Gulfstream executive jet—it is not inconceivable that a rogue state may try to procure such a system for less-than-peaceful goals. The US government now has to reconcile two important national security imperatives: the need to nurture the infant suborbital industry and the need to insure that this technology does not fall too easily into hostile hands. Governments are traditionally far better at killing off infant industries than at nurturing them. Over the last decade, the US government has done a pretty good job of mostly leaving the entrepreneurs alone to pursue their efforts. Now that the industry is at a crucial fork in the road, the government should look very carefully at what steps it takes in dealing with these companies. The US desperately needs the benefits that come from the efforts of these adventurous spirits. A reinvigorated aerospace industry should be the overriding priority.

### No regulatory changes will be made in status quo – using the department of state is key

**Sundahl 2010** (Mark J., professor of International Business Transactions, Commercial Law, and Space Law at Cleveland State University, March, "Space Tourism and Export Controls: A Prayer for Relief,” <http://works.bepress.com/mark_sundahl/1>)

On August 13, 2009, the Obama administration announced that the President had ordered a broad-based review of U.S. export controls, which would presumably include a review of those controls applicable to space technology.7 However, no changes have yet been made and, given the complexity of the regulations and the political sensitivity of the topic of arms control, change is not expected anytime soon. In the meantime, the only hope for relief from the burdens of ITAR lies in the hands of the Department of State’s Directorate of Defense Trade Controls (DDTC), the administrative agency that oversees the application and enforcement of ITAR. As described in this Article, the DDTC has indicated that it is willing to exercise its administrative discretion in a manner that will enable the nascent human spaceflight industry to survive and even flourish in the global marketplace. This indication was given last year when the DDTC exempted Bigelow Aerospace from the need to acquire a license and comply with other requirements under ITAR before allowing foreign nationals aboard their expandable space stations. This ruling was heralded as a breakthrough for the human spaceflight industry which now hopes to be granted the opportunity to operate under a reduced regulatory burden, provided that the Bigelow ruling is extended to other spaceflight companies, such as those offering space tourism services.

## Contention \_\_: The Overview Effect

### First, humanity is like a fish trapped in the ocean—only going to space can explode these shackles and open room for fundamental transformation.

Frank White, author of six books about space exploration, founder of the Overview Effect Institute, frequently speaks at conferences about space exploration, holds a B.A. from Harvard College and an M.Phil. from Oxford University, 1987 (“The Explorer Fish,” *The Overview Effect: Space Exploration and Human Evolution*, Published by Houghton Mifflin Company, ISBN 0395430844, p. 6-7)

A fish glides through a liquid world, aware of light and dark, predators and prey, dimly perceiving the ocean bottom below. On occasion, it may leap out of the water and experience “something else” strange and different. That experience, however, is rare and not an essential element of the fish’s life. This is “fish consciousness” — in regard to land, water, air, and sky, the fish’s knowledge of reality is highly conditioned and extremely restricted by its physical surroundings. If you were a fish, you would have no idea what land is like and only the vaguest notion of what water is like, because water would be the fundamental medium in which you lived. An idea of “sky” would be far beyond your comprehension.

To us, it is a strange and limited life. However, in terms of consciousness and evolution, we are closer to living the life of a fish than we care to realize. Until recently, all human beings have existed in a state much like that of the fish and other marine animals. The planet Earth has been our ocean, from which we have been unable to escape. Even the remote possibility of leaving the planet became imaginable relatively recently.

As a result, it has been extremely difficult to conceive of life off [end page 6] the planet, and without direct experience, we have been limited to speculation. Scientists and science fiction writers have tried to understand the nature of the physical universe beyond our atmosphere, but their attempts were purely conceptual until 1961, when the first human being actually ventured into space.

Since that brief and historic orbital flight by Yuri Gagarin, about two hundred human beings have experienced this wholly new form of existence: living and working in space. Their nonterrestrial time has been brief — several months on the longest journey. Compared to the time humans have spent on this planet, their time in space is hardly measurable. Nevertheless, the vital importance of their experiences is beginning to emerge.

The evidence suggests that humanity’s expansion into the solar system and beyond will result in a fundamental transformation of the human species, an evolutionary step unprecedented in human history. To begin the process of understanding why this is so, let’s return to the example of our ancestors, the fish.

### Second, space exploration prevents human extinction and decreases the risk of war—it’s a bigger impact than anything we could imagine on Earth.

Gerard K. O’Neill, President of the Space Studies Institute, Professor Emeritus of Physics at Princeton University where he was one of the world’s most distinguished authors and scientists in the field of space colonization, holds a Ph.D. in Physics from Cornell University, 1987 (Foreword to *The Overview Effect: Space Exploration and Human Evolution* written by Frank White, Published by Houghton Mifflin Company, ISBN 0395430844, p. xiv-xv)

It is the hope of those who work toward the breakout from planet Earth that the establishment of permanent, self-sustaining colonies of humans off-Earth will have three vital consequences. First, it will make human life forever unkillable, removing it from the endangered species list, where it now stands on a fragile Earth over-armed with nuclear weapons. Second, the opening of virtually unlimited new land area in space will reduce territorial pressures and therefore diminish warfare on Earth itself. Third, the small scale of space colonies, the largest some tens of thousands of people, will lead to local governments that are simple in form, responsive to the desires of their people, and as reachable and intimate as were the New England town meetings of America’s heritage.

Beyond those immediate needs of survival and freedom, we look to our purpose as a species. We are far too diverse, far too contentious, and far too divided by conflicting religious and ideological dogmas ever to be likely to agree on a single long-term goal for humanity. And we are far too impatient, too short in our attention spans, to hold to such a goal for a time of many generations. But [end page xiv] fortunately, the realities of time and space in the era when humanity is freed of Earth’s bonds will lead inevitably to results that will transcend any program we might devise.

In a relatively short time they will bring a higher degree of independence to human communities than is now possible on Earth. In a longer time the effects of genetic drift will show, as human groups separated by great distances evolve into noticeably different forms of humanity. In a much longer time — but a time still short compared to the interval over which Homo sapiens evolved — there will spread throughout our galaxy a variety of civilizations, all traceable, though some may forget their origins, to one beautiful and precious planet, circling a minor star near the galaxy’s edge.

### Third, space exploration is a d-rule—it outweighs mere human survival.

Frank White, author of six books about space exploration, founder of the Overview Effect Institute, frequently speaks at conferences about space exploration, holds a B.A. from Harvard College and an M.Phil. from Oxford University, 1987 (“Prologue,” *The Overview Effect: Space Exploration and Human Evolution*, Published by Houghton Mifflin Company, ISBN 0395430844, p. xvii-xviii)

During the forced stand-down in the space program following the accident, many Americans asked themselves, “What is the fundamental purpose of space exploration; what is the vision that guides our space program?” It is appropriate that this debate ensued, because it is part of taking responsibility for what has happened in the past and what can happen in the future in space. In charting our future in space, we are also choosing our future in general, because space exploration is not just another government program. It may be a key to human survival and evolution, and perhaps even more than that. [end page xvii]

The thesis of this book is that we are not simply reaching out into space to use extraterrestrial resources and opportunities here on Earth. Rather, we are laying the foundations for a series of new civilizations that are the next logical steps in the evolution of human society and human consciousness.

That in itself should be enough to make us take space exploration seriously and to move ahead vigorously. However, I will also argue that human exploration of space may serve an even higher purpose than our own evolution as a species, performing a vital function for the universe as a whole.

Seen this way, space exploration is not a luxury to be pursued after other social priorities have been handled. Rather, it is the most important activity of all. It is important for everyone, but for Americans in particular, to grasp this point because of our heritage as explorers, innovators, and leaders.

A relevant interchange occurred on the television program “This Week with David Brinkley” shortly after the Challenger accident. At one point, columnist George Will said to author Tom Wolfe, “It seems we have justified space exploration in a very banal way; we have sold it on the basis that it produced nonstick frying pans and so on.”

“Yes,” responded Wolfe. “We have never had a philosophy of space exploration.”

With a new century and a new millennium only a few years away, the time is right for the people of the United States and of planet Earth to develop a comprehensive philosophy of space. The purpose of this book is to help begin that process. The goal is to focus on the vision and purpose of space exploration that the old space program sometimes failed to articulate and to show how a new space program can be different.

### Fourth, space exploration is key—only a different physical location makes possible a different worldview.

Frank White, author of six books about space exploration, founder of the Overview Effect Institute, frequently speaks at conferences about space exploration, holds a B.A. from Harvard College and an M.Phil. from Oxford University, 1987 (“The Overview Project,” *The Overview Effect: Space Exploration and Human Evolution*, Published by Houghton Mifflin Company, ISBN 0395430844, p. 3-4)

This line of thought led to a simple but important realization: mental processes and views of life cannot be separated from physical location. Our “world view” as a conceptual framework depends quite literally on our view of the world from a physical place in the universe. [end page 3]

Later, as the plane flew over the deserts and mountains of the western states, the flood of insights continued. I could look down on the network below and actually “see the future.” I knew that the car on Route 110 would soon meet up with that other car on Route 37, though the two drivers were not yet aware of it. If they were about to have an accident, I would see it, but they wouldn’t.

From the airplane, the message that scientists, philosophers, spiritual teachers, and systems theorists have been trying to tell us for centuries was obvious: everything is interconnected and interrelated, each part a subsystem of a larger whole system.

Finally, after I spent several hours looking out at Earth’s surface, all the insights linked into a single gestalt. This is how I expressed it at the time:

People living in space settlements will always have an overview! They will be able to see how everything is related, that what appears to be “the world” to people on Earth is merely a small planet in space, and what appears to be “the present” is merely a limited viewpoint to one looking from a higher level. People who live in space will take for granted philosophical insights that have taken those on Earth thousands of years to formulate. They will start at a place we have labored to attain over several millennia.

That moment of realization gave birth to the term “the overview effect,” which meant, at the time, the predicted experience of astronauts and space settlers, who would have a different philosophical point of view as a result of having a different physical perspective.

### Fifth, this slays their critiques: space exploration is not a technology but a state of mind—vote affirmative to endorse human possibility.

Frank White, author of six books about space exploration, founder of the Overview Effect Institute, frequently speaks at conferences about space exploration, holds a B.A. from Harvard College and an M.Phil. from Oxford University, 1987 (“Creating the Future,” *The Overview Effect: Space Exploration and Human Evolution*, Published by Houghton Mifflin Company, ISBN 0395430844, p. 182-183)

For the prisoners in the cave, the wider environment had always been there. Turning around and going up into the light did not create that wider environment, but it allowed them to perceive it more fully. Initially they were chained and could not leave to see the new reality. However, once one of their number had made the trek, it became their choice to continue staring into the darkness. “It didn’t help *him* very much,” they would say.

The people in the cave are like the imaginary detractors of the explorer fish, and they are frighteningly like us today. We fail to realize that we are in space, that we have the means to experience it on a vast scale, and that doing so will free us from the illusory reality in which we daily indulge. Instead, we spend our time trying to fit outer space into our current paradigm and criticizing our astronauts for failing to explain the light in terms that the darkness can understand. Unfortunately, this is the perfect prescription for our continued solitary confinement from the rest of the universe.

Going into space is not the point. Realizing that we are in space and beginning to deal with the broader implications is the point. We are in space and we cannot be anywhere else, ever. The question is whether our expanded awareness will have a positive impact on social evolution. Seen from this point of view, the issue is whether we are ready to mature as a species, look beyond our narrow [end page 182] parochial concerns, and become true citizens of the universe.

Realizing that we are in space is mind-expanding, but we hate to admit it because it brings us back up against the issues of awareness and choice today, not in the future. The new civilizations, like the Kingdom of God, are within us.

Ultimately, going to space is not about a technological achievement, but about the human spirit and our contribution to universal purpose. Space, as used in the new space movement, is a metaphor for expansiveness, opportunity, and freedom. More than a place or even an experience, it is a state of mind. It is a physical, mental, and spiritual dimension in which humanity can move beyond the current equilibrium point, begin to change, and eventually transform itself into something so extraordinary that we cannot even imagine it.

Space exploration, in all its forms, should become humanity’s modern central project, and the human space program the central project for all five billion of us. The goal should be to get us out of the cave, freeing us to see reality rather than the illusions that persist for a species chained to a planetary surface. The choice of becoming citizens of the universe can be rejected, but humanity can no longer plead ignorance of what is truly possible.

### Sixth - The experience of astronauts confirms our thesis—the Overview Effect promotes ecological awareness and peace.

Frank White, author of six books about space exploration, founder of the Overview Effect Institute, frequently speaks at conferences about space exploration, holds a B.A. from Harvard College and an M.Phil. from Oxford University, 1987 (“Disseminating the Overview,” *The Overview Effect: Space Exploration and Human Evolution*, Published by Houghton Mifflin Company, ISBN 0395430844, p. 73)

If the idea of the Overview Effect as a message is correct, it should be possible to see the overview experience being disseminated in support of a more peaceful, self-aware, and ecologically careful species. The link between that kind of social transformation and space exploration remains circumstantial, but there is good evidence that it exists. For example, many astronauts return from space with an intense interest in ecology. From space, it is easy for them to see the fragility and interdependence of Earth’s environment and the cost to humanity if anything is done to make the planet unlivable.

Seventh – their control turns don’t apply – going to space shifts the paradigm of planetary stewardship

Frank White, author of six books about space exploration, founder of the Overview Effect Institute, frequently speaks at conferences about space exploration, holds a B.A. from Harvard College and an M.Phil. from Oxford University, 1987 (“Disseminating the Overview,” *The Overview Effect: Space Exploration and Human Evolution*, Published by Houghton Mifflin Company, ISBN 0395430844, p. 75)

Many messages may be read into the view of the Earth from space. One is planetary management, the recognition that if the whole can be perceived, the whole can be the focus of practical as well as abstract interest. However, it should be clearly understood that planetary management does not mean planetary manipulation. Planetary management should be seen from a stewardship perspective and as participatory management at the highest level.

The clear message of the Overview Effect is that the Earth is a whole system and humanity one of many interdependent species calling the planet home. A regard for all life as sacred becomes a practical as well as moral position when we see the critical role that all life plays in maintaining the system.

If the next step in human social evolution is to build a planetary civilization, then what is most needed is the ability to see and deal with problems and opportunities on a planetary level. It is also the ability not only to observe, but truly communicate with, the planet as a whole. This message is implicit in the whole Earth symbol itself.

### Finally, allowing more passengers to access space travel will allow access to the overview effect

Sherwood, 11 [“Comparing future options for human space ﬂight,” by Brent Sherwood, NASA Jet Propulsion Laboratory, in Acta Astronautics 69, 2011, Elsevier publishers]

The second option is quite different: Space Passenger Travel. This option does not mean governments ﬂying passengers in space; rather it means focusing government HSF investment to develop technologies and remove barriers to accelerate the success and growth of a new, commercial space passenger travel industry. The precedent is NASA’s own predecessor, NACA, the National Advisory Committee for Aeronautics founded in 1915. Formed as an urgent war-time effort, the NACA went on to conduct the fundamental airfoil and other research that still underpins today’s commercial jet industry and modern supersonic ﬁghters. The core purpose of the Space Passenger Travel option would be to open space travel to ordinary people, thereby creating new travel-related industries to conduct and support it. Another expected outcome would be exposing large numbers of people to the Overview Effect: a perceptual shift documented to happen to space travelers, which deepens their appreciation for the unitary, fragile nature of Earth [14]. The Overview Effect is hypothesized to be caused by looking at Earth ‘‘from outside’’ while experiencing the detached sensation of microgravity. It tends to sensitize travelers to the planetary impacts of human territoriality and environmental destruction, and to deepen spiritual convictions. It is conceivable that large numbers of people experiencing this shift could begin to affect societal views through media and other memespreading communications. Such an outcome would be a legacy in the fourth column if unintended, or a ‘‘purpose’’ in the second column if used as a rationale. Increasingly affordable and accessible space travel could be a transformational contribution to humankind’s 21st century, more real than watching astronauts on TV. The core myth for this HSF option is the ‘‘Jet Set,’’ a theme arising in the mid-20th century that connotes the freedom, privilege, and transnational detachment of global travel embodied today by celebrity entrepreneurs like Richard Branson. While triggered by the commercial jet travel enabled by WW-II technology the Jet Set myth has roots as far back as the early-20th century Art Deco and International Style industrial design and architecture movements, which grew in response to early aviation speeds and materials. For a new myth it is remarkably pervasive: The Jetsons, a middle-class American family animated into a world of robots, ﬂying cars, and lunar vacations, and the Orbiter Hilton in 2001: A Space Odyssey depict instantly recognizable, resonant examples from the 1960s. Jet-setters, and the vast populations who admire and emulate them, tend to imagine that ﬂying into Earth orbit, or to the Moon, is something they will be able to do someday, and this aspiration makes the myth. An HSF program focused on accelerating Space Passenger Travel would actively, consciously promote the Jet Set myth. We know this HSF option is real because even without signiﬁcant government attention, sub-orbital tourism and orbital habitat development have attracted private investment. Against all odds, some entrepreneurs—Bigelow, Rutan, Branson, Musk, and others—are creating a ﬂedgling space tourism industry and there probably is a business case. A trip that couples the ride of your life with the unique sensations of weightlessness and the most poignant, ever-changing view in the solar system ﬁts our contemporary ‘‘experience economy.’’ Former B. Sherwood / Acta Astronautica 69 (2011) 346–353 349NASA Administrator Dan Goldin used to pound on the podium and declare, ‘‘Space tourism is not my job!’’ However there is no fundamental reason why it could not be; NASA’s HSF charter could be directed to accelerate Space Passenger Travel. The expected legacy of this HSF option would be as epochal as Explore Mars, but in quite different ways: (1) routine ﬂights between Earth and orbit on

competing spaceship ﬂeets; (2) in-space destinations with accommodations likely ranging from budget-utilitarian to highend resort; (3) in-space service industries, including dining, shopping, recreation and entertainment, medical care, and maintenance; (4) government space professionals would travel into orbit along with private passengers as they do today on commercial jets, and stay at commercial hotels while they work in orbit. A ﬁfth Another orbital passenger travel legacy (or again, it could be a driving purpose) would be half-orbit intercontinental travel, e.g., London-to-Sydney in less than an hour. However to accomplish this, the Space Passenger Travel option needs several breakthroughs exceeding the capacity of private enterprise without government help. (1) Earth-to-orbit transportation would have to be fully reusable for the commercial business case, and be reliable far beyond anything achieved so far by the world’s space programs. Paying passengers are not heroes; risk would be acceptable only in the same way it already is for air travel, e.g., with ‘‘four nines’’ or greater reliability. (2) A variety of unprecedented space-system technologies could become essential: large-volume habitats, very large windows, berthing mechanisms capable of thousands of cycles, fresh food production, air and solid-waste lifesupport loop closure, space surgery, rotating artiﬁcial gravity, sports, and public entertainment. (3) Targeting government research toward accelerating this new industry would require public–private partnerships like research consortia, port authorities, and company towns. (4) Not the least, the long-term radiation health of commercial crew corps and space workers would need to be managed, and they would need certiﬁcation. At a reasonable state of maturity (after 30 years of cumulative public–private investment?) the Space Passenger Travel option could achieve a continuous throughput of hundreds of thousands of citizens ﬂying in space per year, supported by thousands of professional crew and in-space workers (at typical terrestrial ratios, the latter would reach tens of thousands). Its historical signiﬁcance would be more subtle than the Explore Mars option: rather than historical headlines, an imperceptible but irreversible societal evolution.

## Contention \_\_: Get Off The Rock

### Extinction is inevitable if we don’t get off the rock – life on Earth will inevitably end as a result of expanding sun, asteroids, warming, or disease

Austen, 2011 [Ben Austen, contributing editor of Harper’s Magazine, “After Earth: Why, Where, How, and When We Might Leave Our Home Planet,” popular science, <http://www.popsci.com/science/article/2011-02/after-earth-why-where-how-and-when-we-might-leave-our-home-planet?page=3>] WZ

Earth won’t always be fit for occupation. We know that in two billion years or so, an expanding sun will boil away our oceans, leaving our home in the universe uninhabitable—unless, that is, we haven’t already been wiped out by the Andromeda galaxy, which is on a multibillion-year collision course with our Milky Way. Moreover, at least a third of the thousand mile-wide asteroids that hurtle across our orbital path will eventually crash into us, at a rate of about one every 300,000 years.

Why?

Indeed, in 1989 a far smaller asteroid, the impact of which would still have been equivalent in force to 1,000 nuclear bombs, crossed our orbit just six hours after Earth had passed. A recent report by the Lifeboat Foundation, whose hundreds of researchers track a dozen different existential risks to humanity, likens that one-in-300,000 chance of a catastrophic strike to a game of Russian roulette: “If we keep pulling the trigger long enough we’ll blow our head off, and there’s no guarantee it won’t be the next pull.” Many of the threats that might lead us to consider off-Earth living arrangements are actually man-made, and not necessarily in the distant future. The amount we consume each year already far outstrips what our planet can sustain, and the World Wildlife Fund estimates that by 2030 we will be consuming two planets’ worth of natural resources annually. The Center for Research on the Epidemiology of Disasters, an international humanitarian organization, reports that the onslaught of droughts, earthquakes, epic rains and floods over the past decade is triple the number from the 1980s and nearly 54 times that of 1901, when this data was first collected. Some scenarios have climate change leading to severe water shortages, the submersion of coastal areas, and widespread famine. Additionally, the world could end by way of deadly pathogen, nuclear war or, as the Lifeboat Foundation warns, the “misuse of increasingly powerful technologies.” Given the risks humans pose to the planet, we might also someday leave Earth simply to conserve it, with our planet becoming a kind of nature sanctuary that we visit now and again, as we might Yosemite.

None of the threats we face are especially far-fetched. Climate change is already a major factor in human affairs, for instance, and our planet has undergone at least one previous mass extinction as a result of asteroid impact. “The dinosaurs died out because they were too stupid to build an adequate spacefaring civilization,” says Tihamer Toth-Fejel, a research engineer at the Advanced Information Systems division of defense contractor General Dynamics and one of 85 members of the Lifeboat Foundation’s space-settlement board. “So far, the difference between us and them is barely measurable.” The Alliance to Rescue Civilization, a project started by New York University chemist Robert Shapiro, contends that the inevitability of any of several cataclysmic events means that we must prepare a copy of our civilization and move it into outer space and out of harm’s way—a backup of our cultural achievements and traditions. In 2005, then–NASA administrator Michael Griffin described the aims of the national space program in similar terms. “If we humans want to survive for hundreds of thousands or millions of years, we must ultimately populate other planets,” he said. “One day, I don’t know when that day is, but there will be more human beings who live off the Earth than on it.”

### Space tourism allows us to get off the rock – it is the only way to spur motivation

Parsons, 2007 [Catherine E Parsons, Chapman Law Review, 2005-2006, JD Candidate, Chapman University School of Law, BS in Mathematics, “Space Tourism: Regulating Passage to the Happiest Place on Earth,” http://heinonline.org/HOL/Page?handle=hein.journals/chlr9&div=22&g\_sent=1&collection=journals]WZ

Space tourism is a very young industry and unique in many respects. As with any emerging industry, there are many ques- tions surrounding its very existence. In these early years, all that space tourism can be is entertainment-a luxury good for the slightly space-obsessive and wealthy. A preliminary question must be addressed: why should space tourism be encouraged? The simple answer is: why not?9 The overarching answer is that history has demonstrated that there are three main ways to spur innovations in technology-war, necessity, and entertainment.O Through entertainment, space tourism will at a minimum pro- vide an opportunity for regular people to explore the unknown; the industry also has great potential to be a source of incredible technological innovations.

Immediately after the United States won the space race by placing a man on the moon, space exploration technology was no longer a priority in the United States' Cold War agenda and was put on the political back-burner.1 As moon landings became routine, public interest and political support for National Aero- nautics and Space Administration (NASA) declined.12 Govern- ment development of manned space technology did not cease en- tirely, but it came close.,3 The same space shuttles that went into service in 1981 are still NASA's only means of transporting a human into space. 14 NASA has continued its existence and made remarkable scientific findings despite its slim support, but after two space shuttle disasters have essentially grounded the fleet since 2003, NASA's future is tenuous at best.15 Even President Bush's recent proposal to include a return to the moon in NASA's budget seems to have fallen on deaf ears, as congressional and public support concentrates on domestic issues.16 The public commitment to the space race that existed in the 1960's is simply not there anymore; today, people only support tax expenditures in the interest of national defense or in response to necessity.17

Waiting to investigate the vast possibilities of space explora- tion until emergencies arise will result in an inordinately small window of time to accomplish the difficult feats necessary to evade disaster. Emergencies triggering necessity include limited resources,' 8 the dying sun problem,19 asteroid strikes,20 and other planetary or stellar catastrophes-all of which are not theoreti- cally pressing matters, at least to current knowledge.21 The ne- cessity for escaping the planet is not immediate enough to moti- vate investment now-the initial monetary commitment for speculative and far-off profits is too great.

Entertainment, however, has proven to be the great motiva- tor of the modern era. People in their spare time turn to a myr- iad of activities for entertainment, from video games and movies to skydiving and rock climbing. In the age of globalization and a consumer society, the latest gadgets and toys have put technol- ogy front and center in the casual entertainment arena. Most importantly, by its nature, entertainment has stressed safety within the expansion of its development.

War and necessity regularly foster demand before technology is fully developed, resulting in greater risks to safety than are normally permitted.22 However, in today's consumer market- place, particularly in the entertainment sector where luxury good lawsuits are a part of everyday business,23 such safety risks are not tolerated.24 Currently, the only market for space tourism is affluent space enthusiasts, and the main motivation for such an individual to purchase a ticket is simple enjoyment and enter- tainment.25 If this experience is not presented and maintained as safe as possible, then demand will disappear.26

A prime example of the entertainment business driving technology is the video game industry's effect on computer hard- ware. Sony's most recent game console, the PlayStation 3, is still in development.27 This next generation in video game enter- tainment will feature the revolutionary Cell processor, a piece of hardware about the size of a thumbtack with processing power comparable to that of a supercomputer, ten times the power of the Pentium 4 processor.28

With individuals and industries increasingly relying on com- puters and other technological advancements, companies like Sony can utilize entertainment as a means to recover develop- ment costs and generate initial profits. This consequently drives companies to create what consumers ultimately want: something smaller, better, and faster. Gainers willing to spend hundreds of dollars on video game systems and games provide funding for further computer technology research and development.29 This fuels creative ventures that, although less profitable in the short term, ultimately aid companies in discovering the technology of the future, both safely and efficiently.30

In anticipation of this result, the impact of the Cell chip is already growing: IBM intends to use Sony's Cell chip to run its new line of blade servers.3 1 Sony, Toshiba and IBM recently re- newed their partnership for another five years.32 Originally de- veloped for the entertainment industry in Sony's PlayStation 3, the partnership is now fully "pitching to the defense, medical and entertainment industries."33 This is an excellent example of not only how war, necessity and entertainment can drive the creation of technology, but also how entertainment can fund technology that will later assist in the defense and medical industries. Likewise, space exploration will develop from space entertain- ment, and with it will come prime capital and safe technology de- velopment, later creating the tools and systems necessary to en- hance and sustain other industries, such as mineral gathering and deep space exploration.34

### Low cost orbital space tourism will spill over to infrastructure to live on the Moon or Mars

Collins and Autino, 2009 [Patrick Collins, economics professor at Azabu University in Japan specialist in space economics, tourism, reusable launch vehicles, and SSP, co founder of Space Future Consulting. Adriano Autino, founder of Andromeda Inc., Italy. Acta Astronautica, “What the growth of a space tourism industry could contribute to employment, economic growth, environmental protection, education, culture, and world peace,” http://www.sciencedirect.com/science?\_ob=MImg&\_imagekey=B6V1N-4XG3D5J-1-3&\_cdi=5679&\_user=655954&\_pii=S0094576509004512&\_origin=&\_coverDate=07%2F31%2F2010&\_sk=999339988&view=c&wchp=dGLzVlz-zSkzS&\_valck=1&md5=626854edf87d271fcb65ca489e551f30&ie=/sdarticle.pdf]WZ

Investment in low-cost orbital access and other space infrastructure will facilitate the establishment of settle- ments on the Moon, Mars, asteroids and in man-made space structures. In the first phase, development of new regulatory infrastructure in various Earth orbits, including property/usufruct rights, real estate, mortgage financing and insurance, traffic management, pilotage, policing and other services will enable the population living in Earth orbits to grow very large. Such activities aimed at making near-Earth space habitable are the logical extension of humans’ historical spread over the surface of the Earth. As trade spreads through near-Earth space, settlements are likely to follow, of which the inhabitants will add to the wealth of different cultures which humans have created in the many different environments in which they live.

Success of such extra-terrestrial settlements will have the additional benefit of reducing the danger of human extinction due to planet-wide or cosmic accidents [27]. These horrors include both man-made disasters such as nuclear war, plagues or growing pollution, and natural disasters such as super-volcanoes or asteroid impact.It is hard to think of any objective that is more important than preserving peace. Weapons developed in recent decades are so destructive, and have such horrific, long-term side- effects that their use should be discouraged as strongly as possible by the international community. Hence, reducing the incentive to use these weapons by rapidly developing the ability to use space-based resources on a large scale is surely equally important [11,16]. The achievement of this depends on low space travel costs which, at the present time, appear to be achievable only through the development of a vigorous space tourism industry.

### The plan solves – expansion of space tourism is key to unlock price improvements to access mass colonization and space expansion

Globus, 08 [Space Tourism Leads to Space Settlement,” by Al Globus, Senior Research Associate at San Jose State University Research Foundation and chairs the space settlement committee of the National Space Society, Fri, Aug 1, 2008, National Space Society, http://www.nss.org/tourism/settlement.htm]

Space tourism is a reality. Four tourists have traveled to the International Space Station (ISS) at their own expense and at least four companies are developing sub-orbital tourist vehicles (Virgin Galactic, Space Adventures, Rocketplane Kistler, and Blue Origin). Not only does space tourism extend the freedom to travel into space for those with the means, it promises a profitable market to develop the launch vehicles necessary to expand life throughout the solar system. Space tourism may solve the single most difficult problem holding up space settlement: safe and inexpensive transportation from the surface of the Earth to Low Earth Orbit.

Present launch capabilities, while sufficient for communications, remote sensing, some space science and limited manned operations, are grossly inadequate for large scale space settlement. By space settlement we mean very large numbers of people living in giant orbital spacecraft, on the Moon, on Mars and/or within large asteroids. Space settlement could provides humanity with hundreds of times more living area, thousands of time more physical resources, and millions of times more energy [1, 2] than is presently at our disposal. Such a vast expansion of the resources available to human civilization would eliminate the need, although perhaps not the practice, of resource-driven war. Such warfare kills and maims large numbers of people and destroys their work. Substantially better launch capacity is a necessary precursor to space settlement, but progress over the last 50 years has been disappointing. Space tourism may change that.

Over the last 50 years a wide variety of launchers have been developed, up to and including the U.S. Space Shuttle, the most capable space vehicle to date. However, in spite of decades of development, Earth-to-Orbit transportation costs thousands of dollars per kilogram and suffers a catastrophic failure rate of a one or two percent. Worse, these figures have not improved with time. For example, the Saturn V was developed in the 1960’s to put men on the Moon. This vehicle cost less, measured in man-hours per ton to LEO (Low Earth Orbit), than today’s major launch vehicles [3]. Furthermore, the Saturn never suffered a catastrophic failure, although there were many close calls. By contrast, current shuttle costs run between $500-1,000 million per flight to deliver, at most, a few tens of tons of payload to the International Space Station, and the shuttle has suffered two catastrophic failures in just over a hundred flights.

Aircraft developed much more rapidly in their first 50 years. This may be because hundreds of thousands, if not millions, of flights occurred in that period, but we have only launched a few thousand payloads into space. Substantial launch vehicle improvement may require tens of thousands of launches per year, not the current 50-70 [4]. Unfortunately, current markets for space launch: communications, Earth-observing, science, national prestige, etc. cannot support hundreds of launches per year, let alone tens of thousands. However, a new space market has recently been created: Space Adventures, Ltd. and the Russian space program have flown four tourists to the ISS, reputedly for about $20 million apiece. Although the ISS was originally intended to serve a host of space applications, it has not yet done so for a variety of reasons. Space tourism may be the legacy of- the ISS, and it could be a very good one indeed.

The only market for humans-in-space potentially capable of sustaining thousands of flights per year is tourism, if the cost is in the $100,000 range or less. If the price is in the $10,000 range, millions of flights can be supported. Published market research suggests that the space tourism market may become very large if the price is right. In 1994, Patrick Colins, et al. [5] found that the Japanese market could provide about one million customers per year for space flight at about $10,000 per passenger. In 1996, Sven Abitzsch [6] found that approximately 20% of the U.S., Canadian and German populations and nearly 40% of the Japanese population would be will to pay over $10,000 (actually, six months salary) for a trip into space. This represents nearly a hundred million people. In 1999, Oily Barrett [7] found that 12% of United Kingdom residents, representing 3.5 million people, said they were willing to pay over $10,000 for a trip to space. In 2001, Crouch [8] surveyed the literature and found that the global space tourism market is a strong function of price, with an annual demand of five million per year at $10,000 per flight and 170 at $500,00 per flight, representing annual markets of $5 billion and $85 million respectively. Table 1 shows Crouch’s demand vs. price per ticket. If these projections are optimistic by no more than a factor of ten, and the price per ticket can be brought down sufficiently, there is good reason to believe space tourism can support tens of thousands of launches per year or more, a rate comparable to the early decades of aviation. price/ticket (1994 $) passengers/year $1,000 20 million $10,000 5 million $100,000 400 thousand $250,000 1,000 $500,000 170 Table 1. Projected demand for orbital tourism as a function of price [8].

All human-capable orbital vehicles to date have been developed as national projects by the U.S., Russia/USSR, and China. For sub-orbital vehicles the picture is quite different. Spurred by the $10 million Ansari X-Prize, a change in the way launch development was rewarded, Scaled Composites, LLC built and flew SpaceShipOne into space twice in as many weeks in 2004. Interestingly, these were the only U.S. manned space flights that year as the Shuttle was grounded after a fatal accident in 2003. While Scaled Composites reportedly spent considerably more than the purse to win, other commercial deals involving advertising and technology sales netted a small profit [9]. As a direct result, Scaled is now developing SpaceShipTwo for Virgin Galactic. Virgin Galactic is building a space port in New Mexico and intends to fly tourists into space for two hundred thousand dollars per trip within a few years. Furthermore, Virgin has serious competitors.

Space tourism may lead to large numbers of people traveling to space in the next few decades. Burt Rutan, the technical genius behind SpaceShipOne, made a prediction in a 2004 talk in San Jose, CA: Within 5 years 3,000 tourists will have been to space. Within 15 years sub-orbital tourism will be affordable, and 50,000 people will have flown. Within 15 years the first, expensive orbital tourist flights will have happened. Within 25 years orbital tourism will be affordable.

Space settlement has tremendous potential benefits for mankind but requires a much more robust and inexpensive launch capacity than is available today. Traditional approaches to improving launch have failed to deliver a sufficiently capable system over the last few decades and shows little promise of doing so. To address this issue, we propose orienting launch development towards the tourist market, which, at the right price, is large enough to support tens of thousands of flights per year. Just as computers once cost millions of dollars and were only available to the few, space tourism today is the province of the wealthy. However, as the cost of computers plunged, they have become part of everyday life for the world’s middle-class. Space tourism promises to do something similar for personal space flight. Just as one day millions of years ago life, for whatever reason, crawled out of the oceans and onto dry land, space tourism may well begin the spread of life throughout our solar system.

### Colonization is possible.

Jon **Stanhope**, MLA, Chief Minister – Canberra Times – September 23, 200**9** – lexis

The colonisation of Mars or the moon could be achieved for no more than the cost of the present invasion of Afghanistan, and the much more costly war with Iran next year. Let's dump them in favour of the colonisation of Mars. We can then continue our growth economy off-planet, lifting the burden from the overloaded Earth. Our techno- scientific civilisation, with its unique expertise in colonisation, is the first ever capable of spreading Earth-life out into the solar system. If we do not undertake that task, our civilisation will shrivel before collapsing in about a century from now, and the life of Earth will be trapped on its home planet, to die with it.

### Err Aff – Reducing existential risk by even a tiny amount outweighs every other impact — the math is conclusively on our side.

Nick **Bostrom**, Professor in the Faculty of Philosophy & Oxford Martin School, Director of the Future of Humanity Institute, and Director of the Programme on the Impacts of Future Technology at the University of Oxford, recipient of the 2009 Eugene R. Gannon Award for the Continued Pursuit of Human Advancement, holds a Ph.D. in Philosophy from the London School of Economics, **2011** (“The Concept of Existential Risk,” Draft of a Paper published on ExistentialRisk.com, Available Online at <http://www.existentialrisk.com/concept.html>, Accessed 07-04-2011)

Holding probability constant, risks become more serious as we move toward the upper-right region of figure 2. For any fixed probability, existential risks are thus more serious than other risk categories. But just how much more serious might not be intuitively obvious. One might think we could get a grip on how bad an existential catastrophe would be by considering some of the worst historical disasters we can think of—such as the two world wars, the Spanish flu pandemic, or the Holocaust—and then imagining something just a bit worse. Yet if we look at global population statistics over time, we find that these horrible events of the past century fail to register (figure 3).

[Graphic Omitted] Figure 3: World population over the last century. Calamities such as the Spanish flu pandemic, the two world wars, and the Holocaust scarcely register. (If one stares hard at the graph, one can perhaps just barely make out a slight temporary reduction in the rate of growth of the world population during these events.) But even this reflection fails to bring out the seriousness of existential risk. What makes existential catastrophes especially bad is not that they would show up robustly on a plot like the one in figure 3, causing a precipitous drop in world population or average quality of life. Instead, their significance lies primarily in the fact that they would destroy the future. The philosopher Derek Parfit made a similar point with the following thought experiment: I believe that if we destroy mankind, as we now can, this outcome will be much worse than most people think. Compare three outcomes:(1) Peace.(2) A nuclear war that kills 99% of the world’s existing population (3) A nuclear war that kills 100%.(2) would be worse than (1), and (3) would be worse than (2). Which is the greater of these two differences? Most people believe that the greater difference is between (1) and (2). I believe that the difference between (2) and (3) is very much greater. … The Earth will remain habitable for at least another billion years. Civilization began only a few thousand years ago. If we do not destroy mankind, these few thousand years may be only a tiny fraction of the whole of civilized human history. The difference between (2) and (3) may thus be the difference between this tiny fraction and all of the rest of this history. If we compare this possible history to a day, what has occurred so far is only a fraction of a second. (10: 453-454)

To calculate the loss associated with an existential catastrophe, we must consider how much value would come to exist in its absence. It turns out that the ultimate potential for Earth-originating intelligent life is literally astronomical.

One gets a large number even if one confines one’s consideration to the potential for biological human beings living on Earth. If we suppose with Parfit that our planet will remain habitable for at least another billion years, and we assume that at least one billion people could live on it sustainably, then the potential exist for at least 1018 human lives. These lives could also be considerably better than the average contemporary human life, which is so often marred by disease, poverty, injustice, and various biological limitations that could be partly overcome through continuing technological and moral progress. However, the relevant figure is not how many people could live on Earth but how many descendants we could have in total. One lower bound of the number of biological human life-years in the future accessible universe (based on current cosmological estimates) is 1034 years.[10] Another estimate, which assumes that future minds will be mainly implemented in computational hardware instead of biological neuronal wetware, produces a lower bound of 1054 human-brain-emulation subjective life-years (or 1071 basic computational operations).(4)[11] If we make the less conservative assumption that future civilizations could eventually press close to the absolute bounds of known physics (using some as yet unimagined technology), we get radically higher estimates of the amount of computation and memory storage that is achievable and thus of the number of years of subjective experience that could be realized.[12] Even if we use the most conservative of these estimates, which entirely ignores the possibility of space colonization and software minds, we find that the expected loss of an existential catastrophe is greater than the value of 1018 human lives. This implies that the expected value of reducing existential risk by a mere one millionth of one percentage point is at least ten times the value of a billion human lives. The more technologically comprehensive estimate of 1054 human-brain-emulation subjective life-years (or 1052 lives of ordinary length) makes the same point even more starkly. Even if we give this allegedly lower bound on the cumulative output potential of a technologically mature civilization a mere 1% chance of being correct, we find that the expected value of reducing existential risk by a mere one billionth of one billionth of one percentage point is worth a hundred billion times as much as a billion human lives.

One might consequently argue that even the tiniest reduction of existential risk has an expected value greater than that of the definite provision of any “ordinary” good, such as the direct benefit of saving 1 billion lives. And, further, that the absolute value of the indirect effect of saving 1 billion lives on the total cumulative amount of existential risk—positive or negative—is almost certainly larger than the positive value of the direct benefit of such an action.[13]

### Prefer our impact framing –Magnitude outweighs timeframe in the case of asteroids – their authors underestimate threats and a change in impact assessment is necessary to anticipate catastrophic impacts

Chichilnisky and Eisenberger, 2010 [Garciela Chichilnisky, professor at Columbia University, former UNESCO professor of mathematics and economics, negotiator in the Kyoto Protocol, Co-founder of the concept of the carbon market, part of the Intergovernmental Panel on Climate Change [received the Nobel Prize for peace in 2007], Peter Eisenberger, fellow of the American Physical Society and The American Assocaition for the Advancement of Science, former chair of the Advisory Committee in the Mathematical and Physical Science division of the National Science Foundation, “Asteroids: Accessing Catastrophic Risk,” Journal of Probability and Statistics, http://www.hindawi.com/journals/jps/2010/954750/]WZ

The purpose of this paper is to provide answers to these questions. We examine systematically how to deal with catastrophic risks such as asteroid impacts, which are small-probability events with enormous consequences, events that could threaten the survival of our species, and compare their treatment with risks like global warming that are more imminent and familiar but possibly less catastrophic. The task is not easy. Classic tools for risk management are notoriously poor for managing catastrophic risks, (see Posner [2] and Chichilnisky [3, 4]). There is an understandable tendency to ignore rare events, such as an asteroid impact, which are unlikely to occur in our lifetimes or those of our families [2, 5]. Yes this is a questionable instinct at this stage of human evolution where our knowledge enables to identify such risks. Standard decision tools make this task difficult. We show using the existing data that a major disturbance caused by global warming of less than 1 % of GDP overwhelms in expected value the costs associated with an asteroid impact that can plausibly lead to the extinction of the human species. We show that the expected value of the loss caused by an asteroid that leads to extinction—is between $ 5 0 0 million and $ 9 2 billion. A loss of this magnitude is smaller than that of a failure of a single atomic plant—the Russians lost more than $ 1 4 0 billion with the accident at Chernobyl—or with the potential risks involved in global warming that is between $ 8 9 0 billion and $ 9 . 7 trillion [2]. Using expected values therefore we are led to believe that preventing asteroid impacts should not rank high in our policy priorities. Common sense rebels against the computation we just provided. The ability to anticipate and plan for threats that have never been experienced by any current or past member of the species and are unlikely to happen in our lifespans, appears to be unique to our species. We need to use a risk management approach that enables us to deal more effectively with such threats [2]. To overcome this problem this paper summarizes a new axiomatic approach to catastrophic risks that updates current methods developed initially by John Von Neumann, see Chichilnisky [3, 4, 6–9], and offers practical figures to evaluate possible policies that would protect us from asteroid impacts. Our conclusion is that we are underinvesting in preventing the risk of asteroid like threats. Much can and should be done at a relatively small cost; this paper suggests a methodology and a range of dollar values that should be spent to protect against such risks to help prevent the extinction of our species.

## Contention \_\_: U.S. Competitiveness

### **ITAR regulations are “second only to gravity” in challenging US dominance in space tourism – China and Russia will challenge the US absent ITAR relaxation**

Unnikrishnan, 2009 [Madhu Unnikrishnan, staff writer, Aviation Week, “Commercial Spaceflights may be restricted,” http://www.aviationweek.com/aw/generic/story.jsp?id=news/Spaceflight050409.xml&headline=Commercial%20Spaceflights%20May%20Be%20Restricted&channel=space]

The way U.S. export controls work for space technologies could prevent commercial space operators from taking non-U.S. citizens on spaceflights, and the industry is urging reform of the system to prevent U.S. companies from being overtaken by foreign competitors. It is not just hardware and technologies that are covered by the International Traffic in Arms Regulation (ITAR) rules, but also passengers, and this will hamper such companies as Virgin Galactic and Bigelow Aerospace from taking non-U.S. citizens into space. Non-U.S. citizens who book a flight on Virgin Galactic could, in theory, see sensitive materials and are therefore covered under ITAR rules, said Marc Holzapfel, the company's senior counsel, during a press event in Washington April 29. "Reforming ITAR will allow us to fly a Canadian citizen into space without his getting a security clearance," he said. The "outdated" ITAR rules are a challenge "second only to gravity" in keeping the U.S. commercial space industry on the ground, said Michael Gold, director of Bigelow Aerospace's Washington office. Noting that European providers are marketing "ITAR-free" components and technologies, Gold warned that the U.S. industry could let European competitors erode their business. Bigelow has been active in lobbying the government to change ITAR rules. "We think hardware should be [covered] under ITAR," Gold said, "but passengers should be exempted." The company is working with the departments of State and Commerce to change the rules, and so far has found the government receptive. "State doesn't like ITAR," he said, adding that the real problem lies in Congress. "Congress created a bigger problem than already existed," said Rep. C.A. Ruppersberger (D-Md.), who oversees these regulations on the House Select Committee on Intelligence. Dominance of the commercial space industry could very well shift to China or Russia unless ITAR is reformed, he said. Ruppersberger plans to meet with Commerce Secretary Gary Locke to discuss further reforms, and proposes calling for a high-level working group of industry representatives, congressional staffers from both his committee and the Committee on Foreign Relations, and representatives from the State, Commerce and Defense departments. Relaxing some of the ITAR provisions would take an act of "political bravery," according to Tim Hughes, vice president and chief counsel for commercial space launch provider SpaceX. Even the suggestion by a member of Congress could lead to accusations of being soft on defense, he explained. "But the commercial arguments are so compelling," he said.

### Their demand defense doesn’t apply – recent studies show commercial spaceflight would generate $600 million in its first year

Ziliotto, 2009

[Véronique, European Space Research and Technology Centre, “Relevance of the futron/zogby survey conclusions to the current space tourism industry,” Acta Astronautica, [http://www.sciencedirect.com/science?\_ob=MImg&\_imagekey=B6V1N-4XC3X36-3-5&\_cdi=5679&\_user=655954&\_pii=S0094576509004378&\_origin=search&\_zone=rslt\_list\_item&\_coverDate=07%2F31%2F2010&\_sk=999339988&wchp=dGLzVzb-zSkzk&md5=707c5c4d99c0379d4546b9c5dd3af8fc&ie=/sdarticle.pdf](http://www.sciencedirect.com/science?_ob=MImg&_imagekey=B6V1N-4XC3X36-3-5&_cdi=5679&_user=655954&_pii=S0094576509004378&_origin=search&_zone=rslt_list_item&_coverDate=07%2F31%2F2010&_sk=999339988&wchp=dGLzVzb-zSkzk&md5=707c5c4d99c0379d4546b9c5dd3af8fc&ie=/)]WZ

The current definitive market study for space tourism was conducted by the Futron Corporation in 2002 and updated in 2006 for its suborbital part [3]. Given the nature of spaceflight, the choice of the interviewees is the key parameter to select a valid sample that can be extrapolated to a realistic worldwide forecast. Futron therefore conducted 450 phone interviews of a respon- dent pool of US ‘‘millionaires’’, i.e. with a household income of at least US$250,000 annually, or a minimum net worth of US$1 million. The objective was to address the crucial questions about the viability of the space tourism industry (size of the market, growth potential and customer characteristics) in an unbiased way in order to make a realistic prognostic over a 20-year period.

Starting with the base population of ‘‘affluent house- holds’’, Futron narrowed the number of potential custo- mers by applying several filters to take into account the specific constraints of suborbital space travel such as the expense, interest in suborbital spaceflight at the current prices, pioneering reduction (customers whose main motivation is to be a pioneer) and fitness requirements. The full market maturity was believed to be reached over a timeline of 40 years. The market diffusion model is a Fisher-Pry curve (‘‘S’’ curve), which is a standard pattern to describe the absorption of new technological product.

The initial 2002 Futron conclusions were updated in 2006 to take into account the recent achievements in the domain of suborbital flight, and most notably the heavily covered media events surrounding the creation of Virgin Galactic. The updates concerned the start date of the market, shifted from 2002 to 2006; the initial ticket price that was set to US$200,000 by Virgin Galactic, instead of US$100,000 in the initial study; new population wealth statistics that leads to an increase of potential customers; the passengers fitness requirements, believed to be less stringent than expected if we refer to Virgin Galactic’s current medical check-up and pre-flight tests.

The forecasts of the Futron survey are summarized in the two following graphs (Fig. 1). The base service price (US$200,000) would be maintained for the first three years of service, and then would gradually decline over the following decade to US$50,000 by 2021. This forecast does not assume any supply constraints after service launch, as the service capacity and technical details of potential vehicles were not established at the time of the survey. The estimated demand for the year 2021 would be over 13,000 passengers, generating revenues in excess of US$600 million.

### We’ll isolate several internal links –

### First is Growth: Expansion of space tourism will allow for billions in profit a year and limitless economic growth

Collins and Autino, 2009 [Patrick Collins, economics professor at Azabu University in Japan specialist in space economics, tourism, reusable launch vehicles, and SSP, co founder of Space Future Consulting. Adriano Autino, founder of Andromeda Inc., Italy. Acta Astronautica, “What the growth of a space tourism industry could contribute to employment, economic growth, environmental protection, education, culture, and world peace,” http://www.sciencedirect.com/science?\_ob=MImg&\_imagekey=B6V1N-4XG3D5J-1-3&\_cdi=5679&\_user=655954&\_pii=S0094576509004512&\_origin=&\_coverDate=07%2F31%2F2010&\_sk=999339988&view=c&wchp=dGLzVlz-zSkzS&\_valck=1&md5=626854edf87d271fcb65ca489e551f30&ie=/sdarticle.pdf]WZ

Reducing the cost of space travel to 1% of existing launch vehicles’ costs, in combination with the growth of a new consumer service market in space, would greatly aid the growth of many commercial space activities, thereby creating numerous new business opportunities both on Earth and in space. This process is already at work on a small scale in relation to sub-orbital flight services: in addition to a large number of travel companies acting as agents for sub-orbital flights (including JTB, the largest travel company in Japan), Zero-G Corporation supplies parabolic flight services, Bigelow Aerospace is developing the first space hotel, Spaceport Associates advises on spaceport design, Orbital Outfitters Inc. supplies custo- mised flight suits, spaceports are being developed in several places, and several support organisations have been established. All of this activity is occurring some years before the first high-priced services even start, so a much wider range of different space travel-related businesses are sure to grow in future.

In the case of orbital services there will be an even wider range of companies with much larger revenues, including companies supplying various services to orbit- ing hotels. These will include services which terrestrial hotels typically purchase today, such as catering, cleaning, accounting, entertainment, plus such additional services as space-based window maintenance, air supply, solar- generated electricity, water supply, waste disposal ser- vices, and others.

As activities in orbit expand progressively, they could grow to include use of materials extracted from the Moon and near-Earth asteroids and cometoids, of which the potential has been researched for several decades [11]. Due to the much higher cost of activities in orbit than on

the surface of the Earth, orbiting hotels seem likely to create the first market for non-terrestrial materials like ice, water, oxygen and hydrogen, as discussed in [12].

Another potentially major space-based industry, which has been held back for 40 years by high launch costs, is the supply of solar power from space to Earth. Although the potential of this system was recognised in studies by the US Department of Energy in the late 1970s, and confirmed in the 1990s [13], total funding has remained minimal. However, progress could be rapid once launch costs fall to a few percent of ELV costs [14]. Hence, as passenger space travel activities expand to large scale, a growing range of manufacturing activities in Earth orbit, on the lunar surface and elsewhere could develop spontaneously, driven by entrepreneurial effort to exploit new business opportunities opened up by the growth of new commer- cial markets in Earth orbit. These will in turn open the door to the large-scale space activities described in [11].

The growth of orbital passenger space travel to several million passengers/year over a few decades would represent a direct commercial turnover of some 100 billion Euros/year. In such a scenario of rapid growth, annual investment in new facilities, research and devel- opment might add the same amount again. Indeed, having reached such a scale, there would be no foreseeable limit to further growth—in particular it need not be limited, like terrestrial activities, by environmental or political constraints. Quite apart from the numerous opportunities which such a scenario offers for growth of the space industry, it also offers great potential benefits for humanity, in several different fields, as discussed in turn in the following.

### Second is Jobs: Incentivizing space tourism would create millions of jobs – that’s key to the economy

Collins and Autino, 2009 [Patrick Collins, economics professor at Azabu University in Japan specialist in space economics, tourism, reusable launch vehicles, and SSP, co founder of Space Future Consulting. Adriano Autino, founder of Andromeda Inc., Italy. Acta Astronautica, “What the growth of a space tourism industry could contribute to employment, economic growth, environmental protection, education, culture, and world peace,” http://www.sciencedirect.com/science?\_ob=MImg&\_imagekey=B6V1N-4XG3D5J-1-3&\_cdi=5679&\_user=655954&\_pii=S0094576509004512&\_origin=&\_coverDate=07%2F31%2F2010&\_sk=999339988&view=c&wchp=dGLzVlz-zSkzS&\_valck=1&md5=626854edf87d271fcb65ca489e551f30&ie=/sdarticle.pdf]WZ

In most countries, most of the population do not have economically significant land holdings, and so employ- ment is the economic basis of social life, providing income and enabling people to have stable family lives. The high level of unemployment in most countries today is there- fore not only wasteful, it also causes widespread poverty and unhappiness, and is socially damaging, creating further problems for the future. One reason for investing in the development of passenger space travel, therefore, is that it could create major new fields of employment, capable of growing as far into the future as we can see.

As of 2001, the hotel, catering and tourism sector was estimated to employ 60 million people world-wide, or 3% of the global workforce, and 6% of Europeans [15]. Hence we can estimate that the passenger air travel industry, including airlines, airports, hotels and other tourism- related work, indirectly employs 10–20 times the number of people employed in aircraft manufacturing alone. Likewise, passenger space travel services could presum- ably create employment many times that in launch vehicle manufacturing—in vehicle operations and main- tenance, at spaceports, in orbiting hotels, in many companies supplying these, in services such as staff training, certification and insurance, and in a growing range of related businesses.This possibility is particularly valuable because high unemployment, both in richer and poorer countries, has been the major economic problem throughout the world for decades. Consequently the growth of such a major new market for advanced aero- space technology and services seems highly desirable, as discussed further in [16].

By contrast, in recent years employment in the traditional space industry in USA and Europe has been shrinking fast: a 2003 report by the US Federal Aviation Administration stated that employment in launch vehicle manufacturing and services fell from 28,617 in 1999 to 4828 in 2002, while employment in satellite manufactur- ing fell from 57,372 to 31,262 [17]. Likewise, European space industry employment fell by 20% from 1995 to 2005; the major space engineering company Astrium cut 3300 staff from 2003 through 2006; and in 2005 alone, European prime contractors cut 13.5% of their staff or some 2400 people [18]. Unfortunately, the probability of space industry employment recovering soon is low, because satellite manufacturing and launch services face both low demand and rapidly growing competition from India and China, where costs are significantly lower.

It is therefore positively bizarre that government policy-makers have declined to even discuss the subject of investing in the development of passenger space travel services, and have permitted no significant investment to date out of the nearly 20 billion Euro-equivalents which space agencies spend every year! This is despite the very positive 1998 NASA report ‘‘General Public Space Travel and Tourism’’ [19], and the NASA-funded 2002 ‘‘ASCENT’’ study referred to above [2,3].

In the capitalist system, companies compete to reduce costs since this directly increases their profits. However, reducing the number of employees through improving productivity raises unemployment, except to the extent that new jobs are created in new and growing industries. In an economy with a lack of new industries, increasing so-called ‘‘economic efficiency’’ creates unemployment, which is a social cost. In this situation, governments concerned for public welfare should either increase the rate of creation of new industries, and/or slow the elimination of jobs, at least until the growth of new industries revives, or other desirable counter-measures, such as new social arrangements, are introduced. These may include more leisure time, job-sharing, and other policies designed to prevent the growth of a permanent ‘‘under-class’’ of unemployed and ‘‘working poor’’—a development which would pose a major threat to western civilisation.

One of the many ill effects of high unemployment is that it weakens governments against pressure from corporate interests. For example, increased restrictions on such undesirable activities as arms exports, unfair trade, environmental damage, corporate tax evasion, business concentration, advertising targeted at children, and anti-social corporate-drafted legislation such as the ‘‘codex alimentarus’’, ‘‘tort reform’’ and compulsory arbitration are socially desirable. However, when unem- ployment is high, corporations’ arguments that govern- ment intervention would ‘‘increase unemployment’’ have greater influence on governments.

As outlined above, the opening of near-Earth space to large-scale economic development, based initially on passenger space travel services, promises to create millions of jobs, with no obvious limits to future growth. At a time when high unemployment is the most serious economic problem throughout the world, developing this family of new industries as fast as possible should be a priority for employment policy. To continue economic ‘‘rationalisation’’ and ‘‘globalisation’’ while not developing space travel is self-contradictory, and would be both economically and socially very damaging.

### Third is Small Business: ITAR regulations make it so small companies can’t compete and large companies will not be able to compete internationally

Foust, 2005 [Jeff Foust, aerospace analyst, editor of the space review, “One Nation, Over Regulated: is ITAR stalling the new space race?” Ad Adastra, http://www.nss.org/adastra/volume17/itar.html]

While the satellite and launch industries have become well aware of the effects and consequences of export controls, the up- and-coming space tourism industry is only now starting to grapple with the implications of ITAR. One of the first ventures to have to deal with export controls is Virgin Galactic, an offshoot of British- based Virgin Group that has contracted with Scaled Composites for a vehicle based on SpaceShipOne. "After U.S. government technology transfer issues are clarified and addressed if deemed necessary, we hope to place a firm order for the spacecraft," Will Whitehorn, president of Virgin Galactic, said at a Congressional hearing on space tourism in April 2005. "At this point, due to uncertainty about possible licensing requirements, we are not able to even view Scaled Composites' designs for the commercial space vehicle." While well-funded companies like Virgin Galactic have the resources to deal with ITAR—the company is in the process of obtaining an export license from the State Department—it is a bigger hurdle for smaller, often cash-strapped entrepreneurial ventures. "ITAR is a royal pain for entrepreneurs," says Chuck Lauer, director of business development for Rocketplane Limited, an Oklahoma-based company developing a suborbital reusable launch vehicle for space tourism applications. During a presentation at the Space Access '05 conference in Phoenix in April, Lauer half-jokingly sped through a 277-slide PowerPoint presentation from the company's recent preliminary design review for its XP vehicle. His goal: to ostensibly put the project in the public domain and thus out of the purview of ITAR, but shown at a speed far too fast for anyone to digest. Some in the industry are concerned that, in a worst-case scenario, ITAR could greatly restrict who could fly on future space tourism vehicles. Because vehicle operators may have to share some technical information about their vehicles with passengers for safety reasons, those companies might have to get a license for every non-U.S. passenger they fly. That, some fear, could greatly restrict the number of passengers that would fly on U.S.-based vehicles, making it difficult for those companies to succeed or pushing the space tourism market overseas.

### Fourth is Education: Commercial space tourism would inspire generations of science-oriented students

Collins and Autino, 2009 [Patrick Collins, economics professor at Azabu University in Japan specialist in space economics, tourism, reusable launch vehicles, and SSP, co founder of Space Future Consulting. Adriano Autino, founder of Andromeda Inc., Italy. Acta Astronautica, “What the growth of a space tourism industry could contribute to employment, economic growth, environmental protection, education, culture, and world peace,” http://www.sciencedirect.com/science?\_ob=MImg&\_imagekey=B6V1N-4XG3D5J-1-3&\_cdi=5679&\_user=655954&\_pii=S0094576509004512&\_origin=&\_coverDate=07%2F31%2F2010&\_sk=999339988&view=c&wchp=dGLzVlz-zSkzS&\_valck=1&md5=626854edf87d271fcb65ca489e551f30&ie=/sdarticle.pdf]WZ

The educational value of space activities is well known: children and young people find the subject of space and space travel uniquely fascinating. A number of space- based, science-fiction films and television series have achieved extraordinary popularity, extending over dec- ades. As a result, various organisations have created space-related educational programmes involving satellite design, small rockets and simulation of space flights. Unfortunately, while these activities are popular with the participants, it has to be recognised that they are not effective in increasing young people’s scientific education overall, which continues to decline in most countries. That is, children who enjoy science classes find satellite projects inspiring, but these classes do not prevent the ‘‘flight from science’’ seen in rich countries, which is so dangerous for the successful continuation of civilisation.- However, the possibility of being able to travel to space themselves at an affordable price is of much greater interest to young people than watching videos of other people traveling to space, or than simulating traveling to space. Hence the start of low-cost passenger space travel services holds unique promise for education in fields related to space travel. In particular, the expectation that the price of a sub-orbital flight could fall as low as just a few thousand Euros [8,32] as the service grows to millions of passengers/year, offers the possibility of almost all children being able to take a flight sometime. This possibility can be used as a uniquely stimulating teaching tool. In addition, a scenario like that shown in Fig. 1 will employ tens of thousands of staff in orbit within a few decades—a uniquely exciting goal for young people to aim for.

### **Science education is key to economic competitiveness**

CLA News 8 [Collins Learning Academy, “Report: Retool Instruction, or U.S. Will Fail,” Sept 10 <http://www.collinslearningacademy.com/parents.htm>]

Creating a 21st-century education system that prepares students, workers, and citizens to triumph in the global skills race is the central economic competitiveness issue currently facing the United States, according to a new report from the Partnership for 21st Century Skills (P21). The report provides a sobering wake-up call for the nation's civic and education leaders. The report, called "21st Century Skills, Education, and Competitiveness," argues that for the United States to be globally competitive--and for states to attract growth industries and create jobs--the nation requires a fresh approach to education that recognizes the critical role 21st-century skills play in the workplace. The report summarizes the challenges and opportunities that, if left unaddressed, would curtail U.S. competitiveness and diminish the nation's standing in the world economy. It urges policy makers and leaders in business, education, and workforce development to use the report as a resource for shaping policies that are attuned to competitive needs. We need to recognize that education is the bedrock of competitiveness--the engine, not simply an input, of the economy," the report says. It notes that the country's economic output has changed dramatically over the past 30 years, and there is no sign this trend will stop. In 1967, the production of material goods (such as cars and equipment) and the delivery of material services (such as transportation and construction) accounted for nearly 54 percent of the country's economic output. However, by 1997, the development of information products (such as computers) and the delivery of information services (such as financial and broadcast services) accounted for 63 percent of the country's output. As the world continues to shift from an industrial economy to a service economy driven by information, knowledge, and innovation, cultivating 21st-century skills is vital to economic success, the report states. While the global economy has been changing, the United States has focused primarily on closing domestic achievement gaps and largely has ignored the growing necessity of graduating students capable of filling emerging job sectors, according to the report. And while focusing nationally on closing achievement gaps between the lowest and highest performing students has been a legitimate and useful agenda, the report asserts that this goal has skirted the competitive demand for advanced skills. "Equally important to the domestic achievement gap is the global achievement gap between U.S. students--even top performers--and their international counterparts," said Paige Kuni, worldwide manager of K-12 education for Intel Corp. and P21 chair. "Quite simply, for the United States to stay economically viable and remain a world leader, the country must make closing all achievement gaps a national priority." Abroad, developed and competing nations have focused on imparting a different set of skills--21st-century skills--to their graduates, because these skills increasingly power the wealth of nations, the report says. Furthermore, businesses now require workers who can handle more responsibility and contribute more to productivity and innovation. In fact, from 1995 to 2005, the United States lost three million manufacturing jobs, but, during that same time, 17 million service-sector jobs were created. It is critical that the United States graduate students capable of filling those jobs and keeping pace with the change in skill demands, the report warns. "It has become apparent that there isn't a lack of employees who are technically proficient, but a lack of employees who can adequately communicate and collaborate, innovate, and think critically," said Ken Kay, P21 president. "At this pivotal moment in our nation's history, legislators and policy makers must focus on the outcomes we know produce graduates capable of competing in the 21st century and forging a viable economic future.

Competitiveness key to every major hotspot, heg and economic growth

Friedberg & Schoenfeld 8 (Aaron Friedberg is a professor of politics and international relations at Princeton University's Woodrow Wilson School. Gabriel Schoenfeld, senior editor of Commentary, is a visiting scholar at the Witherspoon Institute in Princeton, N.J., “The Dangers of a Diminished America,” Wall Street Journal, October 21, 2008, http://online.wsj.com/article/SB122455074012352571.html]

With the global financial system in serious trouble, is America's geostrategic dominance likely to diminish? If so, what would that mean? One immediate implication of the crisis that began on Wall Street and spread across the world is that the primary instruments of U.S. foreign policy will be crimped. The next president will face an entirely new and adverse fiscal position. Estimates of this year's federal budget deficit already show that it has jumped $237 billion from last year, to $407 billion. With families and businesses hurting, there will be calls for various and expensive domestic relief programs. In the face of this onrushing river of red ink, both Barack Obama and John McCain have been reluctant to lay out what portions of their programmatic wish list they might defer or delete. Only Joe Biden has suggested a possible reduction -- foreign aid. This would be one of the few popular cuts, but in budgetary terms it is a mere grain of sand. Still, Sen. Biden's comment hints at where we may be headed: toward a major reduction in America's world role, and perhaps even a new era of financially-induced isolationism. Pressures to cut defense spending, and to dodge the cost of waging two wars, already intense before this crisis, are likely to mount. Despite the success of the surge, the war in Iraq remains deeply unpopular. Precipitous withdrawal -- attractive to a sizable swath of the electorate before the financial implosion -- might well become even more popular with annual war bills running in the hundreds of billions. Protectionist sentiments are sure to grow stronger as jobs disappear in the coming slowdown. Even before our current woes, calls to save jobs by restricting imports had begun to gather support among many Democrats and some Republicans. In a prolonged recession, gale-force winds of protectionism will blow. Then there are the dolorous consequences of a potential collapse of the world's financial architecture. For decades now, Americans have enjoyed the advantages of being at the center of that system. The worldwide use of the dollar, and the stability of our economy, among other things, made it easier for us to run huge budget deficits, as we counted on foreigners to pick up the tab by buying dollar-denominated assets as a safe haven. Will this be possible in the future? Meanwhile, traditional foreign-policy challenges are multiplying. The threat from al Qaeda and Islamic terrorist affiliates has not been extinguished. Iran and North Korea are continuing on their bellicose paths, while Pakistan and Afghanistan are progressing smartly down the road to chaos. Russia's new militancy and China's seemingly relentless rise also give cause for concern. If America now tries to pull back from the world stage, it will leave a dangerous power vacuum. The stabilizing effects of our presence in Asia, our continuing commitment to Europe, and our position as defender of last resort for Middle East energy sources and supply lines could all be placed at risk. In such a scenario there are shades of the 1930s, when global trade and finance ground nearly to a halt, the peaceful democracies failed to cooperate, and aggressive powers led by the remorseless fanatics who rose up on the crest of economic disaster exploited their divisions. Today we run the risk that rogue states may choose to become ever more reckless with their nuclear toys, just at our moment of maximum vulnerability. The aftershocks of the financial crisis will almost certainly rock our principal strategic competitors even harder than they will rock us. The dramatic free fall of the Russian stock market has demonstrated the fragility of a state whose economic performance hinges on high oil prices, now driven down by the global slowdown. China is perhaps even more fragile, its economic growth depending heavily on foreign investment and access to foreign markets. Both will now be constricted, inflicting economic pain and perhaps even sparking unrest in a country where political legitimacy rests on progress in the long march to prosperity. None of this is good news if the authoritarian leaders of these countries seek to divert attention from internal travails with external adventures. As for our democratic friends, the present crisis comes when many European nations are struggling to deal with decades of anemic growth, sclerotic governance and an impending demographic crisis. Despite its past dynamism, Japan faces similar challenges. India is still in the early stages of its emergence as a world economic and geopolitical power. What does this all mean? There is no substitute for America on the world stage. The choice we have before us is between the potentially disastrous effects of disengagement and the stiff price tag of continued American leadership. Are we up for the task? The American economy has historically demonstrated remarkable resilience. Our market-oriented ideology, entrepreneurial culture, flexible institutions and favorable demographic profile should serve us well in whatever trials lie ahead. The American people, too, have shown reserves of resolve when properly led. But experience after the Cold War era -- poorly articulated and executed policies, divisive domestic debates and rising anti-Americanism in at least some parts of the world -- appear to have left these reserves diminished. A recent survey by the Chicago Council on World Affairs found that 36% of respondents agreed that the U.S. should "stay out of world affairs," the highest number recorded since this question was first asked in 1947. The economic crisis could be the straw that breaks the camel's back.

### Economic downturn causes war

Mead 9 (Henry , Sr fellow in U.S. Foreign Policy at the Council on Foreign Relations, *The New Republic*, 2/4/09, http://www.tnr.com/politics/story.html?id=571cbbb9-2887-4d81-8542-92e83915f5f8&p=2) ET

So far, such half-hearted experiments not only have failed to work; they have left the societies that have tried them in a progressively worse position, farther behind the front-runners as time goes by. Argentina has lost ground to Chile; Russian development has fallen farther behind that of the Baltic states and Central Europe. Frequently, the crisis has weakened the power of the merchants, industrialists, financiers, and professionals who want to develop a liberal capitalist society integrated into the world. Crisis can also strengthen the hand of religious extremists, populist radicals, or authoritarian traditionalists who are determined to resist liberal capitalist society for a variety of reasons. Meanwhile, the companies and banks based in these societies are often less established and more vulnerable to the consequences of a financial crisis than more established firms in wealthier societies. As a result, developing countries and countries where capitalism has relatively recent and shallow roots tend to suffer greater economic and political damage when crisis strikes--as, inevitably, it does. And, consequently, financial crises often reinforce rather than challenge the global distribution of power and wealth. This may be happening yet again. None of which means that we can just sit back and enjoy the recession. History may suggest that financial crises actually help capitalist great powers maintain their leads--but it has other, less reassuring messages as well. If financial crises have been a normal part of life during the 300-year rise of the liberal capitalist system under the Anglophone powers, so has war. The wars of the League of Augsburg and the Spanish Succession; the Seven Years War; the American Revolution; the Napoleonic Wars; the two World Wars; the cold war: The list of wars is almost as long as the list of financial crises. Bad economic times can breed wars. Europe was a pretty peaceful place in 1928, but the Depression poisoned German public opinion and helped bring Adolf Hitler to power. If the current crisis turns into a depression, what rough beasts might start slouching toward Moscow, Karachi, Beijing, or New Delhi to be born? The United States may not, yet, decline, but, if we can't get the world economy back on track, we may still have to fight.

### The U.S. is still critical- trade, investment, jobs, and remittance exportation make this true – this article is ASSUMPTIVE of decoupling

Kohn6/26/08 (Donald L., PhD – Econ “Global Economic Integration and Decoupling” http://www.federalreserve.gov/newsevents/speech/kohn20080626a.htm) MFR

Global Integration through Trade and Finance Undoubtedly, economies have become more integrated in recent decades. For example, U.S. imports of goods and services have risen relative to the U.S. gross domestic product (GDP), from 10 percent in the second half of the 1980s to nearly 18 percent today. U.S. trade with other industrialized countries has more than doubled over this same period. Industrialized country trade with emerging market economies has experienced a far more dramatic increase.2 These increases in trade are the natural result of various forces. Transport costs have been a big factor. Air shipping costs have declined over time, although some of this has been eroded recently with greater security costs and the rise in fuel prices. Costs of ocean shipping have come down, due to containerization, bulk shipping, and other efficiencies.3 Policy-induced barriers, such as tariffs and other means of restraining international trade, also have declined, with progress especially marked in developing Asia and in Eastern Europe after the breakup of the Soviet Union. Additionally, information about production opportunities in foreign countries has become easier to attain, promoted in part by immigrants and multinational companies facilitating networking and by the enhanced availability of information through the Internet. These developments have led to expanded trade in traditional manufactured goods, but also have led to an expanded breadth of types of traded goods and especially services. As a consequence of these developments, internationally integrated production has risen. From the U.S. perspective, this rise has primarily occurred through growth in the import share of intermediate inputs used across all private industries. In the last decade alone, the imported input share rose from around 8-1/4 percent in 1997 to 10-1/2 percent by 2006. The international movement of workers leads to macroeconomic consequences, particularly for smaller developing countries. In 2007, an estimated $240 billion in remittances went to developing countries, more than double the flow in 2001. These remittances represent a significant source of developing country income and broaden the scope for cyclical spillovers.4 Another area of impressive growth in international linkages has been in financial services. We've seen increased cross-listings of stocks and more cross-border ownership and control of exchanges, banks, and securities settlement systems. Outside of the United States, in 1997, 15 percent of the assets in private equity portfolios were in foreign equities. A decade later, this share has risen to 24 percent. For U.S. investors, the comparable shares grew from 9 percent of total equity portfolios to 19 percent. Bond portfolios have also become more international, especially for foreign investors. While financial integration has occurred globally, this growth has been uneven. Integration among industrialized countries, measured by the ratio of the sum of their foreign assets and liabilities to GDP, has tripled since 1990, while an analogous measure for emerging and developing economies has increased only about 50 percent.5 One result of this financial integration is that the financial channels are growing in importance in the transmission of shocks between economies.6 The extent of this integration has become painfully evident to investors and financial institutions during the current episode of financial turmoil, with the collapse of the subprime mortgage market in the United Statesspreading losses and funding pressures to many corners of the globe. Recent analysis of the size and sources of spillovers between the United States, the euro area, Japan, and other industrial countries finds a central role for international trade. But spillovers also occur through commodity prices and through financial variables such as short- and long-term interest rates and equity prices.7 For example, when liquidity conditions tighten in one country, globally active banks may attempt to pull liquidity from overseas affiliates, reducing the liquidity consequences at home but simultaneously transmitting the shock abroad.8 What is particularly interesting is that in some cases, financial linkages might now be more important for transmission than the traditional trade linkages.

### INDEPENDENTLY, ITAR regulations make it so small companies can’t compete and large companies will not be able to compete internationally

Foust, 2005 [Jeff Foust, aerospace analyst, editor of the space review, “One Nation, Over Regulated: is ITAR stalling the new space race?” Ad Adastra, http://www.nss.org/adastra/volume17/itar.html]

While the satellite and launch industries have become well aware of the effects and consequences of export controls, the up- and-coming space tourism industry is only now starting to grapple with the implications of ITAR. One of the first ventures to have to deal with export controls is Virgin Galactic, an offshoot of British- based Virgin Group that has contracted with Scaled Composites for a vehicle based on SpaceShipOne. "After U.S. government technology transfer issues are clarified and addressed if deemed necessary, we hope to place a firm order for the spacecraft," Will Whitehorn, president of Virgin Galactic, said at a Congressional hearing on space tourism in April 2005. "At this point, due to uncertainty about possible licensing requirements, we are not able to even view Scaled Composites' designs for the commercial space vehicle." While well-funded companies like Virgin Galactic have the resources to deal with ITAR—the company is in the process of obtaining an export license from the State Department—it is a bigger hurdle for smaller, often cash-strapped entrepreneurial ventures. "ITAR is a royal pain for entrepreneurs," says Chuck Lauer, director of business development for Rocketplane Limited, an Oklahoma-based company developing a suborbital reusable launch vehicle for space tourism applications. During a presentation at the Space Access '05 conference in Phoenix in April, Lauer half-jokingly sped through a 277-slide PowerPoint presentation from the company's recent preliminary design review for its XP vehicle. His goal: to ostensibly put the project in the public domain and thus out of the purview of ITAR, but shown at a speed far too fast for anyone to digest. Some in the industry are concerned that, in a worst-case scenario, ITAR could greatly restrict who could fly on future space tourism vehicles. Because vehicle operators may have to share some technical information about their vehicles with passengers for safety reasons, those companies might have to get a license for every non-U.S. passenger they fly. That, some fear, could greatly restrict the number of passengers that would fly on U.S.-based vehicles, making it difficult for those companies to succeed or pushing the space tourism market overseas.

### New industries are key to U.S. leadership

Rocco Martino, 2007, Ph.D. in astrophysics from the Institute of Aerospace Studies, Senior Fellow at the Foreign Policy Research Institute, former Professor of Mathematics at NYU, former Professor of Systems Engineering at the University of Waterloo, Spring, “A Strategy for Success: Innovation Will Renew American Leadership”, Orbis, Vol. 51, No. 2, KK

Much of the foreign policy discussion in the United States today is focused upon the dilemma posed by the Iraq War and the threat posed by Islamist terrorism. These problems are, of course, both immediate and important. However, America also faces other challenges to its physical security and economic prosperity, and these are more long-term and probably more profound. There is, ﬁrst, the threat posed by our declining competitiveness in the global economy, a threat most obviously represented by such rising economic powers as China and India. There is, second, the threat posed by our increasing dependence on oil imports from the Middle East. Moreover, these two threats are increasingly connected, as China and India themselves are greatly increasing their demand for Middle East oil. The United States of course faced great challenges to its security and economy in the past, most obviously from Germany and Japan in the ﬁrst half of the twentieth century and from the Soviet Union in the second half. Crucial to America’s ability to prevail over these past challenges was our technological and industrial leadership, and especially our ability to continuously recreate it. Indeed, the United States has been unique among great powers in its ability to keep on creating and recreating new technologies and new industries, generation after generation. Perpetual innovation and technological leadership might even be said to be the American way of maintaining primacy in world affairs. They are almost certainly what America will have to pursue in order to prevail over the contemporary challenges involving economic competitiveness and energy dependence

### Strong staffed space presence means a strong US primacy—tourism can fill in for the cancelled spaceflight program

**Sundahl 2010** (Mark J., professor of International Business Transactions, Commercial Law, and Space Law at Cleveland State University, March, "Space Tourism and Export Controls: A Prayer for Relief,” <http://works.bepress.com/mark_sundahl/1>)

In addition to the economic interests at stake, the United States has a strong interest in ensuring the success of U.S. human spaceflight companies from the standpoint of national security. A strong space presence has for a long time been an important component of American strength and national security.64 Now that the Obama administration plans to eliminate NASA’s spaceflight program and rely instead on the private space industry to meet the government’s spacefaring needs, it has become essential for the government to make every effort to facilitate the success of the private spacefight industry – which at this point means supporting the space tourism industry. This does not mean that certain export controls cannot be kept in place when required to prevent the proliferation of dangerous technologies, but it does mean that the DDTC should grant exemptions wherever possible in order to ease the regulatory burden on these young companies.

Hegemony prevents extinction

Khalizad 11 (Zalmay, United States ambassador to Afghanistan, Iraq, and the United Nations, The National Review, “The Economy and National Security” 2-8, http://www.nationalreview.com/articles/259024/economy-and-national-security-zalmay-khalilzad?page=1

If U.S. policymakers fail to act and other powers continue to grow, it is not a question of whether but when a new international order will emerge. The closing of the gap between the United States and its rivals could intensify geopolitical competition among major powers, increase incentives for local powers to play major powers against one another, and undercut our will to preclude or respond to international crises because of the higher risk of escalation. The stakes are high. In modern history, the longest period of peace among the great powers has been the era of U.S. leadership. By contrast, multi-polar systems have been unstable, with their competitive dynamics resulting in frequent crises and major wars among the great powers. Failures of multi-polar international systems produced both world wars. American retrenchment could have devastating consequences. Without an American security blanket, regional powers could rearm in an attempt to balance against emerging threats. Under this scenario, there would be a heightened possibility of arms races, miscalculation, or other crises spiraling into all-out conflict. Alternatively, in seeking to accommodate the stronger powers, weaker powers may shift their geopolitical posture away from the United States. Either way, hostile states would be emboldened to make aggressive moves in their regions.

## Plan

### The United States Department of State's Directorate of Defense Trade Controls should grant a "passenger experience" exemption from International Traffic in Arms Regulations to space tourism companies.

## Contention \_\_\_: Solvency

### The DDTC is able to suspend ITAR regulations

**Sundahl 2010** (Mark J., professor of International Business Transactions, Commercial Law, and Space Law at Cleveland State University, March, "Space Tourism and Export Controls: A Prayer for Relief,” <http://works.bepress.com/mark_sundahl/1>)

Despite the strict controls on the export of space technology described in the preceding sections, Section 126.3 of ITAR grants the DDTC broad discretion to suspend the application of the regulations as follows: In a case of exceptional or undue hardship, or when it is otherwise in the interest of the United States Government, the Director, Office of Defense Trade Controls may make an exception to the provisions of this subchapter. This short provision allows the DDTC to suspend the application of ITAR (which composes the entire “subchapter” referred to in this section) under the circumstances described. As written, the discretion should be utilized primarily in cases of “exceptional or undue hardship,” but can also be applied under any circumstances in order to serve “the interest of the United States Government.” No further guidance is given regarding the type of governmental interest would allow for the suspension of ITAR, which means that it could potentially be of any nature, whether based on national security, diplomatic concerns, or commercial interests. The discretion provided by Section 126.3 was apparently instrumental in the Bigelow ruling and will also allow for the extension of the Bigelow ruling to the space tourism companies, as explained in the following sections.

### Granting the DDTC ITAR exemption would set a precedent to increase space tourism innovation and have space tourism survive in the long term

**Sundahl 2010** (Mark J., professor of International Business Transactions, Commercial Law, and Space Law at Cleveland State University, March, "Space Tourism and Export Controls: A Prayer for Relief,” <http://works.bepress.com/mark_sundahl/1>)

When the DDTC receives the requests from the space tourism companies to render the “passenger experience” exempt from ITAR – as was done for Bigelow Aerospace – the DDTC should grant this exemption for two reasons. First, the refusal to grant such an exemption to the space tourism companies would render the Bigelow ruling a nullity. Second, the circumstances for granting an exemption under Section 126.3 of ITAR are clearly met in the case of space tourism companies in light of (i) the exceptional hardship that would be caused by the strict application of ITAR and (ii) the strong interest that the United States has in supporting the success of the private human spaceflight industry.

The first point is a rather obvious one, namely, that the DDTC’s previous ruling regarding Bigelow’s operations would be meaningless unless similar relief is granted to the companies that will deliver people to the Bigelow space stations. The companies that Bigelow is likely to rely upon to deliver scientists, manufacturers, and recreational visitors to its space stations are likely to be the same companies that are now offering suborbital tourism. These companies will continue to refine their technology until they are able to provide orbital delivery. However, without relief from ITAR the tourism companies may not be able to survive even for the short term, let alone long enough to develop orbital delivery capabilities. And without such services being available, Bigelow Aerospace’s space station venture will collapse since there is no sense in placing a space station in orbit if they will stand empty.

# Inherency/Solvency Materials

## DDTC Defenses

### DDTC is key—other branches aren’t acting

**Sundahl 2010** (Mark J., professor of International Business Transactions, Commercial Law, and Space Law at Cleveland State University, March, "Space Tourism and Export Controls: A Prayer for Relief,” <http://works.bepress.com/mark_sundahl/1>)

Finally, as discussed in the following section, if the DDTC does not provide relief to the space tourism industry, then it is likely that no relief will be provided to the space industry, since neither Congress nor the President are likely to act given the political paralysis that has gripped our nation’s capital.

### DDTC has issued a “passenger experience” exemption in the past

**Sundahl 2010** (Mark J., professor of International Business Transactions, Commercial Law, and Space Law at Cleveland State University, March, "Space Tourism and Export Controls: A Prayer for Relief,” <http://works.bepress.com/mark_sundahl/1>)

One way that a company can escape the burdens of ITAR compliance is to ask the DDTC to remove the company’s technology from the USML by way of a “commodity jurisdiction request” (referred to hereinafter as a “CJ request”).50 When submitting a CJ request, the applicant is requesting that the DDTC remove the applicant’s technology from the USML, thus transferring the technology to the jurisdiction of the Department of Commerce which regulates exports under the more lenient Export Administration Regulations.51 On December 27, 2007, Bigelow Aerospace submitted a CJ request to the DDTC seeking to remove its expandable space platform technology from the USML.52 Although the DDTC typically makes a determination within sixty days of a submission, a decision was not to be issued in this case for sixteen months.53 The suspense was broken on April 22, 2009 when Bigelow Aerospace announced that the DDTC had responded favorably to its CJ request.54 The DDTC had ruled that the presence of foreign nationals on a Bigelow space station as well as the training of these private astronauts and marketing efforts, referred to collectively by Mr. Gold as the “passenger experience,” was “non-licensable” under ITAR, meaning that the obligations imposed by ITAR would not apply to this aspect of Bigelow’s operations. Michael Gold had succeeded in his argument that just because a person has seen a space station does not mean that he or she can build one.

### Bigelow tourism received the exception – other countries want the eased regulatory burden

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The DDTC’s ruling on Bigelow’s CJ request has been heralded by other spaceflight companies as a major breakthrough that promises to significantly ease the regulatory burden on their operations.57 For example, Marc Holzapfel, counsel to Virgin Galactic, called the ruling a “major development” that will enable space companies to avoid the “complicated, expensive, and dilatory export approval process.”58 Likewise, the chief counsel of SpaceX, Tim Hughes, praised the DDTC for adopting “a common-sense approach to ITAR.”59 However, as stated above, the Bigelow ruling only provides relief to Bigelow Aerospace and does not apply to either Virgin Galactic or SpaceX. Therefore, these companies, as well as other space tourism companies, will have to seek similar relief on their own. Since Bigelow Aerospace announced the receipt of its favorable ruling, there have been unconfirmed reports that certain space tourism companies have already filed their own CJ requests that will rely on the Bigelow’s ruling as precedent.

## Granting Exemption Is Legitimate

### The space tourism industry meets the “exceptional hardship” standard, and lack of exemption would send costs skyrocketing

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In addition to this first point, and independent from it, the DDTC should exempt the “passenger experience” of the space tourism companies from ITAR under Section 126.3 because the grounds for granting such an exemption are clearly met. As explained above, the DDTC has the power to suspend the application of ITAR in those cases where event of “exceptional or undue hardship, or when it is otherwise in the interest of the United States.”60 Although it is only necessary to show either exceptional hardship or that the exception is in the interest of the United States, both prerequisites are easily met in this case. First, that the space tourism companies face exceptional hardship under the ITAR regulations is undeniable. In fact, the space tourism companies face even greater hardship than the hardship faced by Bigelow Aerospace. For example, space tourism companies will have a much higher number of passengers per year than Bigelow would have on its space stations and would have to apply for many more export licenses to allow for the disclosures to the passengers that are mandated under the Human Space Flight Regulations, as well as for allowing the passengers on board (and thereby potentially disclosing “technical data” related to the spacecraft by means of visual inspection). In addition, the disclosure of any technical data would also likely constitute a “defense service” which, in turn, would require Virgin Galactic to enter into a Technical Assistance Agreement with each individual passenger – an agreement which must then be submitted to the DDTC for approval prior to the disclosure of any such data. Virgin Galactic plans on eventually launching multiple flights per day with six passengers per flight, which would amount to thousands of passengers every year. The cost and complexity of acquiring licenses and entering into Technical Assistance Agreements for each passenger would be colossal. Moreover, these requirements may harm the company’s ability to attract foreign customers who might prefer to fly with a foreign space tourism that is not subject to the cost, uncertainty, and delay of the licensing process.

## Department Of State Has Jurisdiction

### The Department of State has jurisdiction

Stotler, 2007 [Charles W. Stotler, Law degree from Loyola, “International And US national Law Affecting Commercial Space Tourism: How ITAR Tips the Balance Struck Between International Law and the CSLAA, http://www.spacelaw.olemiss.edu/JSL/Back\_issues/JSL%2033-1.pdf]

The activities of Virgin Galactic, those competing in the America's Space Prize, and Mr. Bigelow's plans for space tour- ism fall under the auspices of ITAR, in that spacecraft and launch vehicles, as well as associated technical data, are cov- ered under the Munitions List, are designated significant mili- tary equipment and may also be major defense equipment1. 3 ° This could create a serious problem should these endeavors be attempted by a citizen of the United States in a foreign country, for this constitutes an export to be regulated by the Department of State. The nature of launch windows might compel the space tourism industry to have launch and re-entry facilities in vari- ous positions around the world in order to be commercially vi- able. As noted above, the CSLAA expressly permits the export of commercial space activities, subject only to the issuance of a license or permit. That permit or license can be suspended or revoked if it is necessary to protect a national security or foreign policy interest."' These issues may arise under ITAR, subjecting a licensee to suspension or revocation of the license. Conversely, the Secretary of Transportation, in prescribing additional re- quirements for a license or permit, may waive a U.S. law by a regulation stating that the law not be a requirement.' This may relieve the space industry of the rigors of ITAR and any associated permits or licenses that may be required for the ex-porxt of items and technical data on the Munitions List. The ex- tent of the Secretary of Transportation's authority herein is un- clear, however, in that the Secretary must first consult the ap- propriate executive agencies regarding issues of national secu- rity and foreign policy interests.133 The Departments of State and Defense will surely not relinquish their control over these items on the Munitions List. The controls on exports described above may be the source of the stipulations in Bigelow's Amer- ica's Space Prize that the contestant be domiciled and have a principle place of business in the United States."4 These con- trols present serious hurdles for entrepreneurs of the commer- cial space industry.

# Get Off The Rock Materials

## Yes Demand

### There is a wide demand for spaceflights

Ziliotto, 2009 [Véronique, European Space Research and Technology Centre, “Relevance of the futron/zogby survey conclusions to the current space tourism industry,” Acta Astronautica, http://www.sciencedirect.com/science?\_ob=MImg&\_imagekey=B6V1N-4XC3X36-3-5&\_cdi=5679&\_user=655954&\_pii=S0094576509004378&\_origin=search&\_zone=rslt\_list\_item&\_coverDate=07%2F31%2F2010&\_sk=999339988&wchp=dGLzVzb-zSkzk&md5=707c5c4d99c0379d4546b9c5dd3af8fc&ie=/sdarticle.pdf]WZ

In September 2006 a new study using another metho- dology was published by Derek Webber of Spaceport

Associates and Jane Reifert of Incredible Adventures. They specifically researched the market of adventure tourism through an on-line survey on the web site of Incredible Adventures [4]. The 998 responses that were collected are not a representative sample of potential customers. It gives nevertheless useful hints about the perception of space activities among people who are the most likely to be interested in undertaking the experience, if space tourism is ever going to reach the masses: the ‘‘adventurers’’.

Only 14 percent of the respondents were millionaires and the prices of spaceflights were still considered as too high, with only 7 percent registering for suborbital at current price levels (US$100,000–US$200,000). Thirty six percent of the poll was interested in buying a suborbital spaceflight at a price of US$50,000 or below.

This tends to demonstrate the elasticity of the market and attenuates the importance of the ‘‘pioneering effect’’ in the customers’ motivations to buy a spaceflight. A majority of them were not ready to pay a premium price to fly on the inaugural flights and only 14 percent said they were driven by the desire to be pioneers. The majority (47 percent) planned to wait for the price to fall due to technological developments and 15 percent wanted to be assured of the safety of the spacecraft after some years of operation. In total, 62 percent were willing to wait for more affordable prices and safe proven flights.

The study uncovered several other aspects. Quite surprisingly, 70 percent of the respondents were not indifferent to the chosen spacecraft architecture in terms of take-off and landing preferences. The design adopted by Virgin Galactic (taking off with a spacecraft placed under a mother craft) was considered as half as much interesting than vertical or full horizontal take-off. Moreover, 53 percent asked for a horizontal landing on land. The favourite spacecraft configuration seems to be the most familiar one for most of the customers: a unique plane bringing the travellers all the way up to space like a commercial airline.

The choice of the location of the spaceport did not make a big difference to customers: this is coherent with the customer data released by Virgin Galactic that shows that customers come from more than 30 different countries. In the future, the choice of the spaceport will therefore depend less on national criteria than on the advantages of the location (aeronautic traffic manage- ment, landscapes, etc.).

## Spurring Demand Leads To Launches

### Only Space tourism can develop the infrastructure and demand to send hundreds of thousands of people into space

Globus, 06 [“Contest-Driven Development of Orbital Tourist Vehicles,” a paper presented to NASA, by Al Globus, Senior Research Associate at San Jose State University Research Foundation and chairs the space settlement committee of the National Space Society, 2007, AIAA Space 2006, San Jose, California, September 2006. http://alglobus.net/NASAwork/papers/AIAASpace2006Contest.pdf]

Aircraft developed much more rapidly in their ﬁrst 50 years. Hundreds of thousands, if not millions, of ﬂights occurred in that period, but we have only launched a few thousand payloads into space. Substantial launch vehicle improvement may require tens of thousands of launches per year, not the current 50-70. 4 Unfortunately, current markets for space launch: communications, Earth-observing, science, national prestige, etc. cannot support hundreds of launches per year, let alone tens of thousands. However, a new space market has recently been created: Space Adventures, Ltd. and the Russian space program have ﬂown three tourists to the International Space Station (ISS), reputedly for about $20 million apiece. While this sum does not, apparently, cover the entire cost of the ﬂight, there is an extra seat available on the spacecraft which must be ﬂown periodically to the ISS to provide a functioning life boat capability. Although the ISS was originally intended to serve a host of space applications, it has not yet done so for a variety of reasons. Space tourism may be the legacy of the ISS, and it could be a very good one indeed. The only market for humans-in-space potentially capable of sustaining thousands of ﬂights per year is tourism; particularly if the cost is in the $10-20,000 range and catastrophic failures are extremely rare. Published market research suggests that the space tourism market may become very large if the price is right. In 1994, Patrick Colins, et al. found that the Japanese market could provide about one million customers per year for space ﬂight at about $10,000 per passenger. In 1996, Sven Abitzsch found that approximately 20% of the U.S., Canadian and German populations and nearly 40% of the Japanese population would be will to pay over $10,000 (actually, six months salary) for a trip into space. This represents nearly a hundred million people. In 1999, Oily Barrett found that 12% of United Kingdom residents, representing 3.5 million people, said they were willing to pay over $10,000 for a trip to space. In 2001, Crouch surveyed the literature and found that the global space tourism market is a strong function of price, with an annual demand of ﬁve million per year at $10,000 per ﬂight and 170 at $500,00 per ﬂight, representing annual markets of $5 billion and $85 million respectively. Table 1 shows Crouch’s demand vs. price per ticket. If these projections are optimistic by no more than a factor of ten, and the price per ticket can be brought down to about $10,000, there is good reason to believe space tourism can support tens of thousands of launches per year, a rate comparable to the early decades of aviation.

## Private Sector Key To Demand

### Demand for space tourism is massive – government agencies fail to access this market

Collins, 03 [Invited speech to the AIAA/ICAS Symposium "The Next 100 Years" in honour of the Wright Brothers' First Flight, 17 July 2003, Dayton Ohio. “Space Tourism Market Demand and the Transportation Infrastructure” By Patrick Collins, Professor, Azabu University, Sagamihara City, Kanagawa, Japan, and a Collaborating Researcher with the Institute for Space & Astronautical Science, performed the first market research on space tourism in Japan in 1993, and in the USA in 1995 and is the co-founder of Space Future Consulting, in Space Future, http://www.spacefuture.com/archive/space\_tourism\_market\_demand\_and\_the\_transportation\_infrastructure.shtml]

The second very striking feature of the data on the demand for passenger space travel is that it is hugely positive, across all categories -- age, sex, income-level and country -- everywhere and every time that people have been surveyed. In 1993 I was finally able to use a small budget to perform the first ever market research on the subject, as a Science & Technology Agency Fellow in Japan; with a number of colleagues I distributed a pamphlet and questionnaire to 3030 people selected quasi-randomly from all age-groups, and roughly nation-wide. As Figure 1 shows, a substantial majority of the general population, both men and women, said they wished to travel to space: the youngest were the most keen, but even many older people also said they would like to buy such a service. Figure 2 shows the response to the same questionnaire delivered by telephone in the U.S.A. The main difference is that U.S. women are somewhat less enthusiastic than men, which is presumably due to the military connection and more "macho/techno" image of space flight in the U.S.A. than in Japan. In response to the question "How many months' salary would you pay for a space flight?", some 70% of those wishing to travel to space in Japan, North America and Germany said they would pay several months' salary, and in each country a few percent said they would pay even 1 year's salary or more [11, 12, 13]. Bekey usefully surveyed various different studies as of 1998 [14], as Crouch did in 2001 [15]. More recently Kelly Space & Technology Inc [16] and Futron Inc [17], in studying potential markets for reusable launch vehicles for Nasa, surveyed the potential demand for space tourism -- using Nasa funds for this purpose for the first time. Both studies concluded that passenger travel offers the most promising market for space transportation. The great popularity of passenger space travel makes the lack of data even less excusable. It is indicative of space agencies' failure to follow aviation's successful lead, as well as their failure to do work that has economic

value. There are many striking examples of space agencies refusing to act appropriately, even after having paid for and published research stating these facts. For example, in the U.S.A. the Nasa administrator refused for more than three years to make its report "General Public Space Travel and Tourism" [18] available through its web-site, and even today it is not directly findable -- only indirectly [19] through a link to another site [20]. In Japan, the director of planning at the government's National Aerospace Laboratory ( NAL), even after having paid $4,000 for a survey in the U.S.A., and having co-authored four papers including statements such as "...the demand apparently has the potential to grow to many times the most optimistic projections for existing com-mercial space activities" [12], stopped all work on the subject, while continuing to spend hundreds of millions of dollars/year on activities with little economic value, for six years -- until it was decided to merge the NAL with other research organisations. These examples are sadly typical of space industry officials who feel no pressure to contribute to economic growth. At a time when commercial demand for space transportation (ie satellite launch) has been shrinking progressively, and the U.S. and Japanese economies are in their worst crises for 50 years due precisely to the lack of investment in commercially promising new businesses, this deeply irresponsible attitude has been disastrous for taxpayers. In summary, it is now recognised world-wide that there is a potentially very large market for passenger space travel services. There remains a great need for more market research, as discussed in [15]. This should be performed in collaboration with aviation and other travel-related organisations, of which the thinking is based on supplying passenger services. This matches the facts that the most vigorous advocate of passenger space travel within the U.S. government is the FAA's Associate Director for Commercial Space Transportation (AST), and the main organisation working for it in Japan is the Japanese Aeronautical Association (JAA). How-ever, it is important that the need for more market research on space tourism should not be used as an excuse for further delaying work towards its realisation; it should rather be widened to include research on a range of related matters. These include the planning of many aspects of passenger space flight services as seen from the point of view of passengers, including vehicle specifications, passenger cabin interior design, orbital accommodation facilities and thence to the entire range of infrastructure needed.

# Competitiveness Materials

## ITAR Kills Competitiveness

### ITAR regulations are the only thing standing in the way of space tourism companies competing

**Sundahl 2010** (Mark J., professor of International Business Transactions, Commercial Law, and Space Law at Cleveland State University, March, "Space Tourism and Export Controls: A Prayer for Relief,” <http://works.bepress.com/mark_sundahl/1>)

Despite this bright outlook for commercial human spaceflight, the industry faces several significant challenges before it achieves sustainability. Although these challenges are largely technological and financial, one of the more serious obstacles to the industry’s success is regulatory in nature, namely, the burdensome export control regulations under U.S. law. Export controls on space technology are notoriously strict in the United States, where all technology related to spacecraft is deemed to be munitions and is therefore subject to the complicated and restrictive International Traffic in Arms Regulations (ITAR).3 In fact, the United States is the only country in the world that treats commercial space technology as munitions. The application of ITAR has harmed the ability of U.S. space companies to compete on the world market, as is perhaps best illustrated by the practice of certain European satellite manufacturers to market “ITAR-free” satellites – that is, satellites that do not incorporate any components manufactured in the United States and are therefore free of the regulatory complexities and compliance costs that flow from ITAR. As a result, European satellite sales have increased sharply, cutting deeply into the market-share of U.S. manufacturers. On August 13, 2009, the Obama administration announced that the President had ordered a broad-based review of U.S. export controls, which would presumably include a review of those controls applicable to space technology.7 However, no changes have yet been made and, given the complexity of the regulations and the political sensitivity of the topic of arms control, change is not expected anytime soon. In the meantime, the only hope for relief from the burdens of ITAR lies in the hands of the Department of State’s Directorate of Defense Trade Controls (DDTC), the administrative agency that oversees the application and enforcement of ITAR. As described in this Article, the DDTC has indicated that it is willing to exercise its administrative discretion in a manner that will enable the nascent human spaceflight industry to survive and even flourish in the global marketplace. This indication was given last year when the DDTC exempted Bigelow Aerospace from the need to acquire a license and comply with other requirements under ITAR before allowing foreign nationals aboard their expandable space stations. This ruling was heralded as a breakthrough for the human spaceflight industry which now hopes to be granted the opportunity to operate under a reduced regulatory burden, provided that the Bigelow ruling is extended to other spaceflight companies, such as those offering space tourism services.

No changes to ITAR means no space tourism

Foust, 2005 [Jeff Foust, aerospace analyst, editor of the space review, “One Nation, Over Regulated: is ITAR stalling the new space race?” Ad Adastra, http://www.nss.org/adastra/volume17/itar.html]

Without changes, some caution that the bright future that space tourism and other new commercial space markets promise could be dimmed. Mike Gold, chief counsel of inflatable space habitat developer Bigelow Aerospace, noted that his company has already had to deal with ITAR as the company plans to launch sub- scale versions of its modules on Russian launch vehicles starting next year. If we don't enact some simple commonsense changes to ITAR, then probably none of this will ever come to fruition," he warns. "No Virgin Galactic, no Bigelow Aerospace; nothing."

### Plan spurs a dramatic increase in competitiveness—removing regs is essential to open up new markets

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The DDTC’s ruling on Bigelow’s CJ request has been heralded by other spaceflight companies as a major breakthrough that promises to significantly ease the regulatory burden on their operations.57 For example, Marc Holzapfel, counsel to Virgin Galactic, called the ruling a “major development” that will enable space companies to avoid the “complicated, expensive, and dilatory export approval process.”58 Likewise, the chief counsel of SpaceX, Tim Hughes, praised the DDTC for adopting “a common-sense approach to ITAR.”59 However, as stated above, the Bigelow ruling only provides relief to Bigelow Aerospace and does not apply to either Virgin Galactic or SpaceX. Therefore, these companies, as well as other space tourism companies, will have to seek similar relief on their own. Since Bigelow Aerospace announced the receipt of its favorable ruling, there have been unconfirmed reports that certain space tourism companies have already filed their own CJ requests that will rely on the Bigelow’s ruling as precedent. When the DDTC receives the requests from the space tourism companies to render the “passenger experience” exempt from ITAR – as was done for Bigelow Aerospace – the DDTC should grant this exemption for two reasons. First, the refusal to grant such an exemption to the space tourism companies would render the Bigelow ruling a nullity. Second, the circumstances for granting an exemption under Section 126.3 of ITAR are clearly met in the case of space tourism companies in light of (i) the exceptional hardship that would be caused by the strict application of ITAR and (ii) the strong interest that the United States has in supporting the success of the private human spaceflight industry. The first point is a rather obvious one, namely, that the DDTC’s previous ruling regarding Bigelow’s operations would be meaningless unless similar relief is granted to the companies that will deliver people to the Bigelow space stations. The companies that Bigelow is likely to rely upon to deliver scientists, manufacturers, and recreational visitors to its space stations are likely to be the same companies that are now offering suborbital tourism. These companies will continue to refine their technology until they are able to provide orbital delivery. However, without relief from ITAR the tourism companies may not be able to survive even for the short term, let alone long enough to develop orbital delivery capabilities. And without such services being available, Bigelow Aerospace’s space station venture will collapse since there is no sense in placing a space station in orbit if they will stand empty. In addition to this first point, and independent from it, the DDTC should exempt the “passenger experience” of the space tourism companies from ITAR under Section 126.3 because the grounds for granting such an exemption are clearly met. As explained above, the DDTC has the power to suspend the application of ITAR in those cases where event of “exceptional or undue hardship, or when it is otherwise in the interest of the United States.”60 Although it is only necessary to show either exceptional hardship or that the exception is in the interest of the United States, both prerequisites are easily met in this case. First, that the space tourism companies face exceptional hardship under the ITAR regulations is undeniable. In fact, the space tourism companies face even greater hardship than the hardship faced by Bigelow Aerospace. For example, space tourism companies will have a much higher number of passengers per year than Bigelow would have on its space stations and would have to apply for many more export licenses to allow for the disclosures to the passengers that are mandated under the Human Space Flight Regulations, as well as for allowing the passengers on board (and thereby potentially disclosing “technical data” related to the spacecraft by means of visual inspection). In addition, the disclosure of any technical data would also likely constitute a “defense service” which, in turn, would require Virgin Galactic to enter into a Technical Assistance Agreement with each individual passenger – an agreement which must then be submitted to the DDTC for approval prior to the disclosure of any such data. Virgin Galactic plans on eventually launching multiple flights per day with six passengers per flight, which would amount to thousands of passengers every year. The cost and complexity of acquiring licenses and entering into Technical Assistance Agreements for each passenger would be colossal. Moreover, these requirements may harm the company’s ability to attract foreign customers who might prefer to fly with a foreign space tourism that is not subject to the cost, uncertainty, and delay of the licensing process.

### **Granting “passenger experience” exemptions from ITAR would help commercialization and US competitiveness**

**Sundahl 2010** (Mark J., professor of International Business Transactions, Commercial Law, and Space Law at Cleveland State University, March, "Space Tourism and Export Controls: A Prayer for Relief,” <http://works.bepress.com/mark_sundahl/1>)

In addition to the grounds of “exceptional hardship” that space tourism companies would be suffer under ITAR, a “passenger experience” exemption from ITAR could be based solely on the fact that such an exemption would be in the interest in the United States. The interest that would be served is two-fold. First, the space tourism industry is a significant development in commercialization of space and the technological developments that result from these early tourism ventures are likely to lead to more substantial commercial ventures such as orbital manufacturing, orbital research laboratories, point-to-point space travel, and even the mining of the moon or other celestial bodies. The United States has a great interest from an economic perspective in being at the forefront of this industry and should therefore modulate the application of ITAR in a manner that will foster the competitiveness of U.S. companies.

## ITAR Undermines Other Programs

### ITAR contradicts other policies designed to promote space colonization

Stotler, 2007 [Charles W. Stotler, Law degree from Loyola, “International And US national Law Affecting Commercial Space Tourism: How ITAR Tips the Balance Struck Between International Law and the CSLAA, http://www.spacelaw.olemiss.edu/JSL/Back\_issues/JSL%2033-1.pdf]

Moreover, it is difficult to legally conclude that spacecraft can be on the Munitions List, when the CSLAA and the AECA are given equal footing as Acts of Congress. ITAR indirectly con- travenes the CSLAA in that it restricts the commercial space industry where the CSLAA expressly states a policy of promo- tion.4° Nothing in the AECA, through which ITAR has been promulgated, contravenes the CSLAA. Where the AECA is si- lent regarding spacecraft, begging the question as to why they are on the Munitions List, the CSLAA expressly promotes the commercial use of spacecraft. ITAR, in regards to spacecraft being on the Munitions List, should be invalid, for lex specialis derogate generali-the specificity of the CSLAA prevails over the generality of the AECA. The invalidity of ITAR, in regard to the commercial space industry, can easily be cured without an Act of Congress. Not only would amending the Munitions List not affect the AECA, the amendment would be done pursuant to the AECA, which compels the President to periodically review the Munitions List to determine which items no longer warrant export controls.

### ITAR muddles promotional US space tourism law

Stotler, 2007 [Charles W. Stotler, Law degree from Loyola, “International And US national Law Affecting Commercial Space Tourism: How ITAR Tips the Balance Struck Between International Law and the CSLAA, http://www.spacelaw.olemiss.edu/JSL/Back\_issues/JSL%2033-1.pdf]

The history of space tourism strongly indicates that it is an area with serious potential for strengthening the transportation infrastructure in the United States, through research and de- velopment and the construction of facilities. It also indicates, given the strong interest shown already by consumers, that it has the potential to be an economic boon. Current laws, includ- ing the Government's stance on anchor tenancy and its embrac- ing of the contest prize, offer strong encouragement for the in- dustry. But, as with most industry, regulation runs the risk of suppression. Moreover, without custom and practice to dictate appropriate norms of conduct, regulation from the government runs the risk of being errant.

While the restrictions of the CSLAA should be relaxed to permit the industry to grow and regulate itself, the absolute liability imposed by the Liability Convention presents a serious financial concern for the United States. The CSLAA seems to strike an effective balance between an effort to empower those involved in the commercial space industry and the liability con- cerns raised by the Liability Convention. To some extent, the CSLAA achieves its goal in encouraging the commercial space industry. Its experimental permit removes license requirements easing impediments to research and development. But the posi- tive effects of the CSLAA will most likely be muddled by other U.S. National laws, such as ITAR.

## Space Travel Key To Economy

### Space travel is key to the economy—generates wealth, reduces cost, and creating demand

**Collins 91’** (Patrick, staff writer for Space News, “Benefits of Commercial Passenger Space Travel for Society,” <http://spacefuture.com/archive/benefits_of_commercial_passenger_space_travel_for_society.shtml>)

Inter-related with these social benefits will be a number of economic benefits. First, if passenger space travel is commercially profitable, it will of course have economic benefits by creating wealth. However, by promising to generate continually growing commercial traffic to orbit, passenger space travel offers something more that other space activities do not, namely to create launch operations on the scale needed to amortize fully reusable launch vehicle development costs and to reduce operating costs sharply. Reduced launch costs would in turn render feasible other socially beneficial activities in space that are currently too expensive and too uncertain to justify commercial investment. Most importantly this includes the SPS project, which is not yet considered a serious energy supply candidate by electricity companies, mainly due to the high cost of launch today. But at a launch cost of $100/kg (13000 �/kg), the "SPS 2000" LEO demonstrator project (13, 14) would be almost competitive on a capital cost basis with Earth-based electricity generation systems (though not in delivered energy cost due to the inevitably low utilization). Thus, creating the demand necessary to justify commercial, low-cost launch vehicle development will be an economically beneficial side-effect of passenger space travel. No other use of space has yet been proposed that offers a comparably realistic possibility of a commercial route to airline-type economies of scale in launch operations and costs.

### Space travel is the most viable alternative—reduces costs, increases people in space, and makes other projects more attractive

**Collins 91’** (Patrick, staff writer for Space News, “Benefits of Commercial Passenger Space Travel for Society,” <http://spacefuture.com/archive/benefits_of_commercial_passenger_space_travel_for_society.shtml>)

The space industry suffers from very high launch costs. These were not critical while space activities were an arena for superpower competition. However, as this justification for government involvement in the space industry disappears, the industry's future depends on developing commercially self-supporting activities, which require much lower launch costs. Technically there are design approaches that offer the prospect of reducing launch costs sharply. However, in order to attract commercial investment it is also necessary to identify suitable markets in which demand for launches will grow rapidly as prices fall. Passenger space travel appears to offer the possibility of launch traffic rates several orders of magnitude greater than today. It could therefore lead to launch costs as low as 1% of today's, which would make short visits to low Earth orbit commercially available to a large proportion of the population of developed nations, bringing a range of social benefits. Such low launch costs would also have the benefit of making a range of projects attractive that are not feasible today. Foremost among these is the satellite power station project to supply energy from space to Earth. The consumer services market is different in many ways from the government and telecommunications markets that the space industry has supplied exclusively to date. Thus the initiation of commercial passenger space travel is a major challenge. However this development should be seen not as a threat to the space industry, but as an opportunity to evolve into a more normal commercial industry, independent of government, with a wide popular customer base, and with much wider horizons than today.

## ITAR Key To Innovation

### ITAR regulations empirically block space tourism innovations

Dittmar, 2006 [Mary Lynne Dittmar, Ph.D., President and CEO of Dittmar Associates, “A Framework for Government-Commercial Economics in the New Space Industry,” http://www.dittmar-associates.com/Publications/AIAA%20Space%202006%20Econ%20Dittmar.pdf]

Rutan’s comments evoked considerable controversy, but do point to the difficulty with regulation and the struggle to formulate approaches that will enable, rather than burden, emerging business, particularly when those businesses are not well understood. An additional regulatory burden subsequently facing Rutan’s company about which there is far less dispute is the export control difficulties which have faced his company, Scaled Composites, in their development with Virgin Galactic of a commercial suborbital spaceflight service. Virgin is a British company, and U.S. export control laws collectively known as “ITAR” (International Traffic in Arms Regulations) have caused delays in the program, including delays in placing orders for two “SpaceShip Two” spacecraft, resulting in the postponement by one year of the inception of the commercial spaceflight service22. These concerns were echoed by Elon Musk, founder of SpaceX, who noted difficulties in conducting business transactions with entities in New Zealand, the United Kingdom, and Canada.23

This is not the first time that the negative effects of ITAR on commercial space businesses have been pointed out. In particular, the Satellite Industry Associates (SIA) has been very effective in identifying the impacts of ITAR, estimating that ITAR was largely responsible for a tremendous decrease in U.S. market share of the global satellite industry from 62% in 1998 to 36% in 2002.24 Accepting for the moment that ITAR is representative of the legislative tightrope that must be walked when developing regulations that balance technology and economic growth with the interests of national security, with regard to space commerce it is also a dramatic example of the “law of unintended consequences” in its effects upon international conduct of business.

## Space Tourism Key To Education

### Space tourism leads to a more educated populace

**Collins 91’** (Patrick, staff writer for Space News, “Benefits of Commercial Passenger Space Travel for Society,” <http://spacefuture.com/archive/benefits_of_commercial_passenger_space_travel_for_society.shtml>)

Another social benefit that can be anticipated will be educational. This arises from the "paradox" that as the world comes to depend increasingly on technology, there is a tendency for children in affluent countries to avoid studying the more difficult technical subjects in favour of easier, more fashionable subjects. Although this phenomenon is perhaps most advanced in Britain and the USA, it is becoming visible even in Japan which has hitherto been particularly successful in motivating people to study technology. The prospect of space travel seems attractive to the public, and particularly to children. Yet in order to understand space flight children need to understand a wide range of subjects in engineering, physics, chemistry, biology and other scientific fields. Thus it can be anticipated that the development of a vigorous space travel industry could help to make modern technological education an interesting and natural process, rather than one that is seen as unnecessary and boring.

# Responses To Neg Args

## They Say: “Status Quo Solves”

### NASA’s new budget only provides funding for commercial transport to ISS

Medill Reports, 2/17/11 [“NASA budget flatlines, looks to commercial space industry,” BY CHELSEA WHYTE AND SARA J. MARTINEZ, FEB 17, 2011, Medill Reports is written and produced by graduate journalism students at Northwestern University’s Medill school. http://news.medill.northwestern.edu/chicago/news.aspx?id=178776]

NASA’s proposed 2012 budget lays the Space Shuttle to rest but leaves key robotic missions on target to study Mars and probe the Earth’s radiation belt. NASA’s $18.7 billion budget proposal for fiscal year 2012 holds the agency to the level of funding approved in 2010. “This budget requires us to live within our means so we can invest in our future,” NASA Administrator Charles Bolden said in a NASA statement. The agency has had to embrace this financial holding pattern by proposing to do less in the coming year in line with President Obama's five-year funding freeze. NASA will stop shuttling astronauts to the International Space Station after the Space Shuttle ends its 30-year run with three final missions this year. “NASA has contracted seats on Russian Soyuz capsules,” said Katherine Trinidad, a spokeswoman for NASA. “We will work with our Russian counterparts to ensure the safe transport of our astronauts to and from the International Space station until we have safe, reliable commercial vehicles.” The budget estimates the commercial space vehicles will be available by 2016. NASA is looking to the commercial market to develop low-cost options for crew travel to and from the space station and other future destinations. "It's a welcome change. It's just showing that private industry can do the job of designing and building a rocket faster and for less money," said Rod Burton, an aerospace engineer and professor emeritus at the University of Illinois at Urbana-Champaign. But Burton added that NASA has been lagging behind. "For the last 10 years, they've been short-changing not just university research but basic research and technology development," he said. The 2012 budget makes clear that the human space flight program must now rely on the commercial sector, which will be able to more nimbly provide affordable access to space. Federal grants will be awarded to innovators at U.S. universities and research centers to stimulate the aerospace industry.

## ---- They Say: “ITAR Shouldn’t Apply”

### Even if they win ITAR should not complicate commercial spaceflight it still does

**Sundahl 2010** (Mark J., professor of International Business Transactions, Commercial Law, and Space Law at Cleveland State University, March, "Space Tourism and Export Controls: A Prayer for Relief,” <http://works.bepress.com/mark_sundahl/1>)

At the core of ITAR regulatory regime is the requirement that a license from the

DDTC be acquired prior to the export of any “defense article.”19 “Defense articles” are, in turn, defined as all items listed in Section 121.1 of ITAR, better known as the United States Munitions List – as well as any “technical data recorded or stored in any physical form, models, mock-ups or other items that reveal technical data directly relating to items” on the USML.20 In addition, Section 120.3 of ITAR sets forth specific criteria for determining whether a particular item that is not already listed on the USML could be classified as a “defense article”, and thus subject to control under ITAR.21 Such a determination can be made if the item in question (1) is designed for military use, does not have a primary civilian application, and exceeds the performance standards of equivalent civilian equipment, or (2) is designed for military use and has “significant” military value (regardless of its performance standards or whether it has a predominant civil application).22

The threshold question for Bigelow Aerospace and the space tourism companies is whether their equipment would be deemed a “defense article.” Under the Section 120.3 criteria, it would appear that neither the Bigelow space stations nor Virgin Galactic’s spaceplanes should qualify as “defense articles.” They are not designed for military use, they only have a civil application, and they cannot be said to exceed the performance standards of comparable civilian equipment since no comparable civilian equipment exists – Bigelow’s space stations and Virgin Galactic’s spaceplanes are alone in their class. Nevertheless, despite the apparent failure of this technology to meet the criteria of a “defense article” under Section 120.3, the space stations and spaceplanes still come under a specific listing of controlled technology on the USML, and are therefore subject to ITAR control. The relevant entry in the USML for the human spaceflight industry is Category XV where we find language that brings spacecraft and other space-related technology within the scope of ITAR.23

An analysis Category XV reveals that the entry has four main parts. First, all “spacecraft” and all “ground control stations” engaged in the telemetry, tracking and control of spacecraft come within the ambit of ITAR.24 The term “spacecraft” is not defined in the regulation, which allows for a wide net to be cast by the DDTC when applying the regulations. The only guidance given in the regulations is that the term “spacecraft” includes commercial satellites (which would presumably include Bigelow’s orbiting space stations).25 This inclusion of purely commercial space technology has caused a sustained uproar in industry and among export control pundits.26 In comparison, ITAR only applies to aircraft if the aircraft is “designed, modified, or equipped for military purposes” – thus, commercial aircraft are not regulated by ITAR.27

In addition to being on the USML, spacecraft are also treated as “significant military equipment” (SME), for which “special export controls” can be applied due to the military utility of the technology (which designation is indicated by an asterisk prior to the USML entry).28 Happily, this SME designation does not apply to commercial satellites unless they are used for military purposes, thus sparing Bigelow Aerospace from the threat of these special controls.29

Domestic launches complicate ITAR and still meet its definition of ‘export’

**Sundahl 2010** (Mark J., professor of International Business Transactions, Commercial Law, and Space Law at Cleveland State University, March, "Space Tourism and Export Controls: A Prayer for Relief,” <http://works.bepress.com/mark_sundahl/1>)

Even assuming that suborbital spaceplanes come within the definition of “spacecraft” under Category XV of the USML and are therefore defense articles, a license from the DDTC is still not required unless the spaceplanes are exported. Thus if, for example, Virgin Galactic’s spaceplanes are flown from a U.S. spaceport, such as Spaceport America in New Mexico, and land there as well, no exportation would seem to take place, thus avoiding the burdens of ITAR. This is however, not the case. The concept of an “export” is broadly defined under ITAR to include not only the physical movement of defense articles across the borders of the United States34, but also the following actions:

• Transferring registration, control or ownership to a foreign person of any aircraft, vessel, or satellite covered by the U.S. Munitions List.

• Disclosing (including oral or visual disclosure) or transferring in the United States any defense article to an embassy, any agency or subdivision of a foreign government.

• Disclosing (including oral or visual disclosure) or transferring technical data to a foreign person. • Performing a defense service on behalf of, or for the benefit of, a foreign person.

This broad concept of what constitutes an export under ITAR thus includes not only selling controlled items into foreign countries, but embraces the disclosure of information related to controlled technology, regardless of how such disclosure is made.35

Of particular concern to Bigelow Aerospace, Virgin Galactic, and the other human spaceflight companies is the fact that the disclosure of any “technical data” relating to their spacecraft to a foreign customer would constitute an export, as would the performance of defense services (such as safety training), even if the disclosure or the training takes place in the United States.36 As explained above, “technical data” includes information related to the “operation” of the spacecraft, which could be broadly interpreted to include safety information provided to passengers regarding the operation of hatches and other on-board safety equipment. Disclosure of such technical data without DDTC approval is prohibited regardless of the form in which such data is displayed or stored (whether in documents, models, or other items) and regardless of how the data is communicated (whether by the sharing of documents, email, conversation, or by visual inspection).37 Therefore, the mere presence of a foreign national on a Bigelow space station or a spaceplane could be deemed to be an “export” of technical data on the grounds that the passenger was provided with the opportunity for a visual inspection of the design of the equipment. As a result, a license from the DDTC would be required before any foreign passengers could set foot on the space station or spaceplane.

## They Say: “No Technology”

### **No risk of tech failure – all evidence points to success**

Collins, 03 [Invited speech to the AIAA/ICAS Symposium "The Next 100 Years" in honour of the Wright Brothers' First Flight, 17 July 2003, Dayton Ohio. “Space Tourism Market Demand and the Transportation Infrastructure” By Patrick Collins, Professor, Azabu University, Sagamihara City, Kanagawa, Japan, and a Collaborating Researcher with the Institute for Space & Astronautical Science, performed the first market research on space tourism in Japan in 1993, and in the USA in 1995 and is the co-founder of Space Future Consulting, in Space Future, <http://www.spacefuture.com/archive/space_tourism_market_demand_and_the_transportation_infrastructure.shtml>]

Very similar to the situation concerning demand, there is strikingly little information on the technical possibilities for passenger space travel, but all the information that does exist is positive. The lack of data is due to government space agencies -- never having commisioned a feasibility study of a dedicated passenger launch vehicle in more than 40 years.

In order to understand the potential it is perhaps useful first to dispel the remains of a very widespread myth -- that in order to provide space travel services a vehicle like the U.S. government's "space shuttle" is needed. From this it is commonly concluded that, since that vehicle costs about $100 million/ passenger/flight, space tourism is therefore a fantasy, or at least conceivable only in the far future after several more decades of government-funded space technology. The most important point to note is that the "space shuttle" was designed to military specifications; its hypothetical cost/passenger is therefore of no more relevance to space tourism than the cost of carrying passengers in a bomber aeroplane would have to commercial air travel. Hence the only relevant data are those relating specifically to dedicated passenger vehicle design studies. Over the past decade or more, a number of such studies have been published based on varying degrees of effort. However, they show consider-able consensus about the cost of developing a fully reusable passenger-carrying launch vehicle capable of repeated flights to and from low Earth orbit, with most estimates clustered around $10 billion.

### Advances make obstacles irrelevant—our evidence assumes their warrants

**O’Neil et al 98** (Daniel, compiler at the Marshal Space Flight Center, February 19, Space News, “General Public Space Travel and Tourism - Volume 1 Executive Summary,” <http://www.spacefuture.com/archive/general_public_space_travel_and_tourism.shtml#Recommendations>)

Fortunately, critical advances have been made during the past decade in many of the technologies that can enable non-astronaut human space travel to become both technically and economically feasible, and more are foreseen. As a result, the potential exists for the creation, in the next very few decades, of a $10-20 billion... per year "general public space travel and tourism" business. Too, initial steps can be taken at the surface, then in the atmosphere and later in space so that early profitability and experience, and credibility-creating activities, can begin prior to full orbital trips and long-term stays there.

## They Say: “ITAR Bad” – General

### A passenger experience exemption doesn’t cause any of their offense – it the only mechanism to provide relief to the space tourism industry

**Sundahl 2010** (Mark J., professor of International Business Transactions, Commercial Law, and Space Law at Cleveland State University, March, "Space Tourism and Export Controls: A Prayer for Relief,” <http://works.bepress.com/mark_sundahl/1>)

The DDTC should also be confident that granting a “passenger experience” exemption to the space tourism companies would not result in the proliferation of the dangerous technologies that ITAR is designed to prevent. First of all, the spaceplanes that are currently under development are not in the same class of launch equipment that lofts satellites into orbit and can easily double as ballistic missiles. Although there may be some concern that these spaceplanes could deliver weapons to a target, the current state of spaceplane technology should eliminate any such concerns since the suborbital vehicles are not capable of point-to- point flight to any significant degree but return to their point of departure.65 Moreover, as mentioned above, the tourism equipment is not designed for military use and therefore does not come within the criteria for ITAR control set forth in Section 120.3.66 And not only is technology not of a type that should raise national security concerns, but the transmission of the “technical data” to space tourists is also of a nature that fails to warrant the application of export controls. Even if the Human Space Flight Regulations are interpreted broadly to require disclosure about every aspect of spacecraft safety and potential risks, it is highly unlikely that the information divulged to passengers (or the equipment that is visible to passengers) will entail the level of technological detail that is relevant to the construction and flight operation of the spaceplanes.

For the reasons set forth above, the U.S. government has little to fear and much to gain from easing the regulatory burdens on the space tourism industry by exempting the “passenger experience” from ITAR. The discretion that the DDTC has been granted in Section 126.3 allows the agency to adjust the application of ITAR in an appropriate manner to achieve the policy goals of maintaining security while also protecting the interest of the Unites States in supporting this new industry of private human spaceflight. The relaxation of ITAR in order to support the innovative and important ventures undertaken by the new space tourism industry is precisely the situation that Section 126.3 was intended to address.

Finally, as discussed in the following section, if the DDTC does not provide relief to the space tourism industry, then it is likely that no relief will be provided to the space industry, since neither Congress nor the President are likely to act given the political paralysis that has gripped our nation’s capital.

## ---- They Say: “Prolif”

### Doesn’t lead to prolif—plan only exempts commercial enterprises

**Sundahl 2010** (Mark J., professor of International Business Transactions, Commercial Law, and Space Law at Cleveland State University, March, "Space Tourism and Export Controls: A Prayer for Relief,” <http://works.bepress.com/mark_sundahl/1>)

Whenever a company exports a spacecraft, a launch vehicle, or a satellite, the company is deemed under U.S. law to be engaged in the trafficking of arms and is therefore subject to the Arms Export Control Act (AECA) and the AECA’s implementing regulations, the International Traffic in Arms Regulations.8 It was not always the case that all space technology was treated as munitions under ITAR. In fact, it was only in 1999 that commercial satellite technology was shifted to the jurisdiction of the Department of State and subjected to ITAR.9 While certain space technology should unquestionably be subject to strict export controls in order to prevent the proliferation of dangerous weapons, such as technology related to ballistic missiles, it is often argued that technologies which have a commercial as well as a potential military application, so-called “dual use” items like communications satellites, should be controlled under the less onerous Export Administration Regulations (EAR) which are administered by the Department of Commerce (DOC).

### Plan doesn’t lead to prolif—multiple reasons

**Sundahl 2010** (Mark J., professor of International Business Transactions, Commercial Law, and Space Law at Cleveland State University, March, "Space Tourism and Export Controls: A Prayer for Relief,” <http://works.bepress.com/mark_sundahl/1>)

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## **---- They Say: “Liability”**

### Companies would not bear the burden for failure – the US would

Stotler, 2007 [Charles W. Stotler, Law degree from Loyola, “International And US national Law Affecting Commercial Space Tourism: How ITAR Tips the Balance Struck Between International Law and the CSLAA, http://www.spacelaw.olemiss.edu/JSL/Back\_issues/JSL%2033-1.pdf]

Absolute liability is prescribed for a launching State when damage is caused on the surface of the earth or to an aircraft in flight by that State's space object.' A launching State includes a State that launches or procures a launch, as well as any State from whose territory or facility a space object is launched.55 This is important because it means that a State is absolutely liable for damage caused by commercial launches executed from within its territory. If a Virgin Galactic flight, launched from within the United States, crashes into Auckland, the United States would be absolutely liable. Exoneration from absolute liability is available if a launching State establishes that the damage has resulted from gross negligence or from an inten- tional act or omission on the part of a claimant State or of natu- ral or juridical persons it represents." Therefore, in the scenario described above, if Virgin Galactic is grossly negligent, then the United States may be exonerated from liability.

## ---- They Say: “Safety”

### Their safety turns are exaggerate – the private sector will hold itself to high standards

Parsons, 2007 [Catherine E Parsons, Chapman Law Review, 2005-2006, JD Candidate, Chapman University School of Law, BS in Mathematics, “Space Tourism: Regulating Passage to the Happiest Place on Earth,” http://heinonline.org/HOL/Page?handle=hein.journals/chlr9&div=22&g\_sent=1&collection=journals]WZ

The Space Launch Act's notifications and "fly at your own risk" provisions are all that are truly needed to guarantee both the safety of future passengers and freedom of growth for the in- dustry.237 However, some members of Congress feel that these requirements give too much power to space travel businesses, and that the Space Launch Act's drafters allowed the industry's "desire for profits to ...interfere with the responsibility of main- taining safety and proper oversight."238 Representative Oberstar claimed that the lack of immediate FAA control "could encourage a 'tombstone mentality,' in which regulators would have to stand by until someone got killed or seriously hurt." 239

This claim is exaggerated. The industry has every incentive to hold itself to high safety standards in order to generate greater profit, and the Space Launch Act will also prevent any unscrupu- lous companies from overlooking safety entirely. In addition, the Space Launch Act does not mandate a fatality or even a serious injury before the government may step in: "[the FAA] may come in... [when] there is a risk."240 The AST has unlimited author- ity to regulate in order to protect third parties, and the Space Launch Act gave a clear eight year timetable for when that unlimited authority will extend to passengers.2 41

### Even if they win it isn’t safe the public doesn’t care

Ryabinkin, 2004 [Charity Trelease, JD Candidate, Georgetown University Law Center, Journal of Air Law and Commerce, “Let there be flight: It’s time to reform the regulation of commercial space travel,” http://heinonline.org/HOL/Page?handle=hein.journals/jalc69&div=8&g\_sent=1&collection=journals]WZ

A recent USA Today/CNN/Gallup Poll captures the mercurial nature of American public perception and reveals an interesting twist. Though each disaster has resulted in vocal crit- icism of the Shuttle program, the poll indicates that American support for increasing NASA's budget actually increased after both Challenger and Columbia.94 Of those people polled in 2003, only 17 percent believed NASA spending should be de- creased, compared with 41 percent in 1993.15 In addition, only 17 percent of people polled said any Shuttle accident was unac- ceptable. 6 While such statistics are encouraging, the poll also suggests that America's support is qualified: when asked about other areas of spending, people overwhelmingly favored other programs over the space program.97

### Various measures solve safety issues

Globus, 06 [“Contest-Driven Development of Orbital Tourist Vehicles,” a paper presented to NASA, by Al Globus, Senior Research Associate at San Jose State University Research Foundation and chairs the space settlement committee of the National Space Society, 2007, AIAA Space 2006, San Jose, California, September 2006. http://alglobus.net/NASAwork/papers/AIAASpace2006Contest.pdf]

There is a serious safety problem with the proposed prize system as described. Suppose a competitor hires desparate people to ride in unsafe ships? Some may be killed, but a proﬁt could still be realized on the successful ﬂights. Fortunately, theres a simple solution based on an old French law. Crawford Greenwalt, former President of Dupont, is quoted as saying ”My company has had a safety program for 150 years. The program was instituted as a result of a French law requiring an explosives manufacturer to live on the premises with his family.” In the same vein, we propose requiring at least one major investor, top executive, or senior engineer from the competitor be on each ﬂight. Also, any competitor suﬀering loss of life could be barred from further competition. Extreme measures are necessary since early fatalities could easily destroy the space tourism industry.

VI. Development Flights While awarding companies for ﬂying passengers directly addresses the core of problem, it places ﬁscal pressure on developers to put human beings in ﬂight earlier rather than later, which will tend to increase risky behavior. As noted above, a few early accidents that kill customers is very likely to sink the industry entirely. While other adventure travel, such as climbing Mt. Everest, is extremely dangerous and customers die frequently, the space tourist situation is psychologically quite diﬀerent. When climbing Mt. Everest it’s you against the mountain. The customer is actively engaged in the ﬁght for survival. Orbital tourists are unlikely, in the extreme, to pilot the vehicle. Rather, the customer waits in a small enclosed space to see if they will blow up or not. Thus, it is reasonable to assume that a much higher level of safety will be required. A reasonable target is the safety record of general aviation, which is about one catastrophic failure in 75,000 ﬂights. 15 Note that this is somewhat worse than the Shuttle’s unrealized goal of one loss-of-crew failure in 100,000 ﬂights. A mechanism to reward unmanned test ﬂights would reduce this pressure. One could give partial credit for ﬂying instrumented dummies the size and mass of a typical customer. Simple instrumentation to measure acceleration, pressure, temperature and so for could store data for later analysis to insure that the ’customer’ would have survived the ﬂight without excessive discomfort. It is desirable to limit the fraction of prize money that can be awarded for ﬂying dummies, so we propose that no more than one ﬂight per prize level per competitor be awarded a prize for ﬂying dummies. Furthermore, dummy ﬂight should not be as proﬁtable as ﬂying breathing passengers, so awards for dummy ﬂight may be limited to 1/2 or 1/4 of the amount awarded for human passengers.