# GP AC—Durham (Lay)

#### I affirm

#### Resolved: The appropriation of outer space by private entities is unjust.

## AC- Framework

#### The standard is maximizing expected well-being.

#### Pleasure and pain are intrinsically valuable.

Moen 16 [Ole Martin Moen, Research Fellow in Philosophy at University of Oslo “An Argument for Hedonism” Journal of Value Inquiry (Springer), 50 (2) 2016: 267–281] SJDI, brackets in original

Let us start by observing, empirically, that a widely shared judgment about intrinsic value and disvalue is that pleasure is intrinsically valuable and pain is intrinsically disvaluable. On virtually any proposed list of intrinsic values and disvalues (we will look at some of them below), pleasure is included among the intrinsic values and pain among the intrinsic disvalues. This inclusion makes intuitive sense, moreover, for **there is something undeniably good about** the way **pleasure** feels **and** something **undeniably bad about** the way **pain** feels, and neither the goodness of pleasure nor the badness of pain seems to be exhausted by the further effects that these experiences might have. “Pleasure” and “pain” are here understood inclusively, as encompassing anything hedonically positive and anything hedonically negative.2 The special value statuses of pleasure and pain are manifested in how we treat these experiences in our everyday reasoning about values. If you tell me that you are heading for the convenience store, **I might ask: “What for?”** This is a reasonable question, for when you go to the convenience store you usually do so, not merely for the sake of going to the convenience store, but for the sake of achieving something further that you deem to be valuable. You might answer, for example: “To buy soda.” This answer makes sense, for soda is a nice thing and you can get it at the convenience store. I might further inquire, however: “What is buying the soda good for?” This further question can also be a reasonable one, for it need not be obvious why you want the soda. You might answer: “Well, I want it for the pleasure of drinking it.” If I then proceed by asking “**But** what is the pleasure of drinking the soda good for?” the discussion is likely to reach an awkward end. The reason is that the **pleasure is not good for anything further;** it is simply that for which going to the convenience store and buying the soda is good.3 As Aristotle observes: **“We never ask** [a man] **what his end is in being pleased, because** we assume that **pleasure is** choice **worthy in itself.”**4 Presumably, a similar story can be told in the case of pains, for if someone says “This is painful!” we never respond by asking: “And why is that a problem?” We take for granted that if something is painful, we have a sufficient explanation of why it is bad. If we are onto something in our everyday reasoning about values, it seems that **pleasure and pain are both places where we reach the end of the line in matters of value.**

#### Death is the worst thing under any ethical theory since it forecloses the possibility of any future value.

Paterson 03, Craig [Department of Philosophy, Providence College, Rhode Island] 2003, “A Life Not Worth Living?”, Studies in Christian Ethics

Contrary to those accounts, I would argue that it is death per se that is really the objective evil for us, not because it deprives us of a prospective future of overall good judged better than the alter- native of non-being. It cannot be about harm to a former person who has ceased to exist, for no person actually suffers from the sub-sequent non-participation. Rather, death in itself is an evil to us because it ontologically destroys the current existent subject — it is the ultimate in metaphysical lightning strikes.80 The evil of death is truly an ontological evil borne by the person who already exists, independently of calculations about better or worse possible lives. Such an evil need not be consciously experienced in order to be an evil for the kind of being a human person is. Death is an evil because of the change in kind it brings about, a change that is destructive of the type of entity that we essentially are. Anything, whether caused naturally or caused by human intervention (intentional or unintentional) that drastically interferes in the process of maintaining the person in existence is an objective evil for the person. What is crucially at stake here, and is dialectically supportive of the self-evidency of the basic good of human life, is that death is a radical interference with the current life process of the kind of being that we are. In consequence, death itself can be credibly thought of as a ‘primitive evil’ for all persons, regardless of the extent to which they are currently or prospectively capable of participating in a full array of the goods of life.81  In conclusion, concerning willed human actions, it is justifiable to state that any intentional rejection of human life itself cannot therefore be warranted since it is an expression of an ultimate disvalue for the subject, namely, the destruction of the present person; a radical ontological good that we cannot begin to weigh objectively against the travails of life in a rational manner. To deal with the sources of disvalue (pain, suffering, etc.) we should not seek to irrationally destroy the person, the very source and condition of all human possibility.82

#### Existential risks outweigh.

Farquhar et al. 17 – Sebastian Farquhar, Computer Science DPhil Student at the University of Oxford. John Halstead, Political Philosophy DPhil at the University of Oxford. Dr. Owen Cotton-Barratt, Pure Math DPhil at the University of Oxford. Dr. Stefan Schubert, Philosophy PhD at Lund University. Haydn Belfield, a BA. Andrew Snyder-Beattie, Philosophy PhD Student at the University of Oxford. [Existential Risk: Diplomacy and Governance, Global Priorities Project, 1-23-17, [https://www.fhi.ox.ac.uk/wp-content/uploads/Existential-Risks-2017-01-23.pdf]//BPS](https://www.fhi.ox.ac.uk/wp-content/uploads/Existential-Risks-2017-01-23.pdf%5d//BPS)

In this argument, it seems that Parfit is assuming that the survivors of a nuclear war that kills 99% of the population would eventually be able to recover civilisation without long-term effect. As we have seen, this may not be a safe assumption – but for the purposes of this thought experiment, the point stands. What makes existential catastrophes especially bad is that they would “destroy the future,” as another Oxford philosopher, Nick Bostrom, puts it.66 This future could potentially be extremely long and full of flourishing, and would therefore have extremely large value. In standard risk analysis, when working out how to respond to risk, we work out the expected value of risk reduction, by weighing the probability that an action will prevent an adverse event against the severity of the event. Because the value of preventing existential catastrophe is so vast, even a tiny probability of prevention has huge expected value.67 Of course, there is persisting reasonable disagreement about ethics and there are a number of ways one might resist this conclusion.68 Therefore, it would be unjustified to be overconfident in Parfit and Bostrom’s argument. In some areas, government policy does give significant weight to future generations. For example, in assessing the risks of nuclear waste storage, governments have considered timeframes of thousands, hundreds of thousands, and even a million years.69 Justifications for this policy usually appeal to principles of *intergenerational equity* according to which future generations ought to get as much protection as current generations.70 Similarly, widely accepted norms of sustainable development require development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs.71 However, when it comes to existential risk, it would seem that we fail to live up to principles of intergenerational equity. Existential catastrophe would not only give future generations less than the current generations; it would give them *nothing*. Indeed, reducing existential risk plausibly has a quite low cost for us in comparison with the huge expected value it has for future generations. In spite of this, relatively little is done to reduce existential risk. Unless we give up on norms of intergenerational equity, they give us a strong case for significantly increasing our efforts to reduce existential risks. 1.3. WHY EXISTENTIAL RISKS MAY BE SYSTEMATICALLY UNDERINVESTED IN, AND THE ROLE OF THE INTERNATIONAL COMMUNITY In spite of the importance of existential risk reduction, it probably receives less attention than is warranted. As a result, concerted international cooperation is required if we are to receive adequate protection from existential risks. 1.3.1. Why existential risks are likely to be underinvested in There are several reasons why existential risk reduction is likely to be underinvested in. Firstly, it is *a global public good*. Economic theory predicts that such goods tend to be underprovided. The benefits of existential risk reduction are widely and indivisibly dispersed around the globe from the countries responsible for taking action. Consequently, a country which reduces existential risk gains only a small portion of the benefits but bears the full brunt of the costs. Countries thus have strong incentives to free ride, receiving the benefits of risk reduction without contributing. As a result, too few do what is in the common interest. Secondly, as already suggested above, existential risk reduction is an *intergenerational* public good: most of the benefits are enjoyed by future generations who have no say in the political process. For these goods, the problem is *temporal* free riding: the current generation enjoys the benefits of inaction while future generations bear the costs. Thirdly, many existential risks, such as machine superintelligence, engineered pandemics, and solar geoengineering, pose an unprecedented and uncertain future threat. Consequently, it is hard to develop a satisfactory governance regime for them: there are few existing governance instruments which can be applied to these risks, and it is unclear what shape new instruments should take. In this way, our position with regard to these emerging risks is comparable to the one we faced when nuclear weapons first became available. Cognitive biases also lead people to underestimate existential risks. Since there have not been any catastrophes of this magnitude, these risks are not salient to politicians and the public.72 This is an example of the misapplication of the *availability heuristic*, a mental shortcut which assumes that something is important only if it can be readily recalled. Another cognitive bias affecting perceptions of existential risk is scope neglect. In a seminal 1992 study, three groups were asked how much they would be willing to pay to save 2,000, 20,000 or 200,000 birds from drowning in uncovered oil ponds. The groups answered $80, $78, and $88, respectively.73 In this case, the size of the benefits had little effect on the scale of the preferred response. People become numbed to the effect of saving lives when the numbers get too large. 74 Scope neglect is a particularly acute problem for existential risk because the numbers at stake are so large. Due to scope neglect, decision-makers are prone to treat existential risks in a similar way to problems which are less severe by many orders of magnitude. A wide range of other cognitive biases are likely to affect the evaluation of existential risks.75

## AC- Exploitation

#### Contention one is exploitation.

#### Appropriation of space extends prioritization of billionaires and subjugation of the working class into the cosmos.

Michael Hudson 20, 6-8-2020, "Yes to Space Exploration. No to Space Capitalism.," No Publication, <https://jacobinmag.com/2020/06/spacex-elon-musk-jeff-bezos-capitalism//ingp>

On May 30, SpaceX finally launched astronauts into space more than two years behind schedule. President Donald Trump was on hand for the launch. After pushing for the militarization of space with the formation of the US Space Force, Trump fused his own vision with that of SpaceX founder Elon Musk, declaring, “We’ll soon be landing on Mars and we’ll soon have the greatest weapons ever imagined in history.” Early in Trump’s presidency, Musk faced criticism for being part of the administration’s advisory council and refusing to step down even as Trump signed his signature Muslim ban. It was believed Musk was hoping to benefit from greater public subsidies, on top of the billions NASA gave to SpaceX, and he’s set to do so as part of Trump’s plan to get astronauts back on the moon by 2024. More recently, the two have found themselves of the same mind on the pandemic as they shared misleading health information and Musk echoed Trump’s calls to “open the economy” and give people their “freedom” back. The May 30 launch symbolized both Trump’s desire to project an image of revived American greatness and Musk’s need not only to bolster the myth that makes his wealth possible, but to set the foundations for a privatized space industry. The space billionaires — Musk and Amazon CEO Jeff Bezos foremost among them — have little stake in the well-being of the majority of the population. Their space visions are designed for wealthy people like themselves, with little mention of where the working class would fit in. They’ve built their wealth on exploitation, and their visions of the future are little more than an extension of their present actions. A History of Violence The business practices of Musk and Bezos are increasingly well known and have been on clear display during the pandemic. Musk tried to claim Tesla’s Fremont, California factory was “essential” until authorities forced him to close it; then he reopened it in defiance of health orders. As Tesla CEO, Musk has a long history of opposing the unionization of workers, presiding over a high rate of worker injuries (which the company tried to cover up), and even having a former worker hacked and harassed after he became a whistleblower. Meanwhile, Bezos has a similar history of abusing Amazon workers. Amazon’s warehouses are known for having higher injury rates than the industry average, the company has fought unionization, and the stories of the terrible conditions experienced by workers are legendary. During the pandemic, that has continued, with the company failing to enforce social distancing or provide adequate protective equipment until workers began walking out, refusing to be open about infection information, and firing workers who dared criticize the company, all while Bezos’s wealth has increased by more than $30 billion. But it goes beyond that, because the worldviews of these billionaires began to be formed long before they started the empires they currently lord over. Musk did not have a regular childhood, but rather a wealthy upbringing in apartheid South Africa. His father was an engineer and owned part of an emerald mine in Zambia, telling Business Insider, “We were very wealthy. We had so much money at times we couldn’t even close our safe.” In Elon Musk: Tesla, SpaceX, and the Quest for a Fantastic Future, Ashlee Vance describes how Musk got money from his father when he was starting one of his original ventures. He also had a particular admiration for his grandfather, who moved to apartheid South Africa from Canada after rallying “against government interference in the lives of individuals.” Bezos has a not dissimilar story. His father was a well-off oil engineer in Cuba while Fulgencio Batista was in power. In Bit Tyrants, Rob Larson explains that Bezos’s father left the island after the Cuban Revolution and passed his libertarian views down to his son. Bezos’s parents invested nearly $250,000 in Amazon in 1995 as it was getting started. These space barons made their billions through the exploitation of their workers and came from well-off backgrounds made possible from resource extraction. When digging into their visions for a future in space, it’s clear that they seek to extend these conditions into the cosmos, not challenge them in favor of space exploration for the benefit of all. The Future They Want Musk and Bezos are the leading drivers of the modern push to privatize and colonize space through their respective companies, SpaceX and Blue Origin. Their visions differ slightly, with Musk preferring to colonize Mars, while Bezos has more interest in building space colonies in orbit. In 2016, Musk claimed he would begin sending rockets to Mars in 2018. That never happened, but it hasn’t ended his obsession. Musk is determined to make humans a multi-planetary species, framing our choice as either space colonization or the risk of extinction. Bezos says that Earth is the best planet in our solar system, but if we don’t colonize space we doom ourselves to “stasis and rationing.” These framings serve the interests of these billionaires, and make it seem like colonizing space is an obvious and necessary choice when it isn’t. It ignores their personal culpability and the role of the capitalist system they seek to reproduce in causing the problems they say we need to flee in the first place. Billionaires have a much greater carbon footprint than ordinary people, with Musk flying his private jet all around the world as he claims to be an environmental champion. Amazon, meanwhile, is courting oil and gas companies with cloud services to make their business more efficient, and Tesla is selling a false vision of sustainability that purposely serves people like Musk, all while capitalism continues to drive the climate system toward the cliff edge. Colonizing space will not save us from billionaire-fueled climate dystopia. But these billionaires do not hide who would be served by their futures. Musk has given many figures for the cost of a ticket to Mars, but they’re never cheap. He told Vance the tickets would cost $500,000 to $1 million, a price at which he thinks “it’s highly likely that there will be a self-sustaining Martian colony.” However, the workers for such a colony clearly won’t be able to buy their own way. Rather, Musk tweeted a plan for Martian indentured servitude where workers would take on loans to pay for their tickets and pay them off later because “There will be a lot of jobs on Mars!” Bezos is even more open about how the workforce will have to expand to serve his vision, but has little to say about what they’ll be doing. His plan to maintain economic “growth and dynamism” requires the human population to grow to a trillion people. He claims this would create “a thousand Mozarts and a thousand Einsteins” who would live in space colonies that are supposed to house a million people each, with the surface of Earth being mainly for tourism. Meanwhile, industrial and mining work would move into orbit so as not to pollute the planet, and while he doesn’t explicitly acknowledge it, it’s likely that’s where you’ll find many of those trillion workers toiling for their space overlord and his descendants. Space Shouldn’t Serve Capitalists In 1978, Murray Bookchin skewered a certain brand of futurism that sought to “extend the present into the future” and desired “multinational corporations to become multi-cosmic corporations.” Much of this future thinking obsesses about possible changes to technology, but seeks to preserve the existing social and economic relations — “the present as it exists today, projected, one hundred years from now,” as Bookchin put it. That’s at the core of the space billionaires’ vision for the future. Space has been used by past US presidents to bolster American power and influence, but it was largely accepted that capitalism ended at the edge of the atmosphere. That’s no longer the case, and just as past capitalist expansions have come at the expense of poor and working people to enrich a small elite, so too will this one. Bezos and Trump may have a public feud, but that doesn’t mean that their mutual interest isn’t served by a renewed US push into space that funnels massive public funds into private pockets and seeks to open celestial bodies to capitalist resource extraction. This is not to say that we need to halt space exploration. The collective interest of humanity is served by learning more about the solar system and the universe beyond, but the goal of such missions must be driven by gaining scientific knowledge and enhancing global cooperation, not nationalism and profit-making. Yet that’s exactly what the space billionaires and American authoritarians have found common cause in, with Trump declaring that “a new age of American ambition has now begun” at a NASA press briefing just hours before cities across the country were placed under curfew last week. Before space can be explored in a way that benefits all of humankind, existing social relations must be transformed, not extended into the stars as part of a new colonial project.

#### Space capitalism perpetuates the myth of prosperity—“as long as Elon can colonize Mars the Earth will be ok.” This leads to willful ignorance of actual problems on Earth and ignores the people who literally can’t afford to pursue their future in space—causes an existential laundry list of impacts that includes climate change, structural violence, and exacerbation in health crises.

Tim Jackson 21, 7-20-2021, "Billionaire space race: the ultimate symbol of capitalism’s flawed obsession with growth," Conversation, https://theconversation.com/billionaire-space-race-the-ultimate-symbol-of-capitalisms-flawed-obsession-with-growth-164511//ingp

It’s an ironic twist in the tale of the debate society kid I used to be that I’ve spent most of my professional life confronting those fairytales of growth. Don’t ask me how that happened. By accident mostly. I toyed with the idea of studying astrophysics. But I ended up studying Maths at Cambridge, where I confess to being baffled by the complexity of it all, until I realised that even math is just a trick. Quite literally a formula. Believe in it and you can travel to the stars and back. In your mind, at least. And there I was wandering around in zero G, when I woke up one day (in April 1986) to find that the Number four reactor at the Chernobyl nuclear power plant in Ukraine had suffered a catastrophic meltdown. I suddenly realised that the very same skills I’d spent my life developing were leading humanity not towards the stars but away from the paradise we already inhabit. So yes. I changed my mind. The next day I walked into the Greenpeace office in London and asked what I could do to help. They set me working on the economics of renewable energy I became, accidentally, an economist. (Economics needs more accidental economists.) And that’s when it began to dawn on me that learning how to live well on this fragile planet is far more important than dreaming about the next one. Not so the space race billionaires. A handful of unbelievably powerful men, whose wealth has exploded massively throughout the pandemic, are now busy trying to persuade us that the future lies not here on Earth but out there among the stars. Tesla founder and serial entrepreneur, Elon Musk is one of these new rocket men. “Those who attack space,” he tweeted recently, “maybe don’t realise that space represents hope for so many people”. That may be true of course in a world where huge inequalities of wealth and privilege strip hope from the lives of billions of people. But, as the spouse of a Nasa flight controller pointed out, it obscures the extraordinary demands of escaping from Mother Earth, in terms of energy materials, people and time. Undeterred, the rocket men gaze starward. If resources are the problem, then space must be the answer. Amazon founder Jeff Bezos is pretty explicit about his own expansionary vision. “We can have a trillion humans in the solar system,” he once declared. “Which means we’d have a thousand Mozarts and a thousand Einsteins. This would be an incredible civilisation.” A white man stands in front of a rocket reading 'BLUE ORIGIN' Amazon and Blue Origin founder Jeff Bezos plans to go to space on July 20 2021. Chuck Bigger/Alamy Bezos and Musk have spent their lockdown contesting the top two places on the Forbes rich list. They’ve also been playing “mine is bigger than yours” in their own private space race for a couple of decades now. Bezos’s personal wealth almost doubled during the course of a pandemic that destroyed the lives and livelihoods of millions. He’s now stepping down to spend more time on Blue Origin, the company he hopes will deliver vast human colonies across the solar system. The declared aim of Musk’s rival company, SpaceX, is “to make humanity multiplanetary”. Just like Kim Stanley Robinson’s science fiction trilogy back in the 1990s, Musk aims to establish a permanent human colony on Mars. To get there, he reasons, we need very big rockets – or, in the original terminology of SpaceX, Big Fucking Rockets (BFRs) – eventually capable of transporting scores of people and hundreds of tonnes of equipment millions of miles across the solar system. The BFRs have now given way to a series of (more sedately named) Starships. And to prove his green credentials Musk desperately wants these starships to be reusable. So much so that SpaceX conspired to blow up four consecutive Starship prototypes in quick succession during the first four months of 2021 trying unsuccessfully to re-land them. Move fast and break things is the Silicon Valley motto of course. But eventually you’ve got to bring the goods home. Starship SN15 finally achieved that on May 5 – three weeks after SpaceX had landed a massive US$2.9 billion contract from Nasa, nudging Blue Origin into the space race shadows. Read more: Space tourism: rockets emit 100 times more CO₂ per passenger than flights – imagine a whole industry Not wanting to be outdone, Bezos came up with what he must have hoped was the ultimate comeback. When Blue Origin’s New Shepard rocket – which is also reusable – made its first manned space flight on July 20, he and his brother Mark would be two of the first few passengers on board. Wow, Jeff! Kudos man! Now you really show us your cojones! Nobody likes coming second. Least of all the most powerful people on the planet. But sometimes you get no choice. Out of the blue, without so much as a by-your-leave, Virgin boss, Richard Branson swooped in to steal everyone’s thunder. On July 11, nine days before Bezos’s big day, Branson became the first ever billionaire to launch himself into space. Two people in space suits attain zero gravity. Richard Branson aboard SpaceShip Two Unity 22 as they attain zero gravity, July 11 2021. EPA-EFE/Virgin Galactic And for a cool US$250,000, he promised us, you too can be one of Virgin Galactic’s 600 or so breathless customers, waiting to enjoy three or four weightless minutes gazing back in rapture at the planet you’ve left behind. Apparently, Musk has already signed up. Bezos doesn’t need to. He’s made his own virgin space flight now. Prosperity as health The space rhetoric of the super-rich betrays a mentality that may once have served humanity well. Some would say it’s a quintessential feature of capitalism. Innovation upon innovation. A driving ambition to expand and explore. A primal urge to escape our origins and reach for the next horizon. Space travel is a natural extension of our obsession with economic growth. It’s the crowning jewel of capitalism. Further and faster is its frontier creed. I’ve spent much of my professional life as a critic of that creed, not just for environmental reasons but on social grounds as well. The seven years I spent as economics commissioner on the UK’s Sustainable Development Commission and my subsequent research at the Centre for the Understanding of Sustainable Prosperity revealed something fundamental about our aspirations for the good life. Something that has been underlined by the experience of the pandemic. Prosperity is as much about health as it is about wealth. Ask people what matters most in their lives and the chances are that this will come out somewhere near the top of the list. Health for themselves. Health for their friends and their families. Health too – sometimes – for the fragile planet on which we live and on whose health we ourselves depend. There’s something fascinating in this idea. Because it confronts the obsession with growth head on. As Aristotle pointed out in Nicomachean Ethics (a book named after his physician father), the good life is not a relentless search for more, but a continual process of finding a “virtuous” balance between too little and too much. Three people cross a rope bridge against mountain backdrop. Prosperity requires a balancing act, not a race to the stars. JuliaStar/Shutterstock Population health provides an obvious example of this idea. Too little food and we’re struggling with diseases of malnutrition. Too much and we’re tipped into the “diseases of affluence” that now kill more people than under-nutrition does. Good health depends on us finding and nurturing this balance. This task is always tricky of course, even at the individual level. Just think about the challenge of keeping your exercise, your diet and your appetites in line with the outcome of a healthy body weight. But as I’ve argued, living inside a system that has its sights continually focused on more makes the task near impossible. Obesity has tripled since 1975. Almost two-fifths of adults over 18 are overweight. Capitalism not only fails to recognise the point where balance lies. It has absolutely no idea how to stop when it gets there. You’d think our brush with mortality through the pandemic would have brought some of this home to us. You’d think it would give us pause for thought about what really matters to us: the kind of world we want for our children; the kind of society we want to live in. And for many people it has. In a survey carried out during lockdown in the UK, 85% of respondents found something in their changed conditions they felt worth keeping and fewer than 10% wanted a complete return to normal. When life and health are at stake, the ungodly scramble for wealth and status feels less and less attractive. Even the lure of technology pales. Family, conviviality and a sense of purpose come to the fore. These are the things that many people found they lacked most throughout the pandemic. But their importance in our lives was not a COVID accident: they are the most fundamental elements of a sustainable prosperity. The denial of death Something even more surprising has emerged during my three decades of research. Behind consumer capitalism, behind the frontier mentality, beyond the urge to expand forever lies a deep-seated and pervasive anxiety. What does day two look like, Bezos once asked a crowd of the faithful, referring to his famous maxim about the need to innovate. “Day two is stasis, followed by irrelevance, followed by excruciatingly painful decline, followed by death,” he said. “And that. Is why. It is always. Day one!” His audience loved it. Musk plays out his own inner demons just as disarmingly. “I’m not trying to be anyone’s saviour,” he once told TED’s head curator, Chris Anderton. “I’m just trying to think about the future – and not be sad.” Again, the applause was deafening. A well-trained therapist could have a field day with all of this. Take that miraculous day a few weeks after the Perseverance rover started sending home the most amazing selfies in the universe, when the Ingenuity helicopter made its virgin flight in the wafer thin atmosphere of Mars. It was the kind of outcome that could have intelligence agencies drooling over far less benign uses of the technology. But there was also something pretty existential going on. The faint whispering of the Martian wind, relayed faithfully across the solar system, doesn’t just confirm the possibilities for aerial flight on an alien planet. It’s grist to the mill of an essential belief that human beings are endlessly creative and fiendishly clever. Our visceral response to these momentary triumphs speaks to a branch of psychology called terror management theory drawn from the work of cultural anthropologist Ernest Becker. It was explored in particular in his astonishing 1973 book The Denial of Death. In it, Becker argues that modern society has lost its way, precisely because we’ve become terrified of confronting the inevitability of our own demise. Terror management theory tells us that, when mortality becomes “salient”, instead of addressing the underlying fear, we turn for comfort to the things which make us feel good. Capitalism itself is a massive comfort blanket, designed to help us never confront the mortality that awaits us all. So too are the dreams of the rocket men. Placards at an environmental protest, one of which reads 'capitalism is killing us' ‘Capitalism is killing us’. Alex Bee/Shutterstock.com Beyond lockdown When Sputnik kickstarted the first “space race” six decades ago, a US newspaper headline called it “one step toward [our] escape from imprisonment to the Earth”. Arendt read those words with astonishment. She saw there a deep-seated “rebellion against human existence”. It isn’t just the pandemic that locks us down, the implication is. It’s the entire human condition. The anxiety we feel is nothing new. The choice between confronting our fears and running away from them has always been a profound one. It’s exactly the choice we’re facing now. As vaccine roll-out brings a glimmer of light at the end of COVID-19, the temptation to rush into wild escapism is massive. But for all its glamour, the “final frontier” is at best an amusement and at worst a fatal distraction from the urgent task of rebuilding a society ravaged by social injustice, climate change and a loss of faith in the future. With most of us still reeling from what the World Health Organisation has called a shadow pandemic in mental health, any kind of escape plan at all looks remarkably like paradise. And emigrating to Mars is one hell of an escape plan. Let’s dream of some “final frontier” by all means. But let’s focus our minds too on some quintessentially earthly priorities. Affordable healthcare. Decent homes for the poorest in society. A solid education for our kids. Reversing the decades-long precarity in the livelihoods of the frontline workers – the ones who saved our lives. Regenerating the devastating loss of the natural world. Replacing a frenetic consumerism with an economy of care and relationship and meaning. Never have these things made so much sense to so many. Never has there been a better time to turn them into a reality. Not just for the handful of billionaires dreaming of unbridled wealth on the red planet, but for the eight billion mere mortals living out their far less brazen dreams on the blue one.

**Making outer space public is a necessary step in establishing better legal guidelines and ensuring that the majority of the population actually benefits from space exploration.**

**Rauenzahn et al., 20** (Brianna Rauenzahn is a JD candidate at Penn and writer for the regulatory review, Jasmine Wang is a writer for the regulatory review, Jamison Chung, Peter Jacobs, Aaron Kaufman, and Hannah Pugh, 6-6-2020, accessed on 9-12-2021, The Regulatory Review, "Regulating Commercial Space Activity", https://www.theregreview.org/2020/06/06/saturday-seminar-regulating-commercial-space-activity/, HBisevac)

But the transformation of spaceflight from a **public endeavor to a commercial industry** raises questions about how to **regulate the activities of private entities** in space. In 2014, the National Aeronautics and Space Administration (NASA) outsourced the task of transporting its astronauts, granting billion-dollar contracts to SpaceX and Boeing in a program called Commercial Crew. NASA astronauts Doug Hurley and Bob Behnken became the first crew to enter space under this public-private program. Over the next few decades, NASA plans to rely on this commercial partnership to pursue even more **ambitious goals**: returning to the moon and sending astronauts to Mars. But private companies have their own aspirations for outer space. Musk hopes to use SpaceX to start a human colony on Mars. Amazon’s Jeff Bezos also has his sights set on space colonization, and firms such as Bigelow Aerospace and Axiom Space plan to develop their own space stations. Some investors see opportunities in space tourism and mining. But these for-profit goals raise serious concerns about who can claim ownership of space resources and what law will govern private activity in uncharted frontiers. International space law is governed by a 1967 agreement known as the Outer Space Treaty⁠. The treaty allows all nations to use and explore the moon and celestial bodies, prohibits claims of sovereignty, and it requires nations to oversee the activities of private space companies. But existing space law has **not kept up with the growth in the private sector**, and the United States lacks a comprehensive regulatory regime. In anticipation of a growing commercial space industry, some experts and scholars call for more robust regulation. This week’s Saturday Seminar focuses on possible legal frameworks for governing commercial activity in outer space. In a working paper for the Mercatus Center, Laura Montgomery argues that the Federal Aviation Administration (FAA) and other federal agencies overreach their authority when they rely on Article VI of the Outer Space Treaty to deny private actors access to space. Montgomery contends that because Article VI is not self-executing, under existing U.S. Supreme Court precedent, it is not enforceable federal law. She argues that federal regulatory agencies cannot prohibit or regulate private space activities on the basis of enforcing the treaty. Montgomery similarly finds that Congress did not delegate authority to the FAA to deny private actors’ access to space. Instead, the legislative branch determines which activities by private actors “require Article VI authorization and supervision.” In a recent Air Force Law Review article responding to Laura Montgomery’s argument that Article VI of the Outer Space Treaty is unenforceable, the U.S. Department of Defense’s John S. Goehring claims that the United States has a direct responsibility to regulate such activity. Signatories to Article VI of the Outer Space Treaty—including the United States—have an affirmative obligation to authorize and continually supervise both governmental and non-governmental space activities, according to Goehring. Although he agrees with Montgomery that this obligation should not lead to the United States regulating “a musician playing the harp on the moon,” Goehring asserts that “activities such as launch, re-entry, operation and control of objects in orbit” should fall under governmental oversight. Adopting a regulatory view that ignores this obligation could have longstanding national security repercussions, he claims. Congress should encourage responsible behavior in space for the sake of U.S. national security, Goehring argues, rather than undermining Article VI. Daily space system operations often result in the presence of **space debris**, which can include anything from fallout left behind by satellite explosions and collisions to human generated waste from previous space missions. As commercial space traffic increases, the U.S. regulatory system must adapt and build a **strong foundation** for future debris mitigation, Marlon Sorge of the Aerospace Corporation argues. In a recent paper with the Center for Space Policy and Strategy, Sorge asserts that the federal government should re-evaluate its existing regulatory structure to maximize the potential benefits of commercial space activity and focus on debris mitigation. Through his proposed “one-stop-shop” model, Sorge explains that centralizing regulatory functions under one body could enable more efficient coordination between agencies as they tackle the rapid emergence of the commercial space sector. In a recent article in the Journal of Air Law and Commerce, Andrea J. Harrington of the U.S. Air Force Air Command and Staff College argues that there are not enough protections for space-related objects and sites under current international and cultural heritage law. Currently, there are no treaties that directly address the treatment and protection of space-related cultural heritage. U.S. government entities and nonprofits have proposed national protections for the Apollo landing sites, such as NASA’s Recommendations to Space-Faring Entities. Harrington claims that, although important, these recommendations are just “baby steps” since they do not apply to foreign actors. To preserve existing and future space-related cultural heritage, Harrington calls for a multistep process that would culminate in binding bilateral and multilateral treaties, which could eventually lead to the development of broad protections in customary international law. Without strong governing principles, “**outer space could turn into the ‘Wild West’** of the twenty-first century,” Georgetown University Law Center’s Hope Babcock writes in an article published in the Syracuse Law Review. Because people will inevitably capitalize on celestial resources, there ought to be consensus on which property regime should apply, she asserts. Finding that pure private property regimes would encourage competitive behavior that would exacerbate hostilities and inequalities between nations, Babcock argues instead for a modified version of the **public trust doctrine**. Such a regime would incorporate some private property management tools, allowing for sustainable and equitable extraterrestrial development, according to Babcock.

## AC- Climate Change

#### Contention two is climate change.

#### Commercialization of space exacerbates climate change in two ways:

#### Higher amounts of launches for commercial vehicles emit large quantities of greenhouse gasses and other harmful substances into the atmosphere, and

#### The push for commercial space flights detracts from climate issues on Earth.

Jocelyn Timperley 21, 08-12-2021, "Billionaire space race: What does it mean for climate change and the environment?," BBC Science Focus Magazine, <https://www.sciencefocus.com/news/billionaire-space-race-what-does-it-mean-for-climate-change-and-the-environment//ingp>

Space travel made international headlines in July as both Amazon founder Jeff Bezos and Virgin boss Richard Branson flew to space in crafts made by their own companies. Not to be outdone, Elon Musk’s SpaceX plans to launch an all-civilian crew into orbit in September. Commercial space travel is clearly firing up, and is predicted to become big business. Branson’s Virgin Galactic plans to begin regular commercial services in 2022, and already has 600 reservations at around $250,000 a ticket. According to a recent analysis from Swiss finance firm UBS, the space tourism industry will be worth $4bn by 2030. After landing from his sub-orbital flight to the edge of space, Bezos said the experience had reinforced his commitment to fighting climate change. But one crucial question about this fast-moving sector is what impact it could have on the environment itself? Rockets burn through huge amounts of propellants to take off. But there are a variety of ways to launch rockets into space, so understanding the exact impacts of each craft is not always straightforward. “With all space travel, including space tourism, the environmental impacts depend on a variety of factors that are specific to the mission,” said Dr Simit Raval, a senior lecturer at the University of New South Wales and co-author of a recent analysis on space launch emissions. More research is needed to ensure a “robust understanding” of these impacts, he says. Arguably, the two most important environmental impacts of space travel are its contribution to global warming and stratospheric ozone loss, says Raval. According to one estimate by Dr Eloise Marais at University College London, carbon dioxide emissions for the four or so tourists on a space flight will be up to 100 times more than the emissions per passenger of a long-haul flight — already an extremely carbon intensive activity. According to a study carried out by researchers at UNSW, Sydney, alumina particles, black carbon and even water vapour released into the stratosphere are further causes for concern when it comes to global warming. However, the overall impact is complex as some of these emissions, such as soot, can also have a cooling effect. Paul Peeters, an associate professor in sustainable transport and tourism at Breda University of Applied Sciences in the Netherlands, says that impacts could soon add up if space tourism becomes more common. “Launches into space each have significant ecological footprints per launch,” he says. When it comes to climate change, much depends on the propellant, says Peeters. For example, hybrid rocket engines, a relatively new addition to the space industry which was used on Virgin Galactic’s SpaceShipTwo, run on both solid and liquid fuel and release far more black carbon than kerosene fuel. “If hybrid rockets, which are assumed to be relatively cheap to operate, become popular, a climate disaster is looming,” says Peeters. Additional carbon emissions could also come from building the Earth spaceports and the space tourists flying to launch sites, possibly using private jets, says Annette Toivonen, tourism lecturer at Haaga-Helia University of Applied Sciences in Finland. Alongside the climate impact, rocket launch exhaust plumes contain other substances which can deplete the Earth’s ozone layer such as nitrogen oxides, hydroxyl radicals and water. Emissions from space launches are not yet specifically addressed in the international Montreal Protocol, which addresses substances that deplete the ozone layer. “This may be something that is re-addressed as space launches become more frequent,” says Raval. There can also be local pollution impacts at launch sites. For example, the long term use of unsymmetrical dimethylhydrazine (UDMH) rocket propellant at the Baikonur Cosmodrome spaceport in Kazakhstan led to severe environmental damage. There are currently no global regulations or agreements regarding the pollution or other environmental impacts from space travel. “The current rise in private new space activities has created an increased demand to avoid a ‘Wild West’ attitude and ownership,” says Toivonen. New types of regulations and legislative frameworks are needed, she says, including globally binding space tourism legislation. The US billionaires pushing space tourism argue that they offer hope and even future positive consequences for people around the world. Bezos has argued that space travel will help children “build a future”, while Branson has said that private space travel will be “open to everyone”. Private space launches have certainly piques the interest of many people. An analysis by Media Matters for America found that broadcast morning television in the US spent nearly as much time on the July Bezos space launch in one day as on the entire climate crisis in the whole of 2020. However, Evlondo Cooper, senior writer for Media Matters, says Bezos’ space flight was a missed opportunity to cover both issues. “Space exploration is exciting; but the undue attention given to those who can leave our planet too often ignores all of us who will be left behind to suffer the consequences of an overheated Earth driven by our world’s polluting industries,” he says. Bezos has even argued that “all polluting industry” should be moved into space to keep Earth clean. But transporting heavy industry into space and the products back to earth would require massive use of earthly energy and resources. “There are no quantitative scenarios showing that it is possible by any margin of likelihood,” said Peeters. While space travel will have the potential to become more energy-efficient or to switch to less-pollutant propellants, it will still add to the environmental pressure on earth without adding to the quality of human life on Earth, argues Peeters. The best decision, he says, would be to agree internationally that commercial space travel is “not a wise development” due to the current ongoing environmental and health crises.

#### Climate Change is existential

Ng ’19 [Yew-Kwang; May 2019; Professor of Economics at Nanyang Technology University, Fellow of the Academy of Social Sciences in Australia and Member of the Advisory Board at the Global Priorities Institute at Oxford University, Ph.D. in Economics from Sydney University; Global Policy, “Keynote: Global Extinction and Animal Welfare: Two Priorities for Effective Altruism,” vol. 10, no. 2, p. 258-266; RP]

Catastrophic climate change Though by no means certain, CCC causing global extinction is possible due to interrelated factors of non‐linearity, cascading effects, positive feedbacks, multiplicative factors, critical thresholds and tipping points (e.g. Barnosky and Hadly, [2016](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0005); Belaia et al., [2017](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0008); Buldyrev et al., [2010](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0016); Grainger, [2017](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0027); Hansen and Sato, [2012](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0029); IPCC [2014](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0031); Kareiva and Carranza, [2018](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0033); Osmond and Klausmeier, [2017](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0056); Rothman, [2017](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0066); Schuur et al., [2015](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0069); Sims and Finnoff, [2016](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0072); Van Aalst, [2006](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0079)).[7](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-note-1009_67) A possibly imminent tipping point could be in the form of ‘an abrupt ice sheet collapse [that] could cause a rapid sea level rise’ (Baum et al., [2011](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0006), p. 399). There are many avenues for positive feedback in global warming, including: the replacement of an ice sea by a liquid ocean surface from melting reduces the reflection and increases the absorption of sunlight, leading to faster warming; the drying of forests from warming increases forest fires and the release of more carbon; and higher ocean temperatures may lead to the release of methane trapped under the ocean floor, producing runaway global warming. Though there are also avenues for negative feedback, the scientific consensus is for an overall net positive feedback (Roe and Baker, [2007](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0065)). Thus, the Global Challenges Foundation ([2017](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0026), p. 25) concludes, ‘The world is currently completely unprepared to envisage, and even less deal with, the consequences of CCC’. The threat of sea‐level rising from global warming is well known, but there are also other likely and more imminent threats to the survivability of mankind and other living things. For example, Sherwood and Huber ([2010](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0071)) emphasize the adaptability limit to climate change due to heat stress from high environmental wet‐bulb temperature. They show that ‘even modest global warming could … expose large fractions of the [world] population to unprecedented heat stress’ p. 9552 and that with substantial global warming, ‘the area of land rendered uninhabitable by heat stress would dwarf that affected by rising sea level’ p. 9555, making extinction much more likely and the relatively moderate damages estimated by most integrated assessment models unreliably low. While imminent extinction is very unlikely and may not come for a long time even under business as usual, the main point is that we cannot rule it out. Annan and Hargreaves ([2011](https://onlinelibrary-wiley-com.proxy.lib.umich.edu/doi/full/10.1111/1758-5899.12647#gpol12647-bib-0004), pp. 434–435) may be right that there is ‘an upper 95 per cent probability limit for S [temperature increase] … to lie close to 4°C, and certainly well below 6°C’. However, probabilities of 5 per cent, 0.5 per cent, 0.05 per cent or even 0.005 per cent of excessive warming and the resulting extinction probabilities cannot be ruled out and are unacceptable. Even if there is only a 1 per cent probability that there is a time bomb in the airplane, you probably want to change your flight. Extinction of the whole world is more important to avoid by literally a trillion times.

## AC- Debris

#### Contention three is debris.

#### Space privatization uniquely exacerbates the amount of debris in the atmosphere.

Martin Mccoustra 20, 5-13-2020, "Space junk: Astronomers worry as private companies push ahead with satellite launches," Conversation, https://theconversation.com/space-junk-astronomers-worry-as-private-companies-push-ahead-with-satellite-launches-137572//ingp

And it’s getting busier. In the last few weeks, SpaceX has launched 60 new satellites as part of its Starlink programme. This brings the total to currently around 400 Starlink satellites in low Earth orbit as part of a programme that aims to bring cheap, satellite-based internet access to everyone. Eventually, this programme could place nearly 12,000 satellites in orbit around the Earth. With Amazon, Canada’s Telesat and others planning satellite constellations of similar scale, low Earth orbit is becoming ever more crowded. Get facts about the coronavirus pandemic and the latest research The debris ranges in size from a few microns to many metres. Stuart Grey, an aerospace engineer at the University of Strathclyde, has produced a stunning visualisation that highlights the more than 20,000 objects over 10cm in size now orbiting the Earth (see video above). But there are many millions of particles 1mm in size and smaller. Closing our window on the universe? Amateur astronomers are already expressing concern over the increasing number of bright, moving objects in the night sky. But the worry is perhaps much greater for the professionals. Crowding in low Earth orbit has inevitable consequences for ground-based astronomers. Bright surfaces on satellites can reflect rays from the sun – giving rise to a burst of sunlight directed towards the surface of the Earth. Such intense bursts of light are much stronger than the weak light sources typically being observed by astronomers and will impede observations of distant objects in space. Billions have already been spent on existing optical telescopes, and many more billions will be poured into new platforms in the next decade, such as the European Extremely Large Telescope being built on the Atacama plateau in Chile. There is intense competition for observing time on such resources, so any potential threat from satellite reflections must be taken seriously as they may make some of the observations driving our understanding of the evolution of the universe impossible. SpaceX has assured the public that Starlink will not contribute to this problem and says it has been taking steps to mitigate the impacts of its satellites on observational astronomy – even to the extent of testing whether a black coating on its satellites can reduce visibility, and adjusting some of the satellites’ orbits if necessary. With some 3% of its planned constellation launched, SpaceX is at least responding to the concerns raised by astronomers. Hopefully other agencies planning satellite constellation launches will also be upfront with their plans to reduce this serious problem to astronomical observation. But crowding in low Earth orbit also has consequences for satellites and other space vehicles, including those designed to carry humans. To achieve orbit, satellites seek a balance between their speed and the effect of Earth’s gravity on them. The speed with which a satellite must travel to achieve this balance depends on its altitude above Earth. The nearer to Earth, then the faster the required orbital speed. At an altitude of 124 miles (200km), the required orbital velocity is a little more than 17,000 miles per hour (about 7.4 km/s). Any object shed by a satellite or other vehicle in orbit will maintain the same orbital speed. Collisions between such objects can therefore occur at combined speeds of potentially up to 34,000 mph at 124 miles (if it is head-on). The effects of such impacts can be serious for astronauts and space stations – as the dramatic opening scenes of the 2013 movie Gravity depict. There is impact shielding on satellites and space vehicles which is designed to stop objects smaller than 1cm crashing into them. At best, the shielding will do so – though the electromagnetic impulse created may interfere with electronic systems. At worst, larger pieces of space junk could penetrate the vehicles. This could result in internal damage and disintegration that threaten the safety of the mission. Space agencies such as NASA and ESA have therefore established orbital debris research programmes to observe such debris and develop strategies to control its effects. There is little doubt that, with the increasing use and commercialisation of space, we boost the risk of catastrophic events associated with orbital debris. Agencies, both state and commercial, must recognise this and support efforts to reduce the likelihood of such events by taking steps to remove existing debris and reduce the potential for further debris by removing redundant satellites and other space vehicles. For example the RemoveDEBRIS satellite uses an on-board harpoon to capture junk. Only when we resolve the problem of space junk will our window on, and pathway to, space be truly fully open.

#### Debris triggers miscalculated war.

Peter Dockrill 16. Award-winning science & technology journalist. “Space Junk Accidents Could Trigger Armed Conflict, Study Finds.” <https://www.sciencealert.com/space-junk-accidents-could-trigger-armed-conflict-expert-warns>.

The increasingly crowded space in Earth's low orbit could set the stage for an international armed conflict, says a new study. Researchers from the Russian Academy of Sciences warn that accidents stemming from the steady rise in space junk floating around the planet could incite political rows and even warfare, with nations potentially mistaking debris-caused incidents as the results of intentional aggressive acts by others. In a paper published in Acta Astronautica, the team suggests that space debris in the form of spent rocket parts and other fragments of hardware hurtling at high speed pose a "special political danger" that could dangerously escalate tensions between nations. According to the study, destructive impacts caused by random space junk cannot easily be told apart from military attacks. "The owner of the impacted and destroyed satellite can hardly quickly determine the real cause of the accident," the authors write. The risks of such an event occurring are compounded by the sheer volume of debris now orbiting Earth. Recent figures from NASA indicate that there are more than 500,000 pieces of space junk currently being tracked in orbit, travelling at speeds up to 28,160 km/h (17,500 mph). The majority of those objects are small – around the size of a marble – but some 20,000 of them are bigger than a softball. In addition to these 500,000 or so fragments – which are big enough for scientists to know about them – NASA estimates that there are millions of undetectable pieces of debris in orbit that are too small to be monitored. But even extremely small fragments such as these pose a threat – in fact, they're considered a greater risk than trackable debris, as their invisible status means spacecraft and satellites can't do anything to avoid them until it's too late. As NASA observed in 2013: "Even tiny paint flecks can damage a spacecraft when travelling at these velocities. In fact a number of space shuttle windows have been replaced because of damage caused by material that was analysed and shown to be paint flecks… With so much orbital debris, there have been surprisingly few disastrous collisions." While we may have been lucky in the past, we can't rely on that to continue. The study by the Russian team cites the repeated sudden failures of defence satellites in past decades that were never explained. The researchers attribute two possible causes: either unrecorded collisions with space junk, or aggressive actions from adversaries. "This is a politically dangerous dilemma," the authors write.

#### **It goes nuclear.**

Johnson 14 – **(**Les Johnson is a Baen science fiction author, popular science writer, and NASA technologist. 2014, “Living without satellites” <https://www.baen.com/living_without_satellites>)

Satellite imagery is used by the military and our political leaders to maintain the peace. When your potential adversaries can’t hide what they’re doing, where their armies are moving and what they are doing with their civilian and military infrastructure, then the danger of surprise attack is diminished. In our nuclear age with instant death only minutes away by missile attack, the doctrine of Mutual Assured Destruction (MAD) only works if both sides know whether or not they are being attacked. The launch of missiles or a bomber fleet can easily be seen from space far in advance of either reaching their potential targets halfway around the globe. The danger of surprise attack is therefore small, making an accidental war far less likely. So what does all this mean? And what do we do about it? First of all, it means that the advocates of space development, exploration and commercialization have succeeded far beyond their initial expectations and dreams. The economies and security of countries in the developed world are now dependent on space satellites. We space advocates should celebrate our success and be terrified of it at the same time. Should we lose these fragile assets in space, our economy would experience a disruption like no other: ship, air and train travel would stop and only restart/operate in a much-reduced capacity for years (GPS loss). Many banking and retail transactions would cease (VSAT loss). Distribution of news and vital national information would be crippled (communications satellite loss). Lives would be put at risk and the productivity of our farming would dramatically decrease (weather satellite loss). The risk of war, including nuclear war, would increase (loss of spy satellites) and our military’s ability to react to crises would be significantly reduced (loss of military logistics and intelligence gathering satellites).