### **Voters**

# Comes down to property rights vs human life

# Probability:depletion of ozone layer, and mass amounts of debris are occurring now. Priv companies aims for tourism mean realising 300 tonnes of carbon dioxide into the atmosphere biweekly which is 7mil tonnes a year

# Magnitude: neg literally has no magnitude, just because you preform labor doesnt mean that you get property rights. Their dropped second contention also means they have no impacts. Whereas… explain case

# Solvency: conceded my plantext is legit. Banning private launches could be a starting point to do…

### 

### **Analytics:**

### **No room for safety nets: can't redistribute money (all based on fam you're born into) Conflicts with rawls’s lottery of birth.**

**1. Locke doesn't tell us what to do in the case of conflicting rights. For example, taxation is necessary in order to fund hospitals that protect the right to life, but that funding comes from the government forcing its citizens into paying taxes.**

**2.permissible appropriation entails equal distribution of unowned property, such that enough is left for individuals to sustain themselves. Private Entities have no incentive and the opponent can’t implement any sort of system that forces them to abide by leaving enough for all individuals in society, this appropriation is unjust and will lead to coercion and monopolies of critical goods.**

**3. Simply because one performs labor on land doesn’t make them entitled to this land, just because one cleans a portion of the ocean they can't stake any legitimate claim to the ocean, similarly placing something on unowned land doesn’t make the land yours, placing a boat on the ocean doesn’t make that portion of the ocean mine.**AT: Kant

**1: Consequences are inescapable — when we predict a consequence, it becomes a part of our ethical deliberations. If I know that there’s a risk of killing someone if I throw a rock off a 20-foot building in NYC, that consequence becomes part of the intentionality of rejecting that action.**

**2: No degrees of wrongness — breaking a promise to get a dying person to a hospital is far worse than breaking a promise to meet someone for lunch; only the consequences can explain why one is worse. If you can’t have degrees of wrongness, you can’t apply their framework to what is and isn’t just because then petty theft would deserve the same sentence as homicide.**

I affirm

**I value Justice as implied by the word “unjust” in the resolution**

#### **My value criterion is ensuring equality through adhering to Rawls’s principles of justice: human liberties, and minimizing inequality through a veil of ignorance**

**Constitutional Rights Foundation 2007** (“BRIA 23 3 c Justice as Fairness: John Rawls and His Theory of Justice,” Bill of Rights in Action Fall 2007 - Volume 23, No. 3, <https://www.crf-usa.org/bill-of-rights-in-action/bria-23-3-c-justice-as-fairness-john-rawls-and-his-theory-of-justice>) //neth \*\*brackets in original text.

The First Principle of social justice concerns political institutions: Each person has the same and indefeasible [permanent] claim to a fully adequate scheme of equal basic liberties, which scheme is compatible with the same scheme of liberties for all. This principle means that everyone has the same basic liberties, which can never be taken away. Rawls included most of the liberties in the U.S. Bill of Rights, such as freedom of speech and due process of law. He added some liberties from the broader area of human rights, like freedom of travel. Rawls recognized the right of private individuals, corporations, or workers to own private property. But he omitted the right to own the "means of production" (e.g., mines, factories, farms). He also left out the right to inherit wealth. These things were not basic liberties in his view. Rawls agreed that basic liberties could be limited, but "only for the sake of liberty." Thus, curbing the liberties of an intolerant group that intended to harm the liberties of others may be justified. The Second Principle of social justice concerns social and economic institutions: Social and economic inequalities are to satisfy two conditions: first, they are to be attached to offices and positions open to all under conditions of fair equality of opportunity; and second, they are to be to the greatest benefit of the least-advantaged members of society (the Difference Principle). This Second Principle focused on equality. Rawls realized that a society could not avoid inequalities among its people. Inequalities result from such things as one's inherited characteristics, social class, personal motivation, and even luck. Even so, Rawls insisted that a just society should find ways to reduce inequalities in areas where it can act. By "offices and positions" in his Second Principle, Rawls meant especially the best jobs in private business and public employment. He said that these jobs should be "open" to everyone by the society providing "fair equality of opportunity." One way for a society to do this would be to eliminate discrimination. Another way would be to provide everyone easy access to education. The most controversial element of his theory of social justice was his Difference Principle. He first defined it in a 1968 essay. "All differences in wealth and income, all social and economic inequalities," he wrote, "should work for the good of the least favored." Later, when he wrote A Theory of Justice, he used the phrase, "least-advantaged members of society" to refer to those at the bottom of economic ladder. These might be unskilled individuals, earning the lowest wages in the society. Under the Difference Principle, Rawls favored maximizing the improvement of the "least-advantaged" group in society. He would do this not only by providing "fair equality of opportunity," but also by such possible ways as a guaranteed minimum income or minimum wage (his preference). Rawls agreed that this Difference Principle gave his theory of social justice a liberal character. Finally, Rawls ranked his principles of social justice in the order of their priority. The First Principle ("basic liberties") holds priority over the Second Principle. The first part of the Second Principle ("fair equality of opportunity") holds priority over the second part (Difference Principle). But he believed that both the First and Second Principles together are necessary for a just society. The "Thought Experiment" Rawls was interested in political philosophy. Thus he focused on the basic institutions of society. Unless such institutions as the constitution, economy, and education system operated in a fair way for all, he argued, social justice would not exist in a society. Rawls set out to discover an impartial way to decide what the best principles for a just society were. He reached back several hundred years to philosophers like John Locke and Jean Jacques Rousseau who had developed the idea of a social contract. Locke and Rousseau had written that people in the distant past had formed a contract between themselves and their leader. The people would obey their leader, usually a king, and he would guarantee their natural rights. This would be the basis for a just society. Thomas Jefferson relied on this social contract idea in writing the Declaration of Independence. By the 20th century, most philosophers had dismissed the social contract as a quaint myth. Rawls, however, revived the social contract concept of people agreeing what constitutes a just society. Rawls devised a hypothetical version of the social contract. Some have called it a "thought experiment" (Rawls called it the "Original Position"). This was not a real gathering with real people, bargaining over an agreement. Instead, it was an imaginary meeting held under strict conditions that permitted individuals to deliberate only by using their reason and logic. Their task was to evaluate principles of social justice and choose the best ones. Their decision would be binding on their society forever. Rawls added a requirement to assure that the choice of social justice principles would truly be impartial. The persons in this mental exercise had to choose their justice principles under a "veil of ignorance." This meant that these individuals would know nothing about their particular positions in society. It was as if some force had plucked these people from a society and caused them to experience severe amnesia. Under the "veil of ignorance," these imaginary people would not know their own age, sex, race, social class, religion, abilities, preferences, life goals, or anything else about themselves. They would also be ignorant of the society from which they came. They would, however, have general knowledge about how such institutions as economic systems and governments worked. Rawls argued that only under a "veil of ignorance" could human beings reach a fair and impartial agreement (contract) as true equals not biased by their place in society. They would have to rely only on the human powers of reason to choose principles of social justice for their society. Rawls set up his "thought experiment" with several given systems of social justice principles. The task of the imaginary group members under the "veil of ignorance" was to choose one system of principles for their own society. Rawls was mainly interested to see what choice the group would make between his own Justice as Fairness concept and another called "Average Utility." This concept of justice called for maximizing the average wealth of the people. Making the Choice The fictional persons in the experiment, using their powers of reason and logic, would first have to decide what most people in most societies want. Rawls reasoned that rational human beings would choose four things, which he called the "primary goods": • wealth and income • rights and liberties • opportunities for advancement • self-respect In the next and crucial step, the participants would have to decide how a society should go about justly distributing these "primary goods" among its people. Clearly, designing economic, political, and social institutions that favored the "most advantaged" members of the society would not be justice for all. On the other hand, the members of the experiment group would rationally agree that equal rights and liberties, opportunities, and self-respect for all would be just. But what about everyone having equal wealth and income? Rawls was sure the parties would reasonably conclude that some (but not extreme) inequality of wealth and income is necessary in a just society. Entrepreneurs, innovators, and leaders should be rewarded for working to improve the economy and wealth of the society. Then how should wealth and income be distributed in a just society if not equally or skewed toward the rich? Again using their reason and logic, Rawls argued, the imaginary parties would adopt what philosophers call the maximum-minimum (or "maximin") rule. Under this rule, the best choice is the highest minimum. Average Wage Per Hour Legal Minimum Wage SOCIETY A $20.00 $7.00 SOCIETY B $30.00 $1.00 In the example above, the best choice under the "maximin" rule would be SOCIETY A, which has the highest minimum wage. Those earning the average wage and above are doing pretty well as well. SOCIETY B with its higher average wage benefits those in the middle and at the top income levels, but largely ignores those at the bottom. This is the flaw of the Average Utility social justice system, according to Rawls. Similarly, Rawls believed the persons in his experiment would rationally choose principles of social justice that maximized benefits for the "least advantaged." The individuals under the "veil of ignorance" do not know what position they really occupy in their society. Any one of them might be Bill Gates or an unemployed high school dropout. To be on the safe side, Rawls maintained, the rational-thinking members of the imaginary group would choose the principles of justice that most benefited those at the bottom. In this way, Rawls believed, he had demonstrated that his Justice as Fairness principles, skewed toward the "least advantaged," were the best for building or reforming institutions for a just society. Rawls did not think the United States was yet a just society since it did not satisfy his Difference Principle. To Rawls, wealth and power in the United States were concentrated too much in the hands of the "most advantaged."

**In the context of this resolution, Policies that hurt the least advantaged are inherently unjust in Rawlsian philosophy, and my contentions will prove that private appropriation of space is not only founded in unjust principles but also perpetuates further and unequal harm.**

## **C1 – Furthering inequalities**

#### **The billionaire space race is at odds with Rawls’ conception of equality**

**Maxman 2021** (Abby Maxman, “Billionaires In Space Are Costing Lives On Earth,” July 19, 2021, WBUR – Boston’s NPR news station, <https://www.wbur.org/cognoscenti/2021/07/19/jeff-bezos-blue-origin-space-race-abby-maxman>) //neth

The magic of space exploration is undeniable, as are the advances in science and technology that often come with it. But there is something deeply wrong with our society when three of the wealthiest men on Earth, including Jeff Bezos, spend billions of dollars on an ego-fueled race to space, while the world is reeling from a global pandemic and people on our planet are quite literally starving. A new Oxfam report finds 11 people are likely dying every minute from hunger and malnutrition, outpacing COVID-19 fatalities. This, as Jeff Bezos prepares for his 11-minute thrill ride. Bezos, who takes flight on July 20, is now the wealthiest man on Earth, worth about $200 billion dollars. His wealth could more than address some of the country’s and world’s most pressing problems. How this came to be is not rocket science. It is our backwards and corrupt tax system that has allowed Jeff Bezos to pay next to no federal income tax — even claim the child tax credit one year — while at the same time pour $7.5 billion into his own private aerospace company. Imagine the true heights we could achieve if he, along with other billionaires, paid their fair share of taxes. A recent bombshell IRS leak from ProPublica revealed that America’s 25 richest billionaires — including Bezos — paid only 3% in income tax between 2014 and 2018. Meanwhile the average U.S. worker pays a tax rate of 22%. Here’s the truth: we have built a tax system with inequality at its core, one that deliberately favors the wealthy while squeezing working families who can least afford it. This space race is also an affront to the Amazon workers who struggle to make a living, are denied basic rights like collective bargaining and report being treated like robots, constantly watchedevery second to ensurethey are working, faster and faster. These are the very workers who have helped make Bezos the richest man on Earth. In fact, if Bezos gave each of Amazon’s 1.3 million workers a $65,000 bonus with the profits he made during the pandemic, he would still be left with the $113 billion fortune that he had before the pandemic began. As we grapple with how to control the still-deadly pandemic and pay for a fair and equitable recovery — one that would make desperately needed investments in well-paying jobs, childcare and efforts to combat the climate crisis — we must consider what a fair tax system would look like. If Amazon paid the current U.S. corporate tax rate of 21%, it would pay an additional $2.5 billion in taxes a year — enough to provide food assistance to 1.7 million Americans facing hunger. A 3% wealth tax on Jeff Bezos would generate $6 billion in revenue on his $200 billion fortune, enough to provide high-quality childcare to every child under 4-years-old in Amazon’s home state of Washington — 440,000 kids. A pandemic profits tax, to ensure that companies like Amazon — that profited during the pandemic — are taxed fairly on their windfall gains, would yield $11 billion in additional revenue just from Amazon. That’s enough to vaccinate 580 million people around the world against COVID-19. So where do we go from here? We have a chance to level the playing field in front of us right now. President Biden’s American Jobs Plan and American Families Plan would go a long way to unrigging the rules that have allowed so many corporations and wealthy individuals to get away with paying so little. The American Jobs Plan would raise the corporate tax rate and close offshore tax loopholes. The American Families Plan would raise the marginal rate for those earning more than $400,000, increase the capital gains rate for the wealthiest Americans, and provide much-needed resources to the IRS to make sure tax cheats pay their fair share. No one making less than $400,000 would pay more tax than they do now, and most would pay less. We will never achieve a fair and equitable recovery from COVID-19 if we continue to have a system where corporations and the wealthy get richer while everyone else is left behind. The real innovation we need is not a business plan for space tourism, it is a fair tax system to curb runaway inequality, ensure we reward work, not wealth, and invest in the health, safety and education of people on Earth — our one and only home.

#### **Private appropriation of space amplifies inequalities. Stockwell 20**

Samuel Stockwell, 7-20-2020, "Legal ‘Black Holes’ in Outer Space: The Regulation of Private Space Companies," E-International Relations, <https://www.e-ir.info/2020/07/20/legal-black-holes-in-outer-space-the-regulation-of-private-space-companies/> //marlborough JH

On 30th April 2020, NASA – the US government’s space agency ­– awarded three private space companies a joint-contract worth $967m to complete a lunar mission by 2024, in what was celebrated as “the last piece that [America] need[s] in order to get to the moon” by NASA administrator Jim Brindestine (The Telegraph, 2020). Yet, whilst this development was widely covered in the media, less coverage has focused on the extent to which existing international legislation surrounding outer space endeavours appropriately applies to private entities. Indeed, the prospect of a corporate foothold within the extra-terrestrial domain has thrown up both a mixture of optimism and concern regarding the potential benefits of expanding capital projects into space (Adolph, 2006; Dickens & Ormrod, 2007). ¶By adopting the 1967 UN Outer Space Treaty (OST) as an analytical framework in relation to the rise of the so-called US ‘NewSpace’ actors, this essay argues that there are significant legal ambiguities regarding the status of private space companies in orbital space. Such loopholes allow the US government to circumvent its own obligations to the OST, whilst simultaneously undermining the notion of space as a ‘global commons’ through a commodification process. The lack of specificity within the OST surrounding privateproperty rights over extra-terrestrial resources risks the prospect of reinforcing Earth-bound wealth inequalities and US dominance in space, by restricting the potential economic benefits for the broader global citizenry in favour of a narrow class of wealthy American investors. Moreover, the OST’s weak clause regarding the regulation of space surveillance risks the incentivisation of a ‘global panopticon’ network of US satellites. The rise of dual-use technology is blurring the boundaries between military and civilian observations, raising serious ethical concerns over the nature of US space-based data collection. Finally, the increasing number of private satellite constellations is facilitating the possibility of cataclysmic space debris collisions which could exacerbate geopolitical tensions. Such developments are also contributing towards the contamination of the broader space environment in ways that the OST had never envisioned. ¶The UN Outer Space Treaty and Rise of the ‘NewSpace’ Actors ¶Although ratified into international law in 1967, the UN Outer Space Treaty (OST) is perhaps still the most relevant piece of legislation for analysing state and non-state entity activity in outer space. Designed to prevent both the militarisation of space and national appropriation of celestial bodies at the height of Cold War tensions, the UN OST holds significant influence as a form of customary international law (Hebert, 2014: 6). Ratified by over 100 nations – including major spacefaring nations such as the United States, Russia and China – the treatyis widely accepted as an authoritative document and has formed the basis for all other space treaties that have succeeded it (Kramer, 2017: 129). This is in contrast to more recent legislation such as the 1972 Moon Treaty designed to promote cooperation in Moon exploration and development, which the US and other major space superpowers have refrained from signing (Adolph, 2006: 968-969). ¶The type of American actors becoming involved in the realm of outer space has undergone significant diversification. Despite working alongside NASA since the 1950s, commercial enterprises were largely confined to the manufacturing of parts utilised in rockets and other equipment for space activities (Lal, 2016: 63-66). However, the continuous sharp decline in NASA’s overall budget that has occurred since the Apollo 11 moon landing, and the increasing trends towards the privatisation of government functions has drastically altered both the capabilities and the outlooks of private space companies. Indeed, although the space economy is growing overall, global government spending decreased by 1.3% between 2012 and 2013 while commercial-sector growth increased by roughly 7% (Conklin, 2017: 33). Central to the impetus behind this private sector space boom has been the emergence of the so-called ‘NewSpace’ actors – “a broad range of primarily US-based entrepreneurs… who, for more than 30 years, have aimed to commercialise space” (Valentine, 2012: 1046). Driven by a libertarian outlook of economics, and critical of NASA’s historical grip on space exploration, these individuals portray themselves as the pioneers of the ‘final frontier’ who will save humanity from extinction through privately-funded extra-terrestrial missions (Kearnes & van Dooren, 2017: 182). ¶Near-Earth Object and Lunar Resource Mining: US Private Property in Space ¶Lunar rock samples from the Apollo missions containing rare Earth resources, such as Helium-3 which produces more power and less waste than traditional nuclear reactors on Earth, have since fuelled incentives for extra-terrestrial resource mining (Brearley, 2006: 44-46). This was further facilitated by suggestions that near-earth objects (NEOs) like the so-called ‘Anteros asteroid’ could comprise of over five trillion dollars’ worth of magnesium silicate and aluminium (Kramer, 2017: 131). ¶Envisaging appropriation concerns that might arise from the future extraction of space assets by spacefaring nations, Article II of the UN OST declared that: “Outer space is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means” (UN, 1967). The emphasis on claims of national sovereignty were intimately tied to the Cold War context at the time, where space activities were under the exclusive monopoly of governmental agencies and initiated for goals of military dominance or national prestige (Sachdeva, 2017: 210). However, the privatisation of the space industry that has occurred since the 1980s has meant that the legislation leaves an enormous amount of legal ambiguity and interpretation regarding the regulation of private resource mining in space. As Shaer (2016) demonstrates, the Article II provision fails to address either the exploitation of space for financial gain or the property claims of commercial enterprises (Shaer, 2016: 47). ¶Nevertheless, Article VI of the UN OST asserts that: “States shall be responsible for national space activities whether carried out by governmental or non-governmental entities” (UN, 1967; own emphasis). Some scholars have suggested that this clause significantly restrains the activities of private space corporations by incentivising states to regulate their domestic organisations for fear of liability concerns (Abeyratne, 1998: 168). However, the US government recently enacted a piece of legislation which exploited this clause, in order to circumvent its own restrictions and strengthen US economic influence in space. The passage of the 2015 SPACE Act enabled US citizens to privately “possess, own, transport, use, and sell the resources” they obtain in outer space, whilst making careful consideration to deny national sovereign claims over such materials (Leon, 2018: 500). ¶Yet, regardless of whether it is an American private company or public venture, the US is still satisfying its geopolitical interests; by exclusively siphoning off extra-terrestrial resources for American gain, the nation’s soft power is thereby extended at the expense of spacefaring adversaries such as China(Basu & Kurlekar, 2016: 65). Indeed NewSpace actors cleverly played on these strategic concerns prior to the bill’s passage, with billionaire space entrepreneur Robert Bigelow asserting that the biggest danger wasn’t private enterprises on the Moon, but that “America is asleep and does nothing, while China comes along… surveying and laying claim [to the Moon]” (Klinger, 2017: 222). ¶The US government’s support for private space companies is also likely to lead to the reinforcement of Earth-bound wealth inequalities in space. Many NewSpace actors frame their long-term ambitions in space with strong anthropogenic undertones, by offering the salvation of the human race from impending extinction through off-world colonial developments (Kearnes & Dooren: 2017: 182). Yet, this type of discourse disguises the highly exclusive nature of these missions. Whilst they seem to suggest that there is a stake for ordinary citizens in the vast space frontier, the reality is that these self-described space pioneers are a member of a narrow ‘cosmic elite’ – “founders of Amazon.com, Microsoft, Pay Pal… and a smattering of games designers and hotel magnates” (Parker, 2009: 91). ¶Indeed, private space enterprises have themselves suggested that they have no obligation to share mineral resources extracted in space with the global community (Klinger, 2017: 208). This is reflected in the speeches of individuals such as Nathan Ingraham, a senior editor at the tech site EngadAsteroid mining, who claimed that asteroid mining was “how [America is] going to move into space and develop the next Vegas Strip” (Shaer, 2016: 50). Such comments highlight a form of what Beery (2016) defines as ‘scalar politics’. In similar ways to the ‘scaling’ of unequal international relations that has constituted our relationship with outer space under the guise of the ‘global commons’ (Beery, 2016: 99), private companies – through their anthropogenic discourse – are scaling existing Earth-bound wealth inequalities and social relations into space by siphoning off extra-terrestrial resources. By constructing their endeavours in ways that appeal to the common good, NewSpace actors are therefore concealing the reality of how commercial resource extraction serves the exclusive interests of their private shareholders at the expense of the vast majority of the global population.

#### **And taxpayer money is funding these inequalities – it’s further proof of injustice**

**Grush 2019** (Loren Grush, “Commercial space companies have received $7.2 billion in government investment since 2000,” The Verge, June 18, 2019, <https://www.theverge.com/2019/6/18/18683455/nasa-space-angels-contracts-government-investment-spacex-air-force>) //neth

Early investments from a government agency, like NASA or the Air Force, can be a crucial step in the evolution of commercial space companies from scrappy startups to successful businesses. That’s according to a new report from Space Angels, an investment firm focused on the space industry, which quantified how much money government agencies have invested in private aerospace firms over the last 18 years. The analysis reveals just how important a role the government still plays in the private space industry. It found that early public investment can sometimes be the difference between life and death for a company. “I think it’s really important for people to recognize that it isn’t just the private sector deciding to do something,” Chad Anderson, CEO of Space Angels, tells The Verge. “The government has played a key role in the development of entrepreneurial space companies.” Space Angels made the report at the request of NASA, as the agency wanted to know just how its investments over the last couple of decades have affected the private sector. Ultimately, Space Angels found that 67 space companies received a total of $7.2 billion in investments from the government between 2000 and 2018. And about 93 percent of that investment went into companies dedicated to launching rockets. “It’s no surprise,” says Anderson. “Government funding has been directed at reducing the barriers to entry, and the biggest barrier in the beginning is launch.” The report highlights SpaceX as a prime example of how early government investment contributed to the success of a company. During its first decade of operation, SpaceX operated off of $1 billion, and about half of that money came from government contracts from NASA, according to the Space Angels report. Musk notably thanked NASA for the agency’s support after SpaceX launched its very first Dragon cargo capsule to the International Space Station in 2012. “They didn’t do this alone,” says Anderson. “They couldn’t have done it without the help of NASA

## Contention 2: Space Debris

#### **Growing commercialization of space activities is causing satellite numbers to triple through mega-constellations**

**Muelhaupt et al 19** [Theodore Muelhaupt, Center for Space Policy @ The Aerospace Corporation, Marlon Sorge, Center for Space Policy @ The Aerospace Corporation, Jamie Moren, Center for Space Policy @ The Aerospace Corporation, Robert Wilson, Center for Space Policy @ The Aerospace Corporation, “Space traffic management in the new space era,” Journal of Space Safety Engineering,<https://www.sciencedirect.com/science/article/pii/S246889671930045X>] /Triumph Debate

In just the last few years, commercial companies have proposed, funded, and in a few cases begun deployment of very large constellations of small to medium-sized satellites. These constellations will add much more complexity to space operations. Table 1 shows some of the constellations that have been announced for launch in the next decade. Two dozen companies, when taken together, have proposed placing well over 20,000 satellites in orbit in the next 10 years. For perspective, fewer than 8100 payloads have been placed in Earth orbit in the entire history of the space age, only 4800 [1] remain in orbit and approximately 1950 [2] of those are still active. And it isn't simply numbers – the mass in orbit will increase substantially, and long-term debris generation is strongly correlated with mass. This table is in constant flux. It is based largely on U.S. filings with the Federal Communications Commission (FCC) and various press releases, but many of the companies here have already altered or abandoned their original plans, and new systems are no doubt in work. Although many of these large constellations may never be launched as listed, the traffic created if just half are successful would be more than double the number of payloads launched in the last 60 years and more than 6 times the number of currently active satellites. Current space safety, space surveillance, collision avoidance (COLA) and debris mitigation processes have been designed for and have evolved with the current population profile, launch rates and density of LEO space. By almost any metric used to measure activity in space, whether it is payloads in orbit, the size of constellations, the rate of launches, the economic stakes, the potential for debris creation, the number of conjunctions, NewSpace represents a fundamental change. 3. Compounding effects of better SSA, more satellites, and new operational concepts The changes in the space environment can be seen on this figurative map of low Earth orbit. Fig. 1 shows the LEO environment as a function of altitude. The number of objects found in each 10 km “bin” is plotted on the horizontal axis, while the altitude is plotted vertically. Objects in elliptical orbits are distributed between bins as partial objects proportional to the time spent in each bin. Some notable resident systems are indicated in blue text on the right to provide an altitude reference. The (dotted) red line shows the number of objects in the current catalog tracked by the U.S. Space Surveillance Network (SSN). All the COLA alerts and actions that must be taken by the residents are due to their neighbors in the nearby bins, so the currently visible risk is proportional to the red line. The red line of the current catalog does not represent the complete risk; it indicates the risk we can track and perhaps avoid. A rule of thumb is that the current SSN LEO catalog contains objects about 10 cm or larger. It is generally accepted that an impact in LEO with an object 1 cm or larger will cause damage likely to be fatal to a satellite's mission. Therefore, there is a large latent risk from unobserved debris. While we cannot currently track and catalog much smaller than 10 cm, experiments have been performed to detect and sample much smaller objects and statistically model the population at this size [3]. The (solid) blue line represents the model of the 1 cm and larger debris that is likely mission-ending, usually called lethal but not trackable. If LEO operators avoid collisions with all the objects in the red line, they are nonetheless inherently accepting the risk from the blue line. This risk is already present. The (dashed) orange line is an estimate of the population at 5 cm and larger and is thus an estimate of what the catalog might conservatively be a few years after the Space Fence, a new radar system being built by the Air Force, comes on line (currently planned for 2019) [4]. Commercial companies offering space surveillance services, such as LeoLabs, ExoAnalytics, Analytic Graphics Inc., Lockheed, and Boeing, might also add to the number of objects currently tracked. Space Policy Directive 3 (SPD-3) [13] specifically seeks to expand the use of commercial SSA services. Existing operators can expect a sharp increase in the number of warnings and alerts they will receive because of the increase in the cataloged population. Almost all the increase will come from newly detected debris [5]. The pace of safety operations for each satellite on orbit will significantly change because of the increase in the catalog from the Space Fence. This effect is compounded because the NewSpace constellations described in Table 1 will drastically change the profile of

#### satellites in LEO. The green bars in Fig. 1 represent the number of objects that will be added to the catalog (red or orange lines) from only the NewSpace large LEO constellations at their operational altitudes. This does not include the rocket stages that launch them, or satellites in the process of being phased into or removed from the operational orbits. Neighbors of one of these new constellations may face a radically different operations environment than their current practices were designed to address. Satellites in these large LEO constellations typically have planned operational lifetimes of 5–10 years. Some companies have proposed to dispose of their satellites using low thrust electric propulsion systems, which would spiral satellites down over a period of months or years from operating altitudes as high as 1500 km through lower orbits where the Hubble Space Telescope, the International Space Station, and other critical LEO satellites operate [6]. Similar propulsive techniques would raise replacement satellites from lower launch injection orbits to higher operational orbits. These disposal and replenishment activities will add thousands of satellites each year transiting through lower altitudes and posing a risk to all resident satellites in those lower orbits. More importantly, failures will occur both among transiting satellites and operational constellations, potentially leaving hundreds more stranded along the transit path. Aerospace studies [7–9] have shown that failed satellites, whether they fail during operations or fail during disposal, can pose as great or even greater risk than the many thousands of operational satellites (Fig. 2) **Even small increases in the amount of satellites launched can have a large effect**

**Radtke et al 17** [Jonas Radtke, Technische Universitaet Braunschweig Institute of Space Systems, Enrico Stoll, Technische Universitaet Braunschweig Institute of Space Systems, Hugh Lewis, Aeronautics Research Group @ University of Southampton, Benjamin Vergili, IMS Space Consultancy, “Impact of the Increase in Small Satellite Launch Traffic on the Long Term Evolution of the Space Debris Environment,” 7th European Conference on Space Debris, <https://conference.sdo.esoc.esa.int/proceedings/sdc7/paper/353/SDC7-paper353.pdf>] /Triumph Debate

A large number of long-term simulations including different scenarios of future small satellite traffic have been performed. **From** these **simulations, several conclusions can be drawn**: • In all performed simulations, **small satellites had a significant impact on the long-term space debris environment**. In fact, no single Monte-Carlo run was performed that resembled a Monte-Carlo run from the reference scenario in terms of the number of objects on orbit or number of catastrophic collisions. • It was furthermore shown **that the long-term evolution is highly sensitive to changes in small satellite numbers, characteristics and capabilities. Increased sizes or higher launch altitudes of small satellites** compared to today’s values **will lead to an amplification of the overall impact.**

* **Simulation info:** 
  + To be able to estimate the impact of the increasing num-ber of small satellites, a set of future launch traffic sce-nario was defined. These scenarios were then used to project the long-term evolution of the space debris environment.
  + Simulations were performed using the long-term evolution tool LUCA (Long term utility for collision analysis) [7]. The results of the simula-tions were then compared against a reference scenario, in which no additional small satellite launches were considered.
  + The reference scenario was chosen to be in-line with current simulations performed by the Inter-Agency Space Debris Coordination Committee (IADC)The initial population used for the simulations included all LEO-crossing objects ≥ 10 cm on January 1st 2013, derived from ESA’s Meteoroid and Space Debris Terrestrial Environment Reference Model (MASTER) [10], [11]. The traffic was created by repeating all LEO and geostationary transfer orbit (GTO) launches between 2005 and 2012.
  + For the future solar activity, five different random-cycles were created. All simulations were performed for simulation time frames of 200 years, performing 50 Monte-Carlo runs per scenario.

#### **Satellite debris cause a laundry list of problems**

**Haroun et al 21** [Fawaz Haroun, Law @ University of Lagos, Shalom Ajibade, Law @ University of Lagos, Philip Oladimeji, Law @ University of Lagos, John Igbozurike, Law @ University of Lagos, “Toward the Sustainability of Outer Space: Addressing the Sustainability of Space Debris,” New Space, <https://www.liebertpub.com/doi/pdf/10.1089/space.2020.0047>] /Triumph Debate

Debris pose risks to both Earth and space. With respect to access to space and space resources, debris endangers both current and prospective space missions. NASA notes that **most space debris can reach speeds** \*8,046.72 meter per second (**almost 7 times faster than a bullet**), **fast enough for a relatively small piece of orbital debris to inflict severe damages on a spacecraft or satellite**.3 Majority of the world’s population rely on satellite technologies and applications every day.11 Indeed, **satellites have many essential uses, including communications**, photograph and **mapping, remote sensing** and Geographic Information System (essential to geographical studies), **weather forecast, global positioning system, and the defense industry**.12 When pieces of **space debris** increase, they **pose a great threat not only to the orbital paths of these satellites, but also to their operational span, due to possible collisions**.11 In the same vein, debris also affect safety of humans in space. **The prospects of more human presence in orbit are becoming more realistic** every day. Organizations are planning space missions for tourism. For example, both SpaceX and Virgin Galactic intend to begin private passengers’ flights to space in early 2020s decade.13 **Moreover, current manned missions such as the International Space Station (ISS) are always considered to be at risk** of debris situations. Unsurprisingly, NASA records that the ISS has made 3 collision avoidance maneuvers in 2020 alone.14 Asides the effects of debris in space, there is also direct danger to Earth. **Large items from space can re-enter Earth successfully without totally burning u p** in the atmosphere, **and this can result in nuclear contamination of Earth’s surface**.15 **This danger was made apparent when a Soviet satellite fell to Earth in 1978, scattering radioactive particles over northern Canada; this crash required extensive cleanup** of the area.16 There are other instances of debris falling onto Earth. On April 27, 2000, 3 different places in South Africa experienced space debris crashes.17 Similarly, on May 13, 2020, a Chinese rocket falling back to Earth uncontrollably may have dropped debris in 2 nearby Ivorian villages.18 These events force us to consider where the next debris drop will be, perhaps somebody’s roof, or in a field of playing kids. There is no doubt that something needs to be done in light of the aforementioned risks.

#### **Neg can't solve:** **Private entities have low safety standards, and won’t cooperate with others**

**Yuan 21** [Alda Yuan, Public Health Analyst U.S. Department of Health and Human Services and visiting attorney at the Environmental Law Institute with a JD from Yale, 2021, “FILLING THE VACUUM: ADAPTING INTERNATIONAL SPACE LAW TO MEET THE PRESSURES CREATED BY PRIVATE SPACE ENTERPRISES,” Hein Online, https://heinonline.org/HOL/P?h=hein.journals/denilp49&i=27]/Kankee

C. Non-state Actors Introduce Practical Challenges that **Endanger** the Future of Space Travel If companies are permitted to access space without a proper legal framework or sufficient coordination, the practical risks may **doom** the project of humanity in outer space for the near future. The opening anecdote dramatized the risks, but the fact that a chain of cascading destruction might **preclude** the use of whole bands of outer space or make launches **impossible** is not farfetched. 99 Indeed, it is already happening.0 Because space missions always create debris and there is a **correlation** between the number of objects orbiting earth and the chances of collision, which thereby creates more debris, even no further activity in space will eventually result in a belt of debris encircling the earth.10 1 This cascade effect, called the Kessler Syndrome, 102 has the potential to speed up astronomically if activities in outer space expand without contingent regulation and mitigation measures.1 1 3 At current rates and in the absence of a catastrophic event, lower earth orbit, in particular, might reach a tipping point within the next ten to fifty years.1 4 If the space debris problem is permitted to reach this tipping point, access to space may well be cut off for the near future because it will be impossible to launch satellites.1 5 Given that we do not have the technology to clean up debris yet, space travel faces an existential threat. In light of this, most space-faring states cooperate, working together to develop guidelines and pool resources to track the debris already orbiting the earth to minimize the chances of a collision.106 Given the high speeds the debris travels at, approximately 10 km/second,107 and the amount of damage even tiny pieces can do, 108 the existing tracking systems are not an absolute fix. At these speeds, a piece of debris weighing a mere two grams can produce an impact force equivalent to a kilogram of TNT.109 More than three hundred thousand pieces of debris greater than one cm in diameter," and therefore capable of causing enormous damage, orbit the earth while the US Space Surveillance Network (SSN) system can only track objects over five cm in diameter." There are millions of fragments smaller than one cm, which are impossible to track and yet can still cause significant damage.11 2 Still, the tracking system is important. In the last twenty years, the International Space Station has carried out several avoidance maneuvers to avoid potential collision with pieces of space debris being tracked by the SSN system.113 Between April of 2011 and April of 2012, the ISS performed four evasive maneuvers." 4 On two additional occasions, the crew fell back to the Soyuz since there was no time to set up an evasive maneuver." 5 This sort of cooperation works given the limited number of actors involved and the aligned interests of the nation-state parties. Commercial space companies do not have the same **incentives** to cooperate to share data and new technologies. This is why many have called for the creation of a new convention on managing orbital debris. 16 However, escalation of the Kessler Syndrome is not the only problem that might arise by failing to accommodate for the rise of the commercial corporations, so such a convention would not eliminate the threat. For instance, many satellites use nuclear power sources (NPS), which can break up upon reentry." As early as 1978, the Cosmos-954 incident scattered radioactive debris over Canada.118 Other accidents of this type could raise fallout concerns, especially if they occur over more densely populated regions. In an attempt to alleviate this risk and decrease the chances of collisions, various nations have cooperated to design and standardize methods of decommissioning satellites. 119 One strategy is to supply spacecraft with additional fuel and nudge it out of orbit so it will burn up in the atmosphere over the ocean. 120 Another is to push the ailing satellite into a graveyard orbit. 121 These methods require additional research and design and incur additional costs. 12 2 Private companies may not spontaneously take the steps **necessary** to comport with the common practices of space-faring nations. Thus, the rise of private corporations, while opening up new possibilities, may also **threaten** space travel itself and the international legal order in which coordination currently occurs. More importantly, if companies not subject to regulation and oversight are permitted to operate in outer space, disasters cannot be effectively prevented. In that case, space exploration and the benefits stemming from it might be closed off for all. III. SPACE IS A GLOBAL COMMONS UNDER CUSTOMARY INTERNATIONAL LAW

**AND In Musk’s own words, he stated that spacex will not comply with governmental laws** https://www.dailymail.co.uk/sciencetech/article-8897601/Elon-Musks-SpaceX-says-not-recognize-Earth-laws-planned-Mars-colony.html

## C3: climate change **The Private Space Industry is showing enormous increase in launches – that causes pollutants and warming – with massive amounts of chemicals entering the upper atmosphere. Gammon 21** Katharine Gammon 7-19-2021 "How the billionaire space race could be one giant leap for pollution" <https://www.theguardian.com/science/2021/jul/19/billionaires-space-tourism-environment-emissions> (I’m an award-winning independent science journalist based in Santa Monica, California. My interests range from culture and nature in public lands to the lives of scientists to the complexity of baby brains. Before I became a professional journalist, I served in the Peace Corps in Bulgaria, and attended MIT and Princeton University.)//Jia Recut Last week Virgin Galactic took Richard Branson past the edge of space, roughly 86 km up – part of a new space race with the Amazon billionaire Jeff Bezos, who aims to make a similar journey on Tuesday. Both very wealthy businessmen hope to vastly expand the number of people in space. “We’re here to make space more accessible to all,” said Branson, shortly after his flight. “Welcome to the dawn of a new space age.” Already, people are buying tickets to space. Companies including SpaceX, Virgin Galactic and Space Adventures want to make space tourism more common. The Japanese billionaire Yusaku Maezawa spent an undisclosed sum of money with SpaceX in 2018 for a possible future private trip around the moon and back. And this June, an anonymous space lover paid $28m to fly on Blue Origin’s New Shepard with Bezos – though later backed out due to a “scheduling conflict”. But this launch of a new private space industry that is cultivating tourism and popular use could come with vast environmental costs, says Eloise Marais, an associate professor of physical geography at University College London. Marais studies the impact of fuels and industries on the atmosphere. When rockets launch into space, they require a huge amount of propellants to make it out of the Earth’s atmosphere. For SpaceX’s Falcon 9 rocket, it is kerosene, and for Nasa it is liquid hydrogen in their new Space Launch System. Those fuels emit a variety of substances into the atmosphere, including carbon dioxide, water, chlorine and other chemicals. The carbon emissions from rockets are small compared with the aircraft industry, she says. But they are increasing at nearly 5.6% a year, and Marais has been running a simulation for a decade, to figure out at what point will they compete with traditional sources we are familiar with. “For one long-haul plane flight it’s one to three tons of carbon dioxide [per passenger],” says Marais. For one rocket launch 200-300 tonnes of carbon dioxide are split between 4 or so passengers, according to Marais. “So it doesn’t need to grow that much more to compete with other sources.” Right now, the number of rocket flights is very small: in the whole of 2020, for instance, there were 114 attempted orbital launches in the world, according to Nasa. That compares with the airline industry’s more than 100,000 flights each day on average. But emissions from rockets are emitted right into the upper atmosphere, which means they stay there for a long time: two to three years. Even water injected into the upper atmosphere – where it can form clouds – can have warming impacts, says Marais. “Even something as seemingly innocuous as water can have an impact.” Closer to the ground, all fuels emit huge amounts of heat, which can add ozone to the troposphere, where it acts like a greenhouse gas and retains heat. In addition to carbon dioxide, fuels like kerosene and methane also produce soot. And in the upper atmosphere, the ozone layer can be destroyed by the combination of elements from burning fuels. “While there are a number of environmental impacts resulting from the launch of space vehicles, the depletion of stratospheric ozone is the most studied and most immediately concerning,” wrote Jessica Dallas, a senior policy adviser at the New Zealand Space Agency, in an analysis of research on space launch emissions published last year. Another report from 2019 penned by the Center for Space Policy and Strategy likened the space emissions problem to that of space debris, which the authors say creates an existential risk to the industry. “Today, launch vehicle emissions present a distinctive echo of the space debris problem. Rocket engine exhaust emitted into the stratosphere during ascent to orbit adversely impacts the global atmosphere,” they wrote. “We just don’t know how large the space tourism industry could become,” says Marais. A new market report estimates that the global suborbital transportation and space tourism market is estimated to reach $2.58bn in 2031, growing 17.15% each year of the next decade. “The major driving factor for the market’s robustness will be focused efforts to enable space transportation, emerging startups in suborbital transportation, and increasing developments in low-cost launching sites,” the report says. In the past, most space transportation has been focused on cargo supply missions to the International Space Station and satellite launch services, but currently, this focus has shifted to in-space transportation, planetary explorations, crewed missions, suborbital transportation and space tourism. Several companies, including SpaceX, Blue Origin and Virgin Galactic, have been focusing on developing platforms such as rocket-powered suborbital vehicles that will enable the industry to carry out suborbital transportation and space tourism. People have pointed out that the money these billionaires have poured into space technology could be invested in making life better on our planet, where wildfires, heatwaves and other climate disasters are becoming more frequent as the globe warms up in the climate crisis. “Is anyone else alarmed that billionaires are having their own private space race while record-breaking heatwaves are sparking a ‘fire-breathing dragon of clouds’ and cooking sea creatures to death in their shells?” the former US Labor Secretary Robert Reich tweeted last week. Marais says that there is always an element of excitement to new developments in space – but it’s still possible to be responsible while doing something exciting. She urges caution as the space tourism industry grows, and says there are currently no international rules around the kinds of fuels used and their impact on the environment. “We have no regulations currently around rocket emissions,” she says. “The time to act is now – while the billionaires are still buying their tickets.”

#### **The pollution emitted by ST accumulates** Pultarova7-26-2021 (Teresa Pultarova, space.com, “The rise of space tourism could affect Earth's climate in unforeseen ways, scientists worry,” July 26, 2021, https://www.space.com/environmental-impact-space-tourism-flights) /Triumph Debate

"Black carbon in the geoengineering experiment that we did isn't as high as the stuff from these rockets," she said. "The problem is that **the higher you go, the longer something lasts**. Neither of them is ideal, because either of them would produce heating in places where we don't have heating right now." According to Maggi, the soot particles generated by hybrid rocket engines are extremely small and light-weight. In fact, when he and his colleagues tried to measure the soot output of hybrid rocket engines in a laboratory, they couldn't reliably do it with precision because of the particles' minuscule size. "We were able to measure the particle output from solid rocket motors," Maggi said. "These are about a micron in size, and there [are] a lot of them. But because they are large, they fall to the ground more quickly. **In hybrid rocket engines,** we were not able to collect the soot from the plume because it's extremely fine, a few nanometres in size." Maggi fears these **particles could,** in fact, **stay in the stratosphere forever.** "They have the same size as the carbon emitted by aircrafts," Maggi said. "And we know that **there is a layer of carbon in the atmosphere at the flight level of aircrafts which is staying there. It's very likely that particles coming from rocket motors will do the same.**" The accumulation of these particles over years and decades is what worries the scientists. Just as the current climate crisis started relatively slowly as the amount of carbon released into the atmosphere grew, the pollution in the stratosphere may only start causing harm some years down the road. Rosenlof added that in the long term, **injecting pollutants into the stratosphere could alter the polar jet stream, change winter storm patterns or affect average rainfall**. "You might go from 25 inches [64 centimeters] a year to 20 inches [51 cm] a year in some places, which maybe doesn't sound like that big of a deal unless you are a farmer trying to grow your wheat right there," Rosenlof said. "Then a subtle change in rainfall can impact your crop yields."

**Climate change disproportionately impacts people in poverty McCarthy 2020 “**Why Climate Change and Poverty Are Inextricably Linked” https://www.globalcitizen.org/en/content/climate-change-is-connected-to-poverty/

Pope Francis has called the global failure to act on climate change “a brutal act of injustice toward the poor," while DiCaprio wisely pointed out “**the environment and the fight for the world’s poor are inherently linked.**" Philip Alston, the UN rapporteur, said in 2019 that a "climate apartheid" is right around the corner. **Climate change looms over all countries,** promising severe droughts, supercharged storms, and blistering heat waves. **But** these **consequences are unevenly felt around the world.** Above all, they threaten the most vulnerable populations across the globe.“**Climate change is going to amplify the already existing divide between those who have resources and those who do not**,” Eliot Levine, director of the environment technical support Unit at Mercy Corps, told Global Citizen. “We are already seeing the impacts of climate change around the world, and the latest IPCC reports clearly illustrate that we are very quickly heading towards experiencing them at a greater scale and degree of severity than we had previously understood," he added. As global temperatures and sea levels rise, as the oceans acidify and precipitation patterns get rearranged, people living in poverty are the most severely impacted. **Since climate change affects everything from where a person can live to their access to health care, millions of people could be plunged further into poverty as environmental conditions worsen.** This is especially true for poor people living in low-income countries. Just as climate change deepens inequalities within a country, it also further stratifies international relations because some nations are more threatened by it than others. And **poor countries have fewer resources to deal with the problem.** “The world’s poorest communities often live on the most fragile land, and they are often politically, socially, and economically marginalized, making them especially vulnerable to the impacts of climate change,” Christina Chan, director of the World Resource Institute’s Climate Resilience Practice, told Global Citizen. “More frequent and intense storms, flooding, drought, and changes in rainfall patterns are already impacting these communities, making it difficult for them to secure decent livelihoods.”In 2017, Hurricane Maria slammed into Puerto Rico, becoming the deadliest hurricane in recent US history. More than two years later, the island is still recovering from the disaster. Homes need to be repaired and rebuilt, water supplies have not been fully restored, schools and hospitals remain shuttered, and the island’s economy has been heavily disrupted. Throughout Puerto Rico, the poorest communities were hit the hardest and are the furthest away from recovery. While many wealthy people left the island or used their resources to rebuild after the disaster, poor families have had to wait months or years for assistance from an underfunded relief effort. This pattern has played out around the world in recent years — an unusually powerful storm makes landfall, causes catastrophic harm, and deepens inequalities. And it’s a pattern that will only become more common, according to experts.Coastal communities hold an estimated 37% of the global population — they’re hubs of commerce and culture, and have fueled global development. Yet, for all their historic significance, these environments could be emptied out in the decades ahead as natural disasters intensify and sea levels rise. More than 570 coastal cities could be affected by sea level rise by 2050. In that same period, as many as 1 billion people could be displaced by environmental hazards—primarily sea level rise and natural disasters. Displacement can push a person into poverty by stripping them of their home, profession, and networks. Many people who are displaced are unable to carry their former wealth into their new contexts and struggle to find work and regain their stability. An estimated 100 million people living in developing countries could be pushed into poverty by climate change by 2030. “**Not only are people within these contexts ill equipped to adequately prepare for these extreme events, but they’re also ill equipped to recover from them afterwards,**” Levine said.

#### **Warming also causes mass destruction – things like wildfires, tsunamis, and other natural disasters, with huge promoted shortages of food and water.**

**While billionaires such as Jeff bezos will never suffer from the immense physiological and physical harm he causes, the poorest citizens will and everyday people are disincentivized to combat global warming, thus directly violating rawls difference principle**

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## **Plantext: states should ban the appropriation of outer space by private entities by banning private rocket launches.**

**Space tourism and climate action trade off – that means the aff controls the internal link to ALL climate movements**

**Diehn** 7-20-2021 (Sonya Diehn, July 20, 2021, “Opinion: We need climate action, not space tourism,” DW.com, https://www.dw.com/en/opinion-we-need-climate-action-not-space- tourism/a-58312579) /Triumph Debate

**Diehn 7-20**-2021 (Sonya Diehn, July 20, 2021, “Opinion: We need climate action, not space tourism,” DW.com, <https://www.dw.com/en/opinion-we-need-climate-action-not-space-tourism/a-58312579>) //neth

People's motivation to take action on climate change declines when they see others doing whatever they want, without heed for the consequences. Beyond this demoralization, there is then the actual carbon footprint of space tourism. Look, I'm not against space travel in principle. I'm actually a bit of a science-fiction nerd myself, and get very excited about the possibilities of exploring space. And granted, all tourism — even on Earth — creates carbon emissions. My intention is not to say tourism shouldn't exist. But the problem with space tourism is the proportion. Let's take Richard Branson's Virgin Galactic space flight on July 11. For a suborbital journey of about 100 miles (160 kilometers), the company said the carbon dioxide emissions released were roughly equal to a round-trip trans-Atlantic passenger jet flight. Based on publicly available information, a trip from London to New York City releases about 1.24 metric tons of CO2. To put it another way, that 1 1/2-hour jaunt into space was equivalent to about 3,000 miles (4,800 kilometers) of driving an average passenger car. If Virgin Galactic is adding 3,000 road miles of CO2 emissions to our atmosphere for a single short trip for a mere six people, that devalues efforts — both personal and policy — to protect the climate.