# 1AC

### I affirm:

#### I affirm the whole res: resolved the appropriation of outerspace by private entities is unjust:

#### Pre-liminary Round Framing :

#### 1 – Interpretation: The res has no action verbs e.g. ought, so a plan is not required, but may be offered - just because we don’t “solve” isn’t a reason for us to lose this debate Because we are affirming a hypothetical ethical statement of whether space appropriation is just or not – that’s what the debate centers around

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### Appropriation:

#### 1 – First defining appropriation

**Gorove 1969** [Stephen Gorove, Chairman of the Graduate Program of the School of Law and Professor of Law University of Mississippi School of Law , 1969, “Interpreting Article II of the Outer Space Treat”, Fordham Lw Review Volume 37 Issue 3, <https://ir.lawnet.fordham.edu/cgi/viewcontent.cgi?article=1966&context=flr> ] // Triumph Debate

With respect to the concept of appropriation **the** basic **question is what constitutes "appropriation,"** **as used in the Treaty, especially in contradistinction to casual or temporary use.** **The term "appropriation" is used most frequently to denote the taking of property for one's own or exclusive use with a sense of permanence.** **Under such interpretation the establishment of a permanent settlement or the carrying out of commercial activities** by nationals of a country on a celestial body may **constitute** national **appropriation** if the activities take place under the supreme authority (sovereignty) of the state. Short of this, if the state wields no exclusive authority or jurisdiction in relation to the area in question, the answer would seem to be in the negative, unless, the nationals also use their individual appropriations as cover-ups for their state's activities.5 In this connection, it should be emphasized that **the word "appropriation" indicates a taking which involves something more than just a casual use.** Thus a temporary occupation of a landing site or other area, just like the temporary or nonexclusive use of property, would not constitute appropriation. By the same token, **any use involving consumption or taking with intention of keeping for one's own exclusive use would amount to appropriation.**

#### 2 – Therefore commercial activities like mining, space tourism, geostationary sats, and mega constellations, space colonialization and etc. constitute as appropriation

### Just:

#### 1 – Interpretation: The Term just indicates an ethical statement – this means even if we win a small risk or an action of the Neg that is unjust, its an auto aff ballot

#### Definition of Justice:

“Just English Definition and Meaning .” Lexico Dictionaries | English, Oxford University , https://www.lexico.com/en/definition/just.

Based on or behaving according to what is morally right and fair.

Based on this definition… the framing is as follows:

## Framing:

### Fw:

#### 2 – Use reducing structural violence is the most just action:

#### We are promoting fairness and thus justice by reducing structural violence against marginalized populations

**Olson ‘15** – prof of geography @ UNC Chapel Hill (Elizabeth, ‘Geography and Ethics I: Waiting and Urgency,’ Progress in Human Geography, vol. 39 no. 4, pp. 517-526)

III The body and the emergency Though the body is often presumed to be the most basic unit where urgency might be detected, only some dictionaries link urgency and the body through a ‘medical’ reference to the compelling need to defecate or urinate.5 Focusing on the different meanings of urgency runs the risk of obscuring language categories, but pushing together the two definitions – urgency as the need to defecate and urinate, and urgency as overwhelming force – is useful here, because my aim is to illustrate that the ethical work of urgency has been hijacked by an hierarchical organization of scales of moral deliberation. Specifically, our research suggests that the urgent body is cast as subjective and impulsive, while larger scales, such as the region, state or society, emerge as the scale of a rational ethics. While these are not new arguments about states (Scott, 1998) and their institutions (Foucault, 1995), geographic insights into toileting and securitizations suggest that **technocratic practices both require and perpetuate an ethical distinction between the body and the large-scale future event**, **with the latter emerging as the only legitimate site of urgent claims and thus the dominant subject of moral reasoning**.In research related to contemporary global toileting, the defecating body’s status as a legitimate ethical concern is more likely to be acknowledged when **threatening the sanitation aims of cities and states**. This is perhaps most evident in large metropolitan areas where uneven access to toilets amplifies social inequalities and human suffering (McFarlane, 2013). Jewitt’s (2011) examination of waste management in India and other countries in the Global South reveals that taboos around feces often justify inequality in two ways; first, by creating conditions of precarity through taboos in discussing personal sanitation and toilet practices, and second, by justifying social exclusion on the basis of inferior sanitation practices. The lack of access to sanitation infrastructure can also provide reasons for excluding informally settled populations from ambitiously modernizing cities. In cities like Kampala, Uganda, planners, development workers, and community organizers frame those who cannot use modern toilet facilities as threatening (Terreni-Brown, 2014a). Terreni-Brown (2014b) describes a group of female migrants selling goods outside of a large, upscale mall in Kampala, and their strategies for balancing the lack of access to a toilet with the danger and humiliation of going in the area behind their street-side location. Their desperate pain, induced by waiting hours until they can finally return to a more private location, contrasts with complaints of city planners and NGO workers who point to moral lethargy in the informal settlements that puts the city at risk. The poor, illegal, marginalized body is not a reasonable scale of urgency, nor is it the product of a thoughtful weighing of circumstances; in the face of a morally rational prioritization of a future Kampala, these bodily urgencies literally have no place in the modern city. Though toileting might be thought of as a special case of bodily urgency, geographic research suggests that the body is increasingly set at odds with larger scale ethical concerns, especially **large-scale future events of forecasted suffering**. Emergency planning is a particularly good example in which the large-scale threats of future suffering can **distort moral reasoning**. Žižek (2006) lightly develops this point in the context of the war on terror, where in the presence of fictitious and real ticking clocks and warning systems, the urgent body must be **bypassed** because there are **bigger scales to worry about**:¶ What does this all-pervasive sense of urgency mean ethically? The pressure of events is so overbearing, the stakes are so high, that they necessitate a suspension of ordinary ethical concerns. After all, displaying moral qualms when the lives of millions are at stake plays into the hands of the enemy. (Žižek, 2006)¶ In the presence of large-scale future emergency, the urgency to secure the state, the citizenry, the economy, or the climate creates new scales and new temporal orders of response (see Anderson, 2010; Baldwin, 2012; Dalby, 2013; Morrissey, 2012), many of which treat the urgent body as impulsive and thus requiring management. McDonald’s (2013) analysis of three interconnected discourses of ‘climate security’ illustrates how bodily urgency in climate change is also recast as a menacing impulse that might require exclusion from moral reckoning. The logics of climate security, especially those related to national security, ‘can encourage perverse political responses that not only fail to respond effectively to climate change but may present victims of it as a threat’ (McDonald, 2013: 49). **Bodies that are currently suffering cannot be urgent**, because they are **excluded from the potential collectivity** that could be **suffering everywhere in some future time**. Similar bypassing of existing bodily urgency is echoed in writing about violent securitization, such as drone warfare (Shaw and Akhter, 2012), and also in **intimate scales** like the street and the school, especially in relation to race (Mitchell, 2009; Young et al., 2014).¶ As **large-scale urgent concerns are institutionalized**, the urgent body is increasingly **obscured through technical planning and coordination** (Anderson and Adey, 2012). The predominant characteristic of this institutionalization of large-scale emergency is a ‘**built-in bias for action’** (Wuthnow, 2010: 212) **that circumvents contingencies**. The urgent body is at best an assumed eventuality, one that will likely require another state of waiting, such as **triage** (e.g. Greatbach et al., 2005). Amin (2013) cautions that in much of the West, governmental need to provide evidence of laissez-faire governing on the one hand, and assurance of strength in facing a threatening future on the other, produces ‘just-in-case preparedness’ (Amin, 2013: 151) of neoliberal risk management policies. In the US, ‘personal ingenuity’ is built into emergency response at the expense of the poor and vulnerable for whom ‘[t]he difference between abjection and bearable survival’ (Amin, 2013: 153) will not be determined by emergency planning, but in the material infrastructure of the city.¶ In short, the urgencies of the body provide justifications for social exclusion of the most marginalized based on impulse and perceived threat, while **large-scale future emergencies effectively absorb the deliberative power of urgency into the institutions of preparedness and risk avoidance**. Žižek references Arendt’s (2006) analysis of the banality of evil to explain the current state of ethical reasoning under the war on terror, noting that people who perform morally reprehensible actions under the conditions of urgency assume a ‘tragic-ethic grandeur’ (Žižek, 2006) by sacrificing their own morality for the good of the state. But his analysis fails to note that bodies are today so rarely legitimate sites for claiming urgency. In the context of the **assumed priority of the large-scale future emergency**, the urgent body becomes **literally nonsense, a non sequitur** within societies, states and worlds that will **always be more urgent**.¶ If the important ethical work of urgency has been to identify that which must not wait, then the capture of the power and persuasiveness of urgency by large-scale future emergencies has consequences for the kinds of normative arguments we can raise on behalf of urgent bodies. How, then, might waiting compare as a normative description and critique in our own urgent time? Waiting can be categorized according to its purpose or outcome (see Corbridge, 2004; Gray, 2011), but it also modifies the place of the individual in society and her importance. As Ramdas (2012: 834) writes, ‘waiting … produces hierarchies which segregate people and places into those which matter and those which do not’. The segregation of waiting might produce effects that counteract suffering, however, and Jeffery (2008: 957) explains that though the ‘politics of waiting’ can be repressive, it can also engender creative political engagement. In his research with educated unemployed Jat youth who spend days and years waiting for desired employment, Jeffery finds that ‘the temporal suffering and sense of ambivalence experienced by young men can generate cultural and political experiments that, in turn, have marked social and spatial effects’ (Jeffery, 2010: 186). Though this is not the same as claiming normative neutrality for waiting, it does suggest that waiting is more ethically ambivalent and open than urgency.¶ In other contexts, however, our descriptions of waiting indicate a strong condemnation of its effects upon the subjects of study. Waiting can demobilize radical reform, **depoliticizing ‘the insurrectionary possibilities of the present by delaying the revolutionary imperative to a future moment that is forever drifting towards infinity’** (Springer, 2014: 407). Yonucu’s (2011) analysis of the self-destructive activities of disrespected working-class youth in Istanbul suggests that this sense of infinite waiting can lead not only to depoliticization, but also to a disbelief in the possibility of a future self of any value. Waiting, like urgency, can **undermine the possibility of self-care** two-fold, first by making people wait for essential needs, and again by reinforcing that waiting is ‘[s]omething to be ashamed of because it may be noted or taken as evidence of indolence or low status, seen as a symptom of rejection or a signal to exclude’ (Bauman, 2004: 109). This is why Auyero (2012) suggests that waiting creates an ideal state subject, providing ‘temporal processes in and through which political subordination is produced’ (Auyero, 2012: loc. 90; see also Secor, 2007). Furthermore, Auyero notes, it is not only political subordination, but the subjective effect of waiting that secures domination, as citizens and non-citizens find themselves ‘waiting hopefully and then frustratedly for others to make decisions, and in effect surrendering to the authority of others’ (Auyero, 2012: loc. 123).¶ Waiting can therefore function as a potentially important spatial technology of the elite and powerful, mobilized not only for the purpose of **governing individuals**, but also to **retain claims over moral urgency**. But there is **growing resistance** to the capture of claims of urgency by the elite, and it is important to note that even in cases where the material conditions of containment are currently impenetrable, arguments based on human value are at the forefront of **reclaiming urgency for the body**. In **detention centers, clandestine prisons, state borders and refugee camps**, geographers point to ongoing struggles against the ethical impossibility of bodily urgency and a rejection of states of waiting (see Conlon, 2011; Darling, 2009, 2011; Garmany, 2012; Mountz et al., 2013; Schuster, 2011). Ramakrishnan’s (2014) analysis of a Delhi resettlement colony and Shewly’s (2013) discussion of the enclave between India and Bangladesh describe people who refuse to give up their own status as legitimately urgent, even in the context of larger scale politics. Similarly, Tyler’s (2013) account of desperate female detainees stripping off their clothes to expose their humanness and suffering in the Yarl’s Wood Immigration Removal Centre in the UK suggests that demands for recognition are not just about politics, but also about the acknowledgement of humanness and the irrevocable possibility of being that which cannot wait. The continued existence of places like Yarl’s Wood and similar institutions in the USA nonetheless points to the challenge of exposing the urgent body as a moral priority when it is so easily hidden from view, and also reminds us that our research can help to explain the relationships between normative dimensions and the political and social conditions of struggle.¶ In closing, geographic depictions of waiting do seem to evocatively describe otherwise obscured suffering (e.g. Bennett, 2011), but it is striking how rarely these descriptions also use the language of urgency. Given the discussion above, what might be accomplished – and risked – by incorporating urgency more overtly and deliberately into our discussions of waiting, surplus and abandoned bodies? Urgency can clarify the implicit but understated ethical consequences and normativity associated with waiting, and encourage explicit discussion about harmful suffering. Waiting can be productive or unproductive for radical praxis, but urgency compels and requires response. Geographers could be instrumental in reclaiming the ethical work of urgency in ways that leave it open for critique, clarifying common spatial misunderstandings and representations. There is good reason to be thoughtful in this process, since moral outrage towards inhumanity can itself obscure differentiated experiences of being human, dividing up ‘those for whom we feel urgent unreasoned concern and those whose lives and deaths simply do not touch us, or do not appear as lives at all’ (Butler, 2009: 50). But when the urgent body is rendered as only waiting, both materially and discursively, it is just as easily cast as impulsive, disgusting, animalistic (see also McKittrick, 2006). Feminist theory insists that the urgent body, whose encounters of violence are ‘usually framed as **private, apolitical and mundane’** (Pain, 2014: 8), are as deeply **political, public, and exceptional** as other forms of violence (Phillips, 2008; Pratt, 2005). Insisting that **a suffering body, now, is that which cannot wait**, has the **ethical effect of drawing it into consideration alongside the political, public and exceptional scope of large-scale futures**. It may help us insist on the body, both as a single unit and a plurality, as a legitimate scale of normative priority and social care.¶ In this report, I have explored old and new reflections on the ethical work of urgency and waiting. Geographic research suggests a contemporary popular bias towards the urgency of large-scale futures, institutionalized in ways that further **obscure and discredit the urgencies of the body**. This bias also justifies the production of new **waiting places** in our material landscape, **places like the detention center** and the waiting room. In some cases, waiting is normatively neutral, even providing opportunities for alternative politics. In others, the technologies of waiting serve to manage potentially problematic bodies, leading to suspended suffering and even to extermination (e.g. Wright, 2013). One of my aims has been to suggest that **moral reasoning is important** both because it **exposes normative biases against subjugated people**, and because it potentially **provides routes toward struggle where claims to urgency seem to foreclose** the **possibilities** of alleviation of suffering

### Weighing:

#### 1 – impact filters: Prioritize probability:

Kessler 08 (Oliver; April 2008; PhD in IR, professor of sociology at the University of Bielefeld, and professor of history and theory of IR at the Faculty of Arts; Alternatives, Vol. 33, “From Insecurity to Uncertainty: Risk and the Paradox of Security Politics” p. 211-232)

The problem of the second method is that it is very difficult to "calculate" politically unacceptable losses. If the risk of terrorism is defined in traditional terms by probability and potential loss, then the focus on dramatic terror attacks leads to the marginalization of probabilities. The reason is that even the highest degree of improbability becomes irrelevant as the measure of loss goes to infinity.^o The mathematical calculation of the risk of terrorism thus tends to overestimate and to dramatize the danger. This has consequences beyond the actual risk assessment for the formulation and execution of "risk policies": If one factor of the risk calculation approaches infinity (e.g., if a case of nuclear terrorism is envisaged), then there is no balanced measure for antiterrorist efforts, and risk management as a rational endeavor breaks down. Under the historical condition of bipolarity, the "ultimate" threat with nuclear weapons could be balanced by a similar counterthreat, and new equilibria could be achieved, albeit on higher levels of nuclear overkill. Under the new condition of uncertainty, no such rational balancing is possible since knowledge about actors, their motives and capabilities, is largely absent. The second form of security policy that emerges when the deterrence model collapses mirrors the "social probability" approach. It represents a logic of catastrophe. In contrast to risk management framed in line with logical probability theory, the logic of catastrophe does not attempt to provide means of absorbing uncertainty. Rather, it takes uncertainty as constitutive for the logic itself; uncertainty is a crucial precondition for catastrophes. In particular, catastrophes happen at once, without a warning, but with major implications for the world polity. In this category, we find the impact of meteorites. Mars attacks, the tsunami in South East Asia, and 9/11. To conceive of terrorism as catastrophe has consequences for the formulation of an adequate security policy. Since catastrophes hap-pen irrespectively of human activity or inactivity, no political action could possibly prevent them. Of course, there are precautions that can be taken, but the framing of terrorist attack as a catastrophe points to spatial and temporal characteristics that are beyond "rationality." Thus, political decision makers are exempted from the responsibility to provide security—as long as they at least try to preempt an attack. Interestingly enough, 9/11 was framed as catastrophe in various commissions dealing with the question of who was responsible and whether it could have been prevented. This makes clear that under the condition of uncertainty, there are no objective criteria that could serve as an anchor for measuring dangers and assessing the quality of political responses. For ex- ample, as much as one might object to certain measures by the US administration, it is almost impossible to "measure" the success of countermeasures. Of course, there might be a subjective assessment of specific shortcomings or failures, but there is no "common" currency to evaluate them. As a consequence, the framework of the security dilemma fails to capture the basic uncertainties. Pushing the door open for the security paradox, the main problem of security analysis then becomes the question how to integrate dangers in risk assessments and security policies about which simply nothing is known. In the mid 1990s, a Rand study entitled "New Challenges for Defense Planning" addressed this issue arguing that "most striking is the fact that we do not even know who or what will constitute the most serious future threat, "^i In order to cope with this challenge it would be essential, another Rand researcher wrote, to break free from the "tyranny" of plausible scenario planning. The decisive step would be to create "discontinuous scenarios ... in which there is no plausible audit trail or storyline from current events"52 These nonstandard scenarios were later called "wild cards" and became important in the current US strategic discourse. They justified the transformation from a threat-based toward a capability- based defense planning strategy.53 The problem with this kind of risk assessment is, however, that even the most absurd scenarios can gain plausibility. By constructing a chain of potentialities, improbable events are linked and brought into the realm of the possible, if not even the probable. "Although the likelihood of the scenario dwindles with each step, the residual impression is one of plausibility. "54 This so-called Othello effect has been effective in the dawn of the recent war in Iraq. The connection between Saddam Hussein and Al Qaeda that the US government tried to prove was disputed from the very beginning. False evidence was again and again presented and refuted, but this did not prevent the administration from presenting as the main rationale for war the improbable yet possible connection between Iraq and the terrorist network and the improbable yet possible proliferation of an improbable yet possible nuclear weapon into the hands of Bin Laden. As Donald Rumsfeld famously said: "Absence of evidence is not evidence of absence." This sentence indicates that under the condition of genuine uncertainty, different evidence criteria prevail than in situations where security problems can be assessed with relative certainty.

#### Couple this with Olson ev.

#### 2 – Note: Magnitude and timeframe are directly proportional

#### Profit motives and corporate overconfidence mean careless decisions

**Cook ‘21** [Kevin Cook; author of “The Burning Blue: The Untold Story of Christa McAuliffe and NASA’s Challenger Disaster”; 07-22-2021; “The Case Against Space Tourism”; WSJ; <https://www.wsj.com/articles/blue-origin-spacex-bezos-musk-galactic-branson-tourism-space-11626968962>; Accessed 12-16-2021] AK

The intrepid astro-billionaires admit there are risks involved, but they don’t dwell on them. So far only Mr. **Musk**, whose company is widely admired by NASA insiders, has emphasized the risks. Speaking of his plans to send crews to Mars before the end of the decade, he **said, “a bunch of people will probably die in the beginning.”** Mr. Musk is right. **Space travel is dangerous**, and a question worth asking is: How many will die?

The last time there was talk about sending an ordinary person into space, NASA was doing the talking. In 1985 Christa McAuliffe beat out more than 11,000 other applicants to win a seat on the space shuttle Challenger. Almost overnight, she became a national celebrity: America’s teacher in space.

NASA had a journalist-in-space program ready to go, with applicants including Walter Cronkite and Norman Mailer. “They are probably taking a journalist on the principle that Earth could not but be improved having one fewer on it,” George Will quipped at the time.

When reporters asked McAuliffe whether she was nervous about rocketing into orbit, she repeated what she had been told: that the shuttle was as safe as a passenger jet. In fact, like today’s Blue Origin, SpaceX, and Virgin Galactic vehicles, the space shuttle was an engineering experiment in progress.

After several scrubs due to weather and technical glitches, Challenger blasted off on Jan. 28, 1986, one of the coldest mornings ever recorded at Cape Canaveral, Fla. The rubber O-rings that sealed the shuttle’s million-pound rocket boosters didn’t work as well in cold weather—a fact known to NASA’s managers and engineers—but nobody shared that information with the crew.

The O-rings failed, leading to an explosion over Cape Canaveral that millions of Americans will never forget. McAuliffe and her six crewmates didn’t die instantly; Challenger’s crew compartment, sheared from the rest of the shuttle, rose for another 20 seconds, then fell for more than two minutes before crashing into the Atlantic at 207 miles an hour. During those excruciating minutes the crew behaved heroically, trying to save the mission and one another. But the space shuttle, despite its early successes, was an experimental vehicle. So are today’s commercial spaceships.

Yet wealthy hobbyists are lining up to ride in them. One bidder paid $28 million to join Mr. Bezos on a coming Blue Origin mission. Hundreds more have bid $200,000 to $250,000 for a ride on the next Virgin Galactic flight. One social-media influencer, whose seat will be paid for by her employer, the International Institute for Astronautical Sciences, claims the near future of space travel will be about more than “sending engineers to space; we’re going to be sending poets and communicators and artists and athletes.” There is talk of in-flight ping-pong and champagne.

There is little talk of the Challenger or the Columbia, which burned up on re-entry in 2003, killing seven more astronauts. Both disasters led to investigations and reforms, and by the time the shuttle program ended in 2011, U.S. astronauts had helped build the International Space Station, the shuttle era’s crowning achievement. All three of today’s space-tourism firms plan to zoom clients to the space station and back no later than next year.

**It is easy to imagine a near future in which these companies are moving quickly to outdo one another. Corporate concerns might soon match the pressures NASA executives faced when they chose to launch Challenger on the worst possible day**. During a teleconference the night before Challenger’s launch, engineers recommended waiting for warmer weather. One boss told a holdout to “take off your engineering hat and put on your management hat.” The engineers caved in; **the shuttle blew up**.

What happens if the billionaires’ early triumphs lead to a similar sort of overconfidence and corner-cutting? Suppose one of their companies takes the lead in citizen spacefaring. How intense will the pressure on the others become? How soon might some harried executive say, “SpaceX is launching today. How long do you want me to wait?” **That’s a prescription for the kind of decision-making that gets astronauts**—**or ordinary people in space suits**—**killed**

**3 – this card establishes 2 key things: 1 – it increases the magnitude of all our impacts 2 – It shows how the negative relies on unsafe exploration which in itself is unjust meaning another reason to deny the appropriation of outer space by private entities**

## Case:

### Adv 1 - Indigenous Peoples

#### Mega-constellations are coming now – space companies are planning to launch thousands of satellites – even low failure rates cause massive debris fields in orbit

**Mcfall-Johnsen 20** [Morgan Mcfall-Johnsen, science reporter at Insider with a Bachelor of Science in Journalism from Northwestern University, 11-3-2020, "About 1 in 40 of SpaceX's Starlink satellites may have failed. That's not too bad, but across a 42,000-spacecraft constellation it could spark a crisis.," Business Insider, [https://www.businessinsider.com/spacex-starlink-internet-satellites-percent-failure-rate-space-debris-risk-2020-10[/Kankee](https://www.businessinsider.com/spacex-starlink-internet-satellites-percent-failure-rate-space-debris-risk-2020-10%5b/Kankee)

SpaceX is launching satellites into space by the dozens to realize Starlink, a globe-encircling constellation of spacecraft that beam affordable, high-speed internet across Earth. So far, the scheme — envisioned by SpaceX founder Elon Musk in 2015 — seems to be working. The aerospace company has even opened a public beta test across the northern US and southern Canada for $99 a month, plus $499 for a startup kit. "Other countries to follow as soon as we receive regulatory approval," Musk tweeted on October 8. However, the **unprecedented** project has left a trail of seemingly **unresponsive** spacecraft in its wake. All of the satellites are designed to be maneuverable in space using an ion engine, and even deorbit themselves to burn up in Earth's atmosphere. But satellites with **malfunctioning** communication or propulsion systems can fly **uncontrolled** and pose a hazard to other satellites, and even astronauts, circling Earth. SpaceX launched its first batch of 60 prototypes in May 2019 and, to date, has flown 895 total Starlink internet satellites. But so far around 2.5% of those spacecraft may have **failed**, according to data collected by Jonathan McDowell, an astronomer at the Harvard-Smithsonian Center for Astrophysics. "I would say their failure rate is not egregious," McDowell told Business Insider in early October. "It's not worse than anybody else's failure rates. The concern is that even a normal failure rate in such a **huge constellation** is going to end up with a lot of bad space junk." Some of those failures may be intentional tests, but how many (if any) is not publicly known because SpaceX hasn't released such information. As a result, astronomers like McDowell have resorted to analyzing satellite-movement data gleaned from SpaceX and the US government, showing which Starlink satellites have fallen back toward Earth and which ones are not maneuvering. (McDowell's failure calculations do not include 45 "version 0.9" satellites that SpaceX is known to have intentionally deorbited.) Before the end of October, McDowell was measuring a 3% apparent failure rate, but a recent reanalysis indicates improvement in the newest Starlink batches. Of the last 413 "version 1.0" satellites, only one appears to have died, giving these batches a failure rate of just 0.2%. Still, McDowell notes that many of these satellites have **only** been in space for a few **months**, so more of them are **likely to fail** going forward. "Nevertheless it does seem that the reliability of the satellites has noticeably increased," he tweeted on October 29. SpaceX has permission from the US government to launch nearly 12,000 Starlink satellites through 2027, though it's asked to launch 30,000 more for a total of nearly **42,000**. In either case, SpaceX is on track to form a "**megaconstellation**" that **outnumbers** all prior spacecraft ever launched by **humanity**. If 3% of the maximum planned Starlink constellation fails, that could mean 1,260 dead, 550-pound satellites the size of a desk aimlessly circling the planet. A 2.5% failure rate could mean more than 1,000 inoperative spacecraft. There were about 3,200 nonfunctional satellites in Earth's orbit as of February, according to the European Space Agency. Many of these dead spacecraft regularly **threaten** to **collide** with others and create a space-debris **crisis**. In mid October, for example, satellite trackers flagged a "**very high risk**" close pass between a dead satellite and a discarded rocket body, with one company calculating a 10% chance of collision. (Fortunately, they didn't.) SpaceX says its satellites will naturally deorbit, or burn up in Earth's atmosphere, if their propulsion systems don't work. But that process can take up to five years, according to Starlink's website. In the meantime, defunct satellites rocket around Earth **faster than a bullet**, with **nobody to steer them away** from other spacecraft that may fly in their path. SpaceX did not acknowledge Business Insider's requests for comment. However, in filings to the Federal Communications Commission, SpaceX has downplayed the risk, stating that it "views satellite failure to deorbit rates of 10 or 5 percent as unacceptable, and even a rate of 1 percent is unlikely." If 1% of its satellites did fail with no capacity to maneuver, the company said, "there is approximately a 1 percent chance per decade that any failed SpaceX satellite would collide with a piece of tracked debris." The company also claimed that its practices "effectively eliminate the chance that such rates will ever occur." Dead satellites can collide and build up a space-debris crisis**SpaceX is not alone** in pushing to launch large numbers of internet satellites. OneWeb, which the UK government recently purchased out of bankruptcy, has already launched 74 satellites for its proposed constellation of **48,000**, while Amazon aims to launch more than **3,200** for its Kuiper fleet. It's unclear how many dead satellites those constellations might also leave in orbit. Since **nobody can maneuver** them, failed satellites sometimes hurtle toward other spacecraft — including the International Space Station and its crew of astronauts. Even if a satellite crashes into another satellite with no humans on board, it can create perilous conditions. "We replace two satellites with essentially two **shotgun blasts** of debris," Dan Ceperley, the CEO of satellite-tracking company LeoLabs, told Business Insider in January. That month, two dead satellites almost crossed paths and **exploded** into hundreds of thousands of bits of debris. It wouldn't have been the first such explosion, and it doesn't take many to **exacerbate** the debris problem. In 2007, China tested an anti-satellite missile by obliterating one of its own weather satellites. Two years later, one American and one Russian spacecraft accidentally collided. Those two events alone increased the amount of large debris in low-Earth orbit by about 70%. India conducted its own anti-satellite missile test in 2019, and the explosion created an estimated 6,500 pieces of debris larger than an eraser. All in all, more than 500 such "fragmentation events" have created nearly 130 million bits of debris in Earth's orbit. Those chunks of debris zip around the planet at more than 17,500 mph, or roughly 10 times the speed of a bullet. That's not only a problem for robotic spacecraft, but ones carrying people. Just last month, a piece of debris careened within a mile of the football field-sized space laboratory. To avoid a collision, mission controllers fired the thrusters of an attached Russian cargo spaceship to maneuver the station out of possible harm's way. The three crew members sealed themselves inside an ISS segment with a Soyuz spaceship, so they could escape if the debris struck. If the space-junk problem gets extreme, a chain of collisions could spiral out of control and surround Earth in a practically impassable field of debris. This possibility is known as the Kessler syndrome, after Donald J. Kessler, who worked for NASA's Johnson Space Center and calculated in a 1978 paper that it could take hundreds or even thousands of years for such debris to clear up enough to make spaceflight safe again. "It is a long-term effect that takes place over decades and centuries," Ted Muelhaupt, who leads The Aerospace Corporation's satellite system analysis, previously told Business Insider. "Anything that makes a lot of debris is going to increase that risk." The sheer number of objects in Earth's orbit may already be having a Kessler-like effect, as Rocket Lab CEO Peter Beck described last week."This has a massive impact on the launch side," he told CNN Business, adding that rockets "have to try and weave their way up in between these [satellite] constellations." Starlink is already a space-debris hazard SpaceX has barely launched 2% of its planned constellation, but it has already had a close call. In September 2019, the European Space Agency had to maneuver one of its spacecraft at the last minute to avoid possibly colliding with a Starlink satellite. The chance of that crash was 1 in 1,000. While that may sound low, NASA routinely moves the ISS for chances of 1 in 100,000. The ESA said it had to move its satellite because SpaceX had "no plan to take action." SpaceX said it missed the ESA emails about the issue due to a "bug" in its communications systems. Overall, close approaches like that seem to be happening more frequently. "We are seeing recently a decided uptick in the number of conjunctions," Dan Oltrogge, an astrodynamicist at Analytical Graphics, Inc, where he uses a software that has been assessing conjunction data since 2005, told Business Insider. "And it looks to be very well aligned with the new large-constellation spacecraft that have been launched." As new satellite constellations launch, regulatory agencies like the FCC may need to evaluate how many dead spacecraft they're willing to accept. "What is an acceptable failure rate?" McDowell said. "That, I'm maybe not competent to have an opinion on."

#### Mega Constellations launched by SpaceX are uniquely dangerous – they speed up climate change, cause light pollution, treat this card as both a link and an impact, the future of astronomy is damaged, it also turns all innovation arguements made by the Negative

Rawat, Soumyaa. “What Is a Satellite Mega-Constellation? Advantages and Disadvantages.” Analytics Steps, <https://www.analyticssteps.com/blogs/what-satellite-mega-constellation-advantages-and-disadvantages>.

Introduction: A Satellite Mega-Constellation is a group of man-made satellites operating together to cover a vast span of the globe or even the whole land mass. Used for global communications coverage, satellite mega-constellations are present in the outer atmosphere of the planet and are connected to each other through the technology of inter-satellite communication. Visible to numerous stations located on Earth, satellite mega-constellations work on the basis of low earth orbit (LEO) that refers to the placement of satellite orbits at a low altitude (<2000km). A network of satellites revolving on various orbits, a satellite mega-constellation involves satellites revolving on various orbits placed near to each other. Existent in outer space, leo satellite constellations revolve around orbits with an altitude of upto 2000km or less than that. The concept of satellite mega-constellations has been in trend ever since the 1990s, but it has only been in the 21st century that constellations were actually developed in outer space. Residing in the space cavity that is congested with such constellations, satellite mega-constellations are about to escalate in terms of popularity in the coming years. Majorly functional in the telecommunications sector, satellite mega-constellations have a huge commercial significance in terms of global connectivity and the distribution of the internet services. As more than four satellites are required to be grouped to make a satellite mega-constellation, these networks enable a set of satellites to be visible at once. This means that even if some satellites in a constellation are unable to connect with stations located on Earth, there are still many other satellites that can do the task required. One of the largest satellite mega-constellation is [Starlink](https://www.starlink.com/) by [SpaceX](https://www.analyticssteps.com/blogs/spacex-story). The expanse of Starlink coverage in terms of internet connectivity will become unbeatable in the coming months with more and more satellites being added to the network. “As of August 23rd 2020, SpaceX's Starlink internet satellite constellation numbers a total of 653 operational satellites deployed. Starlink is one of the pioneers for providing internet connectivity from orbit over the whole globe. The ultimate aim is to utilise 12,000 of these small satellites, each weighing between 227–260 kg (500–573 lb), orbiting at a height of 550 kilometres (340 mi) or below. When each of the individual satellites reach their end of life, they are deorbited to burn up in the Earth's atmosphere.” ([largest satellite constellation](https://www.guinnessworldrecords.com/world-records/628755-largest-satellite-constellation)) The world is becoming interconnected as the Internet of Things is unfolding the wonders it can do. Satellites have been in outer space for a long time, however, satellite mega-constellations are a recent development as the internet is becoming widespread. In order to keep the world hooked to a network of satellites that stay in loop throughout, mega-constellations like Starlink and OneWeb have emerged to be the pioneers in this field. The significance of satellite mega-constellations is hidden in our day-to-day lives - the omnipresence of the internet and the widespread use of this commodity. With more than 3 billion internet users in the world, the global internet network still eyes the addition of a major chunk of the human population to be added to this list. Even though terrestrial telecommunication technology has advanced rapidly, satellite mega-constellations can lessen the digital divide that continues to be a concern for the global population. With the coming of satellite mega-constellations that have covered the planet like a blanket, even the remotest areas stand a fair chance to get access to the internet and stay connected to other corners of the globe. As 5G internet has successfully arrived in different countries, the need for better connectivity lures big brands like SpaceX and Amazon to enter the sphere of satellite mega-constellations and make the most out of this technology. The 5G network architecture has pushed technological advances like these and soon, this technology will connect every human to the internet. Let us understand the significance of satellite mega-constellations through the example of Starlink. (Related blog: [Role of Technology in Neuralink](https://www.analyticssteps.com/blogs/role-technology-neuralink)) The coming of satellite mega-constellations has taken everyone by surprise. The next-generation innovations attached with this concept highlight the various advantages and disadvantages of satellite mega-constellations that we will discuss in this segment. One of the biggest benefits of satellite mega-constellations is that they encourage global connectivity. With the aim to provide internet to people residing in any and every part of the world, satellite mega-constellations have emerged as the pioneer of decreasing digital divide that continues to draw the attention of millions of scholars and activists. The humongous reach that these satellite mega-constellations have on the world will determine future technological advancements, including 5G internet and so on. Furthermore, the widespread presence of thousands of satellites will ensure that no spot in the world is kept aloof considering the reach these satellites will have. **“**Launching a constellation of tens, hundreds or even thousands of satellites has become a serious option for providing ubiquitous telecommunications services. This is reflected by the many initiatives spawned in the recent past, ranging from nano and micro satellites systems dedicated to M2M/IoT, to the Megaconstellations of small and medium size satellites, like those envisaged by Oneweb, Leosat and Telesat, to mention but a few. Indeed, constellations of satellites providing access to currently unserved or under-served regions are one of the latest areas of growth for the space industry.” [SATCOM CONSTELLATION INITIATIVE overview](http://megaconstellations/%20SATCOM%20OVERVIEW) One of the most important commodities in the world, the internet is opening millions of opportunities for people across the world. The satellite mega-constellations aim to advance the technology of the internet and connect each and every individual with this technology to ensure global connectivity. As many telecommunication companies are preparing to launch their respective satellite mega-constellations in outer space, there will also be an increase in global internet access. Thanks to satellite mega-constellations and the technology of inter-satellite communication that have together triggered the availability of internet throughout the globe. Although this uniformity has not been completely achieved, it is in the process and is likely to be completed within this decade. Unlike single satellites, satellite mega-constellations are comparatively cheaper. This advantage of cheaper components of satellite mega-constellations makes the process of installing such networks in outer space much easier and affordable. Currently, Starlink, a SpaceX launch has over 12,000 satellites that have created a web around the planet providing internet access to many corners of the world. What’s more is the cheap cost of this network that involves small-sized satellites existing in an LEO, making this network affordable for experiments and commercial success as well. First and foremost disadvantage of satellite mega-constellations is that it will lead to severe space junk hazard which will ultimately exert ecological impacts in the long run. The world is already fighting against the climate change crisis and adding to this, satellite mega-constellations have a demerit that is also one of the major features of this concept. As the satellites in these constellations are cheaper in comparison to single satellite networks, these satellites expire after a certain amount of time. Further, the debris of these expired satellites dissolves in outer space leading to the burning of the miniscule elements of such satellites. With more and more constellations coming up, the space junk hazard is a great concern that has been highlighted by many scholars and scientists in recent times. While scientists are looking for notable space junk solutions, the establishment of satellite mega-constellations will only add to the burden. Another disadvantage of satellite mega-constellations is that it leads to light pollution from space, obstructing the natural dark sky during the nighttime. While the sun provides sunlight during the daytime, the nighttime witnesses no such light other than the luminous rays of the moon that cause darkness of the sky. Due to this darkness, the stars in the sky are visible to humans making the sky look beautiful and heavenly in the nights. However, satellite mega-constellations will obstruct this scenic beauty of the sky and will cause more light pollution as the satellites will illuminate the dark skies, causing unnatural brightness and severe light pollution during the nighttime. This demerit is dangerous so much so that the satellites of the constellation Starlink are already visible during the nighttime encouraging scientists to establish such demerits. Astronomy will be in great danger if satellite mega-constellations see the dawn of the day. Why? Well, the light pollution caused by these satellite networks will obstruct astronomical studies as the Earth’s exosphere will become congested due to the presence of such satellites. As astronomists suggest, satellite mega-constellations like Starlink impact on astronomy will altogether endanger astronomy and its related science in the coming few years. Although many have warned against this consequence, no act of protocol or policing has been put in place to regulate the launch of satellite mega-constellations.

**The impact is colonization, cultural erasure and genocide.**

**Nielson, Hilding. 21** “Indigenous Rights, Peoples, And Space Exploration: A Response To The Canadian Space Agency (CSA) Con.” Arxiv (open-access archive). 2021. Web. December 11, 2021. . Megaconstellations of Satellites is Colonization

The launch of Starlink by SpaceX has had a dramatic and damaging impact on research in astronomy and astrophysics (Clery 2020, Kocifaj 2021). These satellites have added to the amount of light pollution and future satellite constellations could have far greater impact depending on the legal requirements and the purpose of those satellites. Hamacher et al (2020) presented a compelling argument that light pollution is a form of cultural genocide (please note that in the context of the Final Report of the Truth & Reconciliation Commission we will use the term Indigenous erasure instead). In their article, the authors noted that a significant amount of Indigenous knowledge is based on star lore and observations of the sky. Those observations are connected to Indigenous stories about the land and nature - for some peoples the sky is a reflection of the land (Cajete 2000). Those observations, however, are based on a dark night sky without substantive light pollution. As such, light pollution acts to disconnect Indigenous peoples from the land they live, and as such, is a form of erasure. In the same vein, we argue that constellations of satellites are also a form of colonization, especially those that are bright enough to be visible from the ground. If light pollution results in an erasure of knowledges, then megaconstellations of satellites would also constitute an attempt to rewrite that knowledge. There is a second issue that the CSA should consider with respect to space exploration and the impact of new satellites. That issue is at what height do treaties and agreements with Indigenous peoples, end? It is understood that treaties have impact on Indigenous rights and responsibilities with respect to mining, water resources, hunting, etc. but Indigenous communities should be consulted with the impacts on the skies above. This is especially true for satellites that contribute to light pollution, but also satellites that are designed to offer services to communities (such as wireless internet), satellites designed for groundbased or remote imaging such as mapping satellites and LIDAR imaging. The CSA has an obligation to consult with Indigenous communities and Indigenous-led organizations with respect to the legalities of how satellites that impact communities operate.\

#### Additional Impact Senario: By definition, mega-constellations make debris cascades inevitable

**Siegel 20** [Ethan Siegel, astrophysicist, author, and science communicator, who professes physics and astronomy at various colleges, 2-19-2020, "Flaremageddon: How Satellite Mega-Constellations Could Create A New Natural Disaster," Forbes, <https://www.forbes.com/sites/startswithabang/2020/02/19/flaremageddon-how-satellite-mega-constellations-could-create-a-new-natural-disaster/#51403cf049cf]/Kankee>

Over the next few years, the night sky and the volume of space that surrounds the Earth are both poised to become very different than they've been for all of human history. As of 2019, humanity had launched an estimated total of between 8,000 and 9,000 satellites, with approximately 2,000 of them still active. As SpaceX's Starlink, OneWeb, Amazon's Project Kuiper, Telesat and other companies prepare to provide worldwide 5G coverage from space (more than 300 new satellites have gone up for these purposes [in the last 9 months](https://www.forbes.com/sites/jonathanocallaghan/2020/02/17/spacex-launches-fifth-starlink-mission-and-takes-its-total-number-of-satellites-up-to-300/)), humanity is beginning to enter the era of satellite mega-constellations. While media coverage has largely mentioned only one detrimental effect so far — [the **damage** that these satellites are already causing to astronomy](https://www.forbes.com/sites/startswithabang/2020/01/30/dangers-to-astronomy-intensify-with-spacexs-latest-starlink-launch/) — there's a second consequence that could be even more **disastrous**: **Kessler syndrome**. With tens or even **hundreds of thousands** of satellites in orbit, a **single collision** could trigger a **chain reaction**. With the realities of solar flares and the technological needs of mega-constellations, this new type of natural disaster may be **unavoidable**. The idea of [Kessler syndrome](https://en.wikipedia.org/wiki/Kessler_syndrome) is a simple one: if there are too many satellites around Earth, an unfortunate collision between any two of them could create enough debris that another collision becomes inevitable. Although [there is not widespread agreement](http://physics.ucsc.edu/cosmo/Mountbat.PDF) on when that point will be reached, it's widely recognized that greater numbers of larger satellites greatly increases this risk. With Starlink alone proposing a total of 42,000 satellites in three different orbital shells and many other companies sure to soon follow suit, the **danger** of Kessler syndrome is poised to increase by **orders of magnitude** over the 2020s. In prior years, satellites were launched into orbits that were tracked and knowable, but with occasional collisions occurring due to inactive satellites whose orbits were decaying due to atmospheric drag. With mega-constellations, however, artificial intelligence will be entering the picture, and this poses a tremendous danger. With so many objects in orbit at the same altitude, artificial intelligence will be required in order to constantly leverage the on-board thrusters to accomplish three main goals: to ensure the correct, continuous spacing of the satellites to provide the necessary internet coverage, to compensate for the drag of Earth's atmosphere, and to perform any necessary boosts or orbital alterations to avoid collisions with other satellites. This last point is absolutely critical. Any two orbits at the same altitude always have two points where they will cross, and satellite drift would make a collision inevitable. Only by having the satellites correct their own courses in real-time can they ensure a collision-free scenario. But this plan comes along with a catastrophic scenario: what if the satellites are rendered **non-responsive** by some event? If constant orbital corrections are needed in order to avoid collisions with other satellites, the worst thing that could happen would be a scenario that ~~paralyzed~~ [stopped] the satellites and made them unable to respond to not only the artificial intelligence, but to a manual command. This is not some science-fiction horror scenario, but something as inevitable as the Sun itself: space weather. Events like solar flares, coronal mass ejections, and even the plain old solar wind all send charged particles away from the Sun. When they happen to get sent on their way towards planet Earth, our surface is protected by our world's magnetic field and our atmosphere. The danger to humans or any biological organism is essentially zero, with the largest effect that commonly occurs being a spectacular looking auroral display. But in space, even in low-Earth orbit, the atmosphere offers no protection, and the magnetic field offers no guarantee of redirecting these particles away from satellites. [According to NOAA](https://www.swpc.noaa.gov/impacts): Solar Energetic Particles (energetic protons) can penetrate satellite electronics and cause electrical failure. These energetic particles also block radio communications at high latitudes in during Solar Radiation Storms. Right now, the Sun is in the quietest part of its periodic solar cycle. On timescales of 11 years, the number of sunspots — which correlates directly with the odds of flaring activity and coronal mass ejections — goes from essentially zero (a quiet Sun) to solar maximum and back to zero again. Right now, in 2020, we're just leaving the last solar minimum, with the next maximum anticipated to occur in 2024 or 2025 and every 11 years after that. There's a tremendous danger to satellites whenever this type of space weather impacts them. If these energetic protons cause any type of electrical failure in these satellites, they will be unable to adjust their course via artificial intelligence or any other means. If they cannot adjust their course, the question of any two of these satellites colliding becomes a game of **Russian roulette**, where there are likely to be a series of near-misses before the inevitable — an in-space collision between two of them — occurs. The worst-case scenario, and this scenario gets worse with every new large satellite that goes up (and every communications satellite is "large" by this metric), is that each collision increases both the likelihood and frequency of in-orbit collisions. In short order, potentially just weeks or months, the region around Earth will become a debris field, with a significant percent of existing satellites destroyed. At present, every space disaster, [including collisions](https://en.wikipedia.org/wiki/2009_satellite_collision) and failed missions that have exploded or malfunctioned in various ways, means that there are perhaps a few hundred thousand pieces of space debris the size of your fingernail or larger. These are already hazardous to our existing satellites, with one of them colliding with the International Space Station just a few years ago, cracking a window. But with hundreds of thousands of large satellites, a single collision could set off a **catastrophic chain reaction** like we've never seen. In short order, the number of pieces of space debris could rise into the **tens of millions**, impacting satellites in both low-Earth orbit and medium-Earth orbit. The first company whose satellites cause such a **disaster** would likely impact every other one, to say nothing of **military** and **scientific** satellites presently in orbit. Not only will satellite technology become an impossibility for decades or even many **generations**, but routine space launches will become an **enormous gamble**. The greatest danger that the Sun poses to Earth today is a large-scale coronal mass ejection, which — if it heads right for us with the wrong magnetic field orientation — could lead to a wide-scale electrical catastrophe that could knock out power grids all over the Earth, starting fires and causing trillions of dollar in damage to our infrastructure.

#### Kessler syndrome causes massive impacts to climate and weather prediction with the poor and rural communities hit harder

**Undseth et al 21** [Marit Undseth, OECD Space Forum, Claire Jolly, OECD Space Forum, Mattia Olivari, OECD Space Forum, “The Economics of Space Debris in Perspective,” 8th European Conference on Space Debris, <https://conference.sdo.esoc.esa.int/proceedings/sdc8/paper/12/SDC8-paper12.pdf>] /Triumph Debate

**The current costs of space debris are nothing compared with future prospects**. In a worst-case scenario, **certain orbits may become unusable, due to continued, self-reinforcing space debris generation** (Kessler Syndrome). **This would have significant negative impacts on the provision of several important government services** and would most probably also slow down economic growth in the space sector. **The social costs would be unequally distributed, with lower-income and rural regions more hardly hit**, in view of their growing dependence on satellite communications, in particular. These costs are listed in Tab. 2 and are further elaborated in the following paragraphs.

Loss of unique applications and functionalities: The orbits most likely to be disrupted by the Kessler Syndrome are found at 650-1000 km and towards 1400 km altitude in the low-earth orbit, where the thickest belts of debris are located. For instance, the 2009 collision between Iridium-33 and Kosmos-2251 satellites took place at 776 km altitude. In some cases, **the disruption or loss of certain low-earth orbits would have severe impacts on terrestrial applications, for which space observations** (from these orbits) **are either the best or the only source of data and signals**. (Tab. 3). **This applies in particular to polar-orbiting weather** and earth observation **satellites, which make unique contributions to weather forecasting and climate change observations and research**. Polar-orbiting weather satellites provide essential inputs to numerical weather prediction models, reducing errors and improving forecast accuracy [23]. The European Centre for Medium-Range Weather Forecasts has found that **a simultaneous loss of both European and US polar-orbiting satellites would cause a 15-20% reduction in accuracy** [24]. For instance, estimated benefits from satellite-based meteorological observations to the UK economy amount to between GBP 670-1000 million annually [25]. The loss of polar-orbiting weather satellite observations would also heavily affect the Southern hemisphere, where there are fewer terrestrial observations. Lives lost: The International Space Station is located at about 400 km altitude. The planned Chinese Space Station will have a similar location. Although debris at that altitude decays naturally, it still poses a real collision threat. The International Space Station has seen a significant increase in debris avoidance manoeuvres, with seventeen manoeuvres taking place between 2009 and 2017, compared to eight manoeuvres in the 1999- 2008 timeframe [26], [27]. Interrupted time series for earth science and climate research: **Uninterrupted time series are crucial for the accuracy and reliability of weather prediction and climate models**. Several **weather and earth observation satellites in affected orbits make unique measurements for climate observations**. The Jason-2 and Jason-3 satellites, located at 1336 km altitude, measure variations in sea surface height, which provide information about global sea levels, the speed and direction of ocean currents, and heat stored in the ocean. Curbed economic growth in the space sector: Current commercial operators (mostly earth observation and telecom) are mainly located at 400-700 km altitudes [28]. Although the current value of commercial operations in the low-earth orbit is significantly lower than that of telecommunications activities in the geostationary orbit, satellite broadband is widely considered a key driver of space activities and revenues in the coming decades, despite uncertainty concerning business models and viability. Many LEO communication services would be affected by space debris, on orbit and/or during orbitraising, as several of the planned constellations are located near or above the thickest LEO debris belts. This could have knock-on effects on other industry segments, such as manufacturing and launch. Reduced access to finance for space ventures: While the current financial climate is favourable for space sector investments, it is important to acknowledge that many space applications face growing competition from terrestrial applications (e.g. communications, earth observation). It is reasonable to expect that a growing space debris problem may deter investments into the sector, with investors preferring more affordable and less risky terrestrial alternatives. Negative distributional effects: **The loss or perturbation of certain low-earth orbits would affect some groups and geographic regions more heavily than others**, depending on the coverage and quality of existing terrestrial infrastructure. **In some low-income countries, satellite systems may provide more reliable and accurate data and signals than terrestrial alternatives. One of the big selling points for space broadband is its ability to connect hard-to-reach places**, including rural regions in both developed and developing countries.

#### Satellite crashes 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

### 2 – Corporate Colonialism:

#### Tech-billionaires advance a vision of private space colonization as a source of infinite resources to cure society’s ills. This rationalizes unrestrained consumption and replicates the logic of imperialism.

Mccormick 21 [Ted McCormick writes about the history of science, empire, and economic thought. He has a Ph.D. in history from Columbia University and teaches at Concordia University in Montreal. “The billionaire space race reflects a colonial mindset that fails to imagine a different world”. 8-15-2021. The Conversation. https://theconversation.com/the-billionaire-space-race-reflects-a-colonial-mindset-that-fails-to-imagine-a-different-world-165235. Accessed 12-15-2021; //marlborough JH]

It was a time of political uncertainty, cultural conflict and social change. Private ventures exploited technological advances and natural resources, generating unprecedented fortunes while wreaking havoc on local communities and environments. The working poor crowded cities, spurring property-holders to develop increased surveillance and incarceration regimes. Rural areas lay desolate, buildings vacant, churches empty — the stuff of moralistic elegies. ¶Epidemics raged, forcing quarantines in the ports and lockdowns in the streets. [Mortality data](https://wellcomecollection.org/works?query=%22bills+of+mortality%22&production.dates.from=1600&production.dates.to=1699&sortOrder=asc&sort=production.dates) was the stuff of weekly news and [commentary](https://doi.org/10.7227/TSC.27.3.2). ¶Depending on the perspective, mobility — chosen or compelled — was either the cause or the consequence of general disorder. Uncontrolled mobility was associated with political instability, moral degeneracy and social breakdown. However, one form of planned mobility promised to solve these problems: colonization. ¶Europe and its former empires have changed a lot since the 17th century. But the persistence of colonialism as a supposed panacea suggests we are not as far from the early modern period as we think. ¶Colonial promise of limitless growth ¶Seventeenth-century colonial schemes involved plantations around the Atlantic, and motivations that now sound archaic. Advocates of expansion such as the English writer Richard Hakluyt, whose [Discourse of Western Planting (1584)](http://nationalhumanitiescenter.org/pds/amerbegin/exploration/text5/hakluyt.pdf) outlined the benefits of empire for Queen Elizabeth: the colonization of the New World would prevent Spanish Catholic hegemony and provide a chance to claim Indigenous souls for Protestantism. ¶But a key promise was the economic and social renewal of the mother country through new commodities, trades and territory. Above all, planned mobility would cure the ills of apparent overpopulation. Sending the poor overseas to cut timber, mine gold or farm cane would, [according to Hakluyt](https://www.digitalhistory.uh.edu/disp_textbook.cfm?smtID=3&psid=70), turn the “multitudes of loiterers and idle vagabonds” that “swarm(ed)” England’s streets and “pestered and stuffed” its prisons into industrious workers, providing raw materials and a reason to multiply. Colonization would fuel limitless growth. ¶As English plantations took shape in Ulster, Virginia, New England and the Caribbean, “[projectors](https://doi.org/10.1163/15733823-00215p01)” — individuals (nearly always men) who promised to use new kinds of knowledge to radically and profitably transform society — tied mobility to new sciences and technologies. They were inspired as much by English philosopher Francis Bacon’s vision of a tech-centred state in [The New Atlantis](https://www.gutenberg.org/files/2434/2434-h/2434-h.htm) as by his advocacy of observation and experiment. ¶Discovery and invention ¶The English agriculturalist Gabriel Plattes cautioned in 1639 that “[the finding of new worlds is not like to be a perpetual trade](https://quod.lib.umich.edu/cgi/t/text/pageviewer-idx?cc=eebo2;c=eebo2;idno=a68588.0001.001;node=A68588.0001.001:5;seq=29;vid=15242;page=root;view=text).” But many more saw a supposedly vacant America as an invitation to transplant people, plants and machinery. ¶The inventor Cressy Dymock (from Lincolnshire, where fen-drainage schemes were turning wetlands dry) sought support for a “[perpetual motion engine](https://www.dhi.ac.uk/hartlib/view?docset=main&docname=62A_08)” that would plough fields in England, clear forest in Virginia and drive sugar mills in Barbados. Dymock identified private profit and the public good by speeding plantation and replacing costly draught animals with cheaper enslaved labour. Projects across the empire would employ the idle, create “elbow-room,” heal “unnatural divisions” and make England “[the garden of the world](https://www.dhi.ac.uk/hartlib/view?docset=main&docname=64_18).” ¶Extraterrestrial exploration ¶Today, the moon and Mars are in projectors’ sights. And the promises billionaires Elon Musk and Jeff Bezos make for colonization are similar in ambition to those of four centuries ago. ¶As Bezos told an audience at the [International Space Development Conference](https://www.geekwire.com/2018/jeff-bezos-isdc-space-vision/) in 2018: “We will have to leave this planet, and we’re going to leave it, and it’s going to make this planet better.” Bezos traces his thinking to Princeton physicist Gerald O’Neill, whose 1974 article “[The Colonization of Space](https://space.nss.org/the-colonization-of-space-gerard-k-o-neill-physics-today-1974/)” (and 1977 book, The High Frontier) presented orbiting settlements as solutions to nearly every major problem facing the Earth. Bezos echoes O’Neill’s proposal to move heavy industry — and industrial labour — off the planet, rezoning Earth as a mostly residential, green space. A garden, as it were. ¶Musk’s plans for Mars are at once more cynical and more grandiose, in timeline and technical requirements if not in ultimate extent. They center on the dubious possibility of “[terraforming](https://www.businessinsider.com/nasa-just-quashed-elon-musks-plans-to-make-mars-habitable-for-humans-2018-7)” Mars using resources and technologies that don’t yet exist. ¶Musk planned to [send the first humans to Mars in 2024](https://www.businessinsider.com/elon-musk-spacex-mars-plan-timeline-2018-10), and by 2030, he envisioned breaking ground on a city, [launching as many as 100,000 voyages from Earth to Mars](https://www.businessinsider.com/elon-musk-says-we-could-put-a-million-people-on-mars-within-a-century-2015-6) within a century. ¶As of 2020, the timeline had been pushed back slightly, in part because terraforming may require bombarding Mars with 10,000 nuclear missiles to start. But the vision – a Mars of thriving crops, pizza joints and “entrepreneurial opportunities,” preserving life and paying dividends while Earth becomes increasingly uninhabitable — remains. Like the colonial [company-states](https://doi.org/10.1177/1354066120928127) of the 17th and 18th centuries, [Musk’s SpaceX leans heavily on government backing but will make its own laws on its newly settled planet](http://bostonreview.net/science-nature/alina-utrata-lost-space). ¶A failure of the imagination ¶The techno-utopian visions of Musk and Bezos betray some of the same assumptions as their early modern forebears. They offer colonialism as a panacea for complex social, political and economic ills, rather than attempting to work towards a better world within the constraints of our environment. ¶And rather than facing the palpably devastating consequences of an ideology of limitless growth on our planet, they seek to export it, unaltered, into space. They imagine themselves capable of creating liveable environments where none exist. ¶But for all their futuristic imagery, they have failed to imagine a different world. And they have ignored the history of colonialism on this one. Empire never recreated Eden, but it did fuel centuries of growth based on expropriation, enslavement and environmental transformation in defiance of all limits. We are struggling with these consequences today.

#### Wealthy elites exclusively tapping the vast resources of outer space locks in an permanent and unconscionable inequality. Private space colonization amounts to unchecked exploitation and authoritarian corporate control of future settlements. Spencer ‘17

Spencer, Keith A. [senior editor at Salon] “Keep the Red Planet Red.” Jacobin, 2 May 2017, [https://www.jacobinmag.com/2017/02/mars-elon-musk-space-exploration-nasa-colonization. //](https://www.jacobinmag.com/2017/02/mars-elon-musk-space-exploration-nasa-colonization.%20%20//) Accesserd 12/15/2021 // marlborough JH

As the Western liberal order continues to unravel, can you really blame anyone who wants to get off this planet? Since space travel became technologically feasible in the twentieth century, many thinkers — from Arthur C. Clarke to Buckminster Fuller — envisioned the human colonization of other planets as all but inevitable. “Man will not always stay on Earth,” wrote Soviet rocket scientist Konstantin Tsiolkovsky, “the pursuit of light and space will lead him to penetrate the bounds of the atmosphere, timidly at first, but in the end to conquer the whole of solar space.” In their heydays, both the American and Soviet space programs funded [research](http://www.astronautix.com/m/mpk.html) into Mars colonization, viewing it as the next logical step for humanity. In the past two decades however, people have started to pin their hopes for intergalactic travel on private groups instead of public agencies. While President Obama was [privatizing](http://www.businessinsider.com/startups-in-space-2009-8) much of the American space program, a flurry of ventures released competing proposals to visit and/or colonize the red planet. These schemes’ feasibility and harebrained-ness vary: the Mars Foundation, run by multimillionaire former investor Dennis Tito, is soliciting private donations to send a couple on a [flyby](http://www.space.com/19981-private-mars-mission-married-2018.html) of the red planet. Mars One, a Dutch nonprofit, wants to [fund](http://www.mars-one.com/faq/finance-and-feasibility/what-is-mars-ones-funding-model) a permanent human colony through “merchandise sales, ads on video content, brand partnerships, speaking engagements, [b]roadcasting rights, intellectual property rights, games & apps, and events.” The most famous — and perhaps most likely to succeed — comes from entrepreneur and engineer Elon Musk, the multibillionaire CEO of SpaceX and Tesla Motors. Musk’s articulation of his Mars mission reveals not only what’s wrong with how we think about extraterrestrial colonies and resources, but also how little faith most people have in democracy here on Earth. Interplanetary Technocracy Given his reputation as an engineering genius, Musk’s vision for colonization seems the most plausible of the private missions to Mars. After all, SpaceX, which he admitted to founding [specifically](https://www.bloomberg.com/news/articles/2016-09-27/elon-musk-s-vision-for-mars-travel-focuses-on-reusable-rockets) to colonize the solar system, became the first private company to successfully launch a rocket into orbit in 2008. In September 2016, at the International Astronautical Congress in Guadalajara, Musk laid out a detailed [vision](https://www.wired.com/2016/09/elon-musk-colonize-mars/) for his colonization project, including financial estimates, engineering specs for the reusable “Interplanetary Transit System,” and the price of a passenger ticket — around $200,000. Musk’s presentation even included a snazzy computer-animated [video](https://www.nytimes.com/2016/09/28/science/elon-musk-spacex-mars-exploration.html?_r=0) of the transit system in action and [details](http://www.slate.com/blogs/future_tense/2016/09/27/elon_musk_details_his_crazy_very_real_plan_to_colonize_mars.html) about the long trip there, which would offer colonists games, restaurants, and entertainment. “It’ll be, like, really fun to go . . . You’re gonna have a great time,” Musk said. His approach to colonizing Mars comes straight out of Silicon Valley’s playbook: Musk has taken a “problem” — how to colonize Mars — and hacked a feasible “solution” that is one part engineering, one part moxie. Just add investors and we’ll be building cities on the red planet in no time. Though vague, Musk reiterated that his vision would need funding. His talk of “tickets” implies that colonists will likely pay for much of the mission. Unlike a space agency’s astronaut selection process, then, his Mars mission will be limited to those who can afford it. In that sense, Musk’s colonization plan looks a lot like joining a country club or gated community — or any other model of private access to space for those who can afford it. Musk’s proposal — heavy on the engineering and business details, light on the philosophical or political implications of colonization — epitomizes technocracy. He doesn’t seem interested in thinking through Mars’s policy or governance, the labor necessitated by building a civilization from scratch, or the problems that will arise from sending rich tourists to self-manage in a place with scant resources demanding communal organization and thinking. The True Value of Mars For some, sending a few rich folks off to Mars seems like a great idea. After all, it’s hardly an Eden waiting to be destroyed. Unlike previous colonial projects, there are no natives to exploit; no wildlife to hunt to extinction; no ecosystem to radically alter; no fossil fuels to extract; and no climate in danger of destruction from carbon emission. Mars’s atmosphere is already 96 percent carbon dioxide! Why not let Musk and his millionaire buddies take off for a few rounds of golf on the [frosted dunes](https://www.nasa.gov/image-feature/frosted-dunes-on-mars)? If they get stuck there, all the better. From a humanistic perspective, however, even a lifeless world like Mars holds incredible scientific, educational, and environmental value. To let private interests colonize, terraform, or populate it without considering this collective value would be short-sighted. Indeed, when it comes to colonization, we should hope humanity has learned from its past mistakes and is ready to set upon a more democratic process. Perhaps Earth can agree to hold a public discussion before we set about strip-mining Mars’s glorious dunes, vistas, and mountains, lest [the tallest mountain](https://mars.jpl.nasa.gov/gallery/atlas/olympus-mons.html) in the solar system become a [trash heap](https://www.washingtonpost.com/news/morning-mix/wp/2015/03/03/decades-of-human-waste-have-made-mount-everest-a-fecal-time-bomb/) like Everest. Government space agencies have gone to great lengths to keep the scientific and social benefits of publicly funded exploration intact. This is why NASA makes all its mission data [public](https://www.nasa.gov/open/data.html), and also why it insists on sterilizing space probes to avoid contaminating other worlds with cellular life from Earth — one stray terrestrial extremophile could confuse the search for microbial life off-planet. The agency, recognizing its work’s educational value, has sent elementary school children’s [experiments](https://www.nasa.gov/feature/first-cubesat-built-by-an-elementary-school-deployed-into-space) into space and hosted [public naming competitions](https://www.nasa.gov/press/2015/april/nasa-extends-campaign-for-public-to-name-features-on-pluto) for geographic features. Likewise, NASA thinks beyond the engineering challenges: they also consider space travel’s psychological and biological effects, surely an important field of study in anticipation of the long space flights required for interplanetary travel. Private industry will be unlikely to follow these collective practices, as its desire for profit or for exclusive property rights — physical and intellectual — will outweigh any public benefit. I Want to Believe The public and media reaction to Musk’s presentation — more than the presentation itself —reflects the current state of our politics. “The mood at the conference was almost as giddy as a rock concert or the launch of a new Apple product, with people lining up for Mr. Musk’s presentation a couple of hours in advance,” wrote Kenneth Chang in the [New York Times](https://www.nytimes.com/2016/09/28/science/elon-musk-spacex-mars-exploration.html?_r=1), who devoted 1,200 words to it. “Elon Musk finally told the world his vision for colonizing Mars, and it turned out to be one hell of a show,” exclaimed Loren Grush in a [video article](https://www.theverge.com/2016/9/30/13114704/spacex-elon-musk-vs-mars-one-nasa-mission-timeline) for the Verge. Grush noted that Musk drew an “insane crowd,” describing how “people actually stampeded into the hall where his lecture was in order to get a good seat.” He began in lofty tones: “I want to . . . make Mars seem possible. Make it seem as though it is something we can do in our lifetimes.” This statement implied that we needed some great technological leap forward before embarking on this adventure, but, in fact, travel to Mars has been possible for well over half a century. Given the political will, we can go right now. The subtext of Musk’s message, then, was that our democratic governments will never execute big science and engineering projects. People should trust in the private vision for colonization and space travel instead. In Earth politics, this lack of faith in democratic institutions is nothing new. This idea’s policy implications — that collectively we can’t have big public projects or any sort of real democratic decision-making, and must cede our whims to privately funded foundations and technocratic “experts” — have already taken hold of most countries. As far as I could find, none of the magazines that covered Musk’s announcement mentioned this metatheme, namely, that a public and democratically organized colonization of Mars will never happen. No one questioned the premise that we must let billionaires decide how and when to go to Mars — or that it is the only possible way to get there. Musk’s tech-industry social circle benefits from branding technology as synonymous with progress. As a result, many tech employees work long hours to achieve this invisible notion of progress, but their work just fattens their employer’s profit margins. One can imagine the grueling labor required to make an inhospitable planet habitable. On Mars, employees would exhaust themselves for a corporation under the guise of “survival.” After all, regardless of whether a foundation or a corporation spearheads the colonization effort, they will be incentivized, even forty million miles away, to squeeze [as much labor out of their workers](https://www.dailykos.com/story/2015/5/5/1372730/-Skylab-and-the-Sit-Down-Strike-in-Space) at the lowest cost. Further, the question of who is allowed to go to Mars will become as important as the question of who isn’t. If, as Musk proposes, the trip requires a “ticket” — which, as he claims, will eventually drop to only $100,000 — it seems probable that those who can afford to go will mostly resemble, ethnically and politically, Earth’s ruling class. Imagine: the red planet turned racist country club. These questions matter more than how to engineer a rocket or how to build greenhouses or how to harvest water. In fact, state-funded research has already largely solved these technical problems — or, at the least, led to numerous [creative ideas](https://www.newscientist.com/article/mg21628855.100-build-a-mars-base-with-a-box-of-engineered-bugs.html) about making a Mars colony self-sufficient. The Martian Commons Any colonization effort on Mars — even if only a small number of humans go — will present huge political challenges in terms of the labor and personal rights of its citizens. To wit: what kinds of reproductive restrictions will exist on a planet of scarce resources? How will colonists ration food and activity? What about personal privacy? If Martian citizens are working in a life-or-death situation, can the workers strike? At least in its early years, Mars would have a scarcity economy — in other words, resources would likely have to be rationed in order for the collective to survive. A private colony would be unlikely to make any kind of egalitarian guarantee — after all, if there’s a ticket price, there will certainly be a Martian service economy pampering the space tourists. Inequalities will emerge in terms of labor, housing, food, and access to other resources. In fact, we already know what a privatized Mars might resemble: Mount Everest. At higher elevations, it becomes a barren, lifeless, cold world, where climbers require oxygen tanks to survive. The cost of ascending is as steep as the mountain: [between $30,000 to $100,000](https://www.outsideonline.com/1929131/how-much-does-it-cost-climb-everest). Climbers’ journeys are only made possible by their Sherpas’ exploited labor, many of whom die in accidents and are paid [as little as](https://kristof.blogs.nytimes.com/2016/03/28/sherpa-they-die-we-go-home/) $5,000 a year by Western companies. Now imagine this situation replicated forty million miles off, on a lifeless planet, where two-way Earth communication takes almost an hour, and you can envision how dire things could get. A New Hope Musk spent nearly an hour of his speech detailing the technological aspects of Mars travel: the landers, the rockets, the fuel costs, and so on. Musk takes a technology-first approach and rarely mentions the numerous social aspects. His speech and its collective reactions attest to a naïve, John Galt fantasy about how policy and engineering come to pass: through the mind of the lone genius, who alone holds the key to humanity’s future. We saw the same fantasy at work last week when, in the wake of President Trump’s executive order banning emigration from seven majority-Muslim countries, Starbucks CEO Howard Schultz [announced](http://www.businessinsider.com/starbucks-boycott-after-ceos-refugee-support-2017-1) his plan to hire ten thousand refugees and was immediately hailed as a [liberal hero](http://www.huffingtonpost.com/entry/boycott-starbucks-backfires_us_58903e39e4b0c90efeffd8af). The message was clear: we can’t hope to help refugees ourselves, or on a democratic basis — we must rely on the whims of the rich to push forward progressive causes. Alas, the reaction to Musk’s speech also demonstrates how public sentiment has changed: collectively, we no longer believe in public space exploration. Even if we know state agencies can launch a Mars mission, few think it will happen. This doesn’t bode well for how we think of the commons. Are rich people and their foundations the [only ones who can save us](https://www.jacobinmag.com/2016/11/david-brock-clinton-sanders-donald-trump/)? The plethora of private Mars proposals reflects a [lack of faith in democracy on Earth](https://www.jacobinmag.com/2016/07/populism-democracy-technocrats-brexit-trump-sanders-voting-referendum/), in particular in our democratic influence over the directions science and engineering research take. And while faith in public institutions sits at an all-time low, we seem more than happy to hear what the rich can make possible and to believe their promises. Musk is just one of many technocrats who think of a Mars voyage as a technological problem. Not only is it not a technological problem, it’s not even a problem. Colonization of Mars should be seen as a complex social and political policy, with so much potential to create inequality and oppression that it cannot rationally be undertaken without political consensus and a stratagem for maintaining democracy and egalitarianism. We are ready to colonize Mars, and have been for half a century. Doing so without a democratic plan will present unimaginable dangers for the planet and colonists alike. As socialists, our rallying cry should be this: [Keep the red planet red](https://www.jacobinmag.com/2015/04/aliens-extraterrestrials-active-seti/)!

#### This private expansion into space results in corporate colonization of planets that undermines the the rest of humanity. Spencer ’17

Spencer, Keith A. [senior editor at Salon]“Against Mars-a-Lago: Why SpaceX's Mars Colonization Plan Should Terrify You.” Salon, Salon.com, Oct. 8 2017, https://www.salon.com/2017/10/08/against-mars-a-lago-why-spacexs-mars-colonization-plan-should-terrify-you/.

When CEO Elon Musk announced last month that his aerospace company SpaceX would be [sending cargo missions](https://www.washingtonpost.com/news/the-switch/wp/2017/09/29/elon-musk-says-his-next-spaceship-could-not-only-take-to-you-the-moon-and-mars-but-from-n-y-to-london-in-29-minutes/?utm_term=.85279aa2076a) to Mars by 2022 — the first step in his tourism-driven colonization plan — a small cheer went up among space and science enthusiasts. Writing in the New York Post, Stephen Carter [called](http://nypost.com/2017/10/07/elon-musks-inspiring-vision-for-reaching-mars-and-the-stars/) Musk’s vision “inspiring,” a salve for politically contentious times. “Our species has turned its vision inward; our image of human possibility has grown cramped and pessimistic,” Carter wrote: "We dream less of reaching the stars than of winning the next election; less of maturing as a species than of shunning those who are different; less of the blessings of an advanced technological tomorrow than of an apocalyptic future marked by a desperate struggle to survive. Maybe a focus on the possibility of reaching our nearest planetary neighbor will help change all that." The Post editorial reflected a growing media consensus that humankind’s ultimate destiny is the colonization of the solar system — yet on a private basis. American government leaders generally agree with this vision. Obama egged on the [privatization of NASA](http://blogs.discovermagazine.com/80beats/2010/02/01/obamas-nasa-budget-so-long-moon-missions-hello-private-spaceflight/) by legislating a policy shift to private commercial spaceflight, awarding government contracts to private companies like SpaceX to shuttle supplies to the International Space Station. “Governments can develop new technology and do some of the exciting early exploration but in the long run it's the private sector that finds ways to make profit, finds ways to expand humanity,” [said](http://www.theregister.co.uk/2012/03/08/nasa_private_space_nasa/) Dr. S. Pete Worden, the director of the NASA Ames Research lab, in 2012. And in a Wall Street Journal [op-ed](https://www.wsj.com/articles/america-will-return-to-the-moonand-go-beyond-1507158341?mod=e2fb) this week, Vice President Mike Pence wrote of his ambitions to bring [American-style capitalism to the stars](https://www.salon.com/2017/08/06/tacoma-the-next-video-game-from-gone-home-creators-imagines-the-gig-economy-in-space/): “In the years to come, American industry must be the first to maintain a constant commercial human presence in low-Earth orbit, to expand the sphere of the economy beyond this blue marble,” Pence wrote. One wonders if these luminaries know their history. There has be no instance in which a private corporation became a colonizing power that did not end badly for everyone besides the shareholders. The East India Company is perhaps the finest portent of Musk’s Martian ambitions. In 1765, the East India Company forced the Mughal emperor to sign a legal agreement that would essentially permit their company to become the de facto rulers of Bengal. The East India Company then collected taxes and used its private army, which was over 200,000 strong by the early 19th century, to repress those who got in the way of its profit margins. “It was not the British government that seized India at the end of the 18th century, but a dangerously unregulated private company headquartered in one small office, five windows wide, in London, and managed in India by an unstable sociopath,” [writes](https://www.theguardian.com/world/2015/mar/04/east-india-company-original-corporate-raiders) William Dalrymple in the Guardian. “It almost certainly remains the supreme act of corporate violence in world history.” The East India Company came to colonize much of the Indian subcontinent. In the modern era, an era in which the right of corporations to do what they want, unencumbered, has become a [sacrosanct](https://www.salon.com/2017/09/19/trumps-interior-secretary-on-national-monuments-sell-em-and-strip-em/) [right](https://www.salon.com/2016/12/15/exxonmobil-ceo-and-trump-pick-rex-tillerson-my-philosophy-is-to-make-money_partner/) in the eyes of many politicians, the lessons of the East India Company seem to have been all but forgotten. As Dalrymple writes: Democracy as we know it was considered an advance over feudalism because of the power that it gave the commoners to share in collective governance. To privately colonize a nation, much less a planet, means ceding governance and control back to corporations whose interest is not ours, and indeed, is always at odds with workers and residents — particularly in a resource-limited environment like a spaceship or the red planet. Even if, as Musk suggests, a private foundation is [put in charge](https://www.jacobinmag.com/2017/02/mars-elon-musk-space-exploration-nasa-colonization) of running the show on Mars, their interests will inherently be at [odds with the workers](http://www.dailykos.com/story/2015/5/5/1372730/-Skylab-and-the-Sit-Down-Strike-in-Space) and employees involved. After all, a private foundation [is not a democracy](https://www.jacobinmag.com/2015/11/philanthropy-charity-banga-carnegie-gates-foundation-development); and as major philanthropic organizations like the Bill and Melinda Gates Foundation [illustrate](https://www.jacobinmag.com/2015/11/philanthropy-charity-banga-carnegie-gates-foundation-development), often [do the bidding](http://www.peterfrase.com/2011/08/the-decay-of-the-capitalist-class/) of their rich donors, and take an [important role in ripening industries](https://www.salon.com/2016/02/21/corporate_reformers_wreck_public_schools_billionaire_foundations_and_wall_street_financiers_are_not_out_to_help_your_kids_learn/) and regions for exploitation by Western corporations. Yet Mars’ colonization is a bit different than Bengal, namely in that it is not merely underdeveloped; it is undeveloped. How do you start an entirely new economy on a virgin world with no industry? After all, Martian resource extraction and trade with Earth is not feasible; the cost of transporting material across the solar system is astronomical, and there are no obvious minerals on Mars that we don’t already have in abundance on Earth. The only basis for colonization of Mars that Musk can conceive of is one based on tourism: the rich pay an amount — Musk quotes the ticket price at [$200,000 if he can get 1 million tourists](https://www.recode.net/2016/9/27/13081488/elon-musk-spacex-mars-colony-space-travel-funding-rocket-nasa) to pay that — that entitles them to a round-trip ticket. And while they’re on Mars and traveling to it, they luxuriate: Musk has [assured](http://www.telegraph.co.uk/science/2017/06/21/elon-musk-create-city-mars-million-inhabitants/) that the trip would be “fun.” This is what makes Musk’s Mars vision so different than, say, the Apollo missions or the International Space Station. This isn’t really exploration for humanity’s sake — there’s not that much science assumed here, as there was in the Moon missions. Musk wants to build the ultimate luxury package, exclusively for the richest among us. Musk isn’t trying to build something akin to Matt Damon’s spartan research base in "The Martian." He wants to build Mars-a-Lago. And an economy based on tourism, particularly high-end tourism, needs employees — even if a high degree of automation is assumed. And as I’ve written about [before](https://www.jacobinmag.com/2017/02/mars-elon-musk-space-exploration-nasa-colonization), that means a lot of labor at the lowest cost possible. Imagine signing away years of your life to be a housekeeper in the Mars-a-Lago hotel, with your communications, water, food, energy usage, even oxygen tightly managed by your employer, and no government to file a grievance to if your employer cuts your wages, harasses you, cuts off your oxygen. Where would Mars-a-Lago's employees turn if their rights were impinged upon? Oh wait, this planet is run privately? You have no rights. Musk's vision for Mars colonization is inherently authoritarian. The potential for the existence of the employees of the Martian tourism industry to slip into something resembling indentured servitude, even slavery, cannot be underestimated. We have government regulations for a reason on Earth — to protect us from the fresh horror Musk hopes to export to Mars. If he's considered these questions, he doesn't seem to care; for Musk, the devil's in the technological and financial details. The social and political are pretty uninteresting to him. This is unsurprising; accounts from those who have worked closely with him hint that he, like many CEOs, [may be a sociopath](http://www.businessinsider.com/working-with-elon-musk-tesla-2015-5). Even as a space enthusiast, I cannot get excited about the private colonization of Mars. You shouldn’t be either. This is not a giant leap for mankind; this is the next great leap in plutocracy. The mere notion that global wealth is so unevenly distributed that a small but sufficient sum of rich people could afford this trip is unsettling, indicative of the era of astonishing economic inequality in which we suffer. Thomas Frank, writing in Harpers, once [wrote of](https://harpers.org/archive/2011/11/the-bleakness-stakes/) a popular t-shirt he sighted while picnicking in a small West Virginia coal town: “Mine it union or keep it in the ground.” The idea, of course, is that the corporations interested in resource extraction do not care whatsoever about their workers’ health, safety, or well-being; the union had their interests at heart, and was able to negotiate for safety, job security, and so on. I’d like to see a similar t-shirt or bumper sticker emerge among scientists and space enthusiasts: “Explore Mars democratically, or keep it in the sky.”

**Neoliberalism destroys ethics, locks in poverty and exploitation, decimates the environment, and causes war.**

**Werlhof 15** – Claudia, Professor of Political Science/Women's Studies, University Innsbruck (Austria), 2015 (“Neoliberal Globalization: Is There an Alternative to Plundering the Earth?” Global Research, May 25th, Available Online at http://www.globalresearch.ca/neoliberal-globalization-is-there-an-alternative-to-plundering-the-earth/24403)

At the center of both old and new economic liberalism lies: Self-interest and individualism; segregation of ethical principles and economic affairs, in other words: a process of ‘de-bedding’ economy from society; economic rationality as a mere cost-benefit calculation and profit maximization; competition as the essential driving force for growth and progress; specialization and the replacement of a subsistence economy with profit-oriented foreign trade (‘comparative cost advantage’); and the proscription of public (state) interference with market forces.[3] Where the new economic liberalism outdoes the old is in its global claim. Today’s economic liberalism functions as a model for each and everyone: all parts of the economy, all sectors of society, of life/nature itself. As a consequence, the once “de-bedded” economy now claims to “im-bed” everything, including political power. Furthermore, a new twisted “economic ethics” (and with it a certain idea of “human nature”) emerges that mocks everything from so-called do-gooders to altruism to selfless help to care for others to a notion of responsibility.[4] This goes as far as claiming that the common good depends entirely on the uncontrolled egoism of the individual and, especially, on the prosperity of transnational corporations. The allegedly necessary “freedom” of the economy – which, paradoxically, only means the freedom of corporations – hence consists of a freedom from responsibility and commitment to society. The maximization of profit itself must occur within the shortest possible time; this means, preferably, through speculation and “shareholder value”. It must meet as few obstacles as possible. Today, global economic interests outweigh not only extra-economic concerns but also national economic considerations since corporations today see themselves beyond both community and nation.[5] A “level playing field” is created that offers the global players the best possible conditions. This playing field knows of no legal, social, ecological, cultural or national “barriers”.[6] As a result, economic competition plays out on a market that is free of all non-market, extra-economic or protectionist influences – unless they serve the interests of the big players (the corporations), of course. The corporations’ interests – their maximal growth and progress – take on complete priority. This is rationalized by alleging that their well-being means the well-being of small enterprises and workshops as well. The difference between the new and the old economic liberalism can first be articulated in quantitative terms: after capitalism went through a series of ruptures and challenges – caused by the “competing economic system”, the crisis of capitalism, post-war “Keynesianism” with its social and welfare state tendencies, internal mass consumer demand (so-called Fordism), and the objective of full employment in the North. The liberal economic goals of the past are now not only euphorically resurrected but they are also “globalized”. The main reason is indeed that the competition between alternative economic systems is gone. However, to conclude that this confirms the victory of capitalism and the “golden West” over “dark socialism” is only one possible interpretation. Another – opposing – interpretation is to see the “modern world system” (which contains both capitalism and socialism) as having hit a general crisis which causes total and merciless competition over global resources while leveling the way for investment opportunities, i.e. the valorization of capital.[7] The ongoing globalization of neoliberalism demonstrates which interpretation is right. Not least, because the differences between the old and the new economic liberalism can not only be articulated in quantitative terms but in qualitative ones too. What we are witnessing are completely new phenomena: instead of a democratic “complete competition” between many small enterprises enjoying the freedom of the market, only the big corporations win. In turn, they create new market oligopolies and monopolies of previously unknown dimensions. The market hence only remains free for them, while it is rendered unfree for all others who are condemned to an existence of dependency (as enforced producers, workers and consumers) or excluded from the market altogether (if they have neither anything to sell or buy). About fifty percent of the world’s population fall into this group today, and the percentage is rising.[8] Anti-trust laws have lost all power since the transnational corporations set the norms. It is the corporations – not “the market” as an anonymous mechanism or “invisible hand” – that determine today’s rules of trade, for example prices and legal regulations. This happens outside any political control. Speculation with an average twenty percent profit margin edges out honest producers who become “unprofitable”.[9] Money becomes too precious for comparatively non-profitable, long-term projects, or projects that only – how audacious! – serve a good life. Money instead “travels upwards” and disappears. Financial capital determines more and more what the markets are and do.[10] By delinking the dollar from the price of gold, money creation no longer bears a direct relationship to production”.[11] Moreover, these days most of us are – exactly like all governments – in debt. It is financial capital that has all the money – we have none.[12] Small, medium, even some bigger enterprises are pushed out of the market, forced to fold or swallowed by transnational corporations because their performances are below average in comparison to speculation – rather: spookulation – wins. The public sector, which has historically been defined as a sector of not-for-profit economy and administration, is “slimmed” and its “profitable” parts (“gems”) handed to corporations (privatized). As a consequence, social services that are necessary for our existence disappear. Small and medium private businesses – which, until recently, employed eighty percent of the workforce and provided normal working conditions – are affected by these developments as well. The alleged correlation between economic growth and secure employment is false. When economic growth is accompanied by the mergers of businesses, jobs are lost.[13] If there are any new jobs, most are precarious, meaning that they are only available temporarily and badly paid. One job is usually not enough to make a living.[14] This means that the working conditions in the North become akin to those in the South, and the working conditions of men akin to those of women – a trend diametrically opposed to what we have always been told. Corporations now leave for the South (or East) to use cheap – and particularly female – labor without union affiliation. This has already been happening since the 1970s in the “Export Processing Zones” (EPZs, “world market factories” or “maquiladoras”), where most of the world’s computer chips, sneakers, clothes and electronic goods are produced.[15] The EPZs lie in areas where century-old colonial-capitalist and authoritarian-patriarchal conditions guarantee the availability of cheap labor.[16] The recent shift of business opportunities from consumer goods to armaments is a particularly troubling development.[17] It is not only commodity production that is “outsourced” and located in the EPZs, but service industries as well. This is a result of the so-called Third Industrial Revolution, meaning the development of new information and communication technologies. Many jobs have disappeared entirely due to computerization, also in administrative fields.[18] The combination of the principles of “high tech” and “low wage”/”no wage” (always denied by “progress” enthusiasts) guarantees a “comparative cost advantage” in foreign trade. This will eventually lead to “Chinese wages” in the West. A potential loss of Western consumers is not seen as a threat. A corporate economy does not care whether consumers are European, Chinese or Indian. The means of production become concentrated in fewer and fewer hands, especially since finance capital – rendered precarious itself – controls asset values ever more aggressively. New forms of private property are created, not least through the “clearance” of public property and the transformation of formerly public and small-scale private services and industries to a corporate business sector. This concerns primarily fields that have long been (at least partly) excluded from the logic of profit – e.g. education, health, energy or water supply/disposal. New forms of so-called enclosures emerge from today’s total commercialization of formerly small-scale private or public industries and services, of the “commons”, and of natural resources like oceans, rain forests, regions of genetic diversity or geopolitical interest (e.g. potential pipeline routes), etc.[19] As far as the new virtual spaces and communication networks go, we are witnessing frantic efforts to bring these under private control as well.[20] All these new forms of private property are essentially created by (more or less) predatory forms of appropriation. In this sense, they are a continuation of the history of so-called original accumulation which has expanded globally, in accordance with to the motto: “Growth through expropriation!”[21] Most people have less and less access to the means of production, and so the dependence on scarce and underpaid work increases. The destruction of the welfare state also destroys the notion that individuals can rely on the community to provide for them in times of need. Our existence relies exclusively on private, i.e. expensive, services that are often of much worse quality and much less reliable than public services. (It is a myth that the private always outdoes the public.) What we are experiencing is undersupply formerly only known by the colonial South. The old claim that the South will eventually develop into the North is proven wrong. It is the North that increasingly develops into the South. We are witnessing the latest form of “development”, namely, a world system of underdevelopment.[22] Development and underdevelopment go hand in hand.[23] This might even dawn on “development aid” workers soon. It is usually women who are called upon to counterbalance underdevelopment through increased work (“service provisions”) in the household. As a result, the workload and underpay of women takes on horrendous dimensions: they do unpaid work inside their homes and poorly paid “housewifized” work outside.[24] Yet, commercialization does not stop in front of the home’s doors either. Even housework becomes commercially co-opted (“new maid question”), with hardly any financial benefits for the women who do the work.[25] Not least because of this, women are increasingly coerced into prostitution, one of today’s biggest global industries.[26] This illustrates two things: a) how little the “emancipation” of women actually leads to “equal terms” with men; and b) that “capitalist development” does not imply increased “freedom” in wage labor relations, as the Left has claimed for a long time.[27] If the latter were the case, then neoliberalism would mean the voluntary end of capitalism once it reaches its furthest extension. This, however, does not appear likely. Today, hundreds of millions of quasi-slaves, more than ever before, exist in the “world system.”[28] The authoritarian model of the “Export Processing Zones” is conquering the East and threatening the North. The redistribution of wealth runs ever more – and with ever accelerated speed – from the bottom to the top. The gap between the rich and the poor has never been wider. The middle classes disappear. This is the situation we are facing. It becomes obvious that neoliberalism marks not the end of colonialism but, to the contrary, the colonization of the North. This new “colonization of the world”[29] points back to the beginnings of the “modern world system” in the “long 16th century”, when the conquering of the Americas, their exploitation and colonial transformation allowed for the rise and “development” of Europe.[30] The so-called “children’s diseases” of modernity keep on haunting it, even in old age. They are, in fact, the main feature of modernity’s latest stage. They are expanding instead of disappearing. Where there is no South, there is no North; where there is no periphery, there is no center; where there is no colony, there is no – in any case no “Western” – civilization.[31] Austria is part of the world system too. It is increasingly becoming a corporate colony (particularly of German corporations). This, however, does not keep it from being an active colonizer itself, especially in the East.[32] Social, cultural, traditional and ecological considerations are abandoned and give way to a mentality of plundering. All global resources that we still have – natural resources, forests, water, genetic pools – have turned into objects of utilization. Rapid ecological destruction through depletion is the consequence. If one makes more profit by cutting down trees than by planting them, then there is no reason not to cut them.[33] Neither the public nor the state interferes, despite global warming and the obvious fact that the clearing of the few remaining rain forests will irreversibly destroy the earth’s climate – not to mention the many other negative effects of such actions.[34] Climate, animal, plants, human and general ecological rights are worth nothing compared to the interests of the corporations – no matter that the rain forest is not a renewable resource and that the entire earth’s ecosystem depends on it. If greed, and the rationalism with which it is economically enforced, really was an inherent anthropological trait, we would have never even reached this day. The commander of the Space Shuttle that circled the earth in 2005 remarked that “the center of Africa was burning”. She meant the Congo, in which the last great rain forest of the continent is located. Without it there will be no more rain clouds above the sources of the Nile. However, it needs to disappear in order for corporations to gain free access to the Congo’s natural resources that are the reason for the wars that plague the region today. After all, one needs diamonds and coltan for mobile phones. Today, everything on earth is turned into commodities, i.e. everything becomes an object of “trade” and commercialization (which truly means liquidation, the transformation of all into liquid money). In its neoliberal stage it is not enough for capitalism to globally pursue less cost-intensive and preferably “wageless” commodity production. The objective is to transform everyone and everything into commodities, including life itself.[35] We are racing blindly towards the violent and absolute conclusion of this “mode of production”, namely total capitalization/liquidation by “monetarization”.[36] We are not only witnessing perpetual praise of the market – we are witnessing what can be described as “market fundamentalism”. People believe in the market as if it was a god. There seems to be a sense that nothing could ever happen without it. Total global maximized accumulation of money/capital as abstract wealth becomes the sole purpose of economic activity. A “free” world market for everything has to be established – a world market that functions according to the interests of the corporations and capitalist money. The installment of such a market proceeds with dazzling speed. It creates new profit possibilities where they have not existed before, e.g. in Iraq, Eastern Europe or China. One thing remains generally overlooked: the abstract wealth created for accumulation implies the destruction of nature as concrete wealth. The result is a “hole in the ground” and next to it a garbage dump with used commodities, outdated machinery and money without value.[37] However, once all concrete wealth (which today consists mainly of the last natural resources) will be gone, abstract wealth will disappear as well. It will, in Marx’s words, “evaporate”. The fact that abstract wealth is not real wealth will become obvious, and so will the answer to the question of which wealth modern economic activity has really created. In the end it is nothing but monetary wealth (and even this mainly exists virtually or on accounts) that constitutes a monoculture controlled by a tiny minority. Diversity is suffocated and millions of people are left wondering how to survive. And really: how do you survive with neither resources nor means of production nor money? The nihilism of our economic system is evident. The whole world will be transformed into money – and then it will disappear. After all, money cannot be eaten. What no one seems to consider is the fact that it is impossible to re-transform commodities, money, capital and machinery into nature or concrete wealth. It seems that underlying all “economic development” is the assumption that “resources”, the “sources of wealth”,[38] are renewable and everlasting – just like the “growth” they create.[39] The notion that capitalism and democracy are one is proven a myth by neoliberalism and its “monetary totalitarianism”.[40] The primacy of politics over economy has been lost. Politicians of all parties have abandoned it. It is the corporations that dictate politics. Where corporate interests are concerned, there is no place for democratic convention or community control. Public space disappears. The res publica turns into a res privata, or – as we could say today – a res privata transnationale (in its original Latin meaning, privare means “to deprive”). Only those in power still have rights. They give themselves the licenses they need, from the “license to plunder” to the “license to kill”.[41] Those who get in their way or challenge their “rights” are vilified, criminalized and to an increasing degree defined as “terrorists” or, in the case of defiant governments, as “rogue states” – a label that usually implies threatened or actual military attack, as we can see in the cases of Yugoslavia, Afghanistan and Iraq, and maybe Syria and Iran in the near future. U.S. President Bush had even spoken of the possibility of “preemptive” nuclear strikes should the U.S. feel endangered by weapons of mass destruction.[42] The European Union did not object.[43] Neoliberalism and war are two sides of the same coin.[44] Free trade, piracy and war are still “an inseparable three” – today maybe more so than ever. War is not only “good for the economy” but is indeed its driving force and can be understood as the “continuation of economy with other means”.[45] War and economy have become almost indistinguishable.[46] Wars about resources – especially oil and water – have already begun.[47] The Gulf Wars are the most obvious examples. Militarism once again appears as the “executor of capital accumulation” – potentially everywhere and enduringly.[48] Human rights and rights of sovereignty have been transferred from people, communities and governments to corporations.[49] The notion of the people as a sovereign body has practically been abolished. We have witnessed a coup of sorts. The political systems of the West and the nation state as guarantees for and expression of the international division of labor in the modern world system are increasingly dissolving.[50] Nation states are developing into “periphery states” according to the inferior role they play in the proto-despotic “New World Order”.[51] Democracy appears outdated. After all, it “hinders business”.[52] The “New World Order” implies a new division of labor that does no longer distinguish between North and South, East and West – today, everywhere is South. An according International Law is established which effectively functions from top to bottom (“top-down”) and eliminates all local and regional communal rights. And not only that: many such rights are rendered invalid both retroactively and for the future.[53] The logic of neoliberalism as a sort of totalitarian neo-mercantilism is that all resources, all markets, all money, all profits, all means of production, all “investment opportunities”, all rights and all power belong to the corporations only. To paraphrase Richard Sennett: “Everything to the Corporations!”[54] One might add: “Now!” The corporations are free to do whatever they please with what they get. Nobody is allowed to interfere. Ironically, we are expected to rely on them to find a way out of the crisis we are in. This puts the entire globe at risk since responsibility is something the corporations do not have or know. The times of social contracts are gone.[55] In fact, pointing out the crisis alone has become a crime and all critique will soon be defined as “terror” and persecuted as such.[56] IMF Economic Medicine Since the 1980s, it is mainly the Structural Adjustment Programs (SAPs) of the World Bank and the IMF that act as the enforcers of neoliberalism. These programs are levied against the countries of the South which can be extorted due to their debts. Meanwhile, numerous military interventions and wars help to take possession of the assets that still remain, secure resources, install neoliberalism as the global economic politics, crush resistance movements (which are cynically labeled as “IMF uprisings”), and facilitate the lucrative business of reconstruction.[57] In the 1980s, Ronald Reagan and Margaret Thatcher introduced neoliberalism in Anglo-America. In 1989, the so-called “Washington Consensus” was formulated. It claimed to lead to global freedom, prosperity and economic growth through “deregulation, liberalization and privatization”. This has become the credo and promise of all neoliberals. Today we know that the promise has come true for the corporations only – not for anybody else. In the Middle East, the Western support for Saddam Hussein in the war between Iraq and Iran in the 1980s, and the Gulf War of the early 1990s, announced the permanent U.S. presence in the world’s most contested oil region. In continental Europe, neoliberalism began with the crisis in Yugoslavia caused by the Structural Adjustment Programs (SAPs) of the World Bank and the IMF. The country was heavily exploited, fell apart and finally beset by a civil war over its last remaining resources.[58] Since the NATO war in 1999, the Balkans are fragmented, occupied and geopolitically under neoliberal control.[59] The region is of main strategic interest for future oil and gas transport from the Caucasus to the West (for example the “Nabucco” gas pipeline that is supposed to start operating from the Caspian Sea through Turkey and the Balkans by 2011.[60] The reconstruction of the Balkans is exclusively in the hands of Western corporations. All governments, whether left, right, liberal or green, accept this. There is no analysis of the connection between the politics of neoliberalism, its history, its background and its effects on Europe and other parts of the world. Likewise, there is no analysis of its connection to the new militarism.

### Adv 3- Debris

#### Space Tourism is happening soon and will scale up

#### Pultarova ‘21 [Tereza Pultarova; Senior Writer @ Space.com, Master's in Science from the International Space University, Bachelor's in Journalism, Master's in Cultural Anthropology from Prague's Charles University; 07-26-2021; “The rise of space tourism could affect Earth's climate in unforeseen ways, scientists worry”; Space.com; <https://www.space.com/environmental-impact-space-tourism-flights>; Accessed 12-03-2021] AK

**Northern Sky Research predicts that the number of space tourism flights will skyrocket over the next decade, from maybe 10 a year in the near future to 360 a year by 2030**, Kasaboski said. This estimate is still far below the growth rate that space tourism companies like Virgin Galactic and Blue Origin envision for themselves.

"**Demand for suborbital tourism is extremely high**," Kasaboski said. "These companies virtually have customers waiting in a line, and therefore they want to scale up. Ultimately, they would want to fly multiple times a day, just like short-haul aircraft do."

#### Increased space tourism pushes debris over the brink – that wrecks satellites.

**Tehrani ‘21** [James Tehrani; Spark‘s editor-in-chief, an award-winning writer and editor; 04-01-2021; “Space Junk: A Safety and Sustainability Problem Moving at 18,000 MPH”; Spark; <https://sphera.com/spark/space-junk-a-safety-and-sustainability-problem-moving-at-18000-mph/>; Accessed 12-26-2021] AK

Most of the current debris is found in the low Earth orbit (LEO), which is about 600 to 1,200 miles (1,000 to 2,000 kilometers) above the planet. NASA calls LEO an “orbital space junkyard.” The junk isn’t sitting idly in a landfill; it is moving around at speeds up to 18,000 mph (29,000 kph), or 23 times the speed of sound.

While the Inter-Agency Space Debris Coordination Committee was designed to coordinate space debris efforts, **there are currently no international laws in place regarding removing space debris**. Since a single satellite can cost between $50 million and $400 million, the risk of damage from space debris to a satellite is clearly significant. And **as more debris is left behind, there is obviously more risk of collisions, especially when space tourism picks up**. The orbiting junk was explored in the 2013 film “Gravity,” starring George Clooney and Sandra Bullock; it’s known as the Kessler Effect.

Don Kessler, the former NASA scientist who studied space debris even told the Guardian back in 2011 in regard to formulating a plan to deal with space junk: “The longer you wait to do this, the more expensive it’s going to be. … This scenario of increasing space debris will play out even if we don’t put anything else in orbit,” he said.

On that point, the European Space Agency has contracted with a Swiss startup called ClearSpace that plans to launch its first mission to remove space debris in 2025.

The Gravity of the Situation

Without a doubt, space debris is an Operational Risk; even the International Space Station has to dodge space junk at times. Former NASA Administrator Jim Bridenstine even tweeted last September that the “Space Station has maneuvered 3 times in 2020 to avoid debris. In the last 2 weeks, there have been 3 high concern potential conjunctions. Debris is getting worse!” Some of the larger debris that doesn’t burn up re-entering the atmosphere (about one object per day) even crashes back on Earth. Since most of the Earth’s surface is covered in water, it’s not surprisingly that most of the junk winds up in oceans, so the risk to humans is statistically very low. That doesn’t mean nil though.

For example, there is debris from Russian Proton rockets that has been found in Siberia, including that of old fuel tanks containing toxic fuel residue, which can be harmful to plants, animals and humans.

The environmental risks of space junk need to be explored further. A piece of space junk floating through the ocean is certainly not nearly as concerning as our plastic problem, but it’s nothing to ignore either.

LCA Leads the Way

Just as more and more companies are assessing the Life Cycle Assessment (LCA) of their products and services from cradle to grave on Planet Earth, it stands to reason that LCA could be just as important in outer space. That’s especially true when you consider space tourism is poised to blast off to become a potential $1.5 billion industry by 2028. The more activity, the more debris.

#### This points to several impact senarios:

#### First is destruction of BioDiversity:

#### The first is the loss of biodiversity: Satellites are key to biodiversity conservation. - Animals are living beings too, us deciding their fate in the name of innovation and killing them is a form of genocide and structural violence.

**Pettorelli ‘19** [Dr. Nathalie Pettorelli; a Senior Research Fellow at the Institute of Zoology, Zoological Society of London, the editor-in-chief of Remote Sensing in Ecology and Conservation and a senior editor for Journal of Applied Ecology; 09-25-2019; “Satellite Remote Sensing’s role in Biodiversity Conservation”; Medium; <https://medium.com/science-uncovered/satellite-remote-sensings-role-in-biodiversity-conservation-fbce22a7133c>; Accessed 12-26-2021] AK

Regional to global land cover products derived from the information captured by sensors onboard long-term satellite missions, such as Landsat, the Terra and Aqua Earth Observing System satellites, and the Polar­orbiting Operational Environmental Satellite series, are widely accessible and offer a relatively inexpensive and veriﬁable means of deriving complete spatial coverage of environmental information for large areas in a consistent manner that may be updated regularly. Very high spatial resolution commercial optical sensors have provided new opportunities for habitat mapping at a ﬁner spatial scale than previously possible. Hyperspectral imagery has improved opportunities for plant species identiﬁcation, soil properties monitoring, and habitat mapping, as well as plant condition assessment. Instruments such as synthetic aperture radar (SAR) and light detection and ranging (LiDAR) are increasingly being used in ecology and natural resource management, and provide signiﬁcant opportunities for estimating aboveground biomass and the structure of woody vegetation.

Today, the archive of terrestrial satellite imagery from the Landsat system spans more than four decades at spatial resolutions of 15–82 m. Spatial resolutions across all sensors range from roughly 50 cm to 10 km, with bimonthly information available for several sensors. Developments in satellite and sensor technology, as well as progress in techniques and algorithms to process satellite remote sensing images, are relatively rapid and continuous. New combinations of satellite remote sensing data with methodologies such as support vector machines and multisensor image fusion are constantly tested for application, while investigations for developing new indices to monitor vegetation have been occurring for decades. **Satellite remote sensing has** moreover **been successfully applied to address a variety of questions relevant to environmental management, including**, but not limited to: **landscape change monitoring; representativeness assessment; fragmentation assessment and monitoring; and climate change impact analysis**. In recent decades, numerous studies have also highlighted the key role of satellite data in **wildlife management**, with success stories reported in macroecology, plant ecology, animal population dynamics, habitat selection and habitat use studies, movement ecology, and palaeoecology.

**The role of satellites in providing critical information for** improving the **design and implementation of mitigation and adaptation tools to reduce the current rate of biodiversity loss is clear**, with satellite remote sensing data now being used to help identify new protected areas, to inform translocation planning, and to monitor and predict potential invasions. Satellite remote sensing has also proven key to track anthropogenic pressures on biodiversity and our natural capital, in both the terrestrial and marine realms: oil exploration activities, eutrophication, illegal fishing, and oil spills and run­offs are among the many threats that can be detected from space. Satellite remote sensing has thus literally opened up the possibility of addressing questions on scales inaccessible to ground based methods alone, facilitating the development of an integrated approach to natural resource management, where both threats and consequences can be evaluated.

#### The second is the future of space exploration

#### Webb ‘18 [(Amy Webb is a professor at the NYU Stern School of Business and is the chief executive of the Future Today Institute, a strategic foresight and research group in Washington, D.C.), “Space Oddities: We Need a Plan to Stop Polluting Space Before It’s Too Late” WIRED Science April 12, 2018 <https://www.wired.com/story/we-need-a-plan-to-stop-polluting-space-before-its-too-late/>] TDI

Space is our next dumping ground. As many as 170 million fragments of metal and astro debris necklace Earth. That includes 20,000 pieces larger than a softball, and 500,000 about the size of a marble, according to NASA. Old satellites, like Tiangong-1, are the biggest and highest-profile lumps of rubbish, but most of it comes from rocket parts and even lost astronaut tools. Size doesn’t always matter—a fleck of paint, orbiting at a high velocity, cracked the Space Shuttle's windshield.

This **debris will pose a navigation hazard for many centuries to come**. At least 200 objects roar back into the atmosphere each year, including pieces of solar panels and antennas and fragments of metal. All of them pose dangers for future astronauts: One plum-sized piece of gnarled space trash traveling faster than a speeding bullet could rip a five-foot hole into a spacecraft. And that collision, then, would hatch its own spectacle of shrapnel, which would join the rushing river of junk already circling the planet.

It’s not just Americans doing the dumping. China and Russia each have dozens of decommissioned satellites overhead, though the US certainly does it with style. Like everyone, I marveled at the successful launch of SpaceX’s Falcon Heavy rocket, whose cargo included Elon Musk’s Tesla Roaster and a mannequin driver named Starman. I’ll admit, I teared up listening to David Bowie as the rockets separated from the payload. It was an incredible technological achievement, one proving that the system could someday transport people and goods—perhaps real cars, and real people—into space.

Now that Tesla and its driver are overhead, in America’s junkyard in the sky. To be sure, space is big. Really big. Most debris soars about 1,250 miles above the Earth’s surface, so you have better odds scoring a seat on Virgin Galactic’s maiden voyage than witnessing Starman crash into your next door neighbor’s house. But it’s our behavior back here on Earth—our insistence on sending things up, without really thinking how to safely contain or send them back down—that should concern you.

We weren’t always so short-sighted. Ancient Native Americans lived by the Seventh Generation Principal, a way of long-term thinking that considered how every decision would affect their descendants seven generations into the future. In Japan, Buddhist monks devoted part of their daily rituals and work to ensuring the longevity of their communities, even planting and tending to bamboo forests, which would eventually be harvested, treated and used to repair temple roofs many decades hence. With each new generation, we live life faster than our ancestors. As a result, we spend less time thinking about the farther future of humanity.

We now have our sights set on colonizing Mars, mining asteroids for research and commerce, and venturing out to the furthest reaches of our galaxy. Space is no longer the final frontier; we’re already exploring it. Our current approach is about getting there, rather than considering what “getting there” could mean for future generations of humans, not to mention other life in the universe.

Where all that junk winds up isn’t something we can predict accurately. We could be unintentionally wreaking havoc on civilizations far away from Earth, catalyzing future intergalactic wars. Or, we might cause far less scintillating problems. Space junk could start to behave in unpredictable ways, reflecting sunlight the wrong direction, or changing our atmosphere, or impacting the universe in ways that don’t fit into our current understanding of physics.

Last week—30 years after my friends and I created an imaginary net to capture space debris—SpaceX launched RemoveDEBRIS, its own prototype, an experimental net to collect junk in orbit. It’s a neat idea, but even as middle schoolers, we knew it was an impractical one. Individual nets can’t possibly scale to address the hundreds of millions of particles of debris already in orbit.

The challenge is that all of our space agencies are inextricably tied to national governments and militaries. Seeking a global agreement on how to mitigate debris would involve each country divulging exactly what it was launching and when—an unlikely scenario. The private sector could collaborate to build grand-scale orbital cleaners, but their commercial interests are driven by immediate launches. Given all the planned launches in our near future, we don’t have much time to wait. We must learn to be better stewards of our own planet—and commit to very long-term thinking—before we try to colonize any others.

**Third: Apply our impact senarios from Adv 2 – That Sats cause laundry list of problems and that it hits the poor harder.**

#### Normal means is ratification of the Moon Treaty

**Mallick and Rajagopalan 19** [(Senjuti Mallick, graduated from ILS Law College, Pune, in 2016. She was a Law Researcher at the High Court of Delhi from 2016 to 2018 and is currently pursuing LL.M in International Law at The Fletcher School of Law and Diplomacy, USA. She has been doing research on Outer Space Law since she was a student at ILS. Presently, she is working on different aspects of Space Law, in particular, Space debris mitigation and removal, and the law of the commons. She has published articles on Space Law in the All India Reporter Law Journal and The Hindu.)( Dr Rajeswari (Raji) Pillai Rajagopalan is the Director of the Centre for Security, Strategy and Technology (CSST) at the Observer Research Foundation, New Delhi. Dr Rajagopalan was the Technical Advisor to the United Nations Group of Governmental Experts (GGE) on Prevention of Arms Race in Outer Space (PAROS) (July 2018-July 2019). She was also a Non-Resident Indo-Pacific Fellow at the Perth USAsia Centre from April-December 2020. As a senior Asia defence writer for The Diplomat, she writes a weekly column on Asian strategic issues.) “If space is ‘the province of mankind’, who owns its resources?” Occasional Papers, January 24, 2019, https://www.orfonline.org/research/if-space-is-the-province-of-mankind-who-owns-its-resources-47561/] TDI   
A third possible option is to get a larger global endorsement of the Moon Treaty, which highlights the common heritage of mankind. The Moon Treaty is important as it addresses a “loophole” of the OST “by banning any ownership of any extraterrestrial property by any organization or private person, unless that organization is international and governmental.”[[lxiv]](https://www.orfonline.org/research/if-space-is-the-province-of-mankind-who-owns-its-resources-47561/#_edn64) But the fact that it has been endorsed only by a handful of countries makes it a “failure” from the international law perspective.[[lxv]](https://www.orfonline.org/research/if-space-is-the-province-of-mankind-who-owns-its-resources-47561/#_edn65) Nevertheless, efforts must be made to strengthen the support base for the Moon Agreement given the potential pitfalls of resource extraction and space mining activities in outer space. Signatories to the Moon Treaty can take the lead within multilateral platforms such as the UN to debate the usefulness of the treaty in the changed context of technological advancements and new geopolitical dynamics, and potentially find compromises where there are disagreements