## 1AC

### 1AC – T/L

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

My value is justice, which provides objectivity and gives people their proper due. My value criterion is maximizing pleasure – pleasure is inherently good and we should maximize the most happiness and life for the most people, thus we should prioritize existential threats since they have the biggest scope and are most severe.

### 1AC – ADV

My sole contention is that appropriation is unsustainable and will cause extinction.

First some definitions –

#### Appropriation is taking property for one’s exclusive use.

**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.**

#### Private entities are corporations, companies, or groups not affiliated with the government.

UpCounsel 22, Private Entity: Everything You Need to Know, https://www.upcounsel.com/private-entity, Accessed: 1-7-2022, Hari

A private entity can be a partnership, corporation, individual, nonprofit organization, company, or any other organized group that is not government-affiliated. Indian tribes and foreign public entities are not considered private entities.

#### Space appropriation efforts are coming now but the new rise in colonization exacerbates every existential risk.

---SpaceX lacking – was behind in time, technology is incomplete

---Col is unethical – proponents openly endorse Trumpian logics & neglect majority of the population – Musk proves

---UQ – space col is coming now; new landings mean Musk is accelerating

Paris Marx an expert on technology and space writes in, ‘20, Paris Marx has previously written for NBC news and CBC news; they are well read and have experience writing and discussing tech and capitalism, Yes to Space Exploration. No to Space Capitalism., Jacobin Magazine, 6-8-2020, https://www.jacobinmag.com/2020/06/spacex-elon-musk-jeff-bezos-capitalism, Accessed: 12-8-2021, Hari \*edited for ableist language, struck through & modified in brackets

On May 30, SpaceX finally launched astronauts into space more than two years behind schedule. President Donald Trump was on hand for the launch. After pushing for the militarization of space with the formation of the US Space Force, Trump fused his own vision with that of SpaceX founder Elon Musk, declaring, “We’ll soon be landing on Mars and we’ll soon have the greatest weapons ever imagined in history.”

Early in Trump’s presidency, Musk faced criticism for being part of the administration’s advisory council and refusing to step down even as Trump signed his signature Muslim ban. It was believed Musk was hoping to benefit from greater public subsidies, on top of the billions NASA gave to SpaceX, and he’s set to do so as part of Trump’s plan to get astronauts back on the moon by 2024. More recently, the two have found themselves of the same mind on the pandemic as they shared misleading health information and Musk echoed Trump’s calls to “open the economy” and give people their “freedom” back.

The May 30 launch symbolized both Trump’s desire to project an image of revived American greatness and Musk’s need not only to bolster the myth that makes his wealth possible, but to set the foundations for a privatized space industry.

The space billionaires — Musk and Amazon CEO Jeff Bezos foremost among them — have little stake in the well-being of the majority of the population. Their space visions [plans] are designed for wealthy people like themselves, with little mention of where the working class would fit in. They’ve built their wealth on exploitation, and their ~~visions of~~ [plans for] the future are little more than an extension of their present actions.

A History of Violence

The business practices of Musk and Bezos are increasingly well known and have been on clear display during the pandemic. Musk tried to claim Tesla’s Fremont, California factory was “essential” until authorities forced him to close it; then he reopened it in defiance of health orders. As Tesla CEO, Musk has a long history of opposing the unionization of workers, presiding over a high rate of worker injuries (which the company tried to cover up), and even having a former worker hacked and harassed after he became a whistleblower.

Meanwhile, Bezos has a similar history of abusing Amazon workers. Amazon’s warehouses are known for having higher injury rates than the industry average, the company has fought unionization, and the stories of the terrible conditions experienced by workers are legendary. During the pandemic, that has continued, with the company failing to enforce social distancing or provide adequate protective equipment until workers began walking out, refusing to be open about infection information, and firing workers who dared criticize the company, all while Bezos’s wealth has increased by more than $30 billion.

But it goes beyond that, because the worldviews of these billionaires began to be formed long before they started the empires they currently lord over.

Musk did not have a regular childhood, but rather a wealthy upbringing in apartheid South Africa. His father was an engineer and owned part of an emerald mine in Zambia, telling Business Insider, “We were very wealthy. We had so much money at times we couldn’t even close our safe.” In Elon Musk: Tesla, SpaceX, and the Quest for a Fantastic Future, Ashlee Vance describes how Musk got money from his father when he was starting one of his original ventures. He also had a particular admiration for his grandfather, who moved to apartheid South Africa from Canada after rallying “against government interference in the lives of individuals.”

Bezos has a not dissimilar story. His father was a well-off oil engineer in Cuba while Fulgencio Batista was in power. In Bit Tyrants, Rob Larson explains that Bezos’s father left the island after the Cuban Revolution and passed his libertarian views down to his son. Bezos’s parents invested nearly $250,000 in Amazon in 1995 as it was getting started.

These space barons made their billions through the exploitation of their workers and came from well-off backgrounds made possible from resource extraction. When digging into their ~~visions~~ [plans] for a future in space, it’s clear that they seek to extend these conditions into the cosmos, not challenge them in favor of space exploration for the benefit of all.

The Future They Want

Musk and Bezos are the leading drivers of the modern push to privatize and colonize space through their respective companies, SpaceX and Blue Origin. Their ~~visions~~ [goals] differ slightly, with Musk preferring to colonize Mars, while Bezos has more interest in building space colonies in orbit.

In 2016, Musk claimed he would begin sending rockets to Mars in 2018. That never happened, but it hasn’t ended his obsession. Musk is determined to make humans a multi-planetary species, framing our choice as either space colonization or the risk of extinction. Bezos says that Earth is the best planet in our solar system, but if we don’t colonize space we doom ourselves to “stasis and rationing.”

These framings serve the interests of these billionaires, and make it seem like colonizing space is an obvious and necessary choice when it isn’t. It ignores their personal culpability and the role of the capitalist system they seek to reproduce in causing the problems they say we need to flee in the first place.

Billionaires have a much greater carbon footprint than ordinary people, with Musk flying his private jet all around the world as he claims to be an environmental champion. Amazon, meanwhile, is courting oil and gas companies with cloud services to make their business more efficient, and Tesla is selling a false ~~vision~~ [notion] of sustainability that purposely serves people like Musk, all while capitalism continues to drive the climate system toward the cliff edge. Colonizing space will not save us from billionaire-fueled climate dystopia.

But these billionaires do not hide who would be served by their futures. Musk has given many figures for the cost of a ticket to Mars, but they’re never cheap. He told Vance the tickets would cost $500,000 to $1 million, a price at which he thinks “it’s highly likely that there will be a self-sustaining Martian colony.” However, the workers for such a colony clearly won’t be able to buy their own way. Rather, Musk tweeted a plan for Martian indentured servitude where workers would take on loans to pay for their tickets and pay them off later because “There will be a lot of jobs on Mars!”

Bezos is even more open about how the workforce will have to expand to serve his ~~vision~~ [goal] , but has little to say about what they’ll be doing. His plan to maintain economic “growth and dynamism” requires the human population to grow to a trillion people. He claims this would create “a thousand Mozarts and a thousand Einsteins” who would live in space colonies that are supposed to house a million people each, with the surface of Earth being mainly for tourism. Meanwhile, industrial and mining work would move into orbit so as not to pollute the planet, and while he doesn’t explicitly acknowledge it, it’s likely that’s where you’ll find many of those trillion workers toiling for their space overlord and his descendants.

Space Shouldn’t Serve Capitalists

In 1978, Murray Bookchin skewered a certain brand of futurism that sought to “extend the present into the future” and desired “multinational corporations to become multi-cosmic corporations.” Much of this future thinking obsesses about possible changes to technology, but seeks to preserve the existing social and economic relations — “the present as it exists today, projected, one hundred years from now,” as Bookchin put it. That’s at the core of the space billionaires’ ~~vision~~ [plans] for the future.

Space has been used by past US presidents to bolster American power and influence, but it was largely accepted that capitalism ended at the edge of the atmosphere. That’s no longer the case, and just as past capitalist expansions have come at the expense of poor and working people to enrich a small elite, so too will this one. Bezos and Trump may have a public feud, but that doesn’t mean that their mutual interest isn’t served by a renewed US push into space that funnels massive public funds into private pockets and seeks to open celestial bodies to capitalist resource extraction.

This is not to say that we need to halt space exploration. The collective interest of humanity is served by learning more about the solar system and the universe beyond, but the goal of such missions must be driven by gaining scientific knowledge and enhancing global cooperation, not nationalism and profit-making.

Yet that’s exactly what the space billionaires and American authoritarians have found common cause in, with Trump declaring that “a new age of American ambition has now begun” at a NASA press briefing just hours before cities across the country were placed under curfew last week. Before space can be explored in a way that benefits all of humankind, existing social relations must be transformed, not extended into the stars as part of a new colonial project.

#### --No NEG offense---space col fails to support the human race---too many people and it’ll be gatekept by elites (not in the girlboss way but in the musty musk way).

---Corporate space colonization efforts are only for the rich 🡪 reproduces the problems of cap in space

---Scope---a staff of thousands of people are necessary to move tens of people to Mars---there’s so much that needs to be done because it’s new technology that it’s infeasible to move sm people there, and unethical to leave the working class to dust

---Elitism---empirics prove that only the rich can access the good things such as private transport, cool cars, etc.---it’ll be the same way for space col

Paris Marx, ‘20, Paris Marx has previously written for NBC news and CBC news; they are well read and have experience writing and discussing tech and capitalism, Leave the Billionaires in Space, Jacobin Magazine, 7-13-2021, https://www.jacobinmag.com/2021/07/billionaires-space-richard-branson-jeff-bezos-elon-musk, Accessed: 12-13-2021, Hari \*edited for ableist language, struck through & modified in brackets

Billionaires Aren’t Going Anywhere

For years, there have been concerns that billionaires’ space investments are about escaping the climate chaos their class continues to fuel here on Earth. It’s the story of Neill Blomkamp’s Elysium: the rich live on a space colony, and the rest of us suffer on a climate-ravaged Earth while being pushed around by robot police as we perform the labor that makes the abundance of the colony possible. But that’s not actually the future we’re headed toward.

As Sim Kern explains, keeping just a few people alive on the International Space Station takes a staff of thousands — and it gets harder the farther away people are from the one world we can truly call home. Mars colonies or massive space stations are not happening anytime soon; they won’t be a backup plan, nor an escape hatch. As billionaires chase profit in space and boost their egos in the process, they’re also planning for climate apocalypse down here on Earth — but they’re only planning for themselves.

Just as Musk uses misleading narratives about space to fuel public excitement, he does the same with climate solutions. His portfolio of electric cars, suburban solar installations, and other transport projects are promoted to the public, but they are designed to work best — if not exclusively — for the elite. Billionaires are not leaving the planet, they’re insulating themselves from the general public with bulletproof vehicles, battery-powered gated communities, and possibly even exclusive transport tunnels. They have the resources to maintain multiple homes and to have private jets on standby if they need to flee a natural disaster or public outrage.

We desperately need the public to ~~see through~~ [not be deceived by] the spectacle of the billionaire space race and recognize that they’re not laying the groundwork for a fantastic future, or even advancing scientific knowledge about the universe. They’re trying to extend our ailing capitalist system, while diverting resources and attention from the most pressing challenge the overwhelming majority of the planet faces. Instead of letting the billionaires keep playing in space, we need to seize the wealth they’ve extracted from us and redeploy it to address the climate crisis — before it’s too late.

I’ll isolate two reasons why we should end private appropriation of space.

1) Space wars. Colonization of space causes resource disputes, satellite proliferation, and space militarization.

Amalyah Hart, a journalist in 21 explains, Amalyah Hart is a Science Journalist aptly writing about new news in Space, Do we need new space law to prevent space war?, Cosmos Magazine, 11-19-2021, https://cosmosmagazine.com/people/society/space-law-to-prevent-space-war/, Accessed: 1-6-2022, Hari

It’s a cosmic fracas. And contested territory is prime fodder for international disputes, as we know. It’s these kinds of disputes the group of UK diplomats who proposed the UN motion want to prevent, by coming to an agreed-upon set of norms for behaviour in space.

Space law: what are the issues at stake?

The current international framework for law in space is the UN’s 1967 Outer Space Treaty (OST), which sets governing principles for the exploration of space, including that space should be free for use by all nations, that celestial bodies like the Moon should be used exclusively for peaceful purposes, and that outer space should not be subject to national appropriation.

Under international law, any and all objects being launched into space must be registered to avoid collisions. On top of these global laws, each nation-state has its own legal framework around the registering and launching of objects into space.

But as technology evolves and new opportunities arise, are these old laws equipped to govern new problems?

“There exists an incredible amount of applicable law already, and it has served us really well,” says space law expert Steven Freeland, an emeritus professor at Western Sydney University and professorial fellow at Bond University. Freeland is vice-chair of a UN Committee on the Peaceful Uses of Outer Space (COPUOS) working group that is developing laws around the exploitation of resources in space.

“There’s a lot of law at the multilateral level that then filters down to other layers of bilateral or ‘minilateral’ agreements and national laws. But clearly things move so quickly with technology, we’re doing so many more things in space that were beyond the contemplation of the drafters of the original treaties. Ideally we need more.”

Freeland says there are myriad complex, interconnected issues in space that need tighter laws. These include the increasing militarisation of space; the proliferation of satellites, which can lead to overcrowding of “popular” orbits and increased demand for radio-wave spectra; ethical issues around human spaceflight; and the possible extraction of resources on celestial bodies like the Moon.

Resource exploitation

It might sound like science fiction, but mining in outer space is looking increasingly likely in the not-too-distant future. In September 2020, NASA announced that it would award contracts to private companies for the extraction and purchase of lunar regolith (rock matter) from the surface of the Moon, which could be mined and then studied in situ by the company, before the data and rights are transferred to the space agency.

The move heralds what our space-based future might look like, with private companies mining celestial bodies for their precious resources. In our solar system, composed of millions of celestial bodies both large and small, the opportunities for cashing in look potentially endless – provided technology advances to the level of practical spaceflight.

“Most wars on Earth have historically been fought over a quest for resources,” says Freeland, “so it’s incredibly important [to have appropriate space laws].”

#### Militarization erupts in nuclear war to secure primacy.

**Graham a former president’s rep for arms control 05** [Thomas Graham, Jr. is a former special representative of the president for arms control, nonproliferation, and disarmament. In this and other senior capacities, he participated in every major arms control and nonproliferation negotiation in which the United States took part from 1970 to 1997, 12/08/2005, “Space Weapons and the Risk of Accidental Nuclear War”, Arms Control Association, <https://www.armscontrol.org/act/2005-12/features/space-weapons-risk-accidental-nuclear-war>] /Triumph Debate

**The United States and Russia maintain thousands of nuclear warheads on long-range ballistic missiles on 15-minute alert. Once launched, they cannot be recalled, and they will strike their targets in roughly 30 minutes.** Fifteen years after the end of the Cold War, the chance of an accidental nuclear exchange has far from decreased. Yet, the United States may be contemplating further exacerbating this threat by deploying missile interceptors in space. **Both the United States and Russia rely on space-based systems to provide early warning of a nuclear attack.** If deployed, however, U.S. space-based missile defense interceptors could eliminate the Russian early warning satellites quickly and without warning. **So, just the existence of U.S. space weapons could make Russia’s strategic trigger fingers itchy.** The potential protection space-based defenses might offer the United States is swamped therefore by their potential cost: a failure of or false signal from a component of the Russian early warning system could lead to a disastrous reaction and accidental nuclear war. There is no conceivable missile defense, space-based or not, that would offer protection in the event that the Russian nuclear arsenal was launched at the United States. **Nor are the Russians or other countries likely to stand still and watch the United States construct space-based defenses. These states are likely to respond by developing advanced anti-satellite weapon systems.[1] These weapons, in turn, would endanger U.S. early warning systems, impair valuable U.S. weapons intelligence efforts, and increase the jitteriness of U.S. officials.** The Dangers of Failed Early Warning Systems The Russian early warning system is in serious disrepair. This system consists of older radar systems nearing the end of their operational life and just three functioning satellites, although the Russian military has plans to deploy more. The United States has 15 such satellites. Ten years ago, on January 25, 1995, this aging early warning network picked up a rocket launch from Norway. The Russian military could not determine the nature of the missile or its destination. Fearing that it might be a submarine-launched missile aimed at Moscow with the purpose of decapitating the Russian command and control structure, the Russian military alerted President Boris Yeltsin, his defense minister, and the chief of the general staff. They immediately opened an emergency teleconference to determine whether they needed to order Russia’s strategic forces to launch a counterattack. The rocket that had been launched was actually an atmospheric sounding rocket conducting scientific observations of the aurora borealis. Norway had notified Russia of this launch several weeks earlier, but the message had not reached the relevant sections of the military. In little more than two minutes before the deadline to order nuclear retaliation, the Russians realized their mistake and stood down their strategic forces. Thus, 10 years ago, when the declining Russian early warning system was stronger than today, it read this single small missile test launch as a U.S. nuclear missile attack on Russia. The alarm went up the Russian chain of command all the way to the top. The briefcase containing the nuclear missile launch codes was brought to Yeltsin as he was told of the attack. Fortunately, Yeltsin and the Russian leadership made the correct decision that day and directed the Russian strategic nuclear forces to stand down. Obviously, nothing should be done in any way further to diminish the reliability of the space-based components of U.S. and Russian ballistic missile early warning systems. **A decline in confidence in such early warning systems caused by the deployment of weapons in space would enhance the risk of an accidental nuclear weapons attack.** Yet, as part of its plans for missile defense, the Pentagon is calling for the development of a test bed for space-based interceptors as well as examining a number of other exotic space weapons. In an interview published in Arms Control Today, Lt. Gen. Henry Obering, director of the Missile Defense Agency, touted what he said was “a very modest and moderate test-bed approach to launch some experiments.” Obering said the Pentagon would only deploy a handful of interceptors: “We are talking about onesies, twosies in terms of experimentation.”[2] Despite Obering’s claims, however, establishing a test bed for missile defense in space, as opposed to current preliminary research, would be a long step toward space weaponization**. Once space-based missile defenses are tested, they are likely to be deployed, and in significant numbers, no matter if the tests are successful**. To see the path that a space test bed is likely to follow, one need only look at the present ground-based program: the Pentagon claims there is little true difference between a test bed and an operational deployment. Moreover, in space the deployment could be more dramatic. Although the current ground-based configuration envisions a few dozen interceptors, continuous space coverage over a few countries of concern would likely require a very large number of interceptors because a particular interceptor will be above a particular target for only a few minutes a day. Today’s missile defenses provide very little real protection as the United States currently faces no realistic threat of deliberate attack by nuclear-armed long-range missiles. **But space weapons could actually be detrimental to U.S. national security. They would increase the perceived vulnerability of early warning systems to attack and cause Russia and perhaps other countries such as China to pursue potentially destabilizing countermeasures, such as advanced anti-satellite weapons.** These dangers would be particularly worrisome for those components that are placed in geosynchronous orbits (GEO). Space objects in GEO are sufficiently far from the Earth (about 36,000 kilometers) so that their speed roughly matches the rotational speed of the Earth and they remain “stationary” above one location. To be sure, any country that can place a satellite in these farther orbits—and there are several—could potentially threaten another country’s satellites there. Yet, it would be easier to do so, and perhaps more importantly, the threat perception would be greater with weapons based in space than with existing ground-based technology. The 15 U.S. early warning satellites are almost entirely in GEO. The three functioning Russian early warning satellites utilize two different orbits. Two of the satellites use a highly elliptical orbit, which ranges from low-Earth orbit (LEO)—100 to 2,000 kilometers above the Earth where space objects travel at about 8 kilometers per second—out to GEO. The other satellite is permanently stationed in GEO. **Moreover, a space arms competition could hinder the flow of satellite imagery that can be used to track activities that might reveal programs to develop weapons of mass destruction in countries of concern.** For example, activities detected through space-based collection systems can be used to trigger requests for inspections pursuant to the Chemical Weapons Convention (CWC) (implicitly) or the Comprehensive Nuclear Test Ban Treaty (explicitly), should that treaty be brought into force. It is important in this respect to recall that the suspicions that Israel and South Africa may have conducted an atmospheric nuclear test in 1979 were driven by readout from a U.S. VELA satellite. Similarly, the United States has benefited from the revolution in national intelligence that began with and is based on photographic reconnaissance satellites and related systems, which has helped bring to an end the worst-case analysis and close calls with nuclear war that existed throughout the Cold War. If a truly peaceful and stable world order is ever achieved, the advent of this technology beginning in the late 1950s will be regarded by future generations as a major historical turning point.

#### Resource wars cause disease and millions of death.

**Klare et. al 11** [Michael T. Klare, PhD, Barry S. Levy, MD, MPH, corresponding author and Victor W. Sidel, MD, 09/2011, “The Public Health Implications of Resource Wars” NCBI, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3154227/] /Triumph Debate \*tw – mentions of r@pe in card, not highlighted

**Resource wars are violent conflicts that are largely driven by competition for control over vital or valuable natural materials**, such as oil, water, land, timber, animals (or animal products), gold, silver, gems, and other key minerals. **Resource wars can occur between states as (1) wars of conquest**, in which a state or empire employs force to acquire resource-rich territories or colonies; (**2) territorial disputes**, in which 2 or more states fight over a border region or offshore territory with valuable resource deposits; or (**3) access wars,** in which a state fights to gain access to a critical resource deposit in another country. Resource wars can also occur within states, when groups fight for control over key sources of raw materials or over the allocation of the fees and royalties (or “rents”) obtained by governments from private entities that extract resources from areas owned or controlled by the state. **A desire to gain control over a valuable resource supply or the wealth it generates is a dominant factor leading to war;** however, conflicts over resources are usually driven by other factors as well, such as ethnic animosities and historical grievances.4,5 In the current article, we examine what makes resource wars distinctive and an important issue for public health, and we outline ways in which public health workers and the organizations and professional associations with which they are affiliated can minimize the consequences of these wars and contribute to their prevention. Much of this article is focused on wars fought over petroleum; in a recent commentary we examined armed conflicts over water and what public health workers can do to address them.6 Go to: WHY RESOURCE WARS ARE RELEVANT TO PUBLIC HEALTH We believe that resource wars are relevant to public health because of their profound consequences for public health and because public health workers have potential roles and responsibilities to minimize these consequences and to help prevent resource wars. Public health has been defined as what we, as a society, do collectively “to assure the conditions in which people can be healthy.”7 **Resource wars threaten the conditions in which people can be healthy.** Although public health is a societal function, it is a function performed mainly by public health workers in government agencies, academic institutions, nongovernmental organizations, and private-sector entities who work to assure the conditions in which people can be healthy. Although most public health workers do not address resource wars, some have the opportunity—and the responsibility—to help document the health consequences of resource wars, to raise awareness of these consequences, and to advocate for policies and programs for minimizing these consequences and for helping to prevent resource wars. Public health has a responsibility to address the fundamental causes of disease and to prevent adverse health outcomes.8 **War is a major cause of disease, disability, and death; thus, war is a major public health problem**.1,9 The Public Health Oath, which some public health students recite at orientation and graduation, includes the declaration: I will work to ensure that people have the chance to live full and productive lives, free from avoidable disease and disability.10 **Resource wars threaten people's ability to live full and productive lives**; they also provide opportunities for public health workers to help prevent avoidable disease, disability, and death. Go to: HISTORICAL CONTEXT **Competition for control over vital, valuable raw materials has been a source of violent conflict since prehistoric times.11 Conflict over resources, such as gold, silver, spices, furs, timber, and slaves, was especially prominent and violent in the colonial wars and interimperial clashes that culminated in World War I.** However, during World War II and the Cold War, conflict over resources was rarely a central issue. With the end of the Cold War, resource conflicts have again become prominent. Some of these wars, similar to those of the past, have involved efforts by the major powers to dominate sources of energy and safeguard the flow of oil, such as the interventions by the United States in the Persian Gulf area. Others have involved internal conflicts. **For example, the ongoing conflict in the Democratic Republic of the Congo—perhaps the most lethal conflict of the post–Cold War era, with approximately 4 million people dead—has largely been fueled by competition for control of valuable mines in the eastern part of the country.**12 The fighting between northern and southern Sudan, another notably lethal conflict, has been driven in part by a struggle for control over valuable oil fields.13 The future of this struggle is unclear, given the recent separation of Sudan into 2 countries. Go to: RESOURCE WARS ARE DISTINCTIVE **Resource wars have some distinctive features of relevance to public health:** They are often extremely intense because they frequently result from both ethnic animosities (or historical grievances) and disputes over distribution of or access to vital—and often commercially valuable—materials. **This intensity may lead to the conflict having adverse consequences for human health and the environment that are more widespread and more serious than are those resulting from wars fought for other purposes.** **They occur in remote, forbidding areas occupied largely by poor and indigenous people**. Today, most oil production is concentrated in areas largely avoided by advanced cultures, such as deserts, tropical forests, steep mountainsides, and polar or near-polar regions. These areas, however, are often inhabited by indigenous peoples and those too poor to live elsewhere. Governments often allow the use of extractive practices in these areas—such as unsafe mining and environmentally insensitive oil extraction—that would not be permitted elsewhere. In the Niger Delta region of Nigeria, for example, lax government oversight of oil drilling has led to widespread contamination of local fields and fishing grounds, further harming the health and livelihoods of the already impoverished inhabitants, who have revolted against the oil companies and the federal government.14 **The invasion of remote areas to secure access to fresh supplies of vital resources also threatens the modes of living of the few remaining indigenous peoples who still practice their traditional ways of life.** **Such invasions threaten not only indigenous peoples’ ability to survive as distinct cultures but also their physical and psychological health, as adaptive communal lifestyles give way to rootless urban or reservation life.** This pattern is painfully evident in the history of Native Americans, Canadian First Nations peoples, and Australian Aborigines, all of whom have suffered from widespread alcoholism, depression, and inadequate health care after being driven from their ancestral lands. A similar pattern is being repeated today as oil and mining firms penetrate into the Amazonian heartland, central Africa, New Guinea, Borneo, the Arctic, and other areas previously exempted from large-scale development.15 **Resource wars often target noncombatant civilians and violate their human rights through slavery, child labor, rape, kidnapping, and other inhumane practices that cause injury, illness, and death.** Many recent wars in Africa, areas of South America, and Southeast Asia have been driven by warlords and rogue government officials trying to maintain or gain control over a valuable resource. **Lacking funds or structural capacity to recruit and build professional armies, they typically force boys and young men into their ragtag militias, usually at gunpoint, paying them with drugs and the services of female sexual slaves kidnapped from nearby villages, while impressing poor men, women, and children to work in their mines (and paying them little, if anything)**.16,17 This scenario is particularly evident in northeastern Congo, where the militia of the Democratic Forces for the Liberation of Rwanda employs a vast slave army to mine gold and coltan (columbite and tantalite, the source of the lightweight metals used in most cell phones and other handheld electronic devices).18 This militia and other similar groups also employ mass rape as a tactic of intimidation and coercion.19,20 Aside from the physical harm and psychological trauma they cause, these tactics contribute to the spread of HIV/AIDS in Africa**. In resource wars, military or insurgent forces sometimes target resources or related infrastructure over which these conflicts are fought, often with significant public health consequences.** **In the Persian Gulf War of 1990–1991, for example, retreating Iraqi military forces set fire to more than 600 oil wells in Kuwait; the fires burned for weeks, causing respiratory disorders and environmental damage.**21 Many wars in which the control of oil or oil rents is a significant factor involve attacks on oil pipelines, refineries, and other infrastructure, often producing fires and oil spills that adversely affect civilian populations. The rebels in Colombia, for example, often sabotage the country's oil pipelines, causing oil spills that contaminate local water supplies.22

#### 2) Global warming. Predicted increases in rocket launches and space travel will cause immense ozone depletion and contribution to warming via Black carbon—most studies on this question don’t consider all causes so err AFF.

Miraux a member of the space generation advisory council 21 [Loïs Miraux, Project Lead for Environmental Impact @ The Space Generation Advisory Council, “Environmental limits to the space sector's growth,” Science of the Total Environment, <https://www.sciencedirect.com/science/article/abs/pii/S0048969721059404>] /Triumph Debate

**The amount of material emitted by the ≈100 rockets launched every year is** about 40,000 tons, only **0.01% of the fuel burned by the global aviation sector** (Ross and Sheaffer, 2014). **However**, during their ascent from ground to orbit, **they release gases and particles in all the layers of the atmosphere**. **This is** a **unique** characteristic because **rockets are the only anthropogenic source of pollution** in the middle and upper atmosphere, that is, **above 15 km where airlines emissions stop** (Ross and Sheaffer, 2014). **Emissions into the troposphere**, the lower layer of the atmosphere, **are not important** besides transient, local pollution. However, **emissions in the stratosphere**, the layer above the troposphere, **are more concerning for two main reasons. First**, **the stratosphere being dynamically isolated** from the troposphere, **emissions components** of hundreds of launches **accumulate** for several years (Ross and Vedda, 2018). **Then, the stratosphere is the home of the ozone layer**, a region of high concentration of ozone at 15–35 km altitudes, absorbing most of the Sun's harmful ultraviolet radiation and thereby **protecting living organisms on the ground** (Fig. 4). In addition to these particularities, the magnitude of the effects of rocket emissions on the atmosphere varies significantly depending on the type of propellant combination used. Liquid Rocket Engines (LREs) use propellants in the liquid form, such as liquid oxygen combined with liquid hydrogen as a fuel (e.g. Ariane 5) or kerosene (e.g. SpaceX's Falcon 9). This allows thrust variability, but LREs are often coupled with Solid RocketMotors (SRMs) (e.g. Ariane 5 boosters) because they grant higher energy density for lift-off. SRMs typically use a combination of solid aluminium fuel with ammonium perchlorate as an oxidizer. A third type of rocket is being used more recently: Hybrid Rocket Engines (HREs), using a liquid oxidizer and a solid fuel, often a hydrocarbon. They grant high safety, making them popular for space tourism applications (e.g. Virgin Galactic's SpaceShipTwo). Although there are still many uncertainties and serious knowledge gaps on the effect of launch emissions on the atmosphere (Ross and Vedda, 2018), estimates of orders of magnitude are available in the literature. 3.2. Stratospheric ozone depletion **During the lifecycle of complete space missions, the launch event has been reported to contribute to almost 100% of the ozone depletion potential** (Chanoine, 2017).**Ozone is destructed mostly by highly reactive radicals** (oxides of chlorine, nitrogen, bromine, and hydrogen), **with a single molecule able to destroy up to 100,000 ozone molecules** (Ross et al., 2009). Ozone depletion from SRMs particles has historically been the main concern with the first studies carried out by Cicerone (Cicerone, 1974). LREs exhausts contain less reactive chemicals and particles and are, therefore, responsible for ozone loss one order of magnitude smaller than SRMs (Ross et al., 2009). **The ozone loss caused by the global launch fleet has been estimated to be greater than 0.01% and less than 0.1%**, with regional effects reaching several percent and with complete destruction in the surroundings of exhaust plumes (Voigt et al., 2013). This is **to be compared to the** ozone loss caused by **ozone-depleting substances (**ODSs) **banned by the Montreal Protocol of about 3%** (Ross and Vedda, 2018) (of the total amount of ozone). As a consequence, the present-day contribution of rockets to ozone loss is small. It represents a few percent of the total anthropogenic contribution to ozone depletion, about the same relative impact that global aviation has on climate radiative forcing (Ross et al., 2009**). However, the trends discussed in the introduction make an increase of launch emissions by a factor of 10 credible**, which would make the contribution of rockets comparable to that of banned ODSs, as Ross and Vedda warn (Ross and Vedda, 2018). A 2009 study highlighted the limitations to the growth of the space sector due to ozone depletion. It showed that, **considering launch rates required by proposed space systems** at that time (i.e. to be implemented in the future), **global ozone loss could become significant**, even using only LREs (Ross et al., 2009). Moreover, a 2010 study found **that a fleet of 1000 launches per year** of hydrocarbonbased HREs typically used for space tourism **would cause ozone loss up to 6% in polar regions** (Ross et al., 2010). **With the anticipated growth of the space sector, the contribution of rockets to ozone depletion will inevitably increase** in the future. As the study warns, there will be a growing risk of regulation of rocket exhaust compounds in the name of ozone protection. **Important data uncertainties combined with the fact that the Montreal Protocol lacks adapted metrics to tackle rocket emissions effectively make this risk even more important** (Ross and Vedda, 2018). **If left unregulated, by 2050 rocket emissions could deplete ozone more than ODSs ever did** (Ross et al., 2009; ScienceDaily, 2009). 3.3. Contribution to climate change While the effect of rocket emissions on the ozone layer has been studied for several decades, the concern about their impact on climate is more recent. **Available life cycle assessment studies** of space missions are scarce and **often do not account for emissions occurring during the launch event**, or only partially, due to lack of data availability and modeling complexity (Maury et al., 2020a; Chanoine, 2017; Harris and Landis, 2019; Gallice andMaury, 2018). **Yet, launch emissions are likely to be the most important contributor to the impact on climate change** of the global space sector. **Rocket exhausts contain** greenhouse gases (e.g. CO2, H2O) but also particles (e.g. alumina, black carbon). The amount of greenhouse gases emitted by rockets is dwarfed by that of other industrial sectors, making their contribution to the problem insignificant. However, the effect of particles is much more concerning. **Black carbon particles accumulate in the stratosphere and absorb a fraction of sunlight, resulting in a warming** of the stratosphere. **Because some rockets can emit about 10,000 times more black carbon than modern turbine engines** (Ross and Sheaffer, 2014), **the amount of black carbon emitted by rockets in the stratosphere in 2018 was comparable to that emitted by global aviation** (Ross and Toohey, 2019). On the other hand, alumina features amore complex behavior by both reflecting incoming radiation into space and absorbing upwelling radiation from the Earth. This also results in a warming of the stratosphere (Ross and Sheaffer, 2014). At the same time, the reduction in solar flux caused by this accumulation of particles in the stratosphere leads to a cooling of the lower atmosphere (the troposphere) and the ground (Fig. 4). **In 2014, Ross and Sheaffer estimated that rocket emissions globally contributed to warm the stratosphere by about 16** ± 8 **mW/m2,** with relative contributions of 70% for black carbon, 28% for alumina, 2% for H2O, and ≈0% for CO2 (Ross and Sheaffer, 2014). This means that hydrocarbon-based rockets emitting black carbon (e.g. kerosene-fueled LREs, or most HREs) and SRMs emitting alumina are responsible for most of rockets' climate impact. As a consequence, **studies considering only CO2 emissions to assess the contribution of rockets to climate change underestimate it by several orders of magnitude**. Although this value is only an approximation subjected to uncertainties and requiring further confirmation, the study makes an interesting comparison with the contribution of global aviation to radiative forcing,which in 2014 was bigger only by a factor of 4, in absolute values (Ross and Sheaffer, 2014). This means that the magnitude of cooling of the troposphere from rockets could be comparable to the magnitude of warming from aviation. However, this should not be interpreted too quickly as something “positive”. Stratospheric injection of particles has long been discussed by climate scientists as a method of solar geoengineering to counteract the warming of greenhouse gases. But this has always been very controversial and encountered strong opposition. Rocket emissions compounds act as geoengineering agents and, therefore, launchers are already beginning this process in an uncontrolled manner, while black carbon geoengineering — on a much larger scale — has been found to present potentially catastrophic side effects (Kravitz et al., 2012). In addition, since rocket emissions are not distributed homogeneously around the globe, they can cool the troposphere in certain regions but still warm it in other regions because of the complex response of the global climate (Ross et al., 2010). Consequently, Ross and Vedda warn that it is uncertain how policymakers would respond to significant growth in launch activities in a context of growing concerns on climate intervention. Once again, this risk is further increased by the lack of confidence in current radiative forcing estimations (Ross and Vedda, 2018). **The projects mentioned in the introduction could fuel such an important growth. For instance, after a decade of launches at a rate of 1000 per year, the fleet** of hydrocarbon-based HREs (typical for space tourism applications) **would create the same radiative forcing as global aviation** (Ross et al., 2010), **and could rise polar surface temperatures as much as 1 °C**. Interestingly, Ross and Sheaffer estimated that the carbon footprint of a passenger in a typical sub-orbital space tourism flight is comparable to that of a passenger travelling thousands of times in aircraft between Los Angeles and London (Ross and Sheaffer, 2014). This illustrates that, in addition to possible future policy implications, the potential climate impact of space tourism raises important issues related to climate justice in the age of “flygskam”. **But space tourism is not the only emerging market** with high launch rate potential. **The Chinese solar power plant is planned to require more than 100 launches** of Long March 9, a heavy rocket fueled by kerosene (SpaceNews, 2021). Current plans of SpaceX for Earth-to-Earth travel and Mars colonization will be based on its Starship that relies on a liquid oxygen/liquid methane combination expected to be less harmful than kerosene, but this maybe largely offset by the significant associated increase in launch rate.

#### Warming causes a laundry list of issues that threaten human life.

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2050: By 2050, there is broad scientific acceptance that system tipping-points for the West Antarctic Ice Sheet and a sea-ice-free Arctic summer were passed well before 1.5°C of warming, for the Greenland Ice Sheet well before 2°C, and for widespread permafrost loss and large-scale Amazon drought and dieback by 2.5°C. The “hothouse Earth” scenario has been realised, and Earth is headed for another degree or more of warming, especially since human greenhouse emissions are still significant. While sea levels have risen 0.5 metres by 2050, the increase may be 2–3 metres by 2100, and it is understood from historical analogues that seas may eventually rise by more than 25 metres. Thirty-five percent of the global land area, and 55 percent of the global population, are subject to more than 20 days a year of lethal heat conditions, beyond the threshold of human survivability. The destabilisation of the Jet Stream has very significantly affected the intensity and geographical distribution of the Asian and West African monsoons and, together with the further slowing of the Gulf Stream, is impinging on life support systems in Europe. North America suffers from devastating weather extremes including wildfires, heatwaves, drought and inundation. The summer monsoons in China have failed, and water flows into the great rivers of Asia are severely reduced by the loss of more than one-third of the Himalayan ice sheet. Glacial loss reaches 70 percent in the Andes, and rainfall in Mexico and central America falls by half. Semi-permanent El Nino conditions prevail. Aridification emerges over more than 30 percent of the world’s land surface. Desertification is severe in southern Africa, the southern Mediterranean, west Asia, the Middle East, inland Australia and across the south-western United States. Impacts: A number of ecosystems collapse, including coral reef systems, the Amazon rainforest and in the Arctic. Some poorer nations and regions, which lack capacity to provide artificially-cooled environments for their populations, become unviable. Deadly heat conditions persist for more than 100 days per year in West Africa, tropical South America, the Middle East and South-East Asia, which together with land degradation and rising sea levels contributes to 21 perhaps a billion people being displaced. Water availability decreases sharply in the most affected regions at lower latitudes (dry tropics and subtropics), affecting about two billion people worldwide. Agriculture becomes nonviable in the dry subtropics. Most regions in the world see a significant drop in food production and increasing numbers of extreme weather events, including heat waves, floods and storms. Food production is inadequate to feed the global population and food prices skyrocket, as a consequence of a one-fifth decline in crop yields, a decline in the nutrition content of food crops, a catastrophic decline in insect populations, desertification, monsoon failure and chronic water shortages, and conditions too hot for human habitation in significant food-growing regions. The lower reaches of the agriculturally-important river deltas such as the Mekong, Ganges and Nile are inundated, and significant sectors of some of the world’s most populous cities — including Chennai, Mumbai, Jakarta, Guangzhou, Tianjin, Hong Kong, Ho Chi Minh City, Shanghai, Lagos, Bangkok and Manila — are abandoned. Some small islands become uninhabitable. Ten percent of Bangladesh is inundated, displacing 15 million people. According to the Global Challenges Foundation’s Global Catastrophic Risks 2018 report, even for 2°C of warming, more than a billion people may need to be relocated due to sea-level rise, and In high-end scenarios “the scale of destruction is beyond our capacity to model, with a high likelihood of human civilisation coming to an end”. 22