Space LARP AC

Advantage 1: Environment

Increased rocket launches due to the private space industry will release detrimental chemicals into the atmosphere.

Gammon 21 Katharine Gammon. "How the Billionaire Space Race Could Be One Giant Leap for Pollution." The Guardian, Guardian News and Media, 19 July 2021, https://www.theguardian.com/science/2021/jul/19/billionaires-space-tourism-environment-emissions.

One rocket launch produces up to 300 tons of carbon dioxide into the upper atmosphere where it can remain for years. Last week **Virgin Galactic took Richard Branson past the edge of space**, roughly 86 km up – **part of a new space race with** the Amazon billionaire **Jeff Bezos**, who aims to make a similar journey on Tuesday. Both very wealthy businessmen **hope to** vastly **expand the number of people in space.** "We're here to make space more accessible to all," said Branson, shortly after his flight. "Welcome to the dawn of a new space age." **Already, people are buying tickets to space. Companies including SpaceX, Virgin Galactic and Space Adventures want to make space tourism more common.** The Japanese billionaire Yusaku Maezawa spent an undisclosed sum of money with SpaceX in 2018 for a possible future private trip around the moon and back. And this June, an anonymous space lover paid $28m to fly on Blue Origin's New Shepard with Bezos – though later backed out due to a "scheduling conflict". But **this launch of a new private space industry** that is cultivating tourism and popular use **could come with vast environmental costs, says Eloise Marais**, an associate professor of physical geography at University College London. Marais studies the impact of fuels and industries on the atmosphere. **When rockets launch into space, they require a huge amount of propellants to make it out of the** Earth's **atmosphere.** For SpaceX's Falcon 9 rocket, it is **kerosene, and** for Nasa it is **liquid hydrogen** in their new Space Launch System. Those **fuels emit a variety of substances into the atmosphere, including carbon dioxide, water, chlorine and other chemicals. The carbon emissions from rockets** are small compared with the aircraft industry, she says. But they **are increasing at nearly 5.6% a year**, and Marais has been running a simulation for a decade, to figure out at what point will they compete with traditional sources we are familiar with. "**For one long**-haul **plane flight it's one to three tons of carbon dioxide [per passenger]**," says Marais. **For one rocket launch 200-300 tonnes of carbon dioxide are split between 4 or so passengers**, according to Marais. "So it **[Space flight thus] doesn't need to grow that much more to compete with other sources.**" Right now, the number of rocket flights is very small: in the whole of 2020, for instance, there were 114 attempted orbital launches in the world, according to Nasa. That compares with the airline industry's more than 100,000 flights each day on average. But **emissions from rockets are emitted right into the upper atmosphere, which means they stay there for a long time**: two to three years. **Even water injected into the upper atmosphere** – where it can form clouds – **can have warming impacts**, says Marais. "Even **something as seemingly innocuous as water can have an impact." Closer to the ground, all fuels emit huge amounts of heat, which can add ozone to the troposphere, where it acts like a greenhouse gas and retains heat. In addition to carbon dioxide, fuels like kerosene and methane also produce soot.** And **in the upper atmosphere, the ozone layer can be destroyed by the combination of elements from burning fuels.** "While there are a number of environmental impacts resulting from the launch of space vehicles, the depletion of stratospheric ozone is the most studied and most immediately concerning," wrote Jessica Dallas, a senior policy adviser at the New Zealand Space Agency, in an analysis of research on space launch emissions published last year. **A**nother **report from** 2019 penned by **the Center for Space Policy and Strategy likened** the **space emissions** problem to that of space debris, which the **a**uthors **s**ay creates **an existential risk to the industry.** "Today, launch vehicle

emissions present a distinctive echo of the space debris problem. **Rocket engine exhaust emitted into the stratosphere during ascent to orbit adversely impacts the global atmosphere," they wrote. "We just don't know how large the space tourism industry could become,"** says Marais. **A new** market **report estimates that the global suborbital transportation and space tourism market is estimated to reach $2.58bn in 2031, growing 17.15% each year of the next decade.** "The major driving factor for the market's robustness will be focused efforts to enable space transportation, emerging startups in suborbital transportation, and increasing developments in low-cost launching sites," the report says. In the past, most space transportation has been focused on cargo supply missions to the International Space Station and satellite launch services, but currently, **this focus has shifted to in-space transportation, planetary explorations, crewed missions, suborbital transportation and space tourism.**

No matter the type of fuel, an increased number of rockets continue to harm the atmosphere.

Pultarova 21 Pultarova, Tereza. "The Rise of Space Tourism Could Affect Earth's Climate in Unforeseen Ways, Scientists Worry." Space.com, Space.com, 26 July 2021, https://www.space.com/environmental-impact-space-tourism-flights.

Scientists worry that growing numbers of rocket flights and the rise of space tourism could harm Earth's atmosphere and **contribute to climate change.** When billionaires Richard Branson and Jeff Bezos soared into space this month aboard their companies' suborbital tourism vehicles, much of the world clapped in awe. But for some scientists, these milestones represented something other than just a technical accomplishment. Achieved after years of delays and despite significant setbacks, the flights marked the potential beginning of a long-awaited era that might see rockets fly through the so-far rather pristine upper layers of the atmosphere far more often than they do today. In the case of SpaceShipTwo, the vehicle operated by Branson's **Virgin Galactic**, these **flights are powered by a hybrid engine that burns rubber and leaves behind a cloud of soot.** "Hybrid **engines can use different types of fuel**s, **but they always generate a lot of soot**," said Filippo Maggi, associate professor of aerospace engineering at Politecnico di Milano, Italy, who researches rocket propulsion technologies and was part of a team that several years ago published an extensive analysis of hybrid rocket engine emissions. "**These engines work like a candle, and their burning process creates conditions that are favorable for soot generation.**" According to Dallas Kasaboski, principal analyst at the space consultancy Northern Sky Research, **a single** Virgin Galactic **suborbital space** tourism **flight, lasting about an hour and a half, can generate as much pollution as a 10-hour trans-Atlantic flight.** Some **scientists consider that disconcerting, in light of Virgin Galactic's ambitions to fly** paying tourists to the edge of space **several times a day.** "**Even if** the **suborbital tourism** market **is launching at a fraction of the number of launches compared to the rest of the industry, each [space]** of their **flight**s **has a much higher contribution, and that could be a problem,**" Kasaboski told Space.com. Virgin Galactic's rockets are, of course, not the only culprits. **All rocket motors burning hydrocarbon fuels generate soot**, Maggi said. **Solid rocket engines, such as those used in** the past in **the boosters of NASA's space shuttle, burn metallic compounds and emit aluminum oxide particles together with hydrochloric acid, both of which have a damaging effect on the atmosphere.**

The effects of global warming are increasing due to human activity and will be furthered with more emissions from rockets.

NATGEO 19 "Causes of Global Warming." Environment, National Geographic, 4 May 2021, https://www.nationalgeographic.com/environment/article/global-warming-causes.

The average temperature of the Earth **is rising at nearly twice the rate it was 50 years ago. This rapid warming** trend **cannot be explained by natural cycles alone, scientists have concluded. The only**

way to explain the pattern is to include the effect of greenhouse gases (GHGs) emitted by humans. Current levels of the greenhouse gases carbon dioxide, methane, and nitrous oxide in our atmosphere are higher than at any point over the past 800,000 years, and their ability to trap heat is changing our climate in multiple ways. To come to a scientific conclusion on climate change and what to do about it, the United Nations in 1988 formed a group called the Intergovernmental Panel on Climate Change, or IPCC. The IPCC meets every few years to review the latest scientific findings and write a report summarizing all that is known about global warming. Each report represents a consensus, or agreement, among hundreds of leading scientists. One of the first things the IPCC concluded is that there are several greenhouse gases responsible for warming, and humans emit them in a variety of ways. Most come from the combustion of fossil fuels in cars, buildings, factories, and power plants. The gas responsible for the most warming is carbon dioxide, or CO2. Other contributors include methane released from landfills, natural gas and petroleum industries, and agriculture (especially from the digestive systems of grazing animals); nitrous oxide from fertilizers; gases used for refrigeration and industrial processes; and the loss of forests that would otherwise store CO2. Different greenhouse gases have very different heat-trapping abilities. Some of them can trap more heat than an equivalent amount of CO2. A molecule of methane doesn't hang around the atmosphere as long as a molecule of carbon dioxide will, but it is at least 84 times more potent over two decades. Nitrous oxide is 264 times more powerful than CO2. Other gases, such as chlorofluorocarbons, or CFCs—which have been banned in much of the world because they also degrade the ozone layer—have heat-trapping potential thousands of times greater than CO2. But because their emissions are much lower than CO2, none of these gases trap as much heat in the atmosphere as CO2 does. When those gases that humans are adding to Earth's atmosphere trap heat, it's called the "greenhouse effect." The gases let light through but then keep much of the heat that radiates from the surface from escaping back into space, like the glass walls of a greenhouse. The more greenhouse gases in the atmosphere, the more dramatic the effect, and the more warming that happens.

The future in rocket propellents is methane gas. This makes space flight cheaper and more common.

Turney 19 Turney, Drew. "Why the next Generation of Rockets Will Be Powered by Methane." Why the Next Generation of Rockets Will Be Powered by Methane, Australia's Science Channel, 3 Sept. 2019, https://australiascience.tv/why-the-next-generation-of-rockets-will-be-powered-by-methane/?fbclid=IwAR3SJO9ys5dMAn3q4lQKoXddfqsczE2HRFE5XPwFrmp-99NReRIqZIQ49hk.

[A]fter a century of rocket fuel research that has looked at everything from RP-1 to hydrogen to paraffin, the industry is turning to a surprising new source – methane natural gas. One of the most abundant chemicals on our planet, methane is finally enjoying the spotlight. And it could take us to Mars. Rocket fuel performance is measured by a property called the specific impulse, which is essentially how much momentum can be produced for every unit of fuel – a space version of miles per gallon. Jake Teufert from US-based rocket builder Tesseract Space, said a methane/LOX combination offers around a five percent performance increase over kerosene/LOX when burned at the same pressure. "However, with methane, engines can be designed to run at much higher, more efficient pressures. When you factor in the increased efficiency, the performance benefit is more like 20 percent over kerosene." Those efficiency savings mean significant cost savings, mak[e]ing space travel far cheaper. With a higher specific impulse, the quantity of methane required for lift off is less, meaning smaller fuel tanks. There is also easier storage of the fuel before launch, and simpler and lighter fuel pumps on the rocket itself.

These methane emission are driving climate change.

UNEP "Methane Emissions Are Driving Climate Change. Here's How to Reduce Them." UNEP, United Nations, https://www.unep.org/news-and-stories/story/methane-emissions-are-driving-climate-change-heres-how-reduce-them.

Methane is the primary contributor to the formation of ground-level ozone, a hazardous air pollutant and greenhouse gas, exposure to which causes 1 million premature deaths every year. Methane is also a powerful greenhouse gas. Over a 20-year period, it is 80 times more potent at warming than carbon dioxide. Methane has accounted for roughly 30 per cent of global warming since pre-industrial times and is proliferating faster than at any other time since record keeping began in the 1980s. In fact, according to data from the United States National Oceanic and Atmospheric Administration, even as carbon dioxideemissions decelerated during the pandemic-related lockdowns of 2020, atmospheric methane shot up.

The impacts of climate change and global warming and determental.

NATGEO 21 "Global Warming Effects." Environment, National Geographic, 3 May 2021, https://www.nationalgeographic.com/environment/article/global-warming-effects.

The planet is warming, from North Pole to South Pole. Since 1906, the global average surface temperature has increased by more than 1.6 degrees Fahrenheit (0.9 degrees Celsius)—even more in sensitive polar regions. And the impacts of rising temperatures aren't waiting for some far-flung future–the effects of global warming are appearing right now. The heat is melting glaciers and sea ice, shifting precipitation patterns, and setting animals on the move. Many people think of global warming and climate change as synonyms, but scientists prefer to use "climate change" when describing the complex shifts now affecting our planet's weather and climate systems. Climate change encompasses not only rising average temperatures but also extreme weather events, shifting wildlife populations and habitats, rising seas, and a range of other impacts. All of these changes are emerging as humans continue to add heat-trapping greenhouse gases to the atmosphere. Scientists already have documented these impacts of climate change: Ice is melting worldwide, especially at the Earth's poles. This includes mountain glaciers, ice sheets covering West Antarctica and Greenland, and Arctic sea ice. In Montana's Glacier National Park the number of glaciers has declined to fewer than 30 from more than 150 in 1910. Much of this melting ice contributes to sea-level rise. Global sea levels are rising 0.13 inches (3.2 millimeters) a year, and the rise is occurring at a faster rate in recent years. Rising temperatures are affecting wildlife and their habitats. Vanishing ice has challenged species such as the Adélie penguin in Antarctica, where some populations on the western peninsula have collapsed by 90 percent or more. As temperatures change, many species are on the move. Some butterflies, foxes, and alpine plants have migrated farther north or to higher, cooler areas. Precipitation (rain and snowfall) has increased across the globe, on average. Yet some regions are experiencing more severe drought, increasing the risk of wildfires, lost crops, and drinking water shortages.

Climate change causes human extinction. More emission to push us to the tipping point faster.

Spratt and Dunlop 19 (David Spratt, a Research Director for Breakthrough National Centre for Climate Restoration, and Ian T. Dunlop, chairman of the Australian Coal Association, chief executive of the Australian Institute of Company Directors, "Existential climate-related security risk: A scenario approach," Breakthrough - National Centre for Climate Restoration, May 2019, https://docs.wixstatic.com/ugd/148cb0_b2c0c79dc4344b279bcf2365336ff23b.pdf, VY) 2020–2030

Policy-makers fail to act on evidence that the current Paris Agreement path — in which global human-caused greenhouse emissions do not peak until 2030 — will lock in at least 3°C of warming. The case for a global, climateemergency mobilisation of labour and resources to build a zero-emission economy and carbon drawdown in order to have a realistic chance of keeping warming well below 2°C is politely ignored. As projected by Xu and Ramanathan, by 2030 carbon dioxide levels have reached 437 parts per million — which is unprecedented in the last 20 million years — and warming reaches 1.6°C. 18 2030–2050: Emissions peak in 2030, and start to fall consistent with an 80 percent reduction in fossil-fuel energy intensity by 2100 compared to 2010 energy intensity. This leads to warming of 2.4°C by 2050, consistent with the Xu and Ramanathan "baseline-fast" scenario. However, another 0.6°C of warming occurs 19 — taking the total to 3°C by 2050 — due to the activation of a number of carbon-cycle feedbacks and higher levels of ice albedo and cloud

feedbacks than current models assume. [It should be noted that this is far from an extreme scenario: the low-probability, high-impact warming (five percent probability) can exceed 3.5–4°C by 2050 in the Xu and Ramanathan scheme.] 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. 20 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, contributing to more than a billion people being displaced from the tropical zone. 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. Even for 2°C of warming, more than a billion people may need to be relocated 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.

Advantage 2: Disease

As we travel to more objects in outer space, humans won't be able to effectively fight new outer space diseases.

Smith and Cockburn 20 Smith, Adam, and Harry Cockburn. "Space Germs Could Pose Threat to Mammals' Immune Systems, Scientists Warn." The Independent, Independent Digital News and Media, 23 July 2020, https://www.independent.co.uk/life-style/gadgets-and-tech/news/alien-germs-human-cells-immune-system-science-a9633811.html.

Just as the Martians in HG Wells' novel The War of the Worlds are finally slain by "disease bacteria" on Earth, scientists now suggest humans and other mammals could struggle to fight germs from other planets. Given the right conditions and mixture of elements, it is conceivable that microorganisms such as bacteria and viruses could exist beyond Earth, and there are plans to search for signs of them on Mars and some of Saturn and Jupiter's moons. Alien life forms could theoretically be composed of different amino acids to those familiar to us on Earth. Amino acids are the fundamental organic compounds which form the basis for all life as we know it, and are made up of nitrogen, carbon, hydrogen and oxygen. Scientists from the universities of Aberdeen and Exeter tested how mammal immune cells responded to peptides containing two amino acids that are rare on Earth but are commonly found on meteorites. The amino acids "isovaline" and "α-aminoisobutyric acid" were introduced to mice, which have immune systems similar to humans. They found that those mice's immune systems responded to the "alien" peptides in a way that was "less efficient" than to germs from this planet. The research team examined mammalian T cells, which normally work to kill pathogenic bodies, and can recruit other cells to fight off invading diseases. But when the scientists introduced the amino acids found on the meteorites, the T cell response was less efficient, with activation levels of 15 per cent and 61 per cent – compared to 82 per cent and 91 per cent when exposed to peptides made entirely of amino acids that are common on Earth. "Life on Earth relies on essential 22 amino acids," said lead author Dr Katja Schaefer, of the University of Exeter, in a statement. "Our investigation showed that these exo-peptides were still processed, and T cells were still activated, but these responses were less efficient than for 'ordinary' Earth peptides." "We therefore speculate that contact with extra-terrestrial microorganisms might pose an immunological risk for space missions aiming to retrieve organisms from exoplanets and moons," Dr Schaefer added. "The world is now only too aware of the immune challenge posed by the emergence of brand new pathogens," said Professor Neil Gow, a Deputy Vice-Chancellor at the University of Exeter. The research will be published in in the journal Microorganisms, with the title, 'A weakened immune response to synthetic exo-peptides predicts a potential biosecurity risk in the retrieval of exo-microorganisms'. The discovery of liquid water at several locations in the solar system raises the possibility that microbial life could have [also] evolved outside Earth, and could therefore be accidentally introduced into the Earth's ecosystem. The issue of alien germs is a rising priority, as missions to other planets are becoming more common. The UAE recently launched its first mission to Mars, sending The Hope Probe from Japan for a seven-month journey. China also sent the "Questions to Heaven" rover for a 90-day exploration of the Red Planet. Nasa recently gave the Seti Institute a contract to ensure that alien life does not contaminate Earth. The contract covers the Mars 2020 mission and the Europa Clipper mission, which will send probes to a moon of Jupiter. Researchers now say there could be more than 30 alien civilisations in our galaxy. That estimation comes from the assumption that life would develop on other planets as it does on Earth. Scientists than matched the conditions on Earth to other planets that could have similar histories.

Space diseases derail expedition and kill explorers.

Karin 10 Karin, Janice. "Disease May Derail Space Travel." The Future of Things, TFOT, 23 May 2010, https://thefutureofthings.com/4249-disease-may-derail-space-travel/.

Researchers at Nancy University in Lorraine, France have raised concerns that disease will make it impossible to support long-term space travel such as manned missions to Mars. Space travel both weakens the immune system and promotes more virulent growth of bacteria, a potentially deadly combination in a closed environment like a spaceship. Before such travel is viable, some form of protection against these raging microbial cultures must be devised.The scientists used existing studies concerning astronaut immune systems and the results of two experiments (one in 2006 and one in 2008) where cultures of salmonella were grown simultaneously on Earth and on the space shuttle to allow direct comparisons. The cultures on the space shuttle grew faster and resulted in a 300% increase in mortality rate when injected into mice. Furthermore, the bacteria in space tended to grow a biofilm coating which has proven particularly resistant to antibiotics in the past. This accelerated

rate of growth may be caused by fluid shear that creates an environment similar to that found in human intestines. Basically, the salmonella detects the force of surrounding fluids. The salmonella typically slips into the spaces between the villi in the intestines which protect it from the significant churn found in the center of the pathway. Researchers believe the low fluid shear of space is similar to the shear found within these pockets, a condition that sends the bacteria into overdrive as it prepares to enter the blood stream and cause infections. When combined with an observed decrease in the effectiveness of the human immune system in space, the virulence of bacteria growth could cause significant health issues for astronauts on long-term flights. Researchers are exploring the use of different growth medium to control the rate of bacteria virulence. In addition to information about disease in space, these experiments are providing additional information on how salmonella and similar bacteria work more generally which may improve treatment and prevention on Earth and well as in space. TFOT has previously reported on other potential hazards related to space and space travel, including reports of a mysterious space disease in Peru after a meteor strike, the discovery of toxic chemicals on the surface of Mars, and predictions that an extinction-level comet or asteroid collision may occur in the not too distant future.

When a space disease comes back to earth, we won't be prepared to fight it. The economic impact and the death toll will be catastrophic - further extubated by climate.

Walsh 17 Walsh, Bryan. "The World Is Not Ready for the next Pandemic." Time, Time, 4 May 2017, https://time.com/magazine/us/4766607/may-15th-2017-vol-189-no-18-u-s/.

The consequences of a major pandemic would be world-changing. The 1918 flu pandemic killed 50 million to 100 million people–at the top end, more than the combined total casualties of World Wars I and II–and for a slew of reasons, humans are arguably more vulnerable today than they were 100 years ago. First of all, there are simply more of us. The number of people on the planet has doubled in the past 50 years, which means more humans to get infected and to infect others, especially in densely populated cities. Because people no longer stay in one place–nearly 4 billion trips were taken by air last year–neither do diseases. An infection in all but the most remote corner of the world can make its way to a major city in a day or less. Climate change also plays a role as warmer temperatures expand the range of disease-carrying animals and insects we're exposed to, like the Aedes aegypti mosquitoes that transmit Zika. And if nature isn't bloody-minded enough, genetic-engineering tools have made it easier for terrorist groups or lone madmen to unleash custom-designed killer germs. In the case of a new pandemic, modern medicine should provide some protection. But experts say it's more likely that we'll be caught without a vaccine to prevent it or a drug ready to treat it. That's true even with many known viruses. When the last Ebola outbreak exploded, in 2014, eventually killing more than 11,000 people, the virus wasn't a mystery to scientists; it was discovered in 1976. But even though it had been killing people on and off for decades, there were no drugs or vaccines approved to fight it–and there still aren't today, chiefly because there's little incentive for pharmaceutical companies to bring [new drugs and vaccines] them to market. There are troubling economic implications as well. The 2003 SARS epidemic, which killed fewer than 800 people, cost the global economy $54 billion, much of it in lost trade, transportation disruption and health care costs. The World Bank estimates that the toll from a severe flu pandemic could hit $4 trillion. One saving grace is that the scientific understanding of that risk is better than ever. Research groups are working feverishly to predict the next pandemic before it even happens. They're cataloging threats and employing next-generation genetic-sequencing tools to speed the discovery of new or mysterious viruses. They're helping identify and track outbreaks as they happen. But microbes evolve about 40 million times as fast as humans do, and we are losing ground. "Of all the things that can kill millions of people in very short order," says Dr. Ashish Jha, director of the Harvard Global Health Institute, "the one that is most likely to occur over the next 10 years is a pandemic." The question is how policy–and the government dollars that back it–can catch up with the science and keep the world safe.

Advocacy

Thus the advocacy - The appropriation of outer space by private entities is unjust. Definitions: Outer Space: the physical universe beyond the earth's atmosphere. (Oxford Languages)

Unjust: not based on or behaving according to what is morally right and fair. (Oxford Languages)
Private Entities: a partnership, corporation, individual, nonprofit organization, company, or any other organized group that is not government-affiliated. (Upcounsel.com)
Prefer the Advocacy:

a. **Only whole rez allows us to fully engage on the topic and get the entire breadth of education. Breadth is better than depth because it is better to have more general knowledge so we can be more intelligent generally.**

Framing

The standard is maximizing expected well-being. Prefer:

1] Extinction comes first under any framework.

A] Extinction is a prerequisite to ethics. It precludes the possibility of any moral value. We cannot defer value if we are not alive.

B] Infinite future generations means infinite magnitude.

Bostrom 12:
Nick Bostrom. Faculty of Philosophy & Oxford Martin School University of Oxford. "We're Underestimating the Risk of Human Extinction" The Atlantic (2012)

Well suppose you have a moral view that counts **future people [are]** as being **worth as much as present people.** You might say that fundamentally **it doesn't matter whether someone exists at the current time or at some future time**, just as many people think that from a fundamental moral point of view, it doesn't matter where somebody is spatially---**somebody isn't automatically worth less because you move them to the moon** or to Africa or something. **A human life is a human life.** If you have that moral point of view that future generations matter in proportion to their population numbers, then you get this very stark implication that **existential risk mitigation has a** much **higher utility than** pretty much **anything else that you could do.** There are **so many people that could come into existence in the future** if humanity survives this critical period of time---**we might live for billions of years, our descendants might colonize billions of solar systems,** and there could be billions and billions times more people than exist currently. Therefore, **even a very small reduction in** the probability of realizing **this enormous good** will tend to **outweigh even immense benefits like eliminating poverty or curing malaria, which would be tremendous under ordinary standards.**

2] Actor Specificity

A] There is no intent-foresight distinction. - If we are to think up a consequence then we automatically take it into account making it key to our decision.

B] Aggregation - Every policy benefits some people and harms others. Only maximizing expected wellbeing allows govs to aggregate.

3] Degrees of Wrongness. Only consequentialism can define degrees of wrongness. The only way to explain why breaking a promise to take a dying person to the hospital

is much worse than breaking a promise to take someone to breakfast is through consequentialism.
4] Non Consequentialism fails. All of life is based on consequences. We cannot determine intentions, thus other fws are illegit.

Underview

1. **Aff gets 1AR theory—they can be infinitely abusive in the NC and I'll have no ability to call them out on it. This outweighs because there is literally no way for me to win without it. And prefer the 1AR theory paradigm issues:**

a) drop the debater because 2AR is too short to have a fair shot at substance and theory, which means if theory is drop the arg it destroys theory as a resource since I lose a time-trade off for checking abuse.

b) No RVI since a 6-minute 2N dump on theory makes the 2AR impossible.
2. Aff gets rvis A) Under-develop – without an RVI the time crunched 1ar will always have to under-develop the T debate since it's just a NIB they can't win off- means an rvi is key to good T debates B) Reciprocity – T is a unique avenue to the ballot that the aff can't access – makes T structurally unfair without the RVI.

1. **theory first a) Temporal skew: even if the round was unfair in the 1NC, she still accessed arguments she claims are excluded and demonstrated a strategy- their abuse is worse because it prevents me from winning the round going forward b) neg abuse is always worse: aff abuse checks back the 7-4, 6-3 time skew and NC's ability to adapt- I have to choose a stance on something, so don't punish me for having to set ground**