#### *1--Policies are already in place to increase internet access*

**Schmida Bernard et al. 17** (Steve Schmida, James Bernard, Tess Zakaras, Caitlin Lovegrove, Claire Swingle, February 2017, CONNECTING THE NEXT FOUR BILLION: STRENGTHENING THE GLOBAL RESPONSE FOR UNIVERSAL INTERNET ACCESS, <https://www.usaid.gov/sites/default/files/documents/15396/Connecting_the_Next_Four_Billion.pdf>) SJ

In September 2016 the U.S. House of Representatives passed legislation to help promote Internet access in developing countries. According to the Digital Global Access Policy Act of 2016, (HR5537. Digital GAP Act) “the internet offers tremendous opportunities—for those that have access to it.” A similar bill has been introduced in the Senate: The Driving Innovation and Growth in Internet Technology and Launching Universal Access to the Global Economy Act (The DIGITAL AGE Act). · President Obama also issued an Executive Order at the Global Entrepreneurship Summit in June 2016, outlining the need for investment and programs focused on entrepreneurship, with several sections focused specifically on global Internet access. Specifically, through the U.S. State Department Global Connect Initiative (GCI), this executive order asks “foreign countries to prioritize Internet connectivity in development plans, promoting the formation of region-specific multi-sector working groups to ensure technical and regulatory best practices, and encouraging the development of digital literacy programs in developing nations.” · At the International Telecommunications Union (ITU) 2014 Plenipotentiary Conference, Member States unanimously adopted the Connect 2020 agenda, which commits these Member States to work toward the shared vision of "an information society, empowered by the interconnected world, where telecommunication/ICT enables and accelerates socially, economically and environmentally sustainable growth and development for everyone." · The United Nations Sustainable Development Goal 9c, calls to “significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020.”

#### *2--Neg doesn’t solve key barriers to internet access*

**Schmida Bernard et al. 17** (Steve Schmida, James Bernard, Tess Zakaras, Caitlin Lovegrove, Claire Swingle, February 2017, CONNECTING THE NEXT FOUR BILLION: STRENGTHENING THE GLOBAL RESPONSE FOR UNIVERSAL INTERNET ACCESS, <https://www.usaid.gov/sites/default/files/documents/15396/Connecting_the_Next_Four_Billion.pdf>) SJ

Given the global development community’s increasing recognition of the importance of digital access, why are 2.5 billion people projected to remain unconnected?10 What barriers are inhibiting access in developing countries? SSG’s research found significant consensus regarding the principal barriers to increasing access: lack of infrastructure, low incomes and affordability, user capabilities (i.e., basic literacy and digital literacy), and incentives (i.e., cultural and social acceptance of Internet use, awareness and understanding of the Internet, and available and attractive local content).11 In the table below, SSG compares the barriers referenced in its analysis to those cited in seven major publications in recent years. There are some slight variations in the definitions of these four barriers. For example, cultural and social acceptance is included under “Readiness” by Internet.org and Strategy&, and User Capabilities and Incentives are combined into “Usage” in Ericsson and Columbia University’s ICT & SDGs report. However, there is general agreement on the primary barriers to access.

#### Space based mining is not likely to be cost effective due to costs involved in the process

**Dorminev 21** (Dorminev, Bruce. “Does Commercial Asteroid Mining Still Have A Future?.” Forbes. August 31, 2021. Web. December 13, 2021. <https://www.forbes.com/sites/brucedorminey/2021/08/31/does-commercial-asteroid-mining-still-have-a-future/?sh=17c18fef1a93>.) SJ

Kargel says note only will asteroid mining require additional new advances in both spacecraft technology and launch capability, it will need someone with deep pockets to fund serious space-mining development in a way that enables them to absorb losses of billions of dollars year after year until the technology and mining operations can be scaled up to be profitable. Then unless the metals mined from the asteroids are only used for offworld construction and resources, there’s a potential problem with the economics of importing innumerable quantities of PGMs back to Earth. Paradoxically, what was extraordinarily precious may become extraordinarily cheap. While that may lead to new ingenious and more economical uses of PGMs on earth, it would probably make a space-mining operation’s balance sheet insolvent. Paradoxically, what was extraordinarily precious may become extraordinarily cheap. While that may lead to new ingenious and more economical uses of PGMs on earth, it would probably make a space-mining operation’s balance sheet insolvent. If the PGM price per troy ounce is driven down on earth due to this new cornucopia of asteroid metals, says Kargel, prices for space metals would be driven down to such an extent that launch and space operational costs would again make space-mining untenable. “That to me is a conundrum,” said Kargel.

# Traditional 1ac – space topic – rawls

## Fw

#### I value Justice, defined by the following piece of evidence:

**Maise 2003** (Michelle Maiese. "Distributive Justice." Beyond Intractability. Eds. Guy Burgess and Heidi Burgess. Conflict Information Consortium, University of Colorado, Boulder. Posted: June 2003 <http://www.beyondintractability.org/essay/distributive-justice>) //neth

Distributive justice is concerned with the fair allocation of resources among diverse members of a community. Fair allocation typically takes into account the total amount of goods to be distributed, the distributing procedure, and the pattern of distribution that results. In Global Distributive Justice, Armstrong distinguishes between distributive justice generally and principles of distributive justice.[1]. Armstrong defines distributive justice as the ways that the benefits and burdens of our lives are shared between members of a society or community. Principles of distributive justice tell us how these benefits and burdens ought to be shared or distributed.[2]. Because societies have a limited amount of wealth and resources, the question of how those benefits ought to be distributed frequently arises. The common answer is that public assets should be distributed in a reasonable manner so that each individual receives a "fair share." But this leaves open the question of what constitutes a "fair share." Various principles might determine of how goods are distributed. Equality, equity, and need are among the most common criteria.[3] If equality is regarded as the ultimate criterion determining who gets what, goods will be distributed equally among all persons. (In other words each person will get the same amount.) However, due to differences in levels of need, this will not result in an equal outcome. (For example, every incoming freshman to a local college with a grade point above 3.0 might be offered a $500 scholarship. This is a nice reward for students and parents who can afford the remaining tuition, but is of no help to families that cannot afford the additional $6000/year fee to attend the school.)

#### My value criterion is ensuring equality through Rawls’ principles of justice

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

During the 1960s, he mainly concentrated on writing A Theory of Justice, published in 1971. This complex work attempted to develop standards or principles of social justice that could apply to real societies. Justice as Fairness Rawls called his concept of social justice "Justice as Fairness." It consists of two principles. Since he first published A Theory of Justice, he changed the wording of these principles several times. He published his last version in 2001. The First Principle of social justice concerns political institutions: Each person has the same and indefeasible [permanent] claim to a fully adequate scheme of equal basic liberties, which scheme is compatible with the same scheme of liberties for all. This principle means that everyone has the same basic liberties, which can never be taken away. Rawls included most of the liberties in the U.S. Bill of Rights, such as freedom of speech and due process of law. He added some liberties from the broader area of human rights, like freedom of travel. Rawls recognized the right of private individuals, corporations, or workers to own private property. But he omitted the right to own the "means of production" (e.g., mines, factories, farms). He also left out the right to inherit wealth. These things were not basic liberties in his view. Rawls agreed that basic liberties could be limited, but "only for the sake of liberty." Thus, curbing the liberties of an intolerant group that intended to harm the liberties of others may be justified. The Second Principle of social justice concerns social and economic institutions: Social and economic inequalities are to satisfy two conditions: first, they are to be attached to offices and positions open to all under conditions of fair equality of opportunity; and second, they are to be to the greatest benefit of the least-advantaged members of society (the Difference Principle). This Second Principle focused on equality. Rawls realized that a society could not avoid inequalities among its people. Inequalities result from such things as one's inherited characteristics, social class, personal motivation, and even luck. Even so, Rawls insisted that a just society should find ways to reduce inequalities in areas where it can act. By "offices and positions" in his Second Principle, Rawls meant especially the best jobs in private business and public employment. He said that these jobs should be "open" to everyone by the society providing "fair equality of opportunity." One way for a society to do this would be to eliminate discrimination. Another way would be to provide everyone easy access to education. The most controversial element of his theory of social justice was his Difference Principle. He first defined it in a 1968 essay. "All differences in wealth and income, all social and economic inequalities," he wrote, "should work for the good of the least favored." Later, when he wrote A Theory of Justice, he used the phrase, "least-advantaged members of society" to refer to those at the bottom of economic ladder. These might be unskilled individuals, earning the lowest wages in the society. Under the Difference Principle, Rawls favored maximizing the improvement of the "least-advantaged" group in society. He would do this not only by providing "fair equality of opportunity," but also by such possible ways as a guaranteed minimum income or minimum wage (his preference). Rawls agreed that this Difference Principle gave his theory of social justice a liberal character. Finally, Rawls ranked his principles of social justice in the order of their priority. The First Principle ("basic liberties") holds priority over the Second Principle. The first part of the Second Principle ("fair equality of opportunity") holds priority over the second part (Difference Principle). But he believed that both the First and Second Principles together are necessary for a just society. The "Thought Experiment" Rawls was interested in political philosophy. Thus he focused on the basic institutions of society. Unless such institutions as the constitution, economy, and education system operated in a fair way for all, he argued, social justice would not exist in a society. Rawls set out to discover an impartial way to decide what the best principles for a just society were. He reached back several hundred years to philosophers like John Locke and Jean Jacques Rousseau who had developed the idea of a social contract. Locke and Rousseau had written that people in the distant past had formed a contract between themselves and their leader. The people would obey their leader, usually a king, and he would guarantee their natural rights. This would be the basis for a just society. Thomas Jefferson relied on this social contract idea in writing the Declaration of Independence. By the 20th century, most philosophers had dismissed the social contract as a quaint myth. Rawls, however, revived the social contract concept of people agreeing what constitutes a just society. Rawls devised a hypothetical version of the social contract. Some have called it a "thought experiment" (Rawls called it the "Original Position"). This was not a real gathering with real people, bargaining over an agreement. Instead, it was an imaginary meeting held under strict conditions that permitted individuals to deliberate only by using their reason and logic. Their task was to evaluate principles of social justice and choose the best ones. Their decision would be binding on their society forever. Rawls added a requirement to assure that the choice of social justice principles would truly be impartial. The persons in this mental exercise had to choose their justice principles under a "veil of ignorance." This meant that these individuals would know nothing about their particular positions in society. It was as if some force had plucked these people from a society and caused them to experience severe amnesia. Under the "veil of ignorance," these imaginary people would not know their own age, sex, race, social class, religion, abilities, preferences, life goals, or anything else about themselves. They would also be ignorant of the society from which they came. They would, however, have general knowledge about how such institutions as economic systems and governments worked. Rawls argued that only under a "veil of ignorance" could human beings reach a fair and impartial agreement (contract) as true equals not biased by their place in society. They would have to rely only on the human powers of reason to choose principles of social justice for their society. Rawls set up his "thought experiment" with several given systems of social justice principles. The task of the imaginary group members under the "veil of ignorance" was to choose one system of principles for their own society. Rawls was mainly interested to see what choice the group would make between his own Justice as Fairness concept and another called "Average Utility." This concept of justice called for maximizing the average wealth of the people. Making the Choice The fictional persons in the experiment, using their powers of reason and logic, would first have to decide what most people in most societies want. Rawls reasoned that rational human beings would choose four things, which he called the "primary goods": • wealth and income • rights and liberties • opportunities for advancement • self-respect In the next and crucial step, the participants would have to decide how a society should go about justly distributing these "primary goods" among its people. Clearly, designing economic, political, and social institutions that favored the "most advantaged" members of the society would not be justice for all. On the other hand, the members of the experiment group would rationally agree that equal rights and liberties, opportunities, and self-respect for all would be just. But what about everyone having equal wealth and income? Rawls was sure the parties would reasonably conclude that some (but not extreme) inequality of wealth and income is necessary in a just society. Entrepreneurs, innovators, and leaders should be rewarded for working to improve the economy and wealth of the society. Then how should wealth and income be distributed in a just society if not equally or skewed toward the rich? Again using their reason and logic, Rawls argued, the imaginary parties would adopt what philosophers call the maximum-minimum (or "maximin") rule. Under this rule, the best choice is the highest minimum. Average Wage Per Hour Legal Minimum Wage SOCIETY A $20.00 $7.00 SOCIETY B $30.00 $1.00 In the example above, the best choice under the "maximin" rule would be SOCIETY A, which has the highest minimum wage. Those earning the average wage and above are doing pretty well as well. SOCIETY B with its higher average wage benefits those in the middle and at the top income levels, but largely ignores those at the bottom. This is the flaw of the Average Utility social justice system, according to Rawls. Similarly, Rawls believed the persons in his experiment would rationally choose principles of social justice that maximized benefits for the "least advantaged." The individuals under the "veil of ignorance" do not know what position they really occupy in their society. Any one of them might be Bill Gates or an unemployed high school dropout. To be on the safe side, Rawls maintained, the rational-thinking members of the imaginary group would choose the principles of justice that most benefited those at the bottom. In this way, Rawls believed, he had demonstrated that his Justice as Fairness principles, skewed toward the "least advantaged," were the best for building or reforming institutions for a just society. Rawls did not think the United States was yet a just society since it did not satisfy his Difference Principle. To Rawls, wealth and power in the United States were concentrated too much in the hands of the "most advantaged."

## C1 – Furthering inequalities on earth

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

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

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

#### This normalizes a future of even deeper inequalities

**Savage 2021** (Luke Savage, “The Billionaire Space Race Is the Ultimate Symbol of Capitalist Decadence,” July 14, 2021, Jacobin, <https://www.jacobinmag.com/2021/07/billionaire-space-race-richard-branson-bezos-musk>) //neth

As people have been quick to point out, there is very little by way of technological, scientific, or even individual novelty at play in the current three-way pissing match between Virgin Galactic’s Branson, Tesla’s Elon Musk, and Amazon’s Jeff Bezos (who will undertake his own flight in a few days’ time). Some twenty years ago, multimillionaire Dennis Tito shelled out $20 million to travel to the International Space Station, making him the first official space tourist. At only a few minutes in length, Branson’s suborbital flight was far shorter than the nearly two hours cosmonaut Yuri Gagarin spent circling the Earth all the way back in 1961. In most senses that matter, then, the so-called billionaire space race is one untethered from actual innovation or precedent-setting. What is novel is the transformation of space into a new frontier for the world’s lumpen–haute bourgeoisie: a class of people whose fortunes have grown so incomprehensibly large they must now be spent on yachts that contain other yachts and vanity expeditions into the thermosphere because the traditional symbols of billionaire opulence no longer suffice. Contra the effusively futurist spin of their various PR wings, the new frontier in question is thus about as mundane and earthbound as they come — concerned not with the democratization of space nor the transcendence of our worldly existence but rather a scaled-up, fantasy version of generic intra-capitalist competition. Whatever their branding, as Motherboard’s Edward Ongweso Jr writes, ventures like Branson’s are mainly a show put on to dazzle investors. To a certain extent, they are also about jockeying for lucrative government contracts — one of the great ironies of the private space industry being that it quite literally depends on billions in public money. The single greatest impetus for the billionaire space race, however, is arguably one even more familiar to students of historical inequality. Like Musk, Branson, and Bezos, the monopolists of America’s Gilded Age made their fortunes primarily as rentiers rather than innovators, becoming neo-feudal barons of the nation’s expanding industrial infrastructure and reaping the financial rewards. By its very nature, such an enterprise must always be sold as one concerned with the common good — the growing market for global telecommunications and terrifying military gizmos today occupying the place once held by steamships, railways, and telegraph networks. More straightforwardly, extreme wealth in the capitalist age is by definition engaged in a constant and desperate scramble for new sources of ethical legitimacy. Billionaires need a public-facing reason to exist and, for the time being at least, owning the right bits of paper and expropriating surplus value still doesn’t quite cut the mustard. If, on the other hand, plutocratic pursuits — and the impossibly decadent lifestyles surrounding them — can be packaged as extensions of a progressive human project, so much the better: the likes of private islands, luxury estates, and Silicon Valley sweatshops now justifying themselves with all the pomp and somber purpose of Neil Armstrong taking his first step onto the surface of the moon. As temperatures scorch and billions remain unvaccinated more than a year into a global pandemic, Branson’s soaring declaration of radical possibility was thus the ultimate symbol of capitalist decadence in the neoliberal era — a phony futurist advertorial with all the trappings of a springtime orgy at the Palace of Versailles in 1789. Whatever their ostensibly democratic branding, efforts like Branson’s are unlikely to portend any kind of real future for humanity in space (and supposing they somehow did, it would probably resemble Elysium far more than Star Trek). What they do portend is a future of ever-deepening inequality: one in which the barons of twenty-first-century capital attempt to cajole us in the delusion that their commercial interests and personal ventures are an extension of common social purpose rather than ill-gotten wealth and unearned power. In this respect, Branson’s words — delivered with such sparkling ebullience from eighty-six kilometers up (“If we can do this, imagine what else we can do”) — can also be read as a straightforward statement of fact about the privileges now wielded by him and his class. Soon enough, the rest of us may no longer have to imagine.

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

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

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

## C2 – Climate

#### Private space tourism (ST) harms the atmosphere and contributes to climate change; demand for ST is only increasing

**Pultarova 7-26**-2021 (Teresa Pultarova, space.com, “The rise of space tourism could affect Earth's climate in unforeseen ways, scientists worry,” July 26, 2021, <https://www.space.com/environmental-impact-space-tourism-flights>) //neth

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 fuels, 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 [tourism] industry, each of their flights 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 BE-3 engine that powers Blue Origin's New Shepard suborbital vehicle, on the other hand, combines liquid hydrogen and liquid oxygen to create thrust. The BE-3 is not a big polluter compared to other rocket engines, emitting mainly water along with some minor combustion products, experts say. For Karen Rosenlof, senior scientist at the Chemical Sciences Laboratory at the U.S. National Oceanic and Atmospheric Administration (NOAA), the biggest problem is that rockets pollute the higher layers of the atmosphere — the stratosphere, which starts at an altitude of about 6.2 miles (10 kilometers), and the mesosphere, which goes upward from 31 miles (50 km). "You are emitting pollutants in places where you don't normally emit it," Rosenlof told Space.com. "We really need to understand. If we increase these things, what is the potential damage?" So far, the impact of rocket launches on the atmosphere has been negligible, according to Martin Ross, an atmospheric scientist at the Aerospace Corporation who often works with Rosenlof. But that's simply because there have not been that many launches. "The amount of fuel currently burned by the space industry is less than 1% of the fuel burned by aviation," Ross told Space.com. "So there has not been a lot of research, and that makes sense. But things are changing in a way that suggests that we should learn about this in more detail." 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." The rate of rocket launches delivering satellites into orbit is expected to grow as well. But Kasaboski sees bigger potential for growth in space tourism. "It's like the difference between a cargo flight and a passenger flight," Kasaboski said. "There's a lot more passengers that are looking to fly." The problem is, according to Ross, that the scientific community has no idea and not enough data to tell at what point rocket launches will start having a measurable effect on the planet's climate. At the same time, the stratosphere is already changing as the number of rocket launches sneakily grows.

#### The pollution emitted by ST accumulates and increases warming, impacts storm patterns, harms crop yields

**Pultarova 7-26**-2021 (Teresa Pultarova, space.com, “The rise of space tourism could affect Earth's climate in unforeseen ways, scientists worry,” July 26, 2021, <https://www.space.com/environmental-impact-space-tourism-flights>) //neth

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

#### Climate change disproportionately impacts poorer communities – this creates cycles of inequality

**Woetzel 2020** (“Climate change hits the poor hardest. Here’s how to protect them,” Jonathan Woetzel, October 14, 2020, World Economic Forum, <https://www.weforum.org/agenda/2020/10/climate-change-poor-hardest-how-protect-them/>) //neth

But lower-income economies and populations may face the biggest impacts. This is because they often depend on outdoor work like in agriculture, or rely on natural capital, both of which are vulnerable to a changing climate. And with less financial means to adapt, the poor could be left far more exposed—a trend true within both developing and developed countries. Three examples illustrate the regressive nature of climate risk: 1. Extreme heat and humidity in India and other emerging markets Climate science predicts that India may become one of the first places to experience heat waves that cross the survivability threshold for a healthy human being resting in the shade. The already vulnerable parts of the population could be the most affected. Under a higher emissions scenario, some 160 to 200 million people in India are expected to live in areas that could experience such lethal heatwaves by 2030, with estimates suggesting more than half of that population will be living without air conditioning in 2030. Outdoor work, which accounts for about half of India’s GDP today, could also be limited as heat and humidity levels increase. Workers will tire more easily and need to take more frequent breaks, affecting labour productivity. As a result, by 2050, some parts of India could effectively lose nearly 30% of annual daylight working hours. Those without access to cooling systems and those engaged in outdoor and manual activities – among the poorest in the country – will be disproportionately affected. It is not just India. Countries across the world are expected to lose working hours due to rising heat and humidity levels. In the richest countries (based on GDP per capita), share of hours lost could be 1 to 3 percentage points higher in 2050 compared to today; and in the poorest countries, 5 to 10 percentage points higher. Global average temperatures are expected to increase between 1.5 and 5 degrees celsius relative to today in many locations by 2050. 2. Increased volatility of agricultural yields With a changing climate, crop volatility is expected to increase, increasing the likelihood of years with unusually low global production as well as those with bumper yields. Consider yield declines. Climate change could trigger harvest failure in multiple breadbasket locations. Given current high grain stocks, the world would not run out of grain, though incomes for poor farmers reliant on these yearly yields could be affected. Moreover, historical precedent suggests that prices could increase. This would hurt the world’s poorest communities in particular, including the 750 million people living below the international poverty line. On the other hand, bumper yields could negatively affect food prices, affecting incomes of farmers. By 2050, the annual probability of yield falling by more than 10% in a given year is expected to increase from 6% to about 20%; while the probability of yield increasing by more than 10% in a given year is expected to increase from 0 to 6%. Impacts could also vary by region; countries like Canada could see an increased overall likelihood of bumper years, while other (often poorer) parts of the world like India could see an overall increased likelihood of yield declines. 3. Rising flood risk for vulnerable populations Climate change is increasing the destructive power of flooding, which, in addition to often devastating human costs, destroys real estate and disrupts infrastructure services. We examined the impacts of flooding on Ho Chi Minh City, home to nearly 9 million people and 2 million migrant workers. While flooding there is common, climate change could substantially increase damages. We estimate that direct infrastructure asset damage from a 100-year flood today could total up to $300 million, rising to $500 million to $1 billion by 2050, without adaptation. Knock-on costs in terms of disrupted economic activity could be substantial, rising from between $100 million and $400 million today to $1.5 billion to $8.5 billion in 2050. Those who have the least often lose the most. In 2050, estimates suggest that about 85% of the city’s poor urban areas may expect to be exposed to flood risk, compared with roughly 60% of the urban area as a whole. Because poorer areas typically have lower quality, unregulated housing coupled with limited financial reserves and insurance, they are more likely to struggle to recover. These effects are not just seen in emerging markets. In Florida, home prices could devalue as climate risk is priced into buying decisions. Based on historical trends on the impacts of tidal flooding, devaluation of exposed homes could be $30 billion to $80 billion by 2050, all else being equal – a 15 to 35% impact. Impacts could be significantly larger if, for example, mortgage financing, or the price and availability of insurance, are affected. The capacity to spend on flooding mitigation and recovery will be markedly different across communities. Home owners’ decisions to rebuild or relocate will be limited by the availability of recovery money as well as the viability of getting a new mortgage elsewhere.

#### Private space tourism is actively detrimental to climate action movements

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

People's motivation to take action on climate change declines when they see others doing whatever they want, without heed for the consequences. Beyond this demoralization, there is then the actual carbon footprint of space tourism. Look, I'm not against space travel in principle. I'm actually a bit of a science-fiction nerd myself, and get very excited about the possibilities of exploring space. And granted, all tourism — even on Earth — creates carbon emissions. My intention is not to say tourism shouldn't exist. But the problem with space tourism is the proportion. Let's take Richard Branson's Virgin Galactic space flight on July 11. For a suborbital journey of about 100 miles (160 kilometers), the company said the carbon dioxide emissions released were roughly equal to a round-trip trans-Atlantic passenger jet flight. Based on publicly available information, a trip from London to New York City releases about 1.24 metric tons of CO2. To put it another way, that 1 1/2-hour jaunt into space was equivalent to about 3,000 miles (4,800 kilometers) of driving an average passenger car. If Virgin Galactic is adding 3,000 road miles of CO2 emissions to our atmosphere for a single short trip for a mere six people, that devalues efforts — both personal and policy — to protect the climate. The problem could become particularly acute as space tourism ramps up, as it seems could soon be the case: More than 600 people have already made a reservation for a Virgin Galactic space flight, which has a price tag of between $200,000 and $250,000 (€169,000 to €212,000). Branson's Virgin Galactic reportedly focuses on environmental sustainability, although what that entails has not been made clear. I find this to be a very dubious claim, particularly in light of the carbon footprint of such flights. At least billionaire Jeff Bezos gives the environment more than just lip service, by having rockets for his space travel company Blue Origin use hydrogen fuel, which does not produce carbon emissions. But let's please not ignore the fact that hydrogen fuel, though it can be produced using renewable energy, is currently typically produced by — you guessed it — burning fossil fuels.

## C3 – common heritage principle

#### Private appropriation of outer space violates the common heritage principle & the outer space treaty

**Buxton 2004** (Carol R. Buxton, Property in Outer Space: The Common Heritage of Mankind Principle vs. the First in Time, First in Right, Rule of Property, 69 J. Air L. & Com. 689 (2004) <https://scholar.smu.edu/jalc/vol69/iss4/3> | <https://scholar.smu.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1712&context=jalc>) //neth \*\*brackets in original text

The 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies ("the Outer Space Treaty") became the "cornerstone of international space law"47 and the first treaty drafted by the United Nations' Committee on Peaceful Uses of Outer Space (COPUOS).48 As with the Antarctica Treaty, the Outer Space Treaty promotes freedom of access for research and scientific investigation. The treaty denies land ownership rights to any one sovereign, and instead states that "exploration and use of outer space, should be carried on for the benefit of all peoples irrespective of the degree of economic or scientific development. 49 The Outer Space Treaty does not use the term "common heritage of mankind," but rather uses the term "province of mankind," stating that "exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries ... and shall be the province of all mankind. '5° According to Professor Armel Kerrest, 1 "province" seems associated with the idea of territory or the responsibility over a territory, thus giving the notion of control rather than "property and possible wealth. 52 Professor Kerrest states, By itself the common control of humanity over outer space and celestial bodies does not deal with appropriation and property. It only means that the rules over outer space and celestial bodies can only be made by Humanity as a whole. No state ... can rule exploration and use of outer space, [or] can exercise any territorial jurisdiction over it without the agreement of Humanity. 51 Professor Kerrest further states that the idea of "heritage," however, seems directly linked with property and ownership.54 He refers to the Law of the Sea Convention, which declares that "the sea floor and its resources are the common heritage of mankind," and suggests that this language makes it clear "that the property of these resources is [recognized] to a legal person: humanity. 5' 5 Unfortunately, "humanity" seems vague. Professor Kerrest questions, "Who is humanity or[,] more precisely[,] who is entitled to speak for humanity?5 1 6 In a one-country, one-vote system, the majority usually consists of the less-developed nations due to their great number.5 1 More likely than not, the majority does not include space-faring nations.

#### Common Heritage aims to preserve resources for the future and has outer space precedent in the Moon Treaty

**Taylor 2011** (This essay is an adapted version of Taylor, Prue. 2011. “Common Heritage of Mankind Principle.” In Klaus Bosselmann, Daniel Fogel, and J. B. Ruhl, Eds. The Encyclopedia of Sustainability, Vol. 3: The Law and Politics of Sustainability. 64–69. Great Barrington, MA. Berkshire Publishing. | http://wealthofthecommons.org/essay/common-heritage-mankind-bold-doctrine-kept-within-strict-boundaries) //neth

1979 MOON TREATY Even though aspects of CHM appeared in the 1967 Outer Space Treaty, it was not until 1979 that a clear statement appeared in the Moon Treaty, a treaty to govern exploration and exploitation of the moon’s resources. Article 11(1) declares that the moon and its natural resources are the [Common Heritage of Mankind] CHM. Disputes concerning the details of an international system for resource exploitation, including provision for equitable benefit sharing, were resolved by deferring the details of a management regime for the future. The Moon Treaty has been ratified by only a few states; nevertheless it has been used to reject claims to property rights on the basis that it creates a general principle of law, applicable to the whole of the international community and not just states that ratified the treaty. CORE ELEMENTS There is no concise, fully agreed upon definition of CHM. Its features depend upon the details of the regime applying it or the space/resource to which it is applied. There are a number of core elements, however: No state or person can own common heritage spaces or resources (the principle of non-appropriation). They can be used but not owned, as they are a part of the international heritage (patrimony) and therefore belong to all humankind. This protects the international commons from expanding jurisdictional claims. When CHM applies to areas and resources within national jurisdiction, exercise of sovereignty is subject to certain responsibilities to protect the common good. The use of common heritage shall be carried out in accordance with a system of cooperative management for the benefit of all humankind, i.e., for the common good. This has been interpreted as creating a type of trustee relationship for explicit protection of the interests of humanity, rather than the interests of particular states or private entities. There shall be active and equitable sharing of benefits (including financial, technological, and scientific) derived from the CHM. This provides a basis for limiting public or private commercial benefits and prioritizing distribution to others, including developing states (intragenerational equity between present generations of humans). CHM shall be reserved for peaceful purposes (preventing military uses). CHM shall be transmitted to future generations in substantially unimpaired condition (protection of ecological integrity and inter-generational equity between present and future generations of humans). In recent years, these core elements have ensured that CHM remains central to the efforts of international environmental lawyers. It is recognized as articulating many key components of sustainability.

#### The Outer Space Treaty prohibits private appropriation – this acts as a check on inequality

**Gorove 1969** [Stephen Gorove, jurist & Professor Emeritus at University of Missisipi, “Interpreting Article II of the Outer Space Treaty”, 37 Fordham L. Rev. 349, 1969, <https://ir.lawnet.fordham.edu/cgi/viewcontent.cgi?article=1966&context=flr>] //neth

I. SUBJECT MATTER OF APPROPRIATION With respect to the problem of subject matter, the prohibition of national appropriation relates clearly to "outer space, including the moon and other celestial bodies."2 The Treaty is silent on the question of what is outer space, what it encompasses or what its boundaries are in relation to airspace. The only statement contained in the Treaty is that the moon and other celestial bodies are included in outer space. For this reason, the prohibition regarding national appropriation would unquestionably extend to the moon and other celestial bodies. Whether or not the prohibition would extend to outer space in its totality or only to part of it, or would relate to the moon or a celestial body as a whole or only to a part of it, are further significant questions. By common sense interpretation the prohibition could not very well relate to outer space as a whole since no one could at present appropriate outer space as a whole but only a part of it. Insofar as the moon and other celestial bodies are concerned, the prohibition could extend to the whole entity if national appropriation of the whole is indeed possible. But even in relation to the moon and other celestial bodies, it would appear by reasonable interpretation that the prohibition would also cover acquisition of a part of the moon or other celestial body. Any contrary interpretation would seem to make the prohibition of national appropriation largely illusory. In relation to national acquisition of a part of outer space, further questions may be raised. For example, does the prohibition extend to the collection of dust particles or other special elements during flight in outer space? Does the prohibition extend to the appropriation of cosmic rays, gases or the sun's energy, or to the collecting of mineral samples or precious metals on the moon or other celestial bodies? Should the answer depend on the type of resource involved, or on its availability in unlimited (cosmic rays, meteorites, gases) or limited (minerals, metals) quantities or perhaps on its location? In attempting to give answers to these questions, it may be pointed out, first of all, that, in the absence of some special circumstance, little would be gained by insisting on the nonappropriation of resources such as cosmic rays or gases, which are available in inexhaustible quantities. At the same time, the Treaty as it stands seems to make little allowance for national acquisition of exhaustible spatial resources. With respect to location, it could be argued that if any parts of outer space, including the moon and other celestial bodies, were found on the earth, they would not be subject to the prohibition of national appropriation since they would become part and parcel of the earth. Under a strict interpretation it may also be argued that the prohibition extends to the resource irrespective of its location. However, it might be preferable to distinguish between elements of outer space which have reached the earth as a result of natural causes and those which have done so through human intervention. In the first instance national appropriation would not be prohibited, whereas in the second example the prohibition would apply. Thus, a meteorite falling on the earth could be appropriated whereas a precious stone or metal brought to the earth from outer space could not be a subject of national appropriation. Regarding the jurisdictional boundaries of outer space, particularly the dividing line between airspace and outer space, we seem to know a little more now than we knew at the time of the first Colloquium on the Law of Outer Space back in 1958. At that time it did not appear with certainty that nation states would not object to the orbiting of foreign space instrumentalities over and above their territories. Today after more than a decade of spatial experiments, it can be said that an international custom seems to have sprung up which regards the area where space instrumentalities move in durable orbit as outer space. From this we also take for granted that anything above and beyond this area is also regarded as outer space. However, the more precise boundary line between airspace and outer space is still left undetermined. II. NATIONAL APPROPRIATION Turning to the second question which involves the meaning of "national" appropriation, it has been suggested that only the United Nations acting on behalf of the world community as a whole, should be entitled to appropriate.3 While further developments in space law, by international custom or treaty, may eventually prohibit spatial appropriations by an individual or a chartered company or the European communities, the Treaty in its present form appears to contain no prohibition regarding individual appropriation or acquisition by a private association or an international organization, even if other than the United Nations. Thus, at present, an individual acting on his own behalf or on behalf of another individual or a private association or an international organization could lawfully appropriate any part of outer space, including the moon and other celestial bodies. Whether or not an ad hoc international organization could be created for the exclusive purpose of enabling it to appropriate outer space is a delicate question. The answer may have to depend on the good faith of the parties. A further question in relation to "national" appropriation is whether or not political subdivisions of a state, such as the states of a federal state, cities or municipalities may appropriate? Under a strict interpretation, the answers to these questions would likely be in the negative even though an occasional court decision in other areas of the law may support an affirmative position.4 IlL. THE CONCEPT OF APPROPRIATION 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. The question may also be asked whether or not the purpose of appropriation, that is whether it takes place in the name of science, for enrichment, or for any other purpose would have a bearing on the question of its lawfulness. Normally, the purpose of appropriation should have little bearing on the prohibition except that to constitute appropriation, the acquisition must be carried out for the purpose of one's own or exclusive use. However, since the Treaty proclaims freedom of scientific investigation in outer space, 6 there seems to be some support for the argument that if the appropriation takes place in the name of science or in the course of a scientific investigation in outer space, including the moon and other celestial bodies, such use would not be prohibited under the Treaty. Nonetheless, if the proclaimed principle is taken literally, the same argument could not be used with equal force in a case where the scientific investigation was carried out on the earth. It is doubtful whether the Treaty intended such effect, but if it did not, it is unfortunate that it fails to make it clear.7 IV. SOVEREIGN AUTHORITY In relation to the question whether or not there is any room for the exercise of some form or degree of superior authority, jurisdiction, use or occupation in outer space, the answer would seem to be in the affirmative, since the Treaty prohibits the exercise of such authority, use or occupation only if it amounts to national appropriation. Under such interpretation, the temporary use of a spatial resource without the latter's transformation or deterioration may be permissible, whereas the consumption or destruction of a resource may not. Furthermore, insofar as the exercise of authority is concerned, the state on whose registry an object launched into space is carried must retain jurisdiction and control over such object, and over its personnel, while in outer space or on a celestial body.' The Treaty also makes it clear that the states will be internationally responsible for national activities in outer space, including the moon and other celestial bodies, irrespective of whether such activities are carried on by governmental or nongovernmental entities. In fact, the activities of nongovernmental entities require authorization and continuing supervision by the state concerned.9 The fact that some measure of at least temporary exclusive jurisdiction may be exercised over a particular area on the moon or other celestial bodies, such as a space station and its adjacent grounds, is also apparent from Article XII which makes access by representatives of a foreign state contingent on reciprocity. It is not the purpose of the foregoing brief analysis to attempt to resolve the complex problems which may arise in connection with the interpretation of Article II of the Outer Space Treaty. The purpose is rather to draw attention to the existence of these problems which will have to be resolved if man's exploration of the cosmos is to be guarded by law and order.