## Cap v3

### Contention 1: the Space Industrial Complex

#### Private space activity is expanding, 2022 is the crucial year to demonstrate profitability

Kramer 1-4-22

(Miriam, https://www.axios.com/private-human-spaceflight-2022-8ec6082a-e3ae-4d6b-8073-3f8af3e7e2a5.html)

The private human spaceflight industry delivered on long-held promises in 2021, but 2022 is the year where it will need to prove itself to the public. Why it matters: The space industry is predicted to be worth more than $1 trillion within the next 10 years. But for that to happen, companies will need to turn the extraordinary feats of the last year into routine operations. What's happening: Last year, Blue Origin and Virgin Galactic both launched their founders — Jeff Bezos and Richard Branson respectively — to space for the first time. Blue Origin followed that up with two more suborbital human flights in 2021. Those missions marked the culmination of decades of work for the two companies and delivered on a promise of sending more non-professionals to space. SpaceX also consistently launched crewed missions to the International Space Station for NASA, a major customer that will influence the continued growth of the company, and had a huge success with four non-professionals flying to orbit without a pro-astronaut onboard on the Inspiration4 mission. What to watch: Now, those companies are trying to demonstrate they can consistently deliver these services — and turn a profit from them. That means flying more. Blue Origin, Virgin Galactic and SpaceX are expected by space watchers to fly people to space consistently and safely this year. That will be key to determining whether the successes of the last year are one-offs or if they can get into "some sort of rhythm and make some money," Carissa Christensen, founder and CEO of BryceTech, told Axios. SpaceX is planning to launch the Axiom Mission-1 mission to the International Space Station early in 2022, which will act as a followup to the Inspiration4 mission and could be an indicator of the market for more amateur orbital flights. It's hard to gauge whether private companies like Blue Origin are profitable — because their finances aren't open to the public — but routinely launching, which is expensive, can act as a proxy for it, Christensen said. Yes, but: Transforming these missions into routine services won't be easy. It will require companies to increase launch cadence, which is challenging because they're working with relatively newly-developed technology and within complicated regulatory frameworks. The big picture: The public demand for these types of services could also become more clear this year. Studies indicate there is "substantial demand" for suborbital spaceflight, Christensen says. "You have a larger pool of people that can afford it now." According to a May 2021 note sent to investors by analysts Ken Herbert and Austin Moeller, of Canaccord Genuity, the suborbital tourism market could reach $8 billion by 2030 with 1 million potential customers. Between the lines: Demonstrating they can turn a profit will be important for the companies working to make consistent, private human spaceflight a reality, but it's likely a small portion of the revenue for the space industry overall. However, human spaceflight will be one of the most important public-facing elements of the overall industry. Major failures and successes will shift the way the public sees the industry, adding to its support or detracting from it. The bottom line: Last year, the private spaceflight industry showed what it can do, but this year, these companies will need to capitalize on it.

#### Private space enterprise *requires* massive inequality-it’s viewed as a *spatial fix* that allows infinite expansion of colonialism

Penny 20

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The eye-watering upfront costs of these exploratory, high-risk, high-reward endeavors can be absorbed by Silicon Valley venture capitalists and the personal fortunes of its aristocracy. A concentration of capital stands ready to risk big money to secure a stake in future markets (which will double down on its power in existing ones). The point is to ensure a slice of the territory everyone else will be clamoring for. This form of ​“creative destruction”—an idea developed by economist Joseph Schumpeter, understood in neoliberalism to describe the boom-bust cycle of innovation — is often packaged in the mythology of moonshot genius that drives human progress. But Schumpeter’s theory has a less discussed underbelly: Such creative destruction is usually twinned with market capture. As competitors are tossed onto the scrap heap of history by their own sudden irrelevance, oligarchies and monopolies flourish. The riches of the asteroid belt make earthly mining look positively parochial. The problem is that a sudden, vast supply of (formerly) precious metals would make market prices plummet. Journalist Aaron Bastani, author of Fully Automated Luxury Communism, notes that satellite-delivered digital information has the potential to replace our earthbound Internet networks with ​“space-based global Internet” — the way music streaming has replaced CDs and CDs replaced cassettes and vinyl — or to at least render them much cheaper (through, for example, open-access 3D printing). SpaceX and Blue Origin surely share a goal to make space transport cheaper. The question is, for whom? These ventures train their sights on infinite excess, with dwindling marginal costs as the supply of key materials and digital resources expands. This paradigm is great for those interested in the advancement of human civilization, but not so much for a grinning billionaire’s fixation on the bottom line. At first glance, expanding industry beyond Earth sounds like a pragmatic fix to the earth-shatteringly simple dilemma faced by capitalism: that it must grow to survive, but the planet it grows upon is finite. But to maintain profit margins in conditions of plenty (a demand of industry), legal and political fixes are required. If you exclusively own mining rights to asteroids rich in platinum — and precious little platinum is left on Earth — you can charge whatever you like for platinum. The diamond industry perfected this technique decades ago. (Elon Musk’s family fortune comes partially from a Zambian emerald mine.) Hence, the focus of the new space race is not on the production of goods or their most efficient sourcing, but on ownership of land and transport networks. In this latest phase of capitalism, as national growth slows, productive industries dwindle and wealth concentrates in fewer hands. As economist Thomas Piketty has observed, this phase is accompanied by a pivot toward rent-seeking as a profit mechanism. In other words, the scramble for space is the scramble to own satellites and ​“starways,” gatekeep the riches of the solar system and charge rent on the moon. Against this backdrop, Space Force might seem retrograde, a warped nostalgia for a time when the space race was about petty terrestrial wars rather than Musk’s supposedly enlightened vision to colonize Mars. In reality, the two visions go hand in hand. Military might physically captures and secures territory, enforces the American political and legal apparatus and ensures business can function (even on the moon). The darlings of this new space age paint their vision as daring futurism, a wild-eyed libertarian dream of human elevation. But history repeats and the story is old. Like Bezos and Musk, Cecil Rhodes — mining magnate and premier villain of the British Empire — also succumbed to dreams of wealth in the night sky. ​“Expansion is everything,” Rhodes said. ​“I would annex the planets if I could.” Where technology opens up the yawning unknown of new territory glittering with potential profit, private enterprises hustle for dominance — backed by the military and legal capacities of earthbound nations. Colonialism in space is not some post-humanist utopia, but the age-old dominion of land barons and mining magnates, billionaires sloughing off the wreckage of one planet and setting out for the stars.

#### Profit motive makes equitable space exploration *impossible*-rejecting private appropriation enables socialization of space and its benefits

Marx 20

(Paris Marx is a freelance writer, host of left-wing tech podcast Tech Won't Save Us, and editor of Radical Urbanist. <https://www.jacobinmag.com/2020/06/spacex-elon-musk-jeff-bezos-capitalism>, 6-8)

The May 30 launch symbolized both Trump’s desire to project an image of revived American greatness and Musk’s need not only to bolster the myth that makes his wealth possible, but to set the foundations for a privatized space industry. The space billionaires — Musk and Amazon CEO Jeff Bezos foremost among them — have little stake in the well-being of the majority of the population. Their space visions are designed for wealthy people like themselves, with little mention of where the working class would fit in. They’ve built their wealth on exploitation, and their visions of the future are little more than an extension of their present actions. A History of Violence The business practices of Musk and Bezos are increasingly well known and have been on clear display during the pandemic. Musk tried to claim Tesla’s Fremont, California factory was “essential” until authorities forced him to close it; then he reopened it in defiance of health orders. As Tesla CEO, Musk has a long history of opposing the unionization of workers, presiding over a high rate of worker injuries (which the company tried to cover up), and even having a former worker hacked and harassed after he became a whistleblower. Meanwhile, Bezos has a similar history of abusing Amazon workers. Amazon’s warehouses are known for having higher injury rates than the industry average, the company has fought unionization, and the stories of the terrible conditions experienced by workers are legendary. During the pandemic, that has continued, with the company failing to enforce social distancing or provide adequate protective equipment until workers began walking out, refusing to be open about infection information, and firing workers who dared criticize the company, all while Bezos’s wealth has increased by more than $30 billion. But it goes beyond that, because the worldviews of these billionaires began to be formed long before they started the empires they currently lord over. Musk did not have a regular childhood, but rather a wealthy upbringing in apartheid South Africa. His father was an engineer and owned part of an emerald mine in Zambia, telling Business Insider, “We were very wealthy. We had so much money at times we couldn’t even close our safe.” In Elon Musk: Tesla, SpaceX, and the Quest for a Fantastic Future, Ashlee Vance describes how Musk got money from his father when he was starting one of his original ventures. He also had a particular admiration for his grandfather, who moved to apartheid South Africa from Canada after rallying “against government interference in the lives of individuals.” Bezos has a not dissimilar story. His father was a well-off oil engineer in Cuba while Fulgencio Batista was in power. In Bit Tyrants, Rob Larson explains that Bezos’s father left the island after the Cuban Revolution and passed his libertarian views down to his son. Bezos’s parents invested nearly $250,000 in Amazon in 1995 as it was getting started. These space barons made their billions through the exploitation of their workers and came from well-off backgrounds made possible from resource extraction. When digging into their visions for a future in space, it’s clear that they seek to extend these conditions into the cosmos, not challenge them in favor of space exploration for the benefit of all. The Future They Want Musk and Bezos are the leading drivers of the modern push to privatize and colonize space through their respective companies, SpaceX and Blue Origin. Their visions differ slightly, with Musk preferring to colonize Mars, while Bezos has more interest in building space colonies in orbit. In 2016, Musk claimed he would begin sending rockets to Mars in 2018. That never happened, but it hasn’t ended his obsession. Musk is determined to make humans a multi-planetary species, framing our choice as either space colonization or the risk of extinction. Bezos says that Earth is the best planet in our solar system, but if we don’t colonize space we doom ourselves to “stasis and rationing.” These framings serve the interests of these billionaires, and make it seem like colonizing space is an obvious and necessary choice when it isn’t. It ignores their personal culpability and the role of the capitalist system they seek to reproduce in causing the problems they say we need to flee in the first place. Billionaires have a much greater carbon footprint than ordinary people, with Musk flying his private jet all around the world as he claims to be an environmental champion. Amazon, meanwhile, is courting oil and gas companies with cloud services to make their business more efficient, and Tesla is selling a false vision of sustainability that purposely serves people like Musk, all while capitalism continues to drive the climate system toward the cliff edge. Colonizing space will not save us from billionaire-fueled climate dystopia. But these billionaires do not hide who would be served by their futures. Musk has given many figures for the cost of a ticket to Mars, but they’re never cheap. He told Vance the tickets would cost $500,000 to $1 million, a price at which he thinks “it’s highly likely that there will be a self-sustaining Martian colony.” However, the workers for such a colony clearly won’t be able to buy their own way. Rather, Musk tweeted a plan for Martian indentured servitude where workers would take on loans to pay for their tickets and pay them off later because “There will be a lot of jobs on Mars!” Bezos is even more open about how the workforce will have to expand to serve his vision, but has little to say about what they’ll be doing. His plan to maintain economic “growth and dynamism” requires the human population to grow to a trillion people. He claims this would create “a thousand Mozarts and a thousand Einsteins” who would live in space colonies that are supposed to house a million people each, with the surface of Earth being mainly for tourism. Meanwhile, industrial and mining work would move into orbit so as not to pollute the planet, and while he doesn’t explicitly acknowledge it, it’s likely that’s where you’ll find many of those trillion workers toiling for their space overlord and his descendants. Space Shouldn’t Serve Capitalists In 1978, Murray Bookchin skewered a certain brand of futurism that sought to “extend the present into the future” and desired “multinational corporations to become multi-cosmic corporations.” Much of this future thinking obsesses about possible changes to technology, but seeks to preserve the existing social and economic relations — “the present as it exists today, projected, one hundred years from now,” as Bookchin put it. That’s at the core of the space billionaires’ vision for the future. Space has been used by past US presidents to bolster American power and influence, but it was largely accepted that capitalism ended at the edge of the atmosphere. That’s no longer the case, and just as past capitalist expansions have come at the expense of poor and working people to enrich a small elite, so too will this one. Bezos and Trump may have a public feud, but that doesn’t mean that their mutual interest isn’t served by a renewed US push into space that funnels massive public funds into private pockets and seeks to open celestial bodies to capitalist resource extraction. This is not to say that we need to halt space exploration. The collective interest of humanity is served by learning more about the solar system and the universe beyond, but the goal of such missions must be driven by gaining scientific knowledge and enhancing global cooperation, not nationalism and profit-making. Yet that’s exactly what the space billionaires and American authoritarians have found common cause in, with Trump declaring that “a new age of American ambition has now begun” at a NASA press briefing just hours before cities across the country were placed under curfew last week. Before space can be explored in a way that benefits all of humankind, existing social relations must be transformed, not extended into the stars as part of a new colonial project.

#### Private control of space replaces democracy with technocracy. Mars should stay *red*, not become a racist country club

Spencer 17

(Keith A. Spencer is a freelance writer and graduate student from the Bay Area. <https://www.jacobinmag.com/2017/02/mars-elon-musk-space-exploration-nasa-colonization> , 2-5)

\*\*bracketed for gendered language in text

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

#### Private entities in space lock in warming – an emphasis on profits over the populous cements in irreversible climate change via space tourism

Gammon 7-19-21

Katharine Gammon (award-winning independent science journalist, attended MIT and Princeton University.), 7-19-2021, "How the billionaire space race could be one giant leap for pollution," https://www.theguardian.com/science/2021/jul/19/billionaires-space-tourism-environment-emissions, // HW AW

How the billionaire space race could be one giant leap for pollution 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](https://www.theguardian.com/science/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](https://www.reuters.com/lifestyle/science/virgin-galactics-branson-ready-space-launch-aboard-rocket-plane-2021-07-11/), shortly after his flight. “Welcome to the dawn of a new space age.” Already, people are buying tickets to space. Companies including [SpaceX](https://www.theguardian.com/science/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”](https://www.npr.org/2021/07/15/1016510564/blue-origin-space-18-year-old-bezos-oliver-daemen-netherlands). 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](https://www.theguardian.com/science/space) Launch System. Those fuels emit a variety of substances into the atmosphere, including carbon dioxide, water, chlorine and other chemicals. The carbon emissions from rockets are small compared with the aircraft industry, she says. But they are increasing at nearly 5.6% a year, and Marais has been running a simulation for a decade, to figure out at what point will they compete with traditional sources we are familiar with. “For one long-haul plane flight it’s one to three tons of carbon dioxide [per passenger],” says Marais. For one rocket launch 200-300 tonnes of carbon dioxide are split between 4 or so passengers, according to Marais. “So **it doesn’t need to grow that much more to compete with other sources**.” Right now, the number of rocket flights is very small: in the whole of 2020, for instance, there were 114 attempted orbital launches in the world, according to Nasa. That compares with the airline industry’s more than 100,000 flights each day on average. But emissions from rockets are emitted right into the upper atmosphere, which means they stay there for a long time: two to three years. Even water injected into the upper atmosphere – where it can form clouds – can have warming impacts, says Marais. “Even something as seemingly innocuous as water can have an impact.” Closer to the ground, all fuels emit huge amounts of heat, which can add ozone to the troposphere, where it acts like a greenhouse gas and retains heat. In addition to carbon dioxide, fuels like kerosene and methane also produce soot. And in the upper atmosphere, the ozone layer can be destroyed by the combination of elements from burning fuels. “While there are a number of environmental impacts resulting from the launch of space vehicles, **the depletion of stratospheric ozone is the most studied and most immediately concerning,”** wrote Jessica Dallas, a senior policy adviser at the New Zealand Space Agency, in an analysis of [research on space launch emissions](https://www.sciencedirect.com/science/article/abs/pii/S0959652620302560) published last year. Another [report from 2019](https://aerospace.org/sites/default/files/2018-05/RocketEmissions_0.pdf) penned by the Center for Space Policy and Strategy likened the space emissions problem to that of space debris, which the authors say creates an existential risk to the industry. “Today, launch vehicle emissions present a distinctive echo of the space debris problem. Rocket engine exhaust emitted into the stratosphere during ascent to orbit adversely impacts the global atmosphere,” they wrote. “We just don’t know how large the space tourism industry could become,” says Marais. A new market report estimates that the global suborbital transportation and space tourism market is estimated to reach $2.58bn in 2031, growing 17.15% each year of the next decade. “The major driving factor for the market’s robustness will be focused efforts to enable space transportation, emerging startups in suborbital transportation, and increasing developments in low-cost launching sites,” the [report](https://www.prnewswire.com/news-releases/outlook-on-the-sub-orbital-transportation-and-space-tourism-global-market-to-2031---featuring-blue-origin-spacex-and-virgin-galactic-among-others-301333701.html) says. In the past, most space transportation has been focused on cargo supply missions to the International Space Station and satellite launch services, but currently, this focus has shifted to in-space transportation, planetary explorations, crewed missions, suborbital transportation and space tourism. Several companies, including SpaceX, Blue Origin and Virgin Galactic, have been focusing on developing platforms such as rocket-powered suborbital vehicles that will enable the industry to carry out suborbital transportation and space tourism. People have pointed out that **the money these billionaires have poured into space technology could be invested in making life better on our planet, where wildfires, heatwaves and other climate disasters are becoming more frequent as the globe warms up in the climate crisis**. “Is anyone else alarmed that billionaires are having their own private space race while record-breaking heatwaves are sparking a ‘fire-breathing dragon of clouds’ and cooking sea creatures to death in their shells?” the former US Labor Secretary Robert Reich [tweeted](https://twitter.com/RBReich/status/1413266215385001986) last week. Marais says that there is always an element of excitement to new developments in space – **but it’s still possible to be responsible while doing something exciting**. She urges caution as the space tourism industry grows, and says **there are currently no international rules around the kinds of fuels used and their impact on the environment.** “We have no regulations currently around rocket emissions,” she says. “**The time to act is now – while the billionaires are still buying their tickets.”**

#### Private spaceflight ravages the environment- climate change

Savage 12-20-21

(Luke, <https://jacobinmag.com/2021/12/billionaire-space-flights-superrich-carbon-emissions-global-warming-inequality>)

Earlier this month, the World Inequality Lab, founded by Thomas Piketty, among others, released its annual data on inequalities of wealth, income, gender, and ecology. As usual, the report is expansive and worth reading in full. A particular highlight, however, comes in the section on global carbon inequality, which extensively details the disproportionate share of carbon emissions produced by the superrich. While people in wealthy countries do tend to emit more as a group, the very richest people worldwide are truly in a category of their own: taken as a whole, in fact, those in the global top 1 percent of income account for some 15 percent of emissions — more than double the share of those in the bottom half. The reasons for this are straightforward enough. The lifestyles of the ultra-wealthy, almost by definition, involve consumption habits and patterns of behavior that carry a much bigger carbon footprint. As the Financial Times’ Stefan Wagstyl succinctly put it this summer: “Almost everything the wealthy do involves higher emissions, from living in bigger houses to running larger cars and flying more often, especially by private jet. Eating meat comes into it, as does owning a swimming pool. Not to mention a holiday home. Or homes.” It’s hard to imagine a starker illustration of carbon inequality than the recent phenomenon of recreational space flights, like those undertaken by Jeff Bezos’s Blue Origin, Richard Branson’s Virgin Galactic, or Elon Musk’s SpaceX earlier this year — flights whose ambition was clearly to mainstream the whole idea of commercial space travel so that it can eventually become a more common (and perhaps profitable) enterprise. So, just how much carbon do such flights emit? Dig into this year’s World Inequality Report and you’ll find the astonishing estimate that a single, eleven-minute space flight emits at least seventy-five metric tons of carbon per passenger (according to researchers, this is actually an extremely conservative estimate, and the figure may well be in the range of two hundred fifty to a thousand metric tons per passenger). For comparison, the report’s data shows that as many as 1 billion people emit less than a single metric ton per year — meaning that a single passenger on a short space flight produces more carbon pollution in a few minutes than people belonging to roughly one-eighth of the global population will throughout their entire lifetimes. Were commercial space travel to successfully expand beyond brief, suborbital flights, to lengthier trips or even prolonged orbital stays, it’s both easy — and terrifying — to imagine how much more significant the carbon footprint would quickly become. As it stands, at least one company is currently boasting of its plans to build and launch a luxury space hotel before the decade’s end. If those plans succeed as currently written on paper, the so-named Voyager Station will house nearly three hundred guests and more than a hundred crew members, putting the pollution produced by private space travel on an entirely new scale. It’s as yet unclear, of course, whether commercial space flight can actually represent a viable or profitable business model in the decades ahead. What is clear is that the ever-rising consumption habits of the extremely wealthy are already placing an unsustainable burden on the global climate — and that private space travel undertaken on a larger scale could effectively represent a death sentence for the planet.

### Contention 2: A New Hope

#### Capitalism is not natural or inevitable, extending it to space is a disastrous political choice.

Penny 20

(ELEANOR PENNY is a writer, poet and essayist based in London. She is a senior editor at Novara Media, <https://inthesetimes.com/article/space-privatization-future-technology-silicon-valley-elon-musk-jeff-bezos>, 12-17)

\*\*bracketed for gendered language

Space is our birthright. ​“Americans should have the right to engage in commercial exploration, recovery and use of resources in outer space,” President Donald Trump wrote April 6, 2020, issuing the ​“Executive Order on Encouraging International Support for the Recovery and Use of Space Resources.” In the stroke of a pen, Trump planted the U.S. flag on ​“the Moon, Mars and other celestial bodies.” As Trump declared these space lands and resources open for business, you could hear the cheers — mostly from ​“moonshot” corporations that have clamored to sweep away the patchy, unregularized Cold War-era space law in favor of new, unregulated corporate plunder of the solar system. While the institution of private land ownership is now widely taken for granted, it was — like many so-called natural things — invented. Before the muddied, grueling transition from feudalism to capitalism, peasants in Britain and much of Western Europe depended on their right to farm, forage and harvest on common, community lands. The land was controlled by local lords, but it belonged (in a loose, de facto sense) to the communities living on it and dependent upon it. Eventually, common lands were ​“enclosed” and became the private property of aristocrats. This exclusive right to land use (to own and profit from land) was the contrivance that established the new economic order. No longer held in common, the planet’s resources were parceled off to strictly private hands. No longer could peasants scrape by, subsisting on the commons. Instead, they depended on the grace and favor of a wage. Life in feudal times was no bucolic idyll, but enclosure was synonymous with disaster, destitution and death for many people. This model was mirrored in the capture, theft and enclosure of colony lands, the people (and resources) of which fueled the early capitalist transition and later the industrial revolution. Capitalism must grow to persist, and as it grows it must transform ripe, unregularized commons into private fiefdoms — at home and afar. So it seems only ​“natural” to carve up the moon into stretches of valuable real estate, just like Manhattan and the metal mines in the Democratic Republic of Congo. After all, Earth’s resources dwindle by the day, and boundless resources beyond the stratosphere could be a backstop for planetary scarcity. Never mind that our crisis of resources is, in part, the result of this system of private ownership that rewards ruthless, short-term profiteering at the expense of the long-term survival of the natural commons. This future access to a new natural commons is now a stress test on governmental priorities. As Trump proclaimed, ​“Outer space is a legally and physically unique domain of human activity, and the United States does not view it as a global commons.” Trump’s executive order to ​“encourage international support for the public and private recovery and use of resources in outer space” heralds yet another public-private boondoggle, where nominally public institutions thrash out fresh boundaries of corporate activity. As an example, look no further than SpaceX’s Crew Dragon capsule, which successfully transported NASA astronauts Bob Behnken and Doug Hurley to the International Space Station on May 31, 2020. The NASA-SpaceX crossover branding leaves no room for misinterpretation: The next small steps for [hu]mankind will be giant leaps for corporate America. Elon Musk, who founded SpaceX in 2002, talks misty-eyed about a relatively near future when humanity will have risen out of the mud, setting its sights on colonizing Mars — with SpaceX transportation rocketing there. In 2020, Musk began launching a cavalcade of thousands of satellites into low-Earth orbit to form the Starlink satellite system. As of November 2020, nearly 900 satellites had been launched (42,000 are planned in total). This network will potentially seed an extraplanetary monopoly for key economic infrastructure, such as domestic internet access. Fellow billionaire escapist Jeff Bezos, Amazon CEO, has been romanced by the wealth among the stars as well, founding his own aerospace company, Blue Origin, back in 2000. ​“We are going to build a road to space,” Bezos said in 2019. ​“And then, amazing things will happen.” Bezos has invited us all to cosplay his daydreams with the Amazon-funded, interplanetary sci-fi thriller The Expanse, in which a roll call of stock anti-heroes (the rogue policeman, the war-beleaguered pilot, etc.) tumble through a far future when only wise plutocratic innovators can plumb interstellar riches and deliver the solar system from interstellar war. Microsoft, too, has its fingers in the intergalactic pie, launching Azure Orbital in September 2020 to enable satellite operators on its cloud computing platform, along with a SpaceX partnership the following month. According to Forbes, 2019 was a record year for private space investments, with ​“venture capitalists [investing] $5.8 billion in 178 commercial space startups worldwide.” As Earth’s billionaires burnish the power of new stratospheric tech, Trump launched Space Force, the first new branch of the U.S. military in more than seven decades. ​“Space is the world’s newest war-fighting domain,” Trump said. ​“Amid grave threats to our national security, American superiority in space is absolutely vital.” Space exploration has long been tied to military ambition. From its Cold War founding, NASA’s task was to advance the practical interests of the American state as it squared off against the Soviet behemoth. The new field of battle included space-guided missiles and satellite technology. Astronauts are still generally selected from the ranks of the military. Grumman (now better known as half of Northrop Grumman) made parts for both the NASA spacecraft that leapt into the great unknown and the military machines that waged war in Vietnam. As the shadow of nuclear war retreats in the bright light of a digital dawn, the mission of Space Force is to protect the economic and military infrastructure (communications and surveillance technology) seemingly threatened by rival global powers (namely, Russia and China) gearing up their own military space operations. The 1967 Outer Space Treaty, signed by the United States, the United Kingdom and the Soviet Union, attempted to guard against the militarization and the privatization of our shared stratosphere. The treaty limited governmental (and non-governmental) bodies from sending nuclear weapons into space and prohibited the annexation of the moon and temptingly mineral-rich asteroids. As the treaty outlined, any country could use and explore outer space but there could be no ​“appropriation” of astral territory. It was, at heart, a disarmament treaty — one whose ropey legalities were enforced by the now-defunct Cold War brinkmanship between its main two signatories. The treaty never foresaw the dizzying rise of private enterprise clamoring for a slice of the sky. Nor did it foresee the slow shelving of publicly funded U.S. space exploration (especially the manned variety) that would allow venture capitalists to stake their claim in a new space scramble.

#### Post-capitalist space exploration inevitably leads to the extreme taxation of the rich as well as a redistribution of funds towards NASA

Robinson 18

(Kim Stanley, <https://inthesetimes.com/article/kim-stanley-robinson-space-exploration-socialism-mars>, 4-22)

So how should progressives think about SpaceX? They should be grateful that at least one billionaire is interested in space science. Actually there’s more than one. But I think it’s legitimate to go further and ask, ​“Why are there people as rich as this anyway?” Why aren’t there progressive taxes on both income and capital assets, as economist Thomas Piketty suggested, such that the richest people max out at a certain nicely high number, beyond which wealth is passed through to the collective that made it? People and corporations could be taxed at the high rates we had under the Eisenhower Administration, for instance, with perhaps the additional perk that individuals could choose which government programs some portion of their taxes would go to — a kind of direct democracy support for the different functions of government. If the various agencies’ funding was partly a matter of popular ​“vote by taxes,” rather than entirely the result of Congress’ corrupted appropriation process, then it would be interesting to see how much money NASA ended up with, as well as the National Science Foundation (NSF), National Institutes of Health (NIH) and so on. If you were president, would your budget proposal put money toward these agencies? I would look at the relative worth of each agency and how much of a budget increase it could handle. My proposal would suggest that NASA be funded at about $100 billion a year (currently it’s $20 billion), taken out of the Pentagon budget (currently $770 billion a year), because many of the same industries support and are supported by both agencies. I’d fund NSF at $200 billion a year (currently $7 billion), and the Department of Energy at $100 billion. NIH $200 billion a year. Then I’d let the scientists figure out how best to spend that money. They would have to scramble at first to find enough worthy projects — a good problem to have. Putting humans on Mars would be low on my list. Our robots are doing fine there. I’d like to see robotic explorers sent to the moons of Jupiter and Saturn first. What does post-capitalist space exploration look like? It looks like NASA. It’s government, exploring a commons of sorts, doing it in the usual ​“of the people, by the people and for the people” way.

#### Nationalization of space replaces dystopian, militaristic visions with educational, valiant ones. Space has the possibility to transform national competition but must be vested from private hands

Roberts 21

(Spencer Roberts is a science writer, musician, ecologist, and rooftop solar engineer from Colorado. <https://www.jacobinmag.com/2021/09/socialist-space-exploration-publicly-funded-nasa-education-futurism> , 9-8)

In 1961, Soviet cosmonaut Yuri Gagarin flew higher and orbited longer than Richard Branson and Jeff Bezos combined aboard Vostok 1, the world’s first piloted space flight. Upon his return to Earth, Gagarin became a global celebrity, traveling the world and recounting what it felt like to drift weightless and see the planet from above. For a brief moment, he transcended the boundaries of the Cold War, greeting cheering crowds in both Soviet and US-allied countries, capturing our collective fascination with the cosmos. The Vostok mission was meticulously planned and engineered, its cosmonauts trained for years. Its successor, Soyuz 1, was a different story. The 7K-OK spacecraft had been hastily constructed, its three unmanned flight tests all ending in failure. According to one account, Gagarin helped detail over two hundred structural concerns in a report urging the flight be called off. It’s rumored that he even tried to take his fellow cosmonaut Vladimir Komarov’s place piloting the doomed mission. In the end Komarov’s parachute failed to deploy and he burst into flames on reentry, plummeting at forty meters per second into the Earth. In aeronautics, the margin between triumph and tragedy is narrow. While hubris may have been Soyuz 1’s fatal flaw, the pursuit of profit has similarly incentivized corner cutting in the US space program. NASA, once the crown jewel of the public sector, has been slowly sold off to private contractors in the neoliberal era. Since 2020, NASA astronauts have ridden SpaceX Falcon 9 rockets into orbit, a model that has raised safety concerns among engineers and logged more failures since its debut in 2006 than the space shuttle did in thirty years. Recently, another NASA contractor, Virgin Galactic, was grounded for investigation by the Federal Aviation Administration after its pilots failed to notify the agency that its celebrated Unity flight was veering into commercial airspace. Mission objectives have changed as well. While perhaps always mythic, the once allegedly valiant aspirations of the space program have given way to openly touristic and militaristic goals. Corporations pursuing commercial space flight have received billions in public financing, and the US Space Force alone already has nearly three quarters the total budget of NASA. The true ethos of space exploration, however, is one of public works and education. Peering into the void of space inspires the deepest questions facing humanity: Who are we? Where do we come from? Where are we going? While a space program catering to the science fiction fantasies of billionaires is decidedly dystopian, conceptualizing space exploration as an educational mission to remotely probe the depths of the galaxy can help animate a more equitable vision of futurism. Space Exploration for the People How can space exploration serve society? Our first priority must be to decarbonize space flight. Without achieving this, the emissions that space flight generates are hardly justifiable given the state of our planet. Like the space blanket and cochlear implant, the applications of zero-carbon jet fuel would go far beyond the space program that developed it. Commercial aviation contributes an estimated 3.5 percent of effective radiative forcing — a figure that space tourism could skyrocket. Due to the weight of batteries and other logistical challenges, hydrogen fuel cells are considered one of the few viable pathways to decarbonizing long-distance flight. While some private space corporations have begun incorporating hydrogen, the fuel production is likely emissions-intensive and the technology remains proprietary. A publicly directed moonshot research program, coupled with tight restrictions on fossil-fueled rocket launches, could greatly accelerate the implementation of green hydrogen fuel cells in aviation and other difficult-to-decarbonize sectors. In addition to our atmosphere, we must respect the sanctity of orbital space, which we have littered with trash. The Defense Department’s Space Surveillance Network currently estimates there are more than twenty-seven thousand pieces of debris orbiting Earth. Yet even as their own ships run a gauntlet of garbage, billionaires are trashing space more than ever. While perhaps none match the vanity of the Tesla Roadster, competing commercial satellite networks like Musk’s Starlink and Bezos’ Project Kuiper actually pose a much greater collision threat and are also egregious sources of light pollution and electromagnetic interference. These redundant and dangerous monuments to the egos of oligarchs ought to be taken down from our skies along with other forms of space trash. Rather than granting billions in subsidies to enable this pollution, governments should instead collect the taxes that corporations like SpaceX, Blue Origin, and Virgin Galactic have evaded and use them to create public sector careers cleaning up their mess. To the extent that it is useful, publicly sponsored infrastructure in private hands should be nationalized and made accessible to all. The trade-offs between telecommunications infrastructure and preservation of dark skies highlight another core failure of NASA’s past: the lack of a planetary internationalism. In 2013, the Bolivian Space Agency and the China National Space Administration collaboratively launched the Túpac Katari 1 satellite (TKSat 1), demonstrating how easy it could be to close the space infrastructure gap between the Global North and South. The same year that the United States proposed to desecrate a Hawaiian sacred site for a telescope, Bolivia used space technology to bring internet and cell service for the first time to millions of Andean and Amazonian citizens. Since then, TKSat 1 has boosted education and development initiatives and even helped defend Bolivian democracy by relaying the transmissions of campesinos resisting the US-backed coup government in real time. Satellites can serve many other public interests, such as facilitating research that helps scientists monitor problems like climate change, deforestation, and forced labor. While today’s satellite infrastructure is used to commercialize communication and fuel mass surveillance, an international consensus to treat telecommunications and information access as public rights could instead provide free global broadband coverage with minimal infrastructure, balancing scientific advancement with our collective view of the stars. Finally, a socialist vision for space exploration could enable us to reach our full potential to venture into the unknown. History enshrines the intrepid explorers, but the true heroes of the space age are the workers at ground control. Yuri Gagarin made it home safely because of his command crews stationed from Baikonur to Khabarovsk. Apollo 13 famously called on Houston when they had a problem. Today, many of our brightest astrophysicists and aerospace engineers are swept up by military departments and weapons manufacturers. We should use their talents for science and education instead. That doesn’t mean, however, colonizing Mars. The Red Planet is a cosmic wonder, but a dreadful place for Earthlings. It has very little carbon dioxide, and no amount of terraforming will reinstate the magnetic dynamo that once deflected the solar winds now stripping away its depleted atmosphere. In fact, everything we have learned from researching Mars has reinforced the importance of protecting the fragile atmosphere of our home planet. While piloted space flights may be useful in some situations, we should place far more emphasis on collaboratively building robots like the ones that have taught us about our planetary neighbors. In today’s space race, these initiatives compete for funding. By prioritizing cooperation over colonization, however, we could pursue them all. We could attempt to retrieve raw materials for green energy infrastructure from decommissioned satellites and uninhabited asteroids instead of mines in the Global South. We could search the solar system for extraterrestrial life by flying rotorcrafts into the hydrocarbon-rich atmosphere of Titan and boring submarines into the icy subsurface ocean of Europa. We could strive for the first landing on Pluto, Eris, or even beyond — not to plant a flag, but seed a concept of what we can collectively achieve. Visions of Hopeful Futures In his final years of reflection on our Pale Blue Dot, astronomer Carl Sagan pondered, “Where are the cartographers of human purpose? Where are the visions of hopeful futures of technology as a tool for human betterment and not a gun on hair trigger pointed at our heads?” Sagan’s legacy — including the world’s first and only interstellar mission — offers a glimpse of this vision. We can choose to collaboratively probe into the depths of the cosmos, conveying collections of human knowledge, or to taxi billionaires to spend four minutes at the edge of space, indulging their fantasy of escaping the planet they’re poisoning with the very fuel propelling them. In either case, the financial, intellectual, and human costs will be borne by the public. Fortunately, if there’s one thing that space exploration has taught us, it’s that fate isn’t written in the stars. That happens down here on Earth.

#### The tradeoff is direct- tax dodging billionaires get government subsidies for space programs that only serve the elite

Pizzigati 21

(Veteran labor journalist and Institute for Policy Studies associate fellow Sam Pizzigati co-edits Inequality.org, the Institute’s weekly newsletter on our great divides. He also contributes a regular column to OtherWords, the IPS national nonprofit editorial service. <https://ips-dc.org/our-billionaires-are-blasting-off-good-riddance/>, 7-17)

Let’s enjoy the ridicule. But let’s not treat the billionaire space race as a laughing matter. Let’s see it as a wake-up call, a reminder that we don’t only get billionaires when wealth concentrates. We get a society that revolves around the egos of the most affluent among us and an economy where the needs of average people go unmet and don’t particularly matter. Characters like Elon Musk, notes Paris Max, host of the Tech Won’t Save Us podcast, are using “misleading narratives about space to fuel public excitement” and gain tax-dollar support for various projects “designed to work best — if not exclusively — for the elite.” The three corporate space shells for Musk, Bezos, and Branson — SpaceX, Blue Origin, and Virgin Galactic — have “all benefited greatly through partnerships with NASA and the US military,” notes CNN Business. Their common corporate goal: to get satellites, people, and cargo “into space cheaper and quicker than has been possible in decades past.” Branson, for his part, is hawking tickets for roundtrips “to the edge of the atmosphere and back,” at $250,000 per head. He’s planning some 400 such trips a year, observes British journalist Oliver Bullough, about “almost as bad an idea as racing to see who can burn the rainforest quickest.” The annual UN Emissions Gap Report last year concluded that the world’s richest 1 percent do more to foul the atmosphere than the entire poorest 50 percent combined. That top 1 percent, the UN report adds, would have to “reduce its footprint by a factor of 30 to stay in line” with the 2015 Paris Agreement targets. Opening space to rich people’s joyrides would stomp that footprint even bigger. Bezos and Musk seem to have grander dreams than mere space tourism. They’re looking “to colonize the cosmos,” with Bezos pushing “artificial tube-like structures floating close to Earth” and Musk talking up the terraforming of Mars. They essentially see space as a refuge from an increasingly inhospitable planet Earth. They expect tax-dollar support to make their various pipedreams come true. And how should we respond to all this? We should, of course, be working to create a more hospitable planet for all humanity. In the meantime, several egalitarian wags have been circulating online petitions that urge our terrestrial authorities not to let orbiting billionaires back on Earth. “Billionaires should not exist…on Earth or in space, but should they decide the latter, they should stay there,” reads one petition nearing 200,000 signatures. Ric Geiger, the 31-year-old automotive supplies account manager behind that effort, is hoping his petition helps the issue of maldistributed wealth “reach a broader platform.” Activists like Geiger are going down the right track. We don’t need billionaires out to “conquer space.” We need to conquer inequality.

#### There is no such thing as “space philanthropy”- private actors are interested in self promotion, not saving humanity. Their efforts directly gut government programs to allow market capture

Riederer 18

(RACHEL <https://www.jacobinmag.com/2018/07/space-barons-review-elon-musk-bezos-thai-cave>, 7-19)

Bracketed for gendered language

It is impossible for any reader living through the ravages of global warming to scan these sentiments without skepticism. If someone is going to invest enormous amounts of wealth and time in an engineering project, gathering together some of the smartest scientists on the planet to develop and test creative solutions to an intractable problem, in the interest of saving the future of humanity, how could you choose any focus but climate change? Davenport doesn’t ask, taking at face value the space barons’ declarations that they are motivated by planetary rescue. For those interested in the movement to privatize space exploration and space itself, The Space Barons does serve as a useful primer, laying out the timelines and geneses of these companies. But it stops short of posing critical questions about what it means for such enterprises to be privately held — a line of questioning that, given the history of labor problems and tendencies toward monopolization at the barons’ non-space companies Amazon and Tesla, might be very good questions to ask indeed. It instead leans heavily on colorful anecdotes about the companies’ founders and their philosophies. Bezos, obsessed with the accomplishments of NASA ever since he watched the moon landing at the age of five, commissions an underwater search party to recover the Apollo-era Saturn V rocket engines from the floor of the Atlantic. Branson evangelizes about the “life-changing” effects of experiencing space and trains for spaceflight in a spinning centrifuge, declaring the adventure “rather fun.” A young Musk floats an idea for a Martian greenhouse project straight out of the sci-fi of Kim Stanley Robinson, “a P.T. Barnum-like stunt” in which he would launch a greenhouse full of seeds and growing medium onto the surface of Mars and make the red planet bloom. A more seasoned Musk sues the US Air Force for the right to compete for national-security launches alongside established aerospace contractors like Boeing and Lockheed Martin. Running through all of these engineering and business adventures is the rivalry between Bezos and Musk. Both are working toward the same goal: developing and producing rockets that can be reused on multiple flights, making regular spaceflight more efficient. When SpaceX successfully launched — and then re-landed — the Falcon 9 for the first time, in December of 2015, Musk was ecstatic. Until he saw a tweet from Bezos offering his congratulations and saying “Welcome to the club!” Bezos had done the same, with his rocket, the New Shepard, the month before. Musk took the success of the Falcon 9 as validation of his long-term goals. “It really quite dramatically improves my confidence that a city on Mars is possible,” he said. “That’s what this is all about.” Well, it’s part of what this is all about. The desire to be beloved, to be seen as a great visionary rescuer, is what’s so grating about Musk’s recent public announcements of altruism, and it’s present throughout the history of all of the companies profiled in The Space Barons. In addition to amassing billions of dollars in personal wealth and living out their rocket-launching boyhood dreams, the space barons insist on framing their pursuits as inspirational and civic-minded. The tension in the recent dust-up over Musk’s unused Thai-cave rescue pods isn’t about whether Musk and his engineers created the rescue pods, but why. Was it a good-faith effort to help a group of desperate kids, or a megalomaniacal attempt to place himself and his companies at the center of a giant news story? Musk wants the answer to be simple, defending his behavior by insisting that “something’s messed up if this is not a good thing.” The space barons are fond of metaphors of exploration and frontiers. They compare themselves to Shackleton and Magellan. “The thing that actually gets me the most excited about it,” Musk says, “is that I just think it’s the grandest adventure I could possibly imagine. It’s the most exciting thing — I couldn’t think of anything more exciting, more fun, more inspiring than to have a base on Mars.” This enthusiasm is fine, of course. But it also shatters the notion that Musk and company are trying to thrust humanity into space to save us all from planetary disaster. Outer space, a flooded network of caves — anywhere dangerous and sparsely visited will draw to it both adventurers and rescuers. But their work proceeds differently, and someone who’s out for a grand adventure shouldn’t pretend to be a planetary EMT. Perhaps the worst thing about the space barons is that they’re burnishing their reputation by rushing into areas vacated by state divestment — divestment that in many cases, they themselves have helped promote. Witness Musk’s recent pledge to “fund fixing the water in any house in Flint that has water contamination” while lavishly contributing to the Republican Party. Musk and his brethren have hoovered up billions of dollars, funded plutocratic causes — and then balk when anyone raises a peep about their narcissistic antics. “They were driven by the business opportunities in space, by adventure, and by ego,” Davenport writes of the group he profiles. “[I]magine the Promethean legacies they’d leave after opening up the Final Frontier.” Yet Promethean legacy is a double-edge sword: the trickster who stole fire from the gods and gave it to [hu]mankind is as much a symbol of tragic consequences as of human progress.

### Contention 3: the Thanos Paradox

#### We defend the resolution: The appropriation of outer space by private entities is unjust

#### To clarify, we perform a moral calculus about whether private appropriation is just or not

#### 1. Capitalist futurism makes it easier to imagine *the end of the world* than the *end of capitalism*. We don’t need a revolutionary break, we need a progressive series of steps that redefine political economy and space is a crucial starting point. The end of capitalism isn’t *possible*, it’s *necessary*

Robinson and O’Keefe 20

(ABOUT THE AUTHOR Kim Stanley Robinson is the author of more than twenty books, including New York 2140, Red Moon, and the Mars trilogy. ABOUT THE INTERVIEWER Derrick O’Keefe is a cofounder and editor of Ricochet Media and is the author of Michael Ignatieff: The Lesser Evil? and A Woman Among Warlords, coauthored with Afghanistan’s Malalai Joya. Derrick is a longtime political organizer in Vancouver, BC. <https://www.jacobinmag.com/2020/10/kim-stanley-robinson-ministry-future-science-fiction>, 10-22)

DOK I wanted to ask you about the now-famous quote attributed to Jameson, which is actually a bit of a paraphrase: “It is easier to imagine the end of the world than to imagine the end of capitalism.” It strikes me this book is coming out in a year when it’s become pretty easy to imagine the end of things, and that the real challenge is to imagine the beginnings of some kind of socialist system. As much as The Ministry is about the future, it suggests that those beginnings we need are already here with us now and that it’s really a matter of scaling up some of those alternatives. KSR I’m a novelist, I’m a literature major. I’m not thinking up these ideas, I’m listening to the world and grasping — sometimes at straws, sometimes just grasping at new ideas and seeing what everybody is seeing. If we could institute some of these good ideas, we could quickly shift from a capitalism to a post-capitalism that is more sustainable and more socialist, because so many of the obvious solutions are contained in the socialist program. And if we treated the biosphere as part of our extended body that needs to be attended to and taken care of, then things could get better fast, and there are already precursors that demonstrate this possibility. I don’t think it’s possible to postulate a breakdown, or a revolution, to an entirely different system that would work without mass disruption and perhaps blowback failures, so it’s better to try to imagine a stepwise progression from what we’ve got now to a better system. And by the time we’re done — I mean, “done” is the wrong word — but by the end of the century, we might have a radically different system than the one we’ve got now. And this is kind of necessary if we’re going to survive without disaster. So, since it’s necessary, it might happen. And I’m always looking for the plausible models that already exist and imagining that they get ramped up. DOK The cooperative economy of Mondragon, in the Basque region, comes up as one such model in a number of your books. And in The Ministry, there is the example of Kerala, because India is so central to the book’s action as a leader of the transition to dramatic climate action. KSR I’m very interested in both these examples. I’ve actually never been to either region, but I’ve got contacts in both. In Mondragon, they are aware of me as an American science fiction writer who likes them, because my Mars trilogy books are translated into Spanish and do quite well in Spain. With Kerala, I’ve been studying it for twenty, twenty-five years. Like, why is it different and how is it different? Could it be a tail-wagging-dog situation for the rest of India? And so on. I did put places that I’ve been in the novel, because I needed some anchoring points — principally Zurich [where the titular ministry is headquartered]. My wife and I lived in Zurich for years, and I finally managed to put that into fiction, which was a great pleasure. But as for the rest of the world, and for these kinds of leftist precursors, or already existing leftist states that are at a regional or town level, I’ve often thought to myself, “Is there any reason that these can’t be taken as models?” Is there any real reason — since obviously there are ideological reasons; if you’re a defender of capitalism per se, then you would say these are outliers of sorts or too small to be relevant — but if you’re a leftist, you look at them and see the public support for what they’re doing, and you ask, “Why couldn’t that work at a larger scale?” Especially if you’re trying to imagine futures that are working better, which is what a utopian science fiction writer does, then you’re kind of desperate for real world-models. DOK When I originally heard the synopsis for this book, it struck me immediately as something like an ecosocialist Looking Backward 2000–1887. The main character in that work by Edward Bellamy had fallen asleep for over a century and then woke up in a sort of post-capitalist utopia in the year 2000. In contrast, The Ministry is more about the journey to 2050 or so, a world that is very different from today both economically and politically. How do you situate this work, and your work more broadly, within the utopian tradition? KSR Well, Bellamy’s is a good book to think about, because it had an impact in the real world. There were Bellamy clubs, and the whole progressive movement was energized by Looking Backward. I’ve steeped myself in the utopian tradition. It’s not a big body of literature, it’s easy to read the best hits of the utopian tradition. You could make a list, I mean roughly twenty or twenty-five books would be the highlights of the entire four hundred years, which is a little shocking. And maybe there’s more out there that hasn’t stayed in the canon. But if you talk about the utopian canon, it’s quite small — it’s interesting, it has its habits, its problems, its gaps. Famously, from Thomas More (Utopia) on, there’s been a gap in the history — the utopia is separated by space or time, by a disjunction. They call it the Great Trench. In Utopia, they dug a great trench across the peninsula so that their peninsula became an island. And the Great Trench is endemic in utopian literature. There’s almost always a break that allows the utopian society to be implemented and to run successfully. I’ve never liked that because one connotation of the word “utopian” is unreality, in the sense that it’s “never going to happen.” So we have to fill in this trench. When Jameson said it’s easier to imagine the end of the world than the end of capitalism, I think what he was talking about is that missing bridge from here to there. It’s hard to imagine a positive history, but it’s not impossible. And now, yes, it’s easy to imagine the end of the world because we are at the start of a mass extinction event. But he’s talking about hegemony, and a kind of Marxist reading of history, and the kind of Gramscian notion that everybody’s in the mindset that capitalism is reality itself and that there can never be any other way — so it’s hard to imagine the end of capitalism. But I would just flip it and say, it’s hard to imagine how we get to a better system. Imagining the better system isn’t that hard; you just make up some rules about how things should work. You could even say socialism is that kind of utopian imaginary. Let’s just do it this way, a kind of society of mutual aid. And I would agree with anyone who says, “Well, that’s a good system.” The interesting thing, and also the new stories to tell if you’re a science fiction novelist, if you’re any kind of novelist — almost every story’s been told a few times — but the story of getting to a new and better social system, that’s almost an empty niche in our mental ecology. So I’ve been throwing myself into that attempt. It’s hard, but it’s interesting. Homo Economicus Is a Fraud DOK Amidst and between all the action of The Ministry, there are some polemics carried out, is that fair to say? One recurrent polemic is against mainstream economics, a theme running throughout the book that there’s a need for new metrics and new indices both to quantify the biosphere and to express what we truly value rather than just GDP and the stock market. KSR There is a polemic for sure. First, I would want to make a distinction between economics and political economy, because by and large, economics as it’s practiced now is the study of capitalism. It takes the axioms of capitalism as givens and then tries to work from those to various ameliorations and tweaks to the system that would make for a better capitalism, but they don’t question the fundamental axioms: everybody’s in it for themselves, everybody pursues their own self-interest, which will produce the best possible outcomes for everybody. These axioms are highly questionable, and they come out of the eighteenth century or are even older, and they don’t match with modern social science or history itself in terms of how we behave, and they don’t value the natural biosphere properly, and they tend to encourage short-term extractive gain and short-term interests. These are philosophical positions that are expressed as though they are fixed or are nature itself, when in reality they are made by culture. Political economy is a kind of nineteenth-century thing, a more open-ended idea where we could have different systems. And that accounts for a lot of the struggles of the twentieth century. But capitalism likes to pretend that it’s nature itself, and that’s what economics is today, largely. Take the term “efficiency.” In capitalist economics, that’s just regarded as almost a synonym for “good,” but it completely depends on what the efficiency is being aimed at. You know, machine guns are efficient, gas chambers are efficient. So, “efficiency” as such does not mean “good.” It is a measure of the least amount of effort put in for the most amount gotten out. One of the things you’re seeing during the pandemic is that the global system of creating masks is efficient, but it is also fragile, brittle, and unreliable because redundancy, robustness, and resilience are all relatively inefficient, if the only rubric of efficiency is profit. Capitalist economics misunderstands and misjudges the world badly, and that’s why we’re in the mess we’re in — caught between biosphere degradation and radical social inequality. These are both natural results of capitalism as such, a result of the economic calculations we make under capitalist axioms. Distinctions have to be made here. Quantification is really part of science. Social science has some tools for understanding and generalizing from the particulars of individuals to what the group might want. Twenty-five years ago, I might have said, “Economics, we have to throw it out.” That doesn’t hold for me anymore. Economics has a set of tools. And social science tools, working with the right axioms, could make for a socialist economics. There could be a post-capitalist economic system. But what you’re then talking about is a different political economy. That’s one of the things The Ministry is about. Can you morph, by stages, from the political economy that we’re in now, which is neoliberal capitalism, to what you might call anti-austerity, to a return to Keynesianism, and then beyond that to social democracy, and then beyond that to democratic socialism, and then beyond that to a post-capitalist system that might be a completely new invention that we don’t have a name for? Right-wing thinking is supremely hypocritical and convoluted and self-contradictory, and that needs to be pushed on and pointed out at every chance. This is why I hold myself to calling it “post-capitalism,” so as not to try and define it by any of the nineteenth-century political economies. I think many of the solutions can be found in socialism, but I don’t call myself a socialist. I would want to keep it a little more open to the idea that we have to morph capitalism as such, and that we might shove it to the margins, where we might have a market for the non-necessities. I think the market itself has to be reexamined, and this is so fundamental to the way that modern society works that it’s frightening, and, for me, it’s better to think in a stepwise fashion and to imagine society from where we are now transforming to an undefined better political economy. Planetary Heat Death or the End of Capitalism — We Can Choose DOK One of the axioms of that better political economy is expressed in The Ministry as “Public ownership of the necessities, and real political representation” — two things together that we are far from having, by greater or lesser degrees, really almost everywhere today. A key part of getting from here to there, to a new political economy, involves the question of finance. In New York 2140, one of your characters is a Wall Street trader speculating on intertidal markets, and much of the action concerns finance and the banks. In The Ministry, even more radical measures are contemplated for putting finance at the service of a livable, non-submerged future. Where did you get the inspiration for Carbon Quantitative Easing and the rest of the transformation of finance imagined in this book? KSR Carbon Quantitative Easing is not my idea. I really am just a listening facility here, trying to amplify ideas. That one is out there. Recently, even Lawrence Summers — who was the treasury secretary for Bill Clinton and a neoliberal of the first order — and his think tank have been putting out stuff about some kind of CQE. So it’s been spreading quickly as an idea, and I’m glad. But in the years since I wrote New York 2140, I learned more about the central banks and realized that nationalizing the banks, which happens in 2140, wouldn’t be going far enough. It would be great if all banks were owned by the people, and if banks were not private profit-making enterprises, that would be great — but it would only be one step along the way; it would not be enough. Because, at this point, central banks are only concerned with stabilizing money and maybe helping employment levels, and they will not do anything else unless they are under enormous pressure. They need to be changed, and that’s a lot of what this novel’s about. Changing the way we regard money, that would be a step toward post-capitalism right there. If money was created from scratch but not given to the banks to loan to whatever they wanted but given to decarbonization projects first, then flowing out into the general economy — the first spending money by governments, which make money in the first place, would be targeted toward decarbonization efforts. This strikes me as a good idea, a necessary idea. Because saving the biosphere doesn’t make a profit in the capitalist order, we will never do it, and we are therefore doomed. So a very fundamental reform of how we regard money itself is absolutely necessary. I’m saying that a post-capitalist political economy that regards money as created for the public good and is spent on that first — and then trickles into the general economy — is a fundamental shift, and without it, we’re in terrible trouble. DOK A lot of the action takes place in Switzerland, as you mentioned, because many of the main characters are members of the Ministry of the Future headquartered in Zurich. Do you worry that your story could evoke right-wing tropes like the globalist, world government bogeyman that nationalists talk about to avoid action on climate change? KSR Well, maybe so, but I would say the Left has to fight fire with fire. Right-wing ideas are also conceptions of globalization, in terribly poor disguises as being nationalist. But the nationalist system is embedded in capitalism; it’s just completely international and global. These right-wingers, if they could make an extra dime an hour by selling out national citizens by sending their industries to China or India — they’d do it in a second, and they already have. So they need to be called out for being completely inconsistent and hypocritical. And the Left needs to be much more aggressive on that, and say the problem is not globalization per se; the problem is bad globalization, which is capitalism, as opposed to good globalization, which is mutual aid and cooperation among the nation states by way of international treaties and things like the UN. The Paris Agreement is crucial. It’s a major event in world history. It could turn into the League of Nations, in which case we’re screwed. Or it could turn into something new in history, a way to decarbonize without playing the zero-sum game of nation against nation. So all this needs to be fought at the level of the discursive battle, and no concessions can be made on that point. I mean, right-wing thinking is supremely hypocritical and convoluted and self-contradictory, and that needs to be pushed on and pointed out at every chance — these supposed nationalists are also going to sell you out. This discursive battle, it’s very important. DOK You talked about the Great Trench, of how we get from here to there, and it strikes me that this book is very grounded. There’s no reference to a lunar colony, let alone to any Elon Musk Inc. version of Mars, and there’s no mention of off-planet gated communities like in the film Elysium. Does this absence imply that saving the earth, or transitioning to a livable system, requires stopping the capitalist colonization of space? I kept waiting for an Elon Musk character. KSR Well, since there are 106 chapters — I guess that I could have made it 107, and I could have talked about that. But maybe the absence does speak louder than words. All of those things are fantasies, and billionaire fantasy trips are not going anywhere. In Red Moon and Aurora, I’ve made my statement about what’s possible and what isn’t. Because in the capitalist world, you have to make a profit, and even the billionaires don’t have enough money to properly fund these ventures on their own. So they talk about asteroid mining — that’s bullshit. They talk about Helium-3 mining on the moon — that’s bullshit. There is no profit in space. It’s just a fantasy of our culture right now, because everybody’s been convinced by science fiction writers [laughs], and they’re not paying attention to the numbers game, I guess. I believe in space science. I’m totally in love with NASA, and with public space science, as part of government. There’s this saying of NASA’s, “space science is Earth science,” and I totally believe that.

#### 2. Beware the space industrial complex- it’s only purpose is to bring unequal relations to the stars – futurism should be viewed with “extreme skepticism”

Savage 21

(Luke, Editor, https://www.jacobinmag.com/2021/05/spacex-blue-origin-musk-bezos-space-race-endless-frontier-act)

In its promethean quest to conquer the heavens and transcend the limitations of earthly existence, the human race may be on the cusp of reaching an historic milestone: in this case, the successful launch of a giant barrel filled with pork into outer space. Thanks in large part to the giant corporate PR machines now in the fray, the burgeoning contest for dominance of the twenty-first century space travel market tends to be perceived in the loftiest of terms: saturated with futurist mythology and defined by grandiose pronouncements about asteroid mining, multiyear voyages to Mars, and interstellar colonization. But, as this week’s wrangling in Congress suggests, the accelerating rivalry between Elon Musk’s SpaceX and Jeff Bezos’ Blue Origin is destined to play out in a decidedly less than utopian fashion. The tell, as documented in a recent report from the Intercept, is an absurd $10 billion amendment to the sinisterly titled Endless Frontier Act introduced by Washington senator Maria Cantwell. Under the highly dubious auspices of funding scientific and technological research, the cash would almost certainly go straight to Blue Origin — which last month narrowly missed out on a lucrative contract to put astronauts on the moon, and just so happens to be based in Cantwell’s home state (the contract instead went to SpaceX, a move NASA has justified with the absolute howler that it was attempting to “preserve a competitive environment”). The question at hand may officially concern lunar exploration, but the whole episode looks like a textbook case of pork barrel politics run amok. In introducing a rival amendment intended to strip the bill of its absurd $10 billion handout to Blue Origin, the famously direct junior senator from Vermont simply had this to say: “It does not make a lot of sense to me that we would provide billions of dollars to a company owned by the wealthiest guy in America.” As is typically the case, Bernie Sanders had it right: Jeff Bezos’s wealth is by this point less an actual number than a matter for philosophical debate, and there is no tenable justification for handing him public money. He was equally right in using the occasion to question the whole idea of privately led space exploration: When we were younger, and Neil Armstrong made it to the Moon, there was incredible joy and pride in this country that the United States of America did something people had forever thought was impossible: we sent a man to the Moon … an extraordinary accomplishment for all of humanity, not just the United States…. I worry very much that what we are seeing now is two of the wealthiest people in this country — Elon Musk and Mr. Bezos — deciding that they are going to take control over our [efforts] to get to the Moon and, maybe, even the extraordinary accomplishment of getting to Mars…. I have a real problem that, to a significant degree, we are privatizing that effort…. This is something that … all of us should be part of, and not simply a private corporate undertaking. As the free market innovates its way to monopolistic control of the solar system by the Earth’s two richest men, it remains as yet unclear how far both technology and capitalism will actually allow the billionaire-dominated venture to go. Bezos and Musk, as you might expect, paint a utopian portrait of interplanetary colonies and abundant life flourishing off-world. Investors in speculative companies like Planetary Resources and Deep Space Industries, meanwhile, hope that the mining of precious metals from asteroids will unlock untold wealth and bring about a new industrial revolution. The most probable scenario for such efforts, of course, is also far more banal: a primary focus on control of vital infrastructure like satellites by large corporations and their billionaire owners. In the unlikely event that technology ever does allow interstellar colonization to be both possible and profitable, however, it’s safe to assume the result will look more like Blade Runner than Star Trek if people like Musk and Bezos are involved. There’s no reason to believe, after all, that extending the profit motive into outer space would yield a different set of social relations than the ones it already produces here on Earth (think orbital Tesla workhouses and overworked Amazon employees trying to relieve themselves in zero-g). Either way, this week’s absurd congressional wranglings over glorified handouts to the world’s two wealthiest men are as good a reminder as any that a privatized space race has far more to do with earthly vice than off-world utopia. Billionaires have already been allowed to devour much of the global economy. Must we let them own the solar system too?