# Ar

#### Their tech optimism is misplaced- everything needs redesign for space

RIEDERER 14

(RACHEL, Silicon Valley Says Space Mining Is Awesome and Will Change Life on Earth. That’s Only Half Right. <https://newrepublic.com/article/117815/space-mining-will-not-solve-earths-conflict-over-natural-resources> 5-19)

The “getting there first” will not be simple, or cheap. Most of the asteroids in the solar system are in the asteroid belt between Mars and Jupiter. But the orbit paths of some near-Earth asteroids, or NEAs, bring them relatively close to our planet—that is, within around 30 million miles. Planetary Resources has developed what is essentially an outer-space drone: a small telescope-equipped spacecraft, around the size of a desktop computer, that will survey near-Earth asteroids. Once an asteroid is identified and determined to be valuable, the extraction could begin, though that introduces a new set of technical obstacles. Because of the difficulty and expense of getting heavy machinery from Earth into space, some have suggested using 3D printing technology to use materials found in space to create the necessary equipment. Then, some modified version of a terrestrial mining method, like drilling or magnetic separation, could be used for the mining itself. But these extraction processes have been developed for the pressure and gravity of Earth, and they would need to be overhauled to function in the low-gravity, vacuum environment of space.

If this part of the process sounds unclear, it’s because it is. To give an idea of the scale—in time and difficulty—of these kinds of operations, consider the government’s version of asteroid prospecting. In April, NASA greenlighted a mission in which a spacecraft called OSIRIS-REx will rendezvous with an asteroid called Bennu. OSIRIS-Rex is scheduled to launch in 2016, reach the asteroid in 2018, reconnoiter it for over a year, and then bring back samples for scientific study. The amount of asteroid that NASA plans to collect after all this time and trouble? Two ounces. A major premise of private space mining companies is that they will be able to work far faster and more economically than NASA, and will be willing to take on levels of risk beyond that of a government operation, but the scale and timeline of OSIRIS-REx shows how complex these operations will be, even for the swiftest companies.

#### Astroid mining is dead, no infrastructure, no investor support

Araxia 19 “How the asteroid-mining bubble burst A short history of the space industry’s failed (for now) gold rush” by Atossa Araxia Abrahamian, Jun 26, 2019, https://www.technologyreview.com/s/613758/asteroid-mining-bubble-burst-history/

In the best of worlds, Chris Lewicki and Peter Diamandis might have changed the course of human civilization. Their startup, Planetary Resources, was launched in 2012 with the modest dream of mining asteroids for minerals, metals, water, and other valuables. The founders’ résumés and connections gave the zany idea institutional legitimacy: Lewicki had worked on major NASA missions such as the Mars Spirit and Opportunity rovers, and Diamandis was a well-known space--tourism booster. Together with a third partner, Eric Anderson, Planetary Resources had raised $50 million by 2016, of which $21 million came from big-name investors including Google’s Eric Schmidt and filmmaker James Cameron. This story is part of our July/August 2019 issue Before long, a competitor called Deep Space Industries (DSI) appeared on the scene. It raised much less cash: just $3.5 million, supplemented by some government contracts. But it had its own high-profile backers, pie-in-the-sky goals, and a particularly evangelical board member named Rick Tumlinson, who made the rounds at conferences pitching the company’s vision. “Crazy ideas: that’s what moves culture forward,” he said at a 2017 event in New York. “Nothing says this is impossible except our own belief systems.” It was sci-fi come to life—and everybody loved it. “Space mining could become a real thing!” headlines squealed. Amazon CEO Jeff Bezos began speaking of a future in which all heavy industry took place not on Earth, but above it. NASA funded asteroid-mining research; the Colorado School of Mines offered an asteroid-mining degree program; Senator Ted Cruz predicted that Earth’s first trillionaire would be made in space. “There was a lot of excitement and tangible feeling around all of these things that we’ve been dreaming about,” says Chad Anderson (no relation to Eric), the CEO of Space Angels, a venture capital fund that invests in space-related companies. Sign up for The Airlock — your gateway to the future of space technology Also stay updated on MIT Technology Review initiatives and events?YesNo Also crucial to the money-making opportunities was the burgeoning commercial space sector’s lobbying, which shepherded the SPACE Act through Congress in 2015. This not--uncontroversial bill included a “finders, keepers” rule whereby private American companies would have all rights to the bounty they extracted from celestial bodies, no questions asked. (Before that, property rights and mining concessions in space, which belongs to no country, were not a given.) That, in turn, would make it possible to work toward a goal that Eric Anderson predicted could be reached by the mid-2020s: extracting ice from asteroids near Earth and selling it in space as a propellant for other missions. Water can be broken into hydrogen and oxygen to make combustible fuel, or—as in DSI’s technology—just heated up and expelled as a jet of steam. “Both companies believed one of the early products would be propellant itself—that is, water,” says Grant Bonin, the former chief technology officer of Deep Space Industries. “What DSI had been doing is developing propulsion systems to run on water. And everyone who buys one is creating an ecosystem of users now that can be fueled by resources of the future.” By the spring of 2017, Planetary Resources was operating a lab in a warehouse in Redmond, Washington, decorated with NASA paraphernalia and vintage pinball machines. Engineers tinkered with small cube satellites behind thick glass walls, crafting plans to launch prospecting machines. Luxembourg had given the company a multimillion-dollar grant to open a European office. Japan, Scotland, and the United Arab Emirates announced their own asteroid-mining laws or investments. The stars had burned through their red tape. The heavens were ready for Silicon Valley. Then things started going south. Last summer, Planetary failed to raise the money it was counting on. Key staffers, including Peter Marquez, the firm’s policy guy in Washington, had already jumped ship. “We were all frustrated about the revenue prospects, and the business model wasn’t working out the way we’d hoped,” recalls Marquez, who now works for a Washington, DC, advisory shop called Andart Global. “There was more of a focus on the religion of space than the business of space,” Marquez adds. “There’s the religious [segment] of space people who believe that almost like manifest destiny, we’re supposed to be exploring the solar system—and if we believe hard enough, it’ll happen. But the pragmatists were saying there’s no customer base for asteroid mining in the next 12 to 15 years.” A conceptual illustation of asteroids CHRISSIE ABBOT Amid rumors that it was auctioning off its gear, Planetary Resources was acquired last year by ConsenSys, a blockchain software company based in Brooklyn that develops decentralized platforms for signing documents, selling electricity, and managing real estate transactions, among other things. Anderson Tan, an early investor in Planetary Resources, was baffled by the acquisition—and he’s the kind of blockchain guy who promotes other blockchain guys’ blockchain ventures on LinkedIn. “I honestly have no idea … I was shocked. I think they wanted to acquire the equipment and assets,” he says. “For what? I’m not so sure.” DSI, in turn, was acquired by an aeronautics company named Bradford Space. These acquisitions aren’t taking the companies anywhere. “They’re gone; they’re done. They don’t exist,” says Chad Anderson. The lack-of-vision thing What went wrong? Predictably, ex--employees and investors tell slightly different stories. Bonin blames DSI’s demise on investors’ unwillingness to take long-term risks. “We had a plan that would take off after a certain point, and we didn’t get to that point,” he explains. “And we were only $10 million away from hitting that point, but our planning was decades long, and a VC fund’s life cycle is one decade long. They’re incompatible.” Meagan Crawford, who worked with Bonin and is now starting her own venture capital fund for commercial space startups, concurs: “A traditional VC time line is 10 years, when they have to give money back to investors, so in seven years they want to exit. A 15-year business plan isn’t going to fit in.” On the money side, the story is a little less forgiving. “They did not deliver on their promises to investors,” says Chad Anderson, whose Space Angels invested in PR. “Both companies were really good at storytelling and marketing and facilitating this momentum around a vision that their technology never really substantiated.” He adds, “I think that these weren’t the right teams to do it.” There were also bigger structural obstacles—such as, in former employees’ telling, the lack of any infrastructure for an asteroid--mining industry. That put investors off, too: “If you mine an asteroid, mostly likely you’ll [have to] send it to the moon to process it. It wouldn’t be processed on Earth, because the cost would be tremendous,” says Anderson Tan. “So then it’s like a chicken-and-egg problem: do we mine first and then develop a moon base, or invest in building up the moon and then go to asteroid mining?” On the money side, the story is a little less forgiving. Finally, asteroid miners had to compete for funding with a proliferating number of other space-related ventures. Between 2009—“the dawn of the entrepreneurial space age”—and today, “we’ve gone from a world with maybe a dozen privately funded space companies serving one client, the government, to one with more than 400 companies worth millions of bucks,” Chad Anderson says. So if commercial space startups seemed like an out-there proposition in 2012, by 2018 VCs who wanted space in their portfolios could have their pick of companies with better short-term prospects: telecom startups selling internet access, for instance, or firms analyzing the much-more-accessible moon. “The bottom line is that space is hard,” says Henry Hertzfeld, the director of the Space Policy Institute at George Washington University. (Hertzfeld advised Planetary Resources on legal matters; the space world, on Earth, is still very small.) “It’s risky, it’s expensive; lots of high up-front costs. And you need money. You can get just so much money for so long.” To succeed, says Hertzfeld, the companies would have needed to make a profit from other uses of their technology—such as DSI’s water propulsion system, which could be used in satellites, and PR’s hyperspectral sensors, which it built to analyze the composition of asteroids but can also be put to work surveying the Earth. “But they didn’t generate the revenues,” he says, “and there’s a limited amount of time for a company to exist without a profit.” According to Space Angels, $1.7 billion in equity capital poured into space companies in the first quarter of 2019, nearly twice as much as in the last quarter of last year. Of that, 79% went toward satellite businesses and 14% to logistical operations, like rocket launches. The fund’s own interests mirror these trends. “The commercial space industry is maturing to the point where it’s more serious now,” says Peter Ward, the author of The Consequential Frontier, a forthcoming book about the privatization of space. “Some of the people I talked to now see asteroid mining as a bit of a joke.” Building a new frontier In spite of these failures, former asteroid miners sound remarkably chipper about their prospects—and humanity’s interstellar future. Asteroid mining was a gateway drug for high hopes and big dreams. Tamara Alvarez, a doctoral student at the New School in New York who has attended space conferences around the world, says that the rhetoric around space mining maps perfectly onto older frontier tropes. “The mining thing resonated with a lot of people because of the gold rush narrative. There’s something unconscious there that they tapped into,” she says. Similarly, though neither asteroids nor 19th-century California actually created many overnight billionaires, they did create frameworks for how an economy based on a particular resource would function. “There wasn’t all the gold in California, but it brought an infrastructure that people made money off of,” says Alvarez. “Services, fishing—all this grew out of ambitions for gold. With asteroids, it’s the same thing: when you get the idea that there’s all the gold or whatever you need waiting for you, the infrastructure gets built too.” The asteroid miners seem to have thought of it that way. “I think when DSI and PR got started, the headlines all said asteroid-mining [companies] were like [traditional] mining companies,” says Grant Bonin. “But internally we’d joke: We’re not miners yet. We’re the pickax and shovel or Levi’s jeans of space. We’re the creators of tools that were brought into existence that would support the vision, but also help a lot of other people to do a lot more.” Equally significant is that the prospect of asteroid mining pushed governments to think about property rights in space. “The horizon for asteroid mining is still a couple of decades off, but I do think we’re going to do Mars missions, and we’ll need resources in space,” says Marquez. “And thanks to asteroid mining, the policy framework’s been established.”

#### Climate) Innovation picks up pace post-capitalism – we integrate the global south and socialize risk and reward

Smith 15

Tony Smith (Prof of Philosophy and author of “Technological Capital”), 3-31-2015, "Red Innovation," No Publication, [https://jacobinmag.com/2015/03/socialism-innovation-capitalism-smith //](https://jacobinmag.com/2015/03/socialism-innovation-capitalism-smith%20//) Comrade HW AW

The technological dynamism of capitalism has always been a powerful argument in its defense. But one of its secrets is that at the heart of this change we find neither bold entrepreneurs, venture capitalists, nor established firms. Investments pushing the frontiers of scientific knowledge are just too risky. The advances sought may not be forthcoming. Those that do occur may not ever be commercially viable. Any potentially profitable results that do arise may take decades to make any money. And when they finally do, there are no guarantees initial investors will appropriate most of the resulting windfall. There is, accordingly, a powerful tendency for private capital to systematically underinvest in long-term research and development. Despite popular perceptions that private entrepreneurs drive technological innovation, the leading regions of the global economy do not leave the most important stages of technological change to private investors. These costs are socialized. In the quarter-century after World War II, the high profits garnered by American corporations due to their exceptional place in the world market allowed corporate labs to engage in “[blue-skies research](http://scienceogram.org/in-depth/blue-skies-research/)” projects. But even then, public funding accounted for roughly two-thirds of all research and development expenditures in the United States, creating the foundations for the high-tech sectors of today. With the rise of competition from Japanese and European capital in the 1970s, private-sector funding of research and development increased. However, long-term projects were almost entirely abandoned in favor of product development and applied-research projects promising commercial advantages in the short-to-medium term. Basic research continued to be funded by the government, like the work in molecular biology that supported the move of agribusiness companies into biotechnology. The same was true for projects of special interest to the Pentagon — the developments associated with the [Defense Advanced Research Projects Agency](http://www.darpa.mil/our_work/), for instance, which paved the way for modern global positioning systems — and other government agencies. But medium-to-long-term R&D in general was in great danger of falling into a “valley of death” between basic research and immediate development, with neither the government nor private capital providing significant funding for it. For all their rhetoric touting the “magic of the marketplace,” those in the Reagan administration recognized market failure when they saw it. They began to offer federal and publicly funded university laboratories various carrots and sticks to undertake long-term R&D for US capital. New programs were created to provide start-ups with resources to develop innovations prior to the “proof of concept” required by venture capitalists. Under Reagan, the [Small Business Innovation Development Act](https://www.sba.gov/offices/headquarters/oca/resources/6827) even mandated that federal agencies set aside a percentage of their R&D budget to fund research by small firms. These and other forms of public-private partnership have granted US capital enormous competitive advantages in the world market. It’s no surprise that Apple’s tremendously successful line of products — iPads, iPhones, and iPods — incorporate twelve key innovations. All twelve (central processing units, dynamic random-access memory, hard-drive disks, liquid-crystal displays, batteries, digital single processing, the Internet, the HTTP and HTML languages, cellular networks, GPS system, and voice-user AI programs) were developed by publicly funded research and development projects. **It hasn’t been the dynamics of the market so much as active state intervention that has fueled technological change**. The Promised Golden Age Technology is more than just a weapon for inter-capitalist competition; it is a weapon in struggles between capital and labor. Technological changes that create unemployment, de-skill the workforce, and enable one sector of the workforce to be played against another shift the balance of power in capital’s favor. Given this asymmetry, advances in productivity that could reduce work time while expanding real wages lead instead to forced layoffs, increasing stress for those still employed and eroding real wages. Two ongoing technological developments further strengthen the power of capital. Advances in transportation and communication now enable production and distribution chains to be extended across the globe, allowing capital to implement “divide and conquer” strategies against labor to an unprecedented extent. Astounding new labor-saving machines are also becoming more and more inexpensive. A recent exhaustive study of over seven hundred occupations [concluded](https://www.usnews.com/news/blogs/data-mine/2014/08/18/robots-may-disrupt-half-of-all-us-jobs) that no less than 47 percent of employment in the United States is at high risk of being automated within two decades. Anything approaching this level of labor displacement will yield more misery, not progress, for ordinary workers. But the lower cost and higher capacities of machines have also led to change of a better sort. As the prices of computer hardware, software, and Internet connections have declined, many people can now create new “knowledge products” without working for big capitalists. Multitudes across the globe now freely choose to contribute to collective innovation projects of interest to them, outside the relationship of capital and wage labor. The resulting products can now be distributed as unlimited free goods to anyone who wishes to use them, rather than being scarce commodities sold for profit. It is beyond dispute that this new form of **social labor has generated** **innovations superior in quality and scale to the output of capitalist firms**. These innovations also tend to be qualitatively different. While technological developments in capitalism primarily address the wants and needs of those with disposable income, open-source projects can mobilize creative energies to address areas capital systematically neglects, such as [developing seeds](http://www.scidev.net/global/agriculture/news/open-source-seed-released-to-nurture-patent-free-food.html) for poor farmers or medicines for those without the money to buy existing medications. The potential of this new form of collective social labor to address pressing social needs across the globe is historically unprecedented. In order to flourish, however, open-source innovation requires free access to existing knowledge goods. Leading capital firms, hoping to extend their ability to privately profit from publicly supported research, have used their immense political power to extend the intellectual property rights regime in scope and enforcement, severely restricting the access open-source projects require. [Copyright](https://www.jacobinmag.com/2013/09/property-and-theft/), after all, was extended for twenty years at the turn of the century, just as Internet access was starting to balloon. Despite these barriers, the success of open-source projects shows that intellectual-property rights are not required for innovation. Further evidence is provided by the fact that most scientific and technological workers engaged in innovation are forced to sign away intellectual property rights as a condition of employment. These rights actually hamper advancement by raising the cost of engaging in the production of new knowledge, and by diverting funds to unproductive legal costs. The World is Flat? Capitalism also hampers the ability of much of the world to contribute to technological advancement. Whole regions of the global economy lack the wealth to support meaningful innovation. Today, only four countries [spend](http://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS) over 3 percent of their GDP on research and development; a mere six others devote 2 percent or more. Capital in these advantaged regions has the opportunity to establish a virtuous circle, free-riding on the extensive public investment discussed above. Privileged access to advanced R&D enables capitalists to appropriate high returns on successful innovations; these returns allow those companies to make effective use of technological advances in the next cycle, setting the stage for future profits. At the same time, enterprises in poorer regions, lacking access to high-level R&D, find themselves trapped in a vicious cycle. Their present inability to make significant innovations that would enable them to compete successfully in world markets undercuts their future prospects. Only a handful of countries — such as South Korea and Taiwan — have ever been able to move forward from this starting disadvantage. Global disparities in technological change alone do not explain why 1 percent of people in the world now [own](https://www.oxfam.org/en/pressroom/pressreleases/2015-01-19/richest-1-will-own-more-all-rest-2016) 48 percent of global wealth. But they are a major part of the story; technological change is a weapon that enables the privileged to maintain and extend their global advantages over time. Creative Non-Destruction **The destructive effects examined above are not necessary features of technological change; they are necessary features of technological change in capitalism.** **Overcoming them requires overcoming capitalism, even if we only have a provisional sense of what that might mean**. The pernicious tendencies associated with technological change in capitalist workplaces are rooted in a structure where managers are agents of the owners of the firm’s assets, with a fiduciary duty to further their private interests. But a society’s means of production are not goods for personal consumption, like a toothbrush. The material reproduction of society is an inherently public matter, as the technological development of capitalism itself, resting on public funds, confirms. Capital markets, where private claims to productive resources are bought and sold, treat public power as if it were just another item for personal use. They can, and should, be totally done away with. Large-scale productive enterprises should instead be acknowledged as a distinct type of public property, and exercises of authority within these workplaces as acts of public authority. The principle of democracy must then come into play: all exercises of this authority must be subject to the consent of those impacted by it. Though additional regulations would be needed if managers were elected and subject to recall by the workforce as a whole, **technological advances in productivity would not typically result in the involuntary unemployment of some and the overwork of others, but rather in reduced work for all.** We know this because workers say they want more time to spend with their families and friends, or on projects of their own choosing. With [democracy in the workplace](http://www.solidarityeconomy.net/2006/08/29/after-capitalism-economic-democracy-an-interview-with-david-schweickart/), the drive to introduce de-skilling technologies would be replaced with a search for ways to make work more interesting and creative. Suppose that decisions regarding the general level of new investment were also a matter for public debate, eventually decided by a democratic body. If there were pressing social needs, the overall rate of new investment could be increased; if this were not the case, it could be stabilized. These bodies could then set aside a portion of new investment funds to provide public goods free of charge, putting more useful goods and services outside the market’s reach. The public goods of scientific and technological knowledge resulting from basic research and long-term R&D would be decommodified, too, as would the fruits of open-source innovation. The latter could be unleashed by abolishing intellectual property rights and by providing an adequate [basic income](https://www.jacobinmag.com/2013/05/curious-utopias/) to all — enabling anyone who wished to participate in open-source projects to do so. If special incentives were required, generous prizes could be awarded to the first to solve important challenges. Remaining funds could then be distributed to other elected bodies at various geographical levels, each of which would determine what share would go to public goods in a region. The remainder would be distributed to local community banks charged with allocating them to worker enterprises. Various qualitative and quantitative measures could be employed to measure the extent to which those enterprises used technologies to meet social wants and needs effectively, with the results determining the income beyond the basic level received by their members (and the members of the community banks that allocated investment funds to them). Abolishing intellectual property rights would have the added benefit of ensuring that wealthy regions could not use technological knowledge as a weapon to create and reproduce inequality in the global economy. This danger would be all but eliminated if every region were granted a fundamental right to its per capita share of new investment funds. Finally, if workplaces used productivity advances to free up time for their workers rather than to increase the output of commodities, resources would be depleted and waste generated at a much lower rate. Abolishing capital markets and replacing them with democratic control over levels of new investment would free humanity from the “grow or die” imperative and the environmental consequences that follow from it. If enterprises were acknowledged as inherently matters of public concern, it would eliminate the obscene absurdity of having the fate of humanity rest on whether profit-driven oil companies have the political and cultural power to extract and sell an estimated $20 trillion of fossil-fuel reserves, as they clearly plan to do. If open-source innovation flourished, the creative energies of collective social labor across the planet could be mobilized to address environmental challenges. If poor regions with fragile ecologies were guaranteed their fair share of new investment funds, the pressure to sacrifice long-term sustainability for the sake of short-term growth would be overcome. Of course, all of these proposals are vague and provisional. Nonetheless, they show that the social consequences of technological change could be far different than they are today. We do not need private ownership of productive assets, or markets devoted to financial assets, to have a technologically dynamic society. With the necessary political shifts, technological change would no longer be associated with overaccumulation, financial crises, the stifling of open-source innovation, severe global inequality, or the increasingly palpable threat of environmental catastrophe. We need to unleash the full potential of human ingenuity. The way technology advances is already socialized in important, if restricted and inadequate ways. We can finish the job and make sure that its fruits are put to the benefit of ordinary people.

#### CCS is an L tech – better techs already exist the problem is distribution

CleanTechnica 19 https://cleantechnica.com/2019/10/29/carbon-capture-bright-promise-or-senseless-boondoggle/

The idea of carbon capture is alluring, especially for fossil fuel companies. “We can still burn all our lovely coal, oil, and gas,” they argue, “then just strip the carbon emissions from the exhaust stream and bury the stuff…somewhere.” They are a little hazy about the details. If carbon capture works they way they hope it will, they would be free to monetize all their reserves and the Earth would still be the comfortable, familiar place it has always been. Mark Z. Jacobson is a noted professor of civil and environmental engineering and director of the Atmosphere/Energy Program at Stanford University. Professor Jacobson is also a contributor to CleanTechnica. He and his colleagues have presented a plan that would bring 100% renewable energy to 139 countries around the world while creating 52 million jobs. In a recent study also published in the journal Energy & Environmental Science, Jacobson asserts that carbon capture provides no useful reduction in total carbon emissions and may, in some cases, create more carbon emissions. While carbon capture advocates claim their technology can capture up to 90% of the carbon emitted by thermal generating plants, Jacobson says that number conveniently ignores what he calls “upstream emissions” — the carbon dioxide created by extracting fossil fuels in the first place and transporting them to where they are burned. Jacobson’s study does not take into account downstream emissions — such as leakage of the carbon dioxide after it is captured. Any gas under pressure will find a way to escape if it can and carbon dioxide is no exception. CleanTechnica published a story recently showing that the emissions from wasted methane flared off by oil companies is equal to the exhaust emissions from 70,000,000 vehicles worldwide. Carbon capture proponents to ignore such upstream emissions, but Jacobson includes them. After doing so, he says 10 to 20% carbon capture at thermal plants is more realistic. Then there is the problem of powering the carbon capture equipment, which consumes significant amounts of electricity. Jacobson argues that even if that electricity comes from solar or wind, it could be put to better use than operating carbon capture systems. “Even if you have 100 percent capture from the capture equipment, it is still worse, from a social cost perspective, than replacing a coal or gas plant with a wind farm because carbon capture never reduces air pollution and always has a capture equipment cost. Wind replacing fossil fuels always reduces air pollution and never has a capture equipment cost.” “Not only does carbon capture hardly work at existing plants, but there’s no way it can actually improve to be better than replacing coal or gas with wind or solar directly,” Jacobson says. “The latter will always be better, no matter what, in terms of the social cost. You can’t just ignore health costs or climate costs.” But surely once the world transitions to 100% renewable energy, carbon capture techniques — like the one proposed by the MIT researchers — could be used to suck carbon dioxide out of the air, couldn’t they? Jacobson suggests even then the smarter investment is in options such as reforestation and reducing halogen, nitrous oxide. and methane emissions. “There is a lot of reliance on carbon capture in theoretical modeling, and by focusing on that as even a possibility, that diverts resources away from real solutions,” he says. “It gives people hope that you can keep fossil fuel power plants alive. It delays action. In fact, carbon capture and direct air capture are always opportunity costs.” Economists talk about opportunity costs all the time. The principle is simple. If you are doing A, by definition you cannot be doing B. You cannot simultaneously go to work and lie on a beach in Tahiti, for instance. Stanford vs. MIT CleanTechnica reached out to Professor Jacobson to get his reaction to the latest MIT carbon capture news and he was gracious enough to respond almost immediately. “This technology has the exact same problem as the direct air capture technology discussed in my paper in Energy & Environmental Sciences. It requires energy and it does not reduce air pollution or mining of fossil fuels. Thus, for example, renewable electricity powering it could otherwise always be used instead more efficiently to eliminate fossil fuel power plant emissions, thereby eliminating not only CO2 (which this technology is designed for), but also air pollution and mining while not having to pay for an air capture equipment cost. “In other words, it causes more health and climate damage than renewables replacing fossil fuels, so is an opportunity cost. If natural gas or grid electricity is used to power this new equipment, the problem is even worse because then we have even more CO2 and air pollution combustion and upstream emissions and mining of fossil fuels than if renewables were powering it. The bottom line is there is no free lunch, and no synthetic air capture is useful for helping to solve the climate problem.

#### Capitalist peace theory methodologically flawed- it ignores alt causes to peace, distributional effects, and has no concise definition of capitalism

Gerald Schneider in 2017

Professor of International Politics, Capitalist Peace Theory: A Critical Appraisal, Oxford Encyclopedia of Politics, DOI: 10.1093/acrefore/9780190228637.013.314, <http://politics.oxfordre.com/view/10.1093/acrefore/9780190228637.001.0001/acrefore-9780190228637-e-314>

Classic definitions of capitalism stress along these lines the extent to which capital and other productive resources are owned by private people and the profits these “capitalists” try to reap. According to Weber (1958, p. 17), “[C]apitalism is identical with the pursuit of profit, and forever renewed profit, by means of continuous, rational, capitalistic enterprise [emphasis in original].” Current contributions to CPT do not, as indicated, rely on such a minimalist definition of capitalism, rendering it difficult to establish which facet of a country makes them more peaceful both internally and externally.1 A second problem with the extant literature boils down to the observation that extant theories do not sufficiently explore how the wealth possibly created through a capitalist organization of the political leaders renders **political leaders reluctant** to use armed force. Unless one adopts a crude Marxist approach and perceives governments to be the lackeys of the capitalist class, it is the government and not Wall Street or its functional equivalents around the world that calls the shots in this regard. The lack of proper micro-foundations of the approach is all the more severe as the riches that economic openness allegedly provokes can also be used for military purposes. The relationship between development and conflict is thus indefinite (Schneider, 2014a). A third and related criticism focuses on the incomplete nature of the approach. Advocates of the CPT approach often do not differentiate between the level of economic freedom and changes towards it. This has the consequence that capitalist peace theories shy away from addressing the distributional effects that transitions to economic openness create (Bussmann, Schneider, & Wiesehomeier, 2005; Bussmann & Schneider, 2007). This neglect is especially grave in light of the classic interpretations of capitalism by Marx (Kliman, 2015) and Schumpeter (1942) who both stressed risk taking and the alternation between economic expansion and contraction as defining features of capitalism. This article addresses these challenges after an introduction of the historical literature that has disputed whether capitalism is a source of conflict or of peace.

# 1AC

### adv

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

Kramer 1-4-22

(Miriam, (Space Reporter for Axios News) 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

(ELEANOR PENNY is a writer, poet and essayist based in London. member of the Society of Authors (SoA) and the National Institute for Writers in Education (NAWE). , <https://inthesetimes.com/article/space-privatization-future-technology-silicon-valley-elon-musk-jeff-bezos>, 12-17)

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.

#### Private control of space replaces democracy with technocracy. Mars should stay *red*

Spencer 17

(Keith A. Spencer BA Astronomy, MA Literary Studies, worked in a lab to find Dwarf Stars. <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!

#### Capitalism undergirds all modern conflicts and regions of instability

Fernandes PhD 18 (Marcelo Fernandes, Ph.D. - Université Libre de Bruxelles, Research Areas: Econometrics Empirical Finance, Jan-April 2018, "Imperialism and the Question of System Stability," ScieElo, http://www.scielo.br/scielo.php?script=sci\_arttext&pid=S0102-85292018000100033)///PSC

Numerous Marxist authors – including Harvey (2004), Callinicos (2009) and Gowan (2003) – reject the notion that capitalism could reach a level of stability capable of putting an end to inter-imperialist rivalries. But authors such as Sakellaropoulos (2009), Sakellaropoulos and Sotiris (2015), and Marshall (2014) have a more consistent understanding of this phenomenon, since they develop an explanation based on Lenin’s theory of imperialism. Therefore, they manage to establish some opposition to the idea of system stability analysed in the previous sections. Lenin ([1916] 1979) characterised imperialism as a specific stage of the capitalist mode of production, resulting from a substantial change in its organisational structure, the stage of monopoly capitalism, and not merely a ‘preferred’ policy of finance capital for territorial expansion and economic-political control. Having started only in the last quarter of the 19th century, imperialism was the result of the inherent tendencies of the process of capital accumulation – in which concentration and centralisation prevail – and of the contradictions arising from the class struggle in capitalism, as analysed by Marx. At this stage, in which monopolies prevailed, crises were not suppressed, or competition among different capital formations eliminated. Far from it, monopolies amplified the anarchy and contradictions of the economic world, bringing competition to a level in which conflicts would escalate. The statement that cartels can abolish crises is a fable spread by bourgeois economists who at all costs desire to place capitalism in a favourable light. On the contrary, monopoly which is created in certain branches of industry increases and intensifies the anarchy inherent in the system of capitalist production as a whole (Lenin [1916] 1979: 701). Lenin also identified finance capital as the central force of imperialism. In the financial sphere, a qualitative change had taken place: unlike the earlier stage in which industrial capitalism prevailed, the economic impulse of imperialism now lay in haute finance. Thus, the particularity of imperialism lay in the intrinsic need to export capital, rather than commodities. It would be precisely through the export of capital that the international character of capitalism with all its economic and social contradictions would assert itself in an aggressive and irreversible way. This would not be through the formal incorporation of territories, as Lenin ([1916] 1979: 735) highlighted when he wrote about the informal British domination of Brazil, Argentina and Uruguay. Even so, the state plays an essential role in the functioning of capitalism. In the absence of global government, capital cannot reproduce itself without nation-states. In order to ensure the interests of the bourgeoisie, the state develops strategies to manage the labour force, intervenes to maintain the profit of national capital and promote its expansion in the international economy (Sakellaropoulos 2009: 63). However, capital exports also lead to competition among states, since they also play the role of mediating among the interests of different ruling classes. Monopolies can join forces in several parts of the world, yet need to remain linked to their home states where they receive legal protection, even outside legal systems, when this is convenient (Harman 2003). Therefore, international conflicts (economic, political and/or military) are intrinsic to the system, although moments of cooperation may prevail (Lenin [1916] 1979). Capital expansion does not necessarily require war, but this cannot be ruled out. For that reason, activities linked to arms acquire a privileged position in national economies. That causes a permanent warmongering atmosphere, since it is functional for monopolies linked to the war industry to have external enemies, whether real or illusory, to justify military purchases. Hence, the term ‘globalisation’, which describes a capitalist world without borders, available and subservient to the supposedly stateless capital of a unified bourgeoisie, hides or denies crucial aspects of the functioning of the international system15 (Halliday 2002; Petras and Veltmeyer 2000; Ruccio 2003). In reality, the concepts of imperialism and globalisation are not compatible. Although several Marxist authors started to use them as a way of explaining contemporary capitalism, both concepts cannot be adopted at the same time, since the idea of globalisation suppresses a series of questions related to the historical development of the relations of exploitation within the capitalist system, and the role of imperialism as a theoretical and historical reference (Sakellaropoulos 2009). The view of various Marxist authors that the international system is characterised by stability seems to find support in certain passages of the Manifesto of the Communist Party, by Marx and Engels (2010). In this understanding, conflicts are caused almost exclusively by the division between the bourgeoisie and proletarians at the international level. Since international capital has attained unprecedented power, there is little room for protest movements that could undermine the system. This view underestimates the importance of the state and other forms of struggle, such as the struggle of nations oppressed by imperialism. However, even in the Manifesto, the nation-state problem is already raised when the authors call for the national liberation of Poland (Marx and Engels 2010: 68). Another relevant example is the struggle for women’s liberation in countries like the United Arab Emirates and Saudi Arabia. These are countries where the oppression of women is a structural problem – although not necessarily connected to multinational corporations – and any deeper gender-related change favouring women can cause great instability, since the region plays an important role in the geopolitical interests of imperialist countries. The notion that multinational companies have an extraordinary capacity for co-ordination that facilitates international exploitation is also more or less explicit in the writings of the authors referred to in the previous section. However, this is a questionable theoretical assumption in the context of Marxism. The tendency towards the centralisation and concentration of capital inherent in the movement of capital does not eliminate competition, but rather brings it to another level, as pointed out by Lenin, following in the footsteps of Marx. This is because it is competition that forces the capitalist to accumulate uncontrollably. Capital produces without considering its limits, because it is an intrinsic expansionist force; hence the crises that occur from time to time when such limits are exceeded. For the capitalist, there is no other way but to continue seeking a continuous expansion. In the logic of capital, there is no room for sentimentality; ‘he who does not rise, descends.’ Therefore, there can be no unified bourgeoisie exploiting markets around the world in an organised way, capable of suppressing economic crises and their economic-social consequences. In fact, the upsurge of capital internationalisation after the Cold War and the image of companies producing simultaneously in several countries – although this is nothing new – create the perception that these companies are no longer related to their states, as Robinson (2007) mistakenly suggests.16 But we need to distinguish between appearance and reality. When General Motors and Chrysler filed for bankruptcy in 2009, they were bailed out by the US government in their country of origin, at a cost of US$80 billion to the American Treasury until 2013 (Beech 2014). And in 2014, the French bank Paribas was fined a staggering US$8.9 billion by a New York court of justice because it had contravened a Federal law, the International Emergency Economic Powers Act of 1977, by facilitating financial transactions with Cuba, Iran and Sudan, countries that were under US embargo (Lauer 2014). The French government intervened directly, in the form of its president, François Hollande. The Paribas case also runs counter to Panitch and Gindin’s idea that the USA serves the interests of a world capitalist class first and foremost. Therefore, in contrast to ‘globalisation’, the notion of an ‘imperialist chain’ formulated by Lenin is still an accurate description of the hierarchical, uneven, and complex relations arising from the reproduction of capital in the international system.17 It brings together the existing capitalist powers, each of them at a different level of development. According to Milios and Sotiropoulos (2009: 19), the notion of ‘imperialist chain’ leads to two questions. The first is about the law of uneven development. According to Lenin, capitalism could never be a stable system because uneven development causes changes in the correlation of forces of the more advanced nations, tending to erode the centre’s power in relation to new poles of power with greater economic dynamism. Consequently, the contradictions among the powers making up the imperialist chain would escalate (Lenin [1916] 1979: 760). The law of uneven development is central to explaining relations among the countries in the imperialist chain, providing an economic basis for military conflicts. The second question is about the weakest link in the imperialist chain. Uneven development creates the possibility of revolutions in the relatively weaker links of the chain, and not in those states in which the productive forces are more advanced, as Marx initially predicted. But this is a relative position: each country in the imperialist chain is weaker or stronger than the other links in the chain (Poulantzas 1979: 23). Indeed, the international scenario that has emerged at the beginning of the 21st century does not seem to confirm the idea that the capitalist system tends towards stability. On the economic front, crises have become more frequent in the ‘globalisation’ era. They began with the Mexican crisis (1994-5), which had serious repercussions, since Mexico used to be regarded as a model to be followed due to neoliberal reforms implemented since the late 1980s. Later on, the crises in East Asia (1997-8), Russia (1998) and Brazil (1998-1999) exposed the fragility of the international financial architecture that emerged in the 1970s. The turn of the century was the stage for new economic turmoil, as in Turkey and Argentina in 2001. Afterwards, the international economy went through a period of relative calm that lasted for about five years, but this was soon followed by the US subprimecrisis in 2007, triggering the greatest global economic crisis since the Great Depression of the 1930s. The crisis began in the USA, the centre of capitalism, and affected a major part of Europe as well as other world regions. This exposed the fragility of the global financial architecture, and caused unrest about the economic order in several governments and within US society itself, as evidenced by the protest movement ‘Occupy Wall Street’. Despite the intense debate that followed about the reforms needed to prevent a crisis of such magnitude from happening again, few proposals have been implemented, mainly because of the contradictory interests inside the imperialist chain. Added to this, low levels of economic growth in the wake of the crisis have tended to make the environment even less conducive to fresh understandings, stirring up contradictions instead. Given this, it cannot be concluded that the international economic system is more stable, despite the enormous capacity of intervention of central banks, the US Federal Bank in particular, as evidenced in the worst moments of the financial crisis of 2008. Likewise, it cannot be concluded that competition among states no longer exists, and that the problem remains only in the economic sphere. Countries continue to use uneven structures of power to maintain and conquer new spaces of accumulation, according to the interests of their capitalists. During the 1990s, when the USA expanded economically at an unprecedented rate, it managed to maintain its hegemony over other powers, preventing the emergence of autonomous regional strategies with relative success. This did not make the US state more friendly, as Fiori (2008), Gowan (2004), and Sakellaropoulos and Sotiris (2015) demonstrate. In fact, shortly after the end of the Cold War, the central powers adopted some forms of intervention as legitimate, justified by arguments related to violations of human rights,18 the war on drug cartels in Latin America, the fight against corruption, the preservation of international security, and, more recently, the preventive ‘war against terror’ (Bandeira 2014; Sakellaropoulos and Sotiris 2008: 220; Johnson 2004: 31). However, as the law of uneven development prevails, new poles of power are emerging. Cooperation among states has become more problematic due to the growing multipolarisation of the international system, as can be seen in the formation of the BRICS alliance and the Union of South American Nations (USAN), for example, and the relative decrease of US power (Fernandes 2016). This situation helps to explain the growing reaction against US foreign policy, which after ‘09/11’ began to use a warmongering and interventionist language. Since then, the USA has fomented conflict in several parts of the world, ignoring the sovereignty of countries like Afghanistan (2001) and Iraq (2003). Libya and Syria were also targets of US interventions in conjunction with France, Britain and a group of Middle Eastern countries with diverse interests in the region (Bandeira 2014: 382-384). Following the bombing of Libya in 2011, the regime of Muammar al-Gaddafi was overthrown. The same modus operandi was used in Syria.19 However, Russia has played a decisive role in preserving the Bashar al-Assad regime. More recently, the intervention in Ukraine has created strong instability in the region, leading to a referendum on the reincorporation of Crimea into Russia.20 This is evidence that rivalries among the great powers persist, and that Russia is playing an increasingly active role. Finally, it should be noted that, despite the persistent global economic crisis, many countries – including numerous European countries – continue to spend a lot of money on arms (Marshall 2014: 328). According to the Stockholm International Peace Research Institute (SIPRI), global military expenditure reached US$1.68 trillion in 2015, representing a real increase of 1% over 2014. This was the first increase since 2011. But before that, expenditure grew steadily for 13 years between 1998 and 2011 (Perlo-Freeman et al 2016). The USA spends far more on armaments than any other country – 36% of the total in 2015 – but European expenditure should be noted. As shown by Slijper (2013), the military spending of countries such as Spain, Greece and Italy, which were at the epicentre of the crisis in the euro area and have struggled to implement economic austerity programmes at great social cost, remains impressively high. This clearly contradicts the Kautskyan perspective, which predicted a reduction in military spending as a primary result of ultra-imperialism.

#### Capitalism causes extinction through environmental degradation. Rejecting market fundamentalism is crucial to avoid total expenditure of finite resources

Monbiot 10-30-21

(George, MA Zoology https://www.theguardian.com/environment/2021/oct/30/capitalism-is-killing-the-planet-its-time-to-stop-buying-into-our-own-destruction)

There is a myth about human beings that withstands all evidence. It’s that we always put our survival first. This is true of other species. When confronted by an impending threat, such as winter, they invest great resources into avoiding or withstanding it: migrating or hibernating, for example. Humans are a different matter. When faced with an impending or chronic threat, such as climate or ecological breakdown, we seem to go out of our way to compromise our survival. We convince ourselves that it’s not so serious, or even that it isn’t happening. We double down on destruction, swapping our ordinary cars for SUVs, jetting to Oblivia on a long-haul flight, burning it all up in a final frenzy. In the back of our minds, there’s a voice whispering, “If it were really so serious, someone would stop us.” If we attend to these issues at all, we do so in ways that are petty, tokenistic, comically ill-matched to the scale of our predicament. It is impossible to discern, in our response to what we know, the primacy of our survival instinct. Here is what we know. We know that our lives are entirely dependent on complex natural systems: the atmosphere, ocean currents, the soil, the planet’s webs of life. People who study complex systems have discovered that they behave in consistent ways. It doesn’t matter whether the system is a banking network, a nation state, a rainforest or an Antarctic ice shelf; its behaviour follows certain mathematical rules. In normal conditions, the system regulates itself, maintaining a state of equilibrium. It can absorb stress up to a certain point. But then it suddenly flips. It passes a tipping point, then falls into a new state of equilibrium, which is often impossible to reverse. Here’s one of the many ways in which it could occur. A belt of savannah, known as the Cerrado, covers central Brazil. Its vegetation depends on dew forming, which depends in turn on deep-rooted trees drawing up groundwater, then releasing it into the air through their leaves. But over the past few years, vast tracts of the Cerrado have been cleared to plant crops – mostly soya to feed the world’s chickens and pigs. As the trees are felled, the air becomes drier. This means smaller plants die, ensuring that even less water is circulated. In combination with global heating, some scientists warn, this vicious cycle could – soon and suddenly – flip the entire system into desert. The Cerrado is the source of some of South America’s great rivers, including those flowing north into the Amazon basin. As less water feeds the rivers, this could exacerbate the stress afflicting the rainforests. They are being hammered by a deadly combination of clearing, burning and heating, and are already threatened with possible systemic collapse. The Cerrado and the rainforest both create “rivers in the sky” – streams of wet air – that distribute rainfall around the world and help to drive global circulation: the movement of air and ocean currents. Global circulation is already looking vulnerable. For example, the Atlantic meridional overturning circulation (AMOC), which delivers heat from the tropics towards the poles, is being disrupted by the melting of Arctic ice, and has begun to weaken. Without it, the UK would have a climate similar to Siberia’s. AMOC has two equilibrium states: on and off. It has been on for almost 12,000 years, following a devastating, thousand-year off state called the Younger Dryas (12,900 to 11,700 years ago), which caused a global spiral of environmental change. Everything we know and love depends on AMOC remaining in the on state. Regardless of which complex system is being studied, there’s a way of telling whether it is approaching a tipping point. Its outputs begin to flicker. The closer to its critical threshold it comes, the wilder the fluctuations. What we’ve seen this year is a great global flickering, as Earth systems begin to break down. The heat domes over the western seaboard of North America; the massive fires there, in Siberia and around the Mediterranean; the lethal floods in Germany, Belgium, China, Sierra Leone – these are the signals that, in climatic morse code, spell “mayday”. You might expect an intelligent species to respond to these signals swiftly and conclusively, by radically altering its relationship with the living world. But this is not how we function. Our great intelligence, our highly evolved consciousness that once took us so far, now works against us. An analysis by the media sustainability group Albert found that “cake” was mentioned 10 times as often as “climate change” on UK TV programmes in 2020. “Scotch egg” received double the mentions of “biodiversity”. “Banana bread” beat “wind power” and “solar power” put together. I recognise that the media are not society, and that television stations have an interest in promoting banana bread and circuses. We could argue about the extent to which the media are either reflecting or generating an appetite for cake over climate. But I suspect that, of all the ways in which we might measure our progress on preventing systemic environmental collapse, the cake-to-climate ratio is the decisive index. The current ratio reflects a determined commitment to irrelevance in the face of global catastrophe. Tune in to almost any radio station, at any time, and you can hear the frenetic distraction at work. While around the world wildfires rage, floods sweep cars from the streets and crops shrivel, you will hear a debate about whether to sit down or stand up while pulling on your socks, or a discussion about charcuterie boards for dogs. I’m not making up these examples: I stumbled across them while flicking between channels on days of climate disaster. If an asteroid were heading towards Earth, and we turned on the radio, we’d probably hear: “So the hot topic today is – what’s the funniest thing that’s ever happened to you while eating a kebab?” This is the way the world ends, not with a bang but with banter. Faced with crises on an unprecedented scale, our heads are filled with insistent babble. The trivialisation of public life creates a loop: it becomes socially impossible to talk about anything else. I’m not suggesting that we should discuss only the impending catastrophe. I’m not against bants. What I’m against is nothing but bants. It’s not just on the music and entertainment channels that this deadly flippancy prevails. Most political news is nothing but court gossip: who’s in, who’s out, who said what to whom. It studiously avoids what lies beneath: the dark money, the corruption, the shift of power away from the democratic sphere, the gathering environmental collapse that makes a nonsense of its obsessions. I’m sure it’s not deliberate. I don’t think anyone, faced with the prospect of systemic environmental collapse, is telling themselves: “Quick, let’s change the subject to charcuterie boards for dogs.” It works at a deeper level than this. It’s a subconscious reflex that tells us more about ourselves than our conscious actions do. The chatter on the radio sounds like the distant signals from a dying star. There are some species of caddisfly whose survival depends on breaking the surface film of the water in a river. The female pushes through it – no mean feat for such a small and delicate creature – then swims down the water column to lay her eggs on the riverbed. If she cannot puncture the surface, she cannot close the circle of life, and her progeny die with her. This is also the human story. If we cannot pierce the glassy surface of distraction, and engage with what lies beneath, we will not secure the survival of our children or, perhaps, our species. But we seem unable or unwilling to break the surface film. I think of this strange state as our “surface tension”. It’s the tension between what we know about the crisis we face, and the frivolity with which we distance ourselves from it. Surface tension dominates even when we claim to be addressing the destruction of our life-support systems. We focus on what I call micro-consumerist bollocks (MCB): tiny issues such as plastic straws and coffee cups, rather than the huge structural forces driving us towards catastrophe. We are obsessed with plastic bags. We believe we’re doing the world a favour by buying tote bags instead, though, on one estimate, the environmental impact of producing an organic cotton tote bag is equivalent to that of 20,000 plastic ones. We are rightly horrified by the image of a seahorse with its tail wrapped around a cotton bud, but apparently unconcerned about the elimination of entire marine ecosystems by the fishing industry. We tut and shake our heads, and keep eating our way through the life of the sea. A company called Soletair Power receives wide media coverage for its claim to be “fighting climate change” by catching the carbon dioxide exhaled by office workers. But its carbon-sucking unit – an environmentally costly tower of steel and electronics – extracts just 1kg of carbon dioxide every eight hours. Humanity produces, mostly by burning fossil fuels, roughly 32bn kg of CO2 in the same period. I don’t believe our focus on microscopic solutions is accidental, even if it is unconscious. All of us are expert at using the good things we do to blot out the bad things. Rich people can persuade themselves they’ve gone green because they recycle, while forgetting that they have a second home (arguably the most extravagant of all their assaults on the living world, as another house has to be built to accommodate the family they’ve displaced). And I suspect that, in some deep, unlit recess of the mind, we assure ourselves that if our solutions are so small, the problem can’t be so big. I’m not saying the small things don’t matter. I’m saying they should not matter to the exclusion of things that matter more. Every little counts. But not for very much. Our focus on MCB aligns with the corporate agenda. The deliberate effort to stop us seeing the bigger picture began in 1953 with a campaign called Keep America Beautiful. It was founded by packaging manufacturers, motivated by the profits they could make by replacing reusable containers with disposable plastic. Above all, they wanted to sink state laws insisting that glass bottles were returned and reused. Keep America Beautiful shifted the blame for the tsunami of plastic trash the manufacturers caused on to “litter bugs”, a term it invented. The “Love Where You Live” campaign, launched in the UK in 2011 by Keep Britain Tidy, Imperial Tobacco, McDonald’s and the sweet manufacturer Wrigley, seemed to me to play a similar role. It had the added bonus – as it featured strongly in classrooms – of granting Imperial Tobacco exposure to schoolchildren. The corporate focus on litter, amplified by the media, distorts our view of all environmental issues. For example, a recent survey of public beliefs about river pollution found that “litter and plastic” was by far the biggest cause people named. In reality, the biggest source of water pollution is farming, followed by sewage. Litter is way down the list. It’s not that plastic is unimportant. The problem is that it’s almost the only story we know. In 2004, the advertising company Ogilvy & Mather, working for the oil giant BP, took this blame-shifting a step further by inventing the personal carbon footprint. It was a useful innovation, but it also had the effect of diverting political pressure from the producers of fossil fuels to consumers. The oil companies didn’t stop there. The most extreme example I’ve seen was a 2019 speech by the chief executive of the oil company Shell, Ben van Beurden. He instructed us to “eat seasonally and recycle more”, and publicly berated his chauffeur for buying a punnet of strawberries in January. The great political transition of the past 50 years, driven by corporate marketing, has been a shift from addressing our problems collectively to addressing them individually. In other words, it has turned us from citizens into consumers. It’s not hard to see why we have been herded down this path. As citizens, joining together to demand political change, we are powerful. As consumers, we are almost powerless. In his book Life and Fate, Vasily Grossman notes that, when Stalin and Hitler were in power, “one of the most astonishing human traits that came to light at this time was obedience”. The instinct to obey, he observed, was stronger than the instinct to survive. Acting alone, seeing ourselves as consumers, fixating on MCB and mind-numbing trivia, even as systemic environmental collapse looms: these are forms of obedience. We would rather face civilisational death than the social embarrassment caused by raising awkward subjects, and the political trouble involved in resisting powerful forces. The obedience reflex is our greatest flaw, the kink in the human brain that threatens our lives. What do we see if we break the surface tension? The first thing we encounter, looming out of the depths, should scare us almost out of our wits. It’s called growth. Economic growth is universally hailed as a good thing. Governments measure their success on their ability to deliver it. But think for a moment about what it means. Say we achieve the modest aim, promoted by bodies like the IMF and the World Bank, of 3% global growth a year. This means that all the economic activity you see today – and most of the environmental impacts it causes – doubles in 24 years; in other words, by 2045. Then it doubles again by 2069. Then again by 2093. It’s like the Gemino curse in Harry Potter and the Deathly Hallows, which multiplies the treasure in the Lestrange vault until it threatens to crush Harry and his friends to death. All the crises we seek to avert today become twice as hard to address as global economic activity doubles, then twice again, then twice again. Have we reached the bottom yet? By no means. The Gemino curse is just one outcome of a thing we scarcely dare mention. Just as it was once blasphemous to use the name of God, even the word appears, in polite society, to be taboo: capitalism. The main cause of your environmental impact is your money. You persuade yourself you’re a green mega-consumer, but you’re just a mega-consumer Most people struggle to define the system that dominates our lives. But if you press them, they’re likely to mumble something about hard work and enterprise, buying and selling. This is how the beneficiaries of the system want it to be understood. In reality, the great fortunes amassed under capitalism are not obtained this way, but through looting, monopoly and rent grabbing, followed by inheritance. One estimate suggests that, over the course of 200 years, the British extracted from India, at current prices, $45tn. They used this money to fund industrialisation at home and the colonisation of other nations, whose wealth was then looted in turn. The looting takes place not just across geography, but also across time. The apparent health of our economies today depends on seizing natural wealth from future generations. This is what the oil companies, seeking to distract us with MCB and carbon footprints, are doing. Such theft from the future is the motor of economic growth. Capitalism, which sounds so reasonable when explained by a mainstream economist, is in ecological terms nothing but a pyramid scheme. Is this the riverbed? No. Capitalism is just a means by which something even bigger is pursued. Wealth. It scarcely matters how green you think you are. The main cause of your environmental impact isn’t your attitude. It isn’t your mode of consumption. It isn’t the choices you make. It’s your money. If you have surplus money, you spend it. While you might persuade yourself that you are a green mega-consumer, in reality you are just a mega-consumer. This is why the environmental impacts of the very rich, however right-on they may be, are massively greater than those of everyone else. Preventing more than 1.5C of global heating means that our average emissions should be no greater than two tonnes of carbon dioxide per person per year. But the richest 1% of the world’s people produce an average of more than 70 tonnes. Bill Gates, according to one estimate, emits almost 7,500 tonnes of CO2, mostly from flying in his private jets. Roman Abramovich, the same figures suggest, produces almost 34,000 tonnes, largely by running his gigantic yacht. The multiple homes that ultra-rich people own might be fitted with solar panels, their supercars might be electric, their private planes might run on biokerosene, but these tweaks make little difference to the overall impact of their consumption. In some cases, they increase it. The switch to biofuels favoured by Bill Gates is now among the greatest causes of habitat destruction, as forests are felled to produce wood pellets and liquid fuels, and soils are trashed to make biomethane. But more important than the direct impacts of the ultra-wealthy is the political and cultural power with which they block effective change. Their cultural power relies on a hypnotising fairytale. Capitalism persuades us that we are all temporarily embarrassed millionaires. This is why we tolerate it. In reality, some people are extremely rich because others are extremely poor: massive wealth depends on exploitation. And if we did all become millionaires, we would cook the planet in no time at all. But the fairytale of universal wealth, one day, secures our obedience. The difficult truth is that, to prevent climate and ecological catastrophe, we need to level down. We need to pursue what the Belgian philosopher Ingrid Robeyns calls limitarianism. Just as there is a poverty line below which no one should fall, there is a wealth line above which no one should rise. What we need are not carbon taxes, but wealth taxes. It shouldn’t surprise us that ExxonMobil favours a carbon tax. It’s a form of MCB. It addresses only one aspect of the many-headed environmental crisis, while transferring responsibility from the major culprits to everyone. It can be highly regressive, which means that the poor pay more than the rich. But wealth taxes strike at the heart of the issue. They should be high enough to break the spiral of accumulation and redistribute the riches accumulated by a few. They could be used to put us on an entirely different track, one that I call “private sufficiency, public luxury”. While there is not enough ecological or even physical space on Earth for everyone to enjoy private luxury, there is enough to provide everyone with public luxury: magnificent parks, hospitals, swimming pools, art galleries, tennis courts and transport systems, playgrounds and community centres. We should each have our own small domains – private sufficiency – but when we want to spread our wings, we could do so without seizing resources from other people. In consenting to the continued destruction of our life-support systems, we accommodate the desires of the ultra-rich and the powerful corporations they control. By remaining trapped in the surface film, absorbed in frivolity and MCB, we grant them a social licence to operate. We will endure only if we cease to consent. The 19th-century democracy campaigners knew this, the suffragettes knew it, Gandhi knew it, Martin Luther King knew it. The environmental protesters who demand systemic change have also grasped this fundamental truth. In Fridays for Future, Green New Deal Rising, Extinction Rebellion and the other global uprisings against systemic environmental collapse, we see people, mostly young people, refusing to consent. What they understand is history’s most important lesson. Our survival depends on disobedience.

### solvency

#### 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.

#### Absent private companies, dystopian, militaristic visions would be replaced with educational, valiant ones. Space has the possibility to transform our society 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.

#### 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.

#### Space – particularly mars – is the crucial staging ground for societal transformation

Calanchi 20

Alexandra Calanchi (PhD Professor in International Studies @ italian university), 8 sep 2021, https://www.tandfonline.com/doi/full/10.1080/14688417.2021.1982401?scroll=top&needAccess=true // HW AW

For more than a century Mars has been at the centre of scientific and philoso- phical debate about human kind’s place in the cosmos, also soliciting scientific articles, novels and movies (Markley 2005). Robert Markley was interested in high- lighting the importance of the red planet as a foil to better understand Earth and as a screen on which human beings projected their hopes and fears. Persuaded of the importance of interdisciplinary planetary research, and aware of the political implica- tions of SF, he encouraged ‘frequent crossings of the boundaries between science and science fiction’ (Markley 2005, 5). He also recommended that Mars could and should enter the orbit of environmentalism. As the struggle between space advocates and environmentalists demonstrates, however, the risk of repeating the errors of the past does exist. Such risk also affects both the dynamics of communication and the written and visual representation/s. The above mentioned fertile cross-over between science and science fiction also inspired Robert Crossley, who wrote a comprehensive literary history of the red planet assuming that ‘Mars is part of our cultural history, a repository of human desire, a reflection of our aspirations, confusions, and anxieties’ (2011, 7). However, his book, more than environmentalism, focuses on the opportunities given by a new colonisation on unprecedented grounds: Mars is not only a locale, a symbol, a mythos, it is also a tabula rasa. It is a place with a past but without a history. [. . .] Mars is an empty page on which **writers can sketch a critique of things as they have been and are in our own world, a vacant stage on which alternative modes of human organization and conduct can be enacted**. [. . .] If humanity establishes a permanent presence on Mars in the coming decades and centuries, the early literature about the planet will constitute that new civilization’s mythology. [. . .] A great many fictions about Mars imagine the moment when the first human beings set foot on the planet. (Crossley 2011, 16-17) Today, the purposes of hypothetical human missions are human expansion and economic exploitation. Our planet is being destroyed by environmental crises, overpopulation, and natural catastrophes enhanced by human intervention, pandemics included. Either we succeed in making geoengineering take control (McNeill and Engelke 2014) or we look outside the window – so to say – and look for other places to ‘conquer’ (sic! May 2017) or simply to go to (Roach 2010). Unfortunately, **nobody can really guarantee that today’s investors and tomorrow’s settlers will show more respect to the environment than we have granted our own home-planet so far** (Barbanti, Calanchi and Farina 2017). At the same time, **the language of space exploration reflects an underlying racism and gender discrimination** which are really hard to overcome (Haskins 2018).

### framing

#### 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 – that’s what the resolution said to do

#### 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.

#### 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, MA Political Theory and Economy @ UToronto, 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?