### Advantage

#### The advantage is Debris:

#### Privatization of space is unsustainable and increases debris – triggers the Kessler Syndrome

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* Kessler syndrome: objects outside Earth’s immediate orbit causing more damage the longer it’s allowed to orbit

Back in 1978, the astrophysicist Donald Kessler made an alarming prediction: Space junk could wreck our ability to keep satellites aloft. In a fascinating paper, Kessler noted that “low earth orbit” — a region between 99 miles and 1,200 miles up — was getting pretty crowded. In 1978 there were already 3,866 objects being tracked in space. That included satellites used by scientists (say, to monitor weather) or spy agencies. It also included a lot of debris: Every time a rocket launches a satellite into orbit, it tends to leave stray bits of material. The thing is, when objects are zooming through space about 2 km/s, even something as tiny as a chip of paint can smash through glass or steel. Pieces of debris become bullets. What Kessler predicted is that sooner or later, objects in low-earth orbit would start colliding, and produce chain effects, like billiard balls colliding on a crowded pool table. If a piece of debris hit a satellite, it would produce more debris, which would to increase the risk of other collisions … and so on, and so on. At some point, you could reach a tipping point. There’d be so many chunks of debris that collisions would be inevitable, leaving low-earth orbit a junkyard where no satellites could survive. Remember the scene in Wall-E where they blast off Earth, and the planet is utterly ringed with crap? That’s what Kessler worried about. Except in our situation the pieces of junk could be quite small — billions of objects the size of grains of sand, which is actually a lot harder to deal with, because you can’t see it coming. In essence, Kessler predicted we could create an artificial asteroid belt of junk: The result would be an exponential increase in the number of objects with time, creating a belt of debris around the earth. This process of mutual collisions is thought to have been responsible for creating most of the astroids from larger planetlike bodies. Space folks began calling this the “Kessler Syndrome”. It was hard to predict when this might start happening. Kessler worried that conditions could be ripe by as early as 2000. Thankfully, that estimate turned out to be premature. But wow, it looks like it might happen soon. What’s happened recently that makes the “Kessler Syndrome” more likely? A couple of things: Way more satellites are going up The pace at which satellites are going up in the sky is simply exploding. Back when Kessler wrote his paper in 1978, we humans were launching about 53 new satellites a year. Going to space was hard. But now launches are an order of magnitude more common, and they’re increasing in pace rapidly. SpaceX in particular is launching oodles of satellites as it builds its orbital Internet-access service Starlink. In the last two years, it has put 1,740 satellites in low-earth orbit, with plans to eventually shoot 30,000 up there. This is part of a larger trend, which is … The privatization of outer space The private sector is rapidly becoming the dominant actor in space. There’s a huge demand for satellite data — everyone wants better info about weather, crops, traffic patterns, tree coverage, emissions, you name it, on top of the explosive use of satellites for communication and Internet. SpaceX’s remarkable innovations in rocketry (the leading folks, though others are following in their footsteps) have made it cheaper than ever to get a satellite into orbit. It is unlocking a huge pent-up demand for near-earth-orbit tech. More launches mean not only more intentional objects in orbit but unintentional ones — bits of rocket parts and detritus from launches.

#### Privatization exponentially increases the curve but ending dangerous missions prevents it.

Bernat 20 [Pawel, 2020, Military University of Aviation, “ORBITAL SATELLITE CONSTELLATIONS AND THE GROWING THREAT OF KESSLER SYNDROME IN THE LOWER EARTH ORBIT,” SAFETY ENGINEERING OF ANTHROPOGENIC OBJECTS, Volume 4, PDF] Justin

5. Orbital satellite constellations and the growing threat of the Kessler syndrome Space 2.0 – the new era of space exploration that we witness now in the 21st century means, in words of Buzz Aldrin, “moving human enterprise into space” (Pyle, 2019, p. xiv). The process of commercialization of outer space has already begun and is not limited to private companies providing technologies and services for national or international space agencies, as it was in the past. On the contrary, private companies from the space sector have now matured to carry out their own independent projects. As for 2020, SpaceX is a company that serves as the best example – it launches satellites to the orbit, both for state and private contractors, it successfully realized two crew missions to the International Space Station, and is in the process of constructing Starlink satellite constellation that will provide high-speed internet access across the planet. Each satellite weighs around 260 kg, is equipped with an ion propulsion system, autonomous collision avoidance system, and orbits Earth at approximately 540-560 km altitude (Starlink, 2020). At the beginning of November 2020, more than 860 Starlink satellites were orbiting the Earth (Jewett, 2020). Immediate plans include launching 12,000 satellites, but they assume a potential later extension to 42,000 (Henry, 2019a). Of course, SpaceX has employed, at least declaratively, all necessary measures to keep the space clean – the satellites are equipped with the deorbiting system, and in the event of inoperability of the propulsion system (Starlink, 2020). The orbital collisions are, however, inevitable. As it was shown before, the possibility of collisions grows with the number of orbital objects. Bastida Virgili with the team compared (2016, p. 154-155) orbital debris environment development without and with a large hypothetical constellation consisting of merely 1080 satellites, distributed across 20 orbital planes at 1,100 km altitude (Fig. 5).

Chart, line chart

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It has to be noted that although SpaceX’s Starlink is the only constellation that is being built in orbit, it is not the only one planned. There are at least a few initiatives aiming at the same goal – to construct internet infrastructure at the Earth’s orbit. The planned Kuiper Systems LLC, which is a subsidiary of Amazon and intends to place 3,236 broadband satellites in the LEO, is one of Starlink’s biggest competitors (Henry, 2019b). Now, there is even a rivalry between the two companies because Kuiper’s lowest orbital shell is planned to be 590 km, with a tolerance of 9 km either above or below (Cao, 2020), which is the altitude of Starlink satellites. Moreover, the race for space in orbit is now at the beginning. The outer space is vast. It increasingly becomes more cluttered with both operational satellites and space debris. The threat of collisions increases and no institution or body has enough power to license, coordinate and regulate what is sent to the orbit. The UNOOSA has not such power. National states decide what the companies from the space industry can launch to space. In the United States, which is most advanced in the area of private constellations, it is the Federal Aviation Administration (FAA) that issues the appropriate approvals. The race to put broadband internet satellites bears similarities to the gold rush – there are no rules, at the global level, apart from first-come, first-served.

#### Debris causes nuclear war---Noko, Iran, and China.

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If debris from a Chinese test destroys a US military satellite, the US could mistake it as a preemptive strike against its space capabilities — some of which are designed to detect nuclear missile launches. If the US thinks China is trying to take out its ability to detect a nuclear launch, things could get very bad, very quickly. Accidents aren't the only concern. Zenko also worries about intentional space attacks, either during peacetime or a crisis. Here, Iran and North Korea are probably bigger threats, though their ASAT capabilities are far from proven. North Korea has a pattern of crazy military moves designed to extort concessions from South Korea and the West; it could extend that behavior to space. Iran, according to Zenko, "already views space as a legitimate arena in which to contest US military power." He worries that Iran might fire missiles into space "during a major crisis, especially if it believes war is imminent — an assessment that could have self-fulfilling consequences."

#### Any nuclear war causes extinction – ice age and famine.

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A war fought with 21st century strategic nuclear weapons would be more than just a great catastrophe in human history. If we allow it to happen, such a war would be a mass extinction event that [ends human history](https://ratical.org/radiation/NuclearExtinction/StarrNuclearWinterOct09.pdf). There is a profound difference between extinction and “an unprecedented disaster,” or even “the end of civilization,” because even after such an immense catastrophe, human life would go on. But extinction, by definition, is an event of utter finality, and a nuclear war that could cause human extinction should really be considered as the ultimate criminal act. It certainly would be the crime to end all crimes. The world’s leading climatologists now tell us that nuclear war threatens our continued existence as a species. Their studies predict that a large nuclear war, especially one fought with strategic nuclear weapons, would create [a post-war environment in which for many years it would be too cold and dark to even grow food](http://climate.envsci.rutgers.edu/pdf/RobockToonSAD.pdf). Their findings make it clear that not only humans, but most large animals and many other forms of complex life would likely vanish forever in a nuclear darkness of our own making. The environmental consequences of nuclear war would attack the ecological support systems of life at every level. Radioactive fallout, produced not only by nuclear bombs, but also by the destruction of nuclear power plants and their spent fuel pools, would poison the biosphere. Millions of tons of smoke would act to [destroy Earth’s protective ozone layer](https://www2.ucar.edu/atmosnews/just-published/3995/nuclear-war-and-ultraviolet-radiation) and block most sunlight from reaching Earth’s surface, creating Ice Age weather conditions that would last for decades. Yet the political and military leaders who control nuclear weapons strictly avoid any direct public discussion of the consequences of nuclear war. They do so by arguing that nuclear weapons are not intended to be used, but only to deter. Remarkably, the leaders of the Nuclear Weapon States have chosen to ignore the authoritative, long-standing scientific research done by the climatologists, research that predicts virtually any nuclear war, fought with even a fraction of the operational and deployed nuclear arsenals, will leave the Earth essentially uninhabitable.

#### Advantage 2 is Corporate Colonialism:

#### Private appropriation of outer space expands corporate colonialism.

Shammas and Holen 19 [(Victor L, a sociologist working at the Department of Sociology and Human Geography, University of Oslo; Tomas B., independent scholar in Oslo, Norway) “One giant leap for capitalistkind: private enterprise in outer space,” 1-29-2019, pg. 3-5] TDI

The 2010s may very well be remembered as the ‘Age of NewSpace', the decade when outer space was turned into a capitalist space, when private corporations pushed the price of launches, satellites, and space infrastructure downwards, exerting what industry insiders call the ‘SpaceX effect' (Henry, 2018), centered on the technological achievement of ‘reusability', recovering used rocket boosters for additional launches, promising to drastically reduce the price of going to space (Morring, 2016). As one report observes, ‘Not only has the number of private companies engaged in space exploration grown remarkably in recent years, these companies are quickly besting their government-sponsored competitors' (Houser, 2017). What the rockets, shuttles, ships, and landing pods will carry beneath their payload fairing or in their cargo hold, however, along with supplies and satellites, is the capitalist worldview, a particular ideology—just as Robinson Crusoe, in Marx’s ironic retelling in Capital, ‘having saved a watch, ledger, ink and pen from the shipwreck… soon begins, like a good Englishman, to keep a set of books' (Marx, 1976, p. 170), brings with him English political economy—'Freedom, Equality, Property and Bentham', as Marx (1976, p. 280) says elsewhere— to his desert island.

In early 2018, astronomers across the world learned that a New Zealand start-up, Rocket Lab, which aimed to launch thousands of miniature satellites into orbit around Earth (so-called ‘smallsats'), had planned to launch a giant, shining ‘disco ball'—the ‘Humanity Star'—into orbit around Earth. It was an elaborate marketing stunt masked by humanistic idealism. ‘No matter where you are in the world, or what is happening in your life', said Rocket Lab CEO Peter Beck, ‘everyone will be able to see the Humanity Star in the night sky' (Amos, 2018). Many astronomers expressed outrage at these plans, fearing that the light from the Human Star would threaten their ability to carry out scientific observations. But while these astronomers were incensed by the idea of a bright geodesic object disrupting their ability to carry out observations, concerns with the effects of the arrival of capitalistkind on their ability to collect data were non-existent. The astronomical community was angered by the idea of a material, concrete, visible object polluting “pure” scientific data, but it paid less attention to the (invisible and abstract) recuperation of the night sky as it was brought into the fold of capitalism.

In an interview, Beck was quizzed about the Humanity Star and asked by a reporter about the difficulties of generating profits in space (Tucker, 2018). To this Beck replied, ‘It has always been a government domain, but we’re witnessing the democratization of it…[I]t [is] turning into a commercially dominated domain'. Beck established an equivalence established between the dissolution of space as the rightful domain of states and the advent of profitmaking ventures as signs of ‘democratization'. In space, according to Beck’s logic, democratization involves the disappearance of the state and the rise of capital. The argument, of course, is impeccably post-statist: on this account, states are monolithic, conservative Leviathans beyond the reach of popular control; corporations, on the other hand, are in principle representatives of the everyman: in the age of the start-up, any humble citizen could in theory become an agent of disruption, a force for change, an explorer of space, and a potential member of the cadre of capitalistkind. Following this logic, the question for the entrepreneurs of NewSpace is how to monetize outer space, which means turning space into a space for capital; their question is how they can deplanetarize capital and universalize it, literally speaking, that is, turn the Universe into a universe for capital. In this light, Peter Beck’s distortion of democratic ideals appears eminently sensible, equating democratization with monetization, that is, capital liberated from its earthly tethers.

Emblematic of this capitalist turn in space was the founding of Moon Express in 2011, composed of a ‘team of prominent Silicon Valley entrepreneurs…shooting for the moon with a new private venture aimed at scouring the lunar surface for precious metals and rare metallic elements' (Hennigan, 2011). Following Google’s Lunar XPRIZE—an intertwining of Silicon Valley and NewSpace’s capitalistkind—which promised a $20 million prize for the first private company to land a spacecraft on the Moon, travel 500 meters, and transmit high-definition images back to Earth, all by March 2018,9 Moon Express claimed that it would be capable of landing on the lunar surface and earn the cash prize. Their stated goal was twofold: first, to mine rare resource like Helium-3 (a steadily dwindling scarce resources on Earth), gold, platinum group metals, and water, and, second, to carry out scientific work that would ‘help researchers develop human space colonies for future generations' (Ioannou, 2017). The ordering is telling: first profits, then humanity. These were the hollow, insubstantial promises of a venture-capitalized NewSpace enterprise: in early 2018, Google announced that none of the five teams competing for the Lunar XPRIZE, including Moon Express, would reach their stated objectives by the 31 March deadline and they were taking their money back (Grush, 2018). In this sense, it was typical for NewSpace in its formative years: a corporate field populated by (overly exuberant) private enterprises who promised more than they could deliver. But the belief in NewSpace is real enough. In a tome bursting with the optimism of NewSpace, Wohlforth and Hendrix claim that ‘the commercial spaceflight industry is transforming our sense of possibility. Using Silicon Valley’s money and innovative confidence, it will soon bring mass space products to the market' (2016, p. 7).

The trope of humanity plays a key role in the rhetoric of the adherents of NewSpace. To fulfill the objectives of NewSpace, including profit maximization and the exploitation of celestial bodies, the symbolic figure of a shared humanity serves a useful purpose, camouflaging the conquest of space by capitalism with a dream of humanity boldly venturing forth into the dark unknown, thereby also providing the legitimacy and enthusiasm needed to support bolster the legitimacy of NewSpace. So long as the stargazers and SpaceX watchers are permitted their fill of ‘collective effervescence', to use Durkheim’s (1995, p. 228) concept, capitalist entrepreneurs will be able to pursue their business interests more or less as they please. The spectacle of outer space is crucial in this regard.

Crucially, however, and despite this spectacle, SpaceX’s technology might not necessarily be more sophisticated than its competitors or predecessors. Some industry insiders have rebuffed some of the more the spectacular claims of NewSpace’s proponents, arguing that launch vehicle reusability requires a (perhaps prohibitively) expensive refurbishing of the rocket engines involved in launches: ‘The economics will depend on how many times a booster can be flown, and how much the individual expense will be to refurbish the booster…each time' (Chang, 2017). Reusability may be a technological dead-end because of the inherently stressful effects of a rocket launch on the launch vehicle’s components, with extreme limitations on reusability beyond second-use as well as added risks of malfunctions that customers and insurers are likely to wish to avoid. Furthermore, the Falcon Heavy still has not matched the power and payload capacity of NASA’s Saturn V, a product of 1960s military-industrial engineering and Fordist state spending programs. What SpaceX and other NewSpace corporations do with great ingenuity, however, is to manage the spectacle of outer space, producing outpourings of public fervor, aided by a widespread adherence to the ‘Californian Ideology' (Barbrook and Cameron, 1996), or post-statist techno-utopianism, in many postindustrialized societies.

The very centrality of these maneuvers has initiated a new phase in the history of capitalist relations, that of ‘charismatic accumulation'—certainly not in the sense of any ‘objective' or inherent charismatic authority, but with a form of illusio, to speak with Bourdieu, vested in the members of capitalistkind by their uncanny ability to spin mythologizing self-narratives. This has always been part of the capitalist game, from Henry Ford and onwards, but the charismatic mission gains a special potency in the grandiose designs of NewSpace’s entrepreneurs. Every SpaceX launch is a quasi-religious spectacle, observed by millions capable of producing a real sense of wonder in a condition of (legitimizing) collective effervescence.

Outer space necessarily reduces inter-human difference to a common denominator or a shared species-being. An important leitmotiv in many Hollywood science fiction movies, including Arrival (2016), is that a first encounter with an alien species of intelligent beings tends to flatten all human difference (including ethnoracial and national categories), thereby restoring humankind to its proper universality (see also Novoa, 2016). Ambassadors of Earth as a whole, not representatives of particular nations, step forth to meet alien emissaries. But even in the absence of such an encounter, the search for habitable domains (or rather, profitable locales) beyond Earth will necessarily forge a shared conception of the human condition, initiated with the Pale Blue Dot photograph in 1990. Typical of this sentiment are the words of the astronomer Carl Sagan, who famously observed of this photograph: ‘On it everyone you love, everyone you know, everyone you ever heard of, every human being who ever was, lived out their lives'.

This naïvely humanistic vision has been one of the dominant tropes in the discourse on space since the 1950s, and it remains strong today, as with the claims of the United Nations Office for Outer Space Affairs (UNOOSA) that their task is to ‘uphold the vision of a more equitable future for all humankind through shared achievements in space'. This representational tendency mobilizes humanism to generate enthusiasm about space-related activities. But such representations are increasingly being recuperated by capitalist enterprise, so that it is not humankind but its modulation by space capitalists that will launch into the dark unknown. It is not humankind but capitalistkind that ventures forth. In early 2018, NASA was set to request $150 million in its 2019 budget to ‘enable the development and maturation of commercial entities and capabilities which will ensure that commercial successors to the ISS…are operational when they are needed', only one of many signs that space is becoming a space for capitalism. According to one estimate, the value of just one single asteroid would be more than $20 trillion in rare earth and platinum-group metals (Lewis, 1996), a precious prize indeed for profit-hungry corporations.10 Even the UNOOSA spoke vociferously in favor of the commercialization of space, appealing variously to the ‘industry and private sector' and elevating the ‘space economy' to a central pillar in its Space2030 Agenda (including the ‘use of resources that create and provide value and benefits to the world population in the course of exploring, understanding and utilizing space'), even as the UN agency falls back on a humanistic, almost social-democratic vision of the equitable distribution of benefits (and profits) from space mining, exploration, and colonization (UNOOSA, 2018).

We find evidence of this strategic humanism in all manner of pronouncements from NewSpace entrepreneurs. To take but one example: Naveen Jain, the chairman and co-founder of MoonEx, a lunar commercialization firm, has claimed that ‘from an entrepreneur’s perspective, the moon has never truly been explored'. The moon, Jain has claimed, ‘could hold resources that benefit Earth and all humanity' (Hennigan, 2011). We should note the recourse to the trope of all of humanity by this NewSpace entrepreneur, mimicked in the 1979 Moon Agreement, a UN treaty, which also held that the Moon’s resources are ‘the common heritage of mankind' (Tronchetti, 2013, p. 13).11 In a purely factual sense, of course, Jain is wrong: Google Moon offers high-resolution images of the lunar surface,12 and the moon has already been explored, in the sense of being mapped, albeit rudimentarily and with room for further data collection. Crucially, however, these cartographic techniques have not been put to capitalist uses: mapping minerals, for instance, or producing detailed schemata that might one day turn the Moon into a ‘gas station' for commercial space ventures, as Wilbur Ross, Trump’s Secretary of Commerce, has proposed (Bryan, 2018). What is lacking, in short, are capitalist maps of the Moon, i.e., a cartography for capital. But as Klinger (2017: 199) notes, even though no one is ‘actively mining the Moon' at present, at least ‘six national space programs, fifty private firms, and one graduate engineering program, are intent on figuring out how to do so'; furthermore, Klinger draws attention to mapping efforts that have revealed high an abundance of rare earth metals, thorium, and iron in the Moon’s ‘Mare Procellarum KREEP' region (Klinger, 2017, p. 203).

We have already noted that it is not humanity, conceived as species-being, a Gattungswesen, that makes its way into space. The term Gattungswesen, of course, has a long intellectual pedigree, harking back to Hegel, Feuerbach, Marx, and others. The term can ‘be naturally applied both to the individual human being and to the common nature or essence which resides in every individual man and woman', Allan Wood (2004, p. 17) writes, as well as ‘to the entire human race, referring to humanity as a single collective entity or else to the essential property which characterizes this entity and makes it a single distinctive thing in its own right'. Significantly, the adherents of NewSpace often resort to the idea of humanity in its broad universality (e.g., Musk, 2017), but this denies and distorts the modulation of humanity by its imbrication with the project of global (and post-global, i.e., space-bound) capitalism. It is precisely the sort of false universality implied in the humanism of the supporters of NewSpace that Marx subjected to a scathing critique in the sixth of his Theses on Feuerbach. Here Marx noted that the human essence is not made up of some ‘abstraction inherent in each single individual' (1998, p. 570). Instead, humans are defined by the ‘ensemble of social relations' in which they are enmeshed. Under NewSpace, it is not humanity, plain and simple, that ventures forth, but a specific set of capitalist entrepreneurs, carrying a particular ideological payload, alongside their satellites, instruments, and supplies, a point noted by other sociologists of outer space, or ‘astrosociologists' (Dickens and Ormrod, 2007a, 2007b).

#### The insistence on outer space as corporate capital’s spatial fix accelerates environmental degradation.

Shammas and Holen 19 [(Victor L, a sociologist working at the Department of Sociology and Human Geography, University of Oslo; Tomas B., independent scholar in Oslo, Norway) “One giant leap for capitalistkind: private enterprise in outer space,” 1-29-2019, pg. 6-8] julian

As Earth’s empty spaces are filled, as our planet comes to be shorn of blank places, capitalistkind emerges to rescue capitalism from its terrestrial limitations, launching space rockets, placing satellites into orbit, appropriating extraterrestrial resources, and, perhaps one day, building colonies on distant planets like Mars. But why limit ourselves to Mars? As of mid-2017, NASA’s Kepler observatory had discovered more than 5000 exoplanets—planets that seem like promising alternatives to Earth, located at an appropriate distance from their respective suns in the famed ‘Goldilocks zone'. These ‘planetary candidates', as they are known —that is, candidates for the replacement of Earth, capable of supporting human life with only minimal technological augmentation or cybernetic re-engineering—are above all viable candidates for selection by specific capitalists seeking to discover new profitable ventures beyond the limits of an Earth-bound capitalism. Space reveals the impotence of the neoliberal, postFordist state, its incapacity and unwillingness to embark on gigantic infrastructural projects, to project itself outwards, and to fire the imagination of (actual) humankind. Capitalistkind steps in to fill the vacuum left behind by a state that lacks what Mann (2012, p. 170) calls ‘infrastructural power'. The old question, the question of Old Space, was quite simply: is this planet a viable site for humankind, a suitable homeland for the reproduction of human life away from Earth? But the new question, the question for NewSpace, will be: can this celestial body support capitalistkind? Will it support the interests of capitalist entrepreneurs, answering to the capitalist desire for continued accumulation?

While some elements of the astrosociological community, such as the Astrosociology Research Institute (ARI),14 insist on elucidating the “human dimension” in outer space, Dickens and Ormrod recognize that this humanization-through-capitalism really involves the ‘commodification of the universe' (2007b, p. 2). While Dickens and Ormrod develop similar arguments to those sketched here—from their concept of an ‘outer spatial fix' to their argument about outer space becoming woven into circuits of capital accumulation—they were writing at a time when their remarks necessarily remained speculative: the commercialization of space was still in its infancy. In an inversion of Hegel’s owl of Minerva, reality has since largely confirmed their ideas and caught up with theory. Above all, when considering the various ventures ongoing in space today, it is not so much the universalizing human dimension as the specifically capitalist dimension that is striking. With the advent of NewSpace, outer space is becoming not the domain of a common humanity but of private capital.

The arguments laid out above mirror an ongoing turn in critical scholarship away from the notion of the Anthropocene towards a more rigorously political-economic concept of Capitalocene, premised on the ‘claim that capitalism is the pivot of today’s biospheric crisis' (Moore, 2016, p. xi). Just as the exponents of the concept of Capitalocene emphasize that it is capitalism, and not humanity as such, that is the driving force behind environmental transformation, so too does the notion of capitalistkind emphasize that it is not humankind tout court but rather a set of specific capitalist entrepreneurs who are acting as the central transformative agents of and in outer space, with the ‘ever-increasing infiltration of capital' into what was formerly the domain of the state (Dickens and Ormrod, 2007a, p. 6). We can also think about these issues in terms of what Philippopoulos-Mihalopoulos (2015) terms ‘spatial justice'. This concept captures the fact that struggles over justice are often struggles to occupy space, as the term is more conventionally understood, as with urban battles over the ‘right to the city' (Harvey, 2008), to provide just one example. But the same also holds true for outer space: there is an ongoing struggle over the right to take up space in outer space. So far, the capitalist side appears to be winning. As the proto-communism of the Cold War-era Outer Space Treaty is abandoned—in tandem with the increased technological feasibility of exploiting resources and accumulating profits in outer space—spatial justice in outer space increasingly comes to mean the ‘justice' of capital, capitalistkind taking the place of humankind. It is comparatively easy to declare that outer space is a commons, as the Outer Space Treaty did in the late 1960s, when that domain is, for all practical purposes, inaccessible to capital; with the heightened accessibility of outer space, however, it is unsurprising that central political agents, such as President Trump’s administration, should seek to dismantle this regulatory framework and ensure the smooth functioning of capital accumulation beyond the terrains of Earth.

What kind of capitalism is being projected into space? The complexity of state-market relations is sufficient to force us to hedge against a simplified reading of space commercialization: it is not a matter of states against markets, as if the two were mutually exclusive. Instead, as Bratton (2015) suggests, we are witnessing the emergence of a ‘stack', a complex intertwining of commercial, geopolitical, and technological concerns, which challenges previous notions of state sovereignty. This can be seen as a hybridized state-market form, with technology playing a central role in reciprocal processes of political and economic transformation. On the one hand, outer space was in some sense always already the domain of marketization, albeit to a limited extent, even during the Cold War, from the first commercial satellite launch in the early 1960s to President Ronald Reagan’s implementation of the Commercial Space Launch Act of 1984, which aimed to encourage private enterprise to take an interest in an emerging launch market. As Hermann Bondi, the head of the European Space Organization, wrote in the early 1970s, ‘It is clear…that there must be three partners in space, universities and research institutions on the one hand, the government on the second and industry on the third' (Bondi, 1971, p. 9).

On the other hand, outer space still remains firmly within the domain of the state and is likely to do so for the foreseeable future, with the likely continued importance of military uses of satellite technology and the weaponization of Earth’s orbit— crucially, the Outer Space Treaty only prohibits nuclear arms and other ‘weapons of mass destruction' in space, not conventional weapons, such as ballistic missiles. One novel element in this phase of capitalism-in-space is the interrelationship between Silicon Valley, NewSpace, and the state (see, e.g., Vance, 2015). Silicon Valley’s capitalist class, including Amazon’s Jeff Bezos, play an outsize role in NewSpace. Behind and around these figures, however, remains the state—through its weighty fiscal, regulatory, military, and symbolic investments.15 To take but one example: In June 2018, SpaceX won a $130 million contract with the U.S. Air Force to launch an ‘Air Force Space Command' satellite onboard a Falcon Heavy rocket (Erwin, 2018).

Fredric Jameson’s (2003, p. 76) oft-quoted observation that it is easier to imagine the end of humankind than the end of capitalism, is realized in the ideals and operations of capitalistkind. Elon Musk has observed that the goal of SpaceX is to establish humankind as a ‘multiplanetary species with a self-sustaining civilization on another planet' whose purpose is to counteract the possibility of a ‘worst-case scenario happening and extinguishing human consciousness' (Vance, 2015, p. 5). But couldn’t we view this idealistic assertion on behalf of humanity in another way? It is not human consciousness, over and against what the writer Kim Stanley Robinson (2017, p. 2) calls ‘mineral unconsciousness' (i.e., the mute, geological reality of the natural universe), so much as a specifically capitalist consciousness that is at stake. While the actions of capitalistkind may primarily be aimed at ensuring the future survival of the human species, an additional result is to ensure that the very idea of capitalism itself will outlive a (distantly) possible extinction event. Capitalism is a self-replicating system, pushing to expand ever outwards, using a territorializing strategy of survival. As David Harvey notes, ‘a steady rate of growth is essential for the health of a capitalist economic system, since it is only through growth that profits can be assured and the accumulation of capital be sustained' (1990, p. 180). In this respect, outer space is ideal: it is boundless and infinite. As Earth comes to be blanketed by capital, it is only to be expected that capital should set its sights on the stars above. The actions of capitalistkind serve to bolster the capitalist mode of production and accumulation: it is not only life but capital itself that must outlive Earth—even into the darkness of space.

#### Environmental degradation causes extinction.

Dr. Peter Kareiva 18, Ph.D. in Ecology and Applied Mathematics from Cornell University, Director of the Institute of the Environment and Sustainability at UCLA, Pritzker Distinguished Professor in Environment & Sustainability at UCLA, et al., September 2018, “Existential Risk Due To Ecosystem Collapse: Nature Strikes Back”, Futures, Volume 102, p. 39-50

In summary, six of the nine proposed planetary boundaries (phosphorous, nitrogen, biodiversity, land use, atmospheric aerosol loading, and chemical pollution) are unlikely to be associated with existential risks. They all correspond to a degraded environment, but in our assessment do not represent existential risks. However, the three remaining boundaries (climate change, global freshwater cycle, and ocean acidification) do pose existential risks. This is because of intrinsic positive feedback loops, substantial lag times between system change and experiencing the consequences of that change, and the fact these different boundaries interact with one another in ways that yield surprises. In addition, climate, freshwater, and ocean acidification are all directly connected to the provision of food and water, and shortages of food and water can create conflict and social unrest.

Climate change has a long history of disrupting civilizations and sometimes precipitating the collapse of cultures or mass emigrations (McMichael, 2017). For example, the 12th century drought in the North American Southwest is held responsible for the collapse of the Anasazi pueblo culture. More recently, the infamous potato famine of 1846–1849 and the large migration of Irish to the U.S. can be traced to a combination of factors, one of which was climate. Specifically, 1846 was an unusually warm and moist year in Ireland, providing the climatic conditions favorable to the fungus that caused the potato blight. As is so often the case, poor government had a role as well—as the British government forbade the import of grains from outside Britain (imports that could have helped to redress the ravaged potato yields).

Climate change intersects with freshwater resources because it is expected to exacerbate drought and water scarcity, as well as flooding. Climate change can even impair water quality because it is associated with heavy rains that overwhelm sewage treatment facilities, or because it results in higher concentrations of pollutants in groundwater as a result of enhanced evaporation and reduced groundwater recharge. Ample clean water is not a luxury—it is essential for human survival. Consequently, cities, regions and nations that lack clean freshwater are vulnerable to social disruption and disease.

Finally, ocean acidification is linked to climate change because it is driven by CO2 emissions just as global warming is. With close to 20% of the world’s protein coming from oceans (FAO, 2016), the potential for severe impacts due to acidification is obvious. Less obvious, but perhaps more insidious, is the interaction between climate change and the loss of oyster and coral reefs due to acidification. Acidification is known to interfere with oyster reef building and coral reefs. Climate change also increases storm frequency and severity. Coral reefs and oyster reefs provide protection from storm surge because they reduce wave energy (Spalding et al., 2014). If these reefs are lost due to acidification at the same time as storms become more severe and sea level rises, coastal communities will be exposed to unprecedented storm surge—and may be ravaged by recurrent storms.

A key feature of the risk associated with climate change is that mean annual temperature and mean annual rainfall are not the variables of interest. Rather it is extreme episodic events that place nations and entire regions of the world at risk. These extreme events are by definition “rare” (once every hundred years), and changes in their likelihood are challenging to detect because of their rarity, but are exactly the manifestations of climate change that we must get better at anticipating (Diffenbaugh et al., 2017). Society will have a hard time responding to shorter intervals between rare extreme events because in the lifespan of an individual human, a person might experience as few as two or three extreme events. How likely is it that you would notice a change in the interval between events that are separated by decades, especially given that the interval is not regular but varies stochastically? A concrete example of this dilemma can be found in the past and expected future changes in storm-related flooding of New York City. The highly disruptive flooding of New York City associated with Hurricane Sandy represented a flood height that occurred once every 500 years in the 18th century, and that occurs now once every 25 years, but is expected to occur once every 5 years by 2050 (Garner et al., 2017). This change in frequency of extreme floods has profound implications for the measures New York City should take to protect its infrastructure and its population, yet because of the stochastic nature of such events, this shift in flood frequency is an elevated risk that will go unnoticed by most people.

4. The combination of positive feedback loops and societal inertia is fertile ground for global environmental catastrophes.

Humans are remarkably ingenious, and have adapted to crises throughout their history. Our doom has been repeatedly predicted, only to be averted by innovation (Ridley, 2011). However, the many stories of human ingenuity successfully addressing existential risks such as global famine or extreme air pollution represent environmental challenges that are largely linear, have immediate consequences, and operate without positive feedbacks. For example, the fact that food is in short supply does not increase the rate at which humans consume food—thereby increasing the shortage. Similarly, massive air pollution episodes such as the London fog of 1952 that killed 12,000 people did not make future air pollution events more likely. In fact it was just the opposite—the London fog sent such a clear message that Britain quickly enacted pollution control measures (Stradling, 2016). Food shortages, air pollution, water pollution, etc. send immediate signals to society of harm, which then trigger a negative feedback of society seeking to reduce the harm.

In contrast, today’s great environmental crisis of climate change may cause some harm but there are generally long time delays between rising CO2 concentrations and damage to humans. The consequence of these delays are an absence of urgency; thus although 70% of Americans believe global warming is happening, only 40% think it will harm them (http://climatecommunication.yale.edu/visualizations-data/ycom-us-2016/). Secondly, unlike past environmental challenges, the Earth’s climate system is rife with positive feedback loops. In particular, as CO2 increases and the climate warms, that very warming can cause more CO2 release which further increases global warming, and then more CO2, and so on. Table 2 summarizes the best documented positive feedback loops for the Earth’s climate system. These feedbacks can be neatly categorized into carbon cycle, biogeochemical, biogeophysical, cloud, ice-albedo, and water vapor feedbacks. As important as it is to understand these feedbacks individually, it is even more essential to study the interactive nature of these feedbacks. Modeling studies show that when interactions among feedback loops are included, uncertainty increases dramatically and there is a heightened potential for perturbations to be magnified (e.g., Cox, Betts, Jones, Spall, & Totterdell, 2000; Hajima, Tachiiri, Ito, & Kawamiya, 2014; Knutti & Rugenstein, 2015; Rosenfeld, Sherwood, Wood, & Donner, 2014). This produces a wide range of future scenarios.

Positive feedbacks in the carbon cycle involves the enhancement of future carbon contributions to the atmosphere due to some initial increase in atmospheric CO2. This happens because as CO2 accumulates, it reduces the efficiency in which oceans and terrestrial ecosystems sequester carbon, which in return feeds back to exacerbate climate change (Friedlingstein et al., 2001). Warming can also increase the rate at which organic matter decays and carbon is released into the atmosphere, thereby causing more warming (Melillo et al., 2017). Increases in food shortages and lack of water is also of major concern when biogeophysical feedback mechanisms perpetuate drought conditions. The underlying mechanism here is that losses in vegetation increases the surface albedo, which suppresses rainfall, and thus enhances future vegetation loss and more suppression of rainfall—thereby initiating or prolonging a drought (Chamey, Stone, & Quirk, 1975). To top it off, overgrazing depletes the soil, leading to augmented vegetation loss (Anderies, Janssen, & Walker, 2002).

Climate change often also increases the risk of forest fires, as a result of higher temperatures and persistent drought conditions. The expectation is that forest fires will become more frequent and severe with climate warming and drought (Scholze, Knorr, Arnell, & Prentice, 2006), a trend for which we have already seen evidence (Allen et al., 2010). Tragically, the increased severity and risk of Southern California wildfires recently predicted by climate scientists (Jin et al., 2015), was realized in December 2017, with the largest fire in the history of California (the “Thomas fire” that burned 282,000 acres, https://www.vox.com/2017/12/27/16822180/thomas-fire-california-largest-wildfire). This catastrophic fire embodies the sorts of positive feedbacks and interacting factors that could catch humanity off-guard and produce a true apocalyptic event. Record-breaking rains produced an extraordinary flush of new vegetation, that then dried out as record heat waves and dry conditions took hold, coupled with stronger than normal winds, and ignition. Of course the record-fire released CO2 into the atmosphere, thereby contributing to future warming.

Out of all types of feedbacks, water vapor and the ice-albedo feedbacks are the most clearly understood mechanisms. Losses in reflective snow and ice cover drive up surface temperatures, leading to even more melting of snow and ice cover—this is known as the ice-albedo feedback (Curry, Schramm, & Ebert, 1995). As snow and ice continue to melt at a more rapid pace, millions of people may be displaced by flooding risks as a consequence of sea level rise near coastal communities (Biermann & Boas, 2010; Myers, 2002; Nicholls et al., 2011). The water vapor feedback operates when warmer atmospheric conditions strengthen the saturation vapor pressure, which creates a warming effect given water vapor’s strong greenhouse gas properties (Manabe & Wetherald, 1967).

Global warming tends to increase cloud formation because warmer temperatures lead to more evaporation of water into the atmosphere, and warmer temperature also allows the atmosphere to hold more water. The key question is whether this increase in clouds associated with global warming will result in a positive feedback loop (more warming) or a negative feedback loop (less warming). For decades, scientists have sought to answer this question and understand the net role clouds play in future climate projections (Schneider et al., 2017). Clouds are complex because they both have a cooling (reflecting incoming solar radiation) and warming (absorbing incoming solar radiation) effect (Lashof, DeAngelo, Saleska, & Harte, 1997). The type of cloud, altitude, and optical properties combine to determine how these countervailing effects balance out. Although still under debate, it appears that in most circumstances the cloud feedback is likely positive (Boucher et al., 2013). For example, models and observations show that increasing greenhouse gas concentrations reduces the low-level cloud fraction in the Northeast Pacific at decadal time scales. This then has a positive feedback effect and enhances climate warming since less solar radiation is reflected by the atmosphere (Clement, Burgman, & Norris, 2009).

The key lesson from the long list of potentially positive feedbacks and their interactions is that runaway climate change, and runaway perturbations have to be taken as a serious possibility. Table 2 is just a snapshot of the type of feedbacks that have been identified (see Supplementary material for a more thorough explanation of positive feedback loops). However, this list is not exhaustive and the possibility of undiscovered positive feedbacks portends even greater existential risks. The many environmental crises humankind has previously averted (famine, ozone depletion, London fog, water pollution, etc.) were averted because of political will based on solid scientific understanding. We cannot count on complete scientific understanding when it comes to positive feedback loops and climate change.

#### Our internal link is reverse causal. The “spatial fix” ensures infinite environmental destruction.

Shammas and Holen 19 [(Victor L, a sociologist working at the Department of Sociology and Human Geography, University of Oslo; Tomas B., independent scholar in Oslo, Norway) “One giant leap for capitalistkind: private enterprise in outer space,” 1-29-2019, pg. 5-6] julian

No longer terra nullius, space is now the new terra firma of capitalistkind: its naturalized terroir, its next necessary terrain. The logic of capitalism dictates that capital should seek to expand outwards into the vastness of space, a point recognized by a recent ethnography of NewSpace actors (Valentine, 2016, p. 1050). The operations of capitalistkind serve to resolve a series of (potential) crises of capitalism, revolving around the slow, steady decline of spatial fixes (see e.g., Harvey, 1985, p. 51–66) as they come crashing up against the quickly vanishing blank spaces remaining on earthly maps and declining (terrestrial) opportunities for profitable investment of surplus capital (Dickens and Ormrod, 2007a, p. 49–78).

A ‘spatial fix' involves the geographic modulation of capital accumulation, consisting in the outward expansion of capital onto new geographic terrains, or into new spaces, with the aim of filling a gap in the home terrains of capital. Jessop (2006, p. 149) notes that spatial fixes may involve a number of strategies, including the creation of new markets within the capitalist world, engaging in trade with non-capitalist economies, and exporting surplus capital to undeveloped or underdeveloped regions. The first two address the problem of insufficient demand and the latter option creates a productive (or valorizing) outlet for excess capital. Capitalism must regularly discover, develop, and appropriate such new spaces because of its inherent tendency to generate surplus capital, i.e., capital bereft of profitable purpose. In Harvey’s (2006, p. xviii) terms, a spatial fix revolves around ‘geographical expansions and restructuring…as a temporary solution to crises understood…in terms of the overaccumulation of capital'. It is a temporary solution because these newly appropriated spaces will in turn become exhausted of profitable potential and are likely to produce their own stocks of surplus capital; while ‘capital surpluses that otherwise stood to be devalued, could be absorbed through geographical expansions and spatio-temporal displacements' (Harvey, 2006, p. xviii), this outwards drive of capitalism is inherently limitless: there is no end point or final destination for capitalism. Instead, capitalism must continuously propel itself onwards in search of pristine sites of renewed capital accumulation. In this way, Harvey writes, society constantly ‘creates fresh productive powers elsewhere to absorb its overaccumulated capital' (Harvey, 1981, p. 8).

Historically, spatial fixes have played an important role in conserving the capitalist system. As Jessop (2006, p. 149) points out, ‘The export of surplus money capital, surplus commodities, and/or surplus labour-power outside the space(s) where they originate enabled capital to avoid, at least for a period, the threat of devaluation'. But these new spaces for capital are not necessarily limited to physical terrains, as with colonial expansion in the nineteenth century; as Greene and Joseph (2015) note, various digital spaces, such as the Internet, can also be considered as spatial fixes: the Web absorbs overaccumulated capital, heightens consumption of virtual and physical goods, and makes inexpensive, flexible sources of labor available to employers. Greene and Joseph offer the example of online high-speed frequency trading as a digital spatial fix that furthers the ‘annihilation of space by time' first noted by Marx in his Grundrisse (see Marx, 1973, p. 524).

Outer space serves at least two purposes in this regard. In the short-to medium-term, it allows for the export of surplus capital into emerging industries, such as satellite imaging and communication. These are significant sites of capital accumulation: global revenues in the worldwide satellite market in 2016 amounted to $260 billion (SIA, 2017, p. 4). Clearly, much of this activity is taking place ‘on the ground'; it is occurring in the ‘terrestrial economy'. But all that capital would have to find some other meaningful or productive outlet were it not for the expansion of capital into space. Second, outer space serves as an arena of technological innovation, which feeds back into the terrestrial economy, helping to avert crisis by pushing capital out of technological stagnation and innovation shortfalls.

In short, outer space serves as a spatial fix. It swallows up surplus capital, promising to deliver valuable resources, technological innovations, and communication services to capitalists back on Earth. This places outer space on the same level as traditional colonization, analyzed in Hegel’s Philosophy of Right, which Hegel thought of as a product of the ‘inner dialectic of civil society', which drives the market to ‘push beyond its own limits and seek markets, and so its necessary means of subsistence, in other lands which are either deficient in the goods it has overproduced, or else generally backward in creative industry, etc.' (Hegel, 2008, p. 222). In this regard, SpaceX and related ventures are not so very different from maritime colonialists and the trader-exploiters of the British East India Company. But there is something new at stake. As the Silicon Valley entrepreneur Peter Diamandis has gleefully noted: ‘There are twenty-trillion-dollar checks up there, waiting to be cashed!' (Seaney and Glendenning, 2016). Capitalistkind consists in the naturalization of capitalist consciousness and practice, the (false) universalization of a particular mode of political economy as inherent to the human condition, followed by the projection of this naturalized universality into space—capitalist humanity as a Fukuyamite ‘end of history', the end-point of (earthly) historical unfolding, but the starting point of humanity’s first serious advances in space.

What role, then, for the state? The frontiersmen of NewSpace tend to think of themselves as libertarians, pioneers beyond the domain of state bureaucracy (see Nelson and Block, 2018). ‘The government should leave the design work and ownership of the product to the private sector', the author of a 2017 report, Capitalism in Space, advocates. ‘The private companies know best how to build their own products to maximize performance while lowering cost' (Zimmerman, 2017, p. 27). One ethnographer notes that ‘politically, right-libertarianism prevails' amongst NewSpace entrepreneurs (Valentine, 2016, p. 1047–1048). Just as Donald Rumsfeld dismissed the opponents to the Iraq War as ‘Old Europe', so too are state entities’ interests in space exploration shrugged off as symptoms of ‘Old Space'. Elon Musk, we are told in a recent biography, unlike the sluggish Big State actors of yore, ‘would apply some of the start-up techniques he’d learned in Silicon Valley to run SpaceX lean and fast…As a private company, SpaceX would also avoid the waste and cost overruns associated with government contractors' (Vance, 2015, p. 114). This libertarianism-in-space has found a willing chorus of academic supporters. The legal scholar Virgiliu Pop introduces the notion of the frontier paradigm (combining laissez-faire economics, market competition, and an individualist ethic) into the domain of space law, claiming that this paradigm has ‘proven its worth on our planet' and will ‘most likely…do so in the extraterrestrial realms' as well (Pop, 2009, p. vi). This frontier paradigm is not entirely new: a ‘Columbus mythology', centering on the ‘noble explorer', was continuously evoked in the United States during the Cold War space race (Dickens and Ormrod, 2016, pp. 79, 162–164).

But the entrepreneurial libertarianism of capitalistkind is undermined by the reliance of the entire NewSpace complex on extensive support from the state, ‘a public-private financing model underpinning long-shot start-ups' that in the case of Musk’s three main companies (SpaceX, SolarCity Corp., and Tesla) has been underpinned by $4.9 billion dollars in government subsidies (Hirsch, 2015). In the nascent field of space tourism, Cohen (2017) argues that what began as an almost entirely private venture quickly ground to a halt in the face of insurmountable technical and financial obstacles, only solved by piggybacking on large state-run projects, such as selling trips to the International Space Station, against the objections of NASA scientists. The business model of NewSpace depends on the taxpayer’s dollar while making pretensions to individual self-reliance. The vast majority of present-day clients of private aerospace corporations are government clients, usually military in origin. Furthermore, the bulk of rocket launches in the United States take place on government property, usually operated by the US Air Force or NASA.13

This inward tension between state dependency and capitalist autonomy is itself a product of neoliberalism’s contradictory demand for a minimal, “slim” state, while simultaneously (and in fact) relying on a state reengineered and retooled for the purposes of capital accumulation (Wacquant, 2012). As Lazzarato writes, ‘To be able to be “laissez-faire”, it is necessary to intervene a great deal' (2017, p. 7). Space libertarianism is libertarian in name only: behind every NewSpace venture looms a thick web of government spending programs, regulatory agencies, public infrastructure, and universities bolstered by research grants from the state. SpaceX would not exist were it not for state-sponsored contracts of satellite launches. Similarly, in 2018, the US Defense Advanced Research Projects Agency (DARPA)—the famed origin of the World Wide Web—announced that it would launch a ‘responsive launch competition', meaning essentially the reuse of launch vehicles, representing an attempt by the state to ‘harness growing commercial capabilities' and place them in the service of the state’s interest in ensuring ‘national security' (Foust, 2018b).

This libertarianism has been steadily growing in the nexus between Silicon Valley, Stanford University, Wall Street, and the Washington political establishment, which tend to place a high value on Randian ‘objectivism' and participate in a long American intellectual heritage of individualistic ‘bootstrapping' and (allegedly) gritty self-reliance. But as Nelson and Block (2018, p. 189–197) recognize, one of the central symbolic operations of capitalistkind resides in concealing its reliance on the state by mobilizing the charm of its entrepreneurial constituents and the spectacle of space. There is a case to be made for the idea that SpaceX and its ilk resemble semi-private corporations like the British East India Company. The latter, “incorporated by royal charter from Her Majesty Queen Elizabeth I in 1600 to trade in silk and spices, and other profitable Indian commodities,” recruited soldiers and built a ‘commercial business [that] quickly became a business of conquest' (Tharoor, 2017). SpaceX, too, is increasingly imbricated with an attempt on the part of a particular state, the United States, to colonize and appropriate resources derived from a particular area, that of outer space; it, too, depends on the infrastructure, contracts, and regulatory environment that thus far only a state seems able to provide. Its private character, like that of the East India Company, is troubled by being deeply embedded in the state. As one commentator has observed of SpaceX, ‘If there’s a consistent charge against Elon Musk and his high-flying companies…it’s that they’re not really examples of independent, innovative market capitalism. Rather, they’re government contractors, dependent on taxpayer money to stay afloat' (cit. Nelson and Block, 2018, p. 189).

Perhaps this should not come as a surprise. As Bourdieu (2005, p. 12) observed, ‘The economic field is, more than any other, inhabited by the state, which contributes at every moment to its existence and persistence, and also to the structure of the relations of force that characterize it'. The state lays out the preconditions for market exchanges. Under neoliberalism, the state is the preeminent facilitator of markets. The neoliberal state is not so much a Minimalstaat, night watchman state, or slim state as it is the prima causa of market society (see, e.g., Wacquant, 2012). Similarly, in the political theory of Deleuze and Guattari, any economic development presupposes the political differentiation caused by the state (Deleuze and Guattari, 2004a, p. 237–238). Even in the global environment of contemporary capitalism, the market cannot operate without the state becoming integrated with capitalism itself, as ‘it is the modern state that gives capitalism its models of realization' (Deleuze and Guattari, 2004b, p. 480). For capitalism to survive in outer space, the state must create a regulatory environment, subsidize infrastructure, and hand down contracts – in short, assemble outer space as a domain made accessible in legal, technical, and economic ways.

### Advocacy

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

#### Revising the Outer Space Treaty curbs the impact of space debris – timeframe is crucial.

Shah 20 – Sachin, 8/30/20, [“Aug 30 The International Legal Regulation of Space Debris,” CORNELL UNDERGRADUATE LAW & SOCIETY REVIEW, Administrative, Policy, Technology, <https://www.culsr.org/articles/the-international-legal-regulation-of-space-debris>] Justin

In this article, I have demonstrated that the existing laws and regulations pertaining to space debris are best captured in the Outer Space Treaty of 1967. While many scholars do believe that Articles VII and IX of the Treaty does provide basic accountability for space debris, many also agree that its vague, non-technical legal language creates problems in mitigating the ever-growing problem of space debris in orbit around Earth. Despite this lack of legal clarity, some scholars have proposed solutions to the space debris issue. Some have simply called for a revised, specific version of the Outer Space Treaty. Others have recommended implementing an entire regulatory regime with the authority to create laws which specifically pertain to holding actors accountable for space debris production. While lawmakers have yet to update the existing regulations regarding space debris, more effective space debris mitigation techniques lie in the private sector. The profit-based incentives of private satellite companies ensure their responsibility in and around Earth's orbit. In the example of SpaceX, the loose legal regulations of satellite use by the FCC and the ITU have allowed the company to send thousands of satellites into orbit. We live in a different world today than we did in 1967. In order to maintain our current safety and our future ability to voyage outer space, stronger legal frameworks must be created to prevent the uncontrollable expansion of space debris around Earth. Used effectively, legal action can accomplish these goals, but lack thereof may result in disaster.

#### Private entities are non-governmental.

Dunk 11 – Frans G. von der Dunk, 2011, [“The Origins of Authorisation: Article VI of the Outer Space Treaty and International Space Law,” University of Nebraska] Justin

4. Interpreting Article VI of the Outer Space Treaty One main novel feature of Article VI stood out with reference to the role of private enterprise in this context. Contrary to the version of the concept applicable under general international law, where “direct state responsibility” only pertained to acts somehow directly attributable to a state and states could only be addressed for acts by private actors under “indirect,” “due care”/“due diligence” responsibility,18 Article VI made no difference as to whether the activities at issue were the state’s own (“whether such activities are carried on by governmental agencies” . . .) or those of private actors (. . . “or by non-governmental entities”). The interests of the Soviet Union in ensuring that, whomever would actually conduct a certain space activity, some state or other could be held responsible for its compliance with applicable rules of space law to that extent had prevailed. However, the general acceptance of Article VI as cornerstone of the Outer Space Treaty unfortunately was far from the end of the story. Partly, this was the consequence of key principles being left undefined.

#### Exemptions destroy the the power of treaties – causes circumvention across the board.

Hickman and Dolman 2 – John and Everett, 2002, Associate professor in the Department of Government and International Studies at Berry College in Mt. Berry, [“Resurrecting the Space Age: A State–Centered Commentary on the Outer Space Regime,” Volume 21 Number 1, <https://doi.org/10.1080/014959302317350855>] Elmer Recut Justin

Thus a state party need merely announce its intention to withdraw and then wait one year. Withdrawal of a single state party to the treaty, however, would not necessarily terminate the treaty between the other state parties. Yet, the decision of an important state not to be bound by a regime–creating treaty obviously endangers the entire treaty. The decision of the United States or China to withdraw from the OST would have far greater implications for the survival of the international space regime than the same decision by Bangladesh, Burkina Faso, or Papua New Guinea—the equality of states under international law remains nothing more than a useful  ction. For the OST to remain good international law, it must be accepted as such by the major space faring states of the 21st Century: the United States, Russia, the European Union, Japan, and China. One defection from the regime by a member of this group would no doubt lead to its effective collapse, as the remaining space faring states are unlikely to use the kind of coercion necessary to enforce the regime. A more likely response to such a defection is a scramble to make similar claims to sovereignty, based on historical precedent and effective occupation. Similar rushes to stake claims for territory sovereignty in other celestial bodies might follow.

#### Corporate colonialism also locks the Global South out of space, which internal link turns any negative offense because it magnifies interstellar inequality.

Stockwell 20 [Sam Stockwell is a research assistant at RAND Europe working in the area of defence, security and infrastructure. His research interests include terrorism and counter-terrorism, cybersecurity, emerging technologies in conflict environments, and space security. Prior to RAND, Stockwell was a research assistant at The Henry Jackson Society, a security think tank, where he studied the impact of coronavirus on online extremist content. He has also worked with lecturers at the University of East Anglia on Brexit-related projects. Stockwell achieved a Distinction at King's College London in conflict, security and development studies, specialising in far-right terrorism and cyber security. He holds a First Class B.A. (Hons) degree in politics from the University of East Anglia, where he also received The Thomas Paine Prize in Politics for achieving consistently high marks on assignments throughout his course.) “Legal ‘Black Holes’ in Outer Space: The Regulation of Private Space Companies” E-International Relations, July 20, 2020] RM

Corporate Space Debris, Security Tensions and Environmental Contamination

Space debris can be defined as non-purposeful man-made objects that reside in space; made up of inactive parts from former space operations and fragmentations of spacecraft, there are nearly 30,000 pieces of debris in the Earth’s orbit (Pellegrino & Stang, 2016: 25). Despite most debris being centimetres or millimetres in size satellites often travel at the speed of a bullet, meaning that a collision between the two could be catastrophic in terms of environmental, mechanical and financial damage (Black & Butt, 2010: 1).

Since the development of the Kessler Syndrome thesis in 1978 – which predicted that space debris may become so dense as to trigger a chain reaction of major collisions – space debris is considered more of a threat to security operations in the near-term than military space activity (Quintana, 2017: 95). Difficulty over determining whether a collision was accidental or a purposeful act further exacerbates this problem, given that “every object in orbit is a threat to everything else in orbit, regardless of its intended function” (Faith, 2012: 86). Such developments have led to the US administration increasingly adopting a securitisation discourse around orbital debris (Bowen, 2014: 47), which may cause concerns as to whether policymakers may react to future American satellite collisions in a militarised manner.

A number of NewSpace actors are likely to complicate these worries even further through recent satellite proposals. Whilst Boeing is proposing a constellation of up to 3,000 satellites, SpaceX has even grander goals of creating a constellation consisting of 4,425 satellites, eventually expanding to 12,000 satellites in the near-future (Kosiak, 2019: 7). Putting this into context, there are currently just around 1,400 active satellites in orbit around the Earth, highlighting the scale of these projects. The collision between a single US privately-owned Iridium satellite and state-owned Russian Cosmos satellite in 2009 underscored not only the sheer amount of debris caused by these collisions – over 1,500 pieces – but also foreshadowed the possible geopolitical tensions that may arise from them (Wang, 2010: 87-88). Given the number of various commercial satellite constellations possibly going into orbit in the near-future, this raises questions over the possibly devastating security hazards they could pose once in orbit or when they eventually become defunct.

Yet the proliferation of these commercial satellite plans also pose significant environmental issues. Article IX of the OST asserts that: “States shall pursue activities of outer space in a manner that avoids any harmful contamination or adverse environmental changes on Earth” (UN, 1967). However, the use of terms like ‘harmful’ or ‘adverse change’ underscores the lack of specificity over what exactly constitutes environmental damage, or for whom it must refrain from harming. There is also a failure to address the explicit problem of space debris since the discourse is primarily concentrated on chemical effluent pollution, undermining attempts to facilitate the removal of floating wreckage(Gupta, 2016: 26).

The inability of the OST to properly promote environmental considerations in space has been mirrored in the NewSpace community, where there has been a woeful lack of ecological consideration: “The hundreds of articles and books on outer space resource development seldom mention that such actions may adversely affect the environment in ways that will potentially disadvantage their enterprises and the humans that will be required to implement them” (Kramer, 2017: 136). Such images evoke the types of difficulties that private firms have encountered on Earth reconciling capital with the environment in a way that doesn’t damage profit margins (Magdoff & Foster, 2011: 61-66). Yet in doing so, this neglect is only likely to result in the proliferation of extra-terrestrial debris that the UN OST failed to address. Indeed, despite its vastness there is only a narrow region of orbital space that is either useable or beneficial for prolonged human missions (Brearley, 2005: 2), meaning that the increase in space debris from these massive commercial satellite constellations will likely be at the detriment of developing nations who have yet fostered spacefaring capabilities.

Elon Musk’s SpaceX company has already caused complications for Earth-bound astrologists. The brightness of his recent ‘Starlink’ satellite constellation system in comparison to other satellites has been obscuring telescopic images (see Grush, 2020). More concerningly, Starlink may be much more visible during twilight hours which could be problematic in identifying potentially hazardous asteroids in a timely manner (The Verge, 2020). In this sense, whilst private space entrepreneurs are able to increase their profitability from being able to establish constellations, such endeavours are spoiling the scientific work of researchers on Earth that may complicate the monitoring of Earth-based asteroid impacts.

Conclusion: Space as a Global Commodity

Ultimately, this essay has revealed how the UN OST fails to adequately regulate private space enterprises in outer space within an array of activities. Predominately designed from a state-centric perspective, the increasing entanglement of the state apparatus with the private sector is enabling both actors to satisfy their extra-terrestrial interests through legal ambiguities in a way that the treaty never envisaged possible.

Yet, these processes also expose the ways in which the conceptualisation of outer space by both the drafters of the OST and NewSpace actors is intimately connected to Earth-bound social relations and power structures. Whether it be contestations over resources, surveillance or the environment, the concerns raised mirror those taking place on Earth. A product of its time, the OST was broadly concerned with protecting states from damage caused by one another in a tense international terrestrial atmosphere of possible nuclear annihilation, rather than seeking to protect the space environment as an aspiration “in its own right” (Brearley, 2005: 19). Despite framing themselves as the saviours of an anthropogenic extinction, the emphasis of NewSpace entrepreneurs on profit accumulation in space also emulates the types of criticisms private enterprises have faced on Earth, and risk the extension of existing wealth inequalities into the cosmos. The precedent set by NASA in April 2020 that will likely lead to the further involvement of private firms such as SpaceX in space endeavours will therefore serve to restrict public access to the extra-terrestrial domain – and the benefits that may arise from this. Indeed, the notion of outer space as a ‘global commons’ is slowly turning into one of a ‘global commodity’.

### **Framework**

#### A] The standard is maximizing life. Prefer it:

#### [1] Actor spec: util is the best for governments, which is the actor in the rez – multiple warrants:

#### [a] Governments must aggregate since every policy benefits some and harms others, which also means side constraints freeze action.

#### [b] No intent-foresight distinction – the actions we take are inevitably informed by predictions from certain mental states, meaning consequences are a collective part of the will.

#### [c] No act omission distinction – governments are responsible for everything in the public sphere and have yes/no bills so inaction is an implicit authorization of action.

#### [d] Actor-spec comes first since different agents have different ethical standings. Takes out util calc indicts since they’re empirically denied and link turns them because the alt is no action.

#### [e] Reject calc indicts—they’re functionally NIBs that everyone knows are silly but skew the aff and move the debate away from the topic and actual philosophical debate, killing valuable education. All indicts assume the Aff is true.

#### B] Extinction outweighs under any framework

Pummer 15 [Theron, Junior Research Fellow in Philosophy at St. Anne's College, University of Oxford. “Moral Agreement on Saving the World” Practical Ethics, University of Oxford. May 18, 2015] AT

There appears to be lot of disagreement in moral philosophy. Whether these many apparent disagreements are deep and irresolvable, I believe there is at least one thing it is reasonable to agree on right now, whatever general moral view we adopt: that it is very important to reduce the risk that all intelligent beings on this planet are eliminated by an enormous catastrophe, such as a nuclear war. How we might in fact try to reduce such existential risks is discussed elsewhere. My claim here is only that we – whether we’re consequentialists, deontologists, or virtue ethicists – should all agree that we should try to save the world. According to consequentialism, we should maximize the good, where this is taken to be the goodness, from an impartial perspective, of outcomes. Clearly one thing that makes an outcome good is that the people in it are doing well. There is little disagreement here. If the happiness or well-being of possible future people is just as important as that of people who already exist, and if they would have good lives, it is not hard to see how reducing existential risk is easily the most important thing in the whole world. This is for the familiar reason that there are so many people who could exist in the future – there are trillions upon trillions… upon trillions. There are so many possible future people that reducing existential risk is arguably the most important thing in the world, even if the well-being of these possible people were given only 0.001% as much weight as that of existing people. Even on a wholly person-affecting view – according to which there’s nothing (apart from effects on existing people) to be said in favor of creating happy people – the case for reducing existential risk is very strong. As noted in this seminal paper, this case is strengthened by the fact that there’s a good chance that many existing people will, with the aid of life-extension technology, live very long and very high quality lives. You might think what I have just argued applies to consequentialists only. There is a tendency to assume that, if an argument appeals to consequentialist considerations (the goodness of outcomes), it is irrelevant to non-consequentialists. But that is a huge mistake. Non-consequentialism is the view that there’s more that determines rightness than the goodness of consequences or outcomes; it is not the view that the latter don’t matter. Even John Rawls wrote, “All ethical doctrines worth our attention take consequences into account in judging rightness. One which did not would simply be irrational, crazy.” Minimally plausible versions of deontology and virtue ethics must be concerned in part with promoting the good, from an impartial point of view. They’d thus imply very strong reasons to reduce existential risk, at least when this doesn’t significantly involve doing harm to others or damaging one’s character. What’s even more surprising, perhaps, is that even if our own good (or that of those near and dear to us) has much greater weight than goodness from the impartial “point of view of the universe,” indeed even if the latter is entirely morally irrelevant, we may nonetheless have very strong reasons to reduce existential risk. Even egoism, the view that each agent should maximize her own good, might imply strong reasons to reduce existential risk. It will depend, among other things, on what one’s own good consists in. If well-being consisted in pleasure only, it is somewhat harder to argue that egoism would imply strong reasons to reduce existential risk – perhaps we could argue that one would maximize her expected hedonic well-being by funding life extension technology or by having herself cryogenically frozen at the time of her bodily death as well as giving money to reduce existential risk (so that there is a world for her to live in!). I am not sure, however, how strong the reasons to do this would be. But views which imply that, if I don’t care about other people, I have no or very little reason to help them are not even minimally plausible views (in addition to hedonistic egoism, I here have in mind views that imply that one has no reason to perform an act unless one actually desires to do that act). To be minimally plausible, egoism will need to be paired with a more sophisticated account of well-being. To see this, it is enough to consider, as Plato did, the possibility of a ring of invisibility – suppose that, while wearing it, Ayn could derive some pleasure by helping the poor, but instead could derive just a bit more by severely harming them. Hedonistic egoism would absurdly imply she should do the latter. To avoid this implication, egoists would need to build something like the meaningfulness of a life into well-being, in some robust way, where this would to a significant extent be a function of other-regarding concerns (see chapter 12 of this classic intro to ethics). But once these elements are included, we can (roughly, as above) argue that this sort of egoism will imply strong reasons to reduce existential risk. Add to all of this Samuel Scheffler’s recent intriguing arguments (quick podcast version available here) that most of what makes our lives go well would be undermined if there were no future generations of intelligent persons. On his view, my life would contain vastly less well-being if (say) a year after my death the world came to an end. So obviously if Scheffler were right I’d have very strong reason to reduce existential risk. We should also take into account moral uncertainty. What is it reasonable for one to do, when one is uncertain not (only) about the empirical facts, but also about the moral facts? I’ve just argued that there’s agreement among minimally plausible ethical views that we have strong reason to reduce existential risk – not only consequentialists, but also deontologists, virtue ethicists, and sophisticated egoists should agree. But even those (hedonistic egoists) who disagree should have a significant level of confidence that they are mistaken, and that one of the above views is correct. Even if they were 90% sure that their view is the correct one (and 10% sure that one of these other ones is correct), they would have pretty strong reason, from the standpoint of moral uncertainty, to reduce existential risk. Perhaps most disturbingly still, even if we are only 1% sure that the well-being of possible future people matters, it is at least arguable that, from the standpoint of moral uncertainty, reducing existential risk is the most important thing in the world. Again, this is largely for the reason that there are so many people who could exist in the future – there are trillions upon trillions… upon trillions. (For more on this and other related issues, see this excellent dissertation). Of course, it is uncertain whether these untold trillions would, in general, have good lives. It’s possible they’ll be miserable. It is enough for my claim that there is moral agreement in the relevant sense if, at least given certain empirical claims about what future lives would most likely be like, all minimally plausible moral views would converge on the conclusion that we should try to save the world. While there are some non-crazy views that place significantly greater moral weight on avoiding suffering than on promoting happiness, for reasons others have offered (and for independent reasons I won’t get into here unless requested to), they nonetheless seem to be fairly implausible views. And even if things did not go well for our ancestors, I am optimistic that they will overall go fantastically well for our descendants, if we allow them to. I suspect that most of us alive today – at least those of us not suffering from extreme illness or poverty – have lives that are well worth living, and that things will continue to improve. Derek Parfit, whose work has emphasized future generations as well as agreement in ethics, described our situation clearly and accurately: “We live during the hinge of history. Given the scientific and technological discoveries of the last two centuries, the world has never changed as fast. We shall soon have even greater powers to transform, not only our surroundings, but ourselves and our successors. If we act wisely in the next few centuries, humanity will survive its most dangerous and decisive period. Our descendants could, if necessary, go elsewhere, spreading through this galaxy…. Our descendants might, I believe, make the further future very good. But that good future may also depend in part on us. If our selfish recklessness ends human history, we would be acting very wrongly.” (From chapter 36 of On What Matters)