## Framing

#### LINK FILTER – The affirmative does not stop the commercialization of space. Barring appropriation only limits the ownership of real property, use is still allowed. 100% of aff harms result from use, like the claiming of resources in space, not ownership of real estate.

#### *The aff doesn’t have a single piece of solvency or link evidence that is actually about appropriation, or even says the word appropriation, so you should give it ZERO WEIGHT. Go ahead, control F the doc – he only uses it to explain normal means in his first card.*

Švec et al 20 [Martin Švec, Petr Boháček, and Nikola Schmidt, “Utilization of Natural Resources in Outer Space: Social License to Operate as an Alternative Source of Both Legality and Legitimacy,” Oil Gas Energy Law J, 2020. <https://planetary-defense.eu/wp-content/uploads/2020/11/ov18-1-article17-notitle.pdf>] CT

2.2.1. Is the Utilization of Space Resources Implicitly Prohibited by the OST?

When the OST was drafted, exploitation of space resources was not considered feasible. Thus, the treaty does not contain any specific reference to space resource activities. However, silence of the OST does not necessarily imply unlawfulness of these activities. On the contrary, the freedom of exploration, use and access is one of the most fundamental principles of international space law. Art I of the OST reads: “Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.“25 It is worth mentioning that France already in 1966, during the negotiations of the OST, emphasised that it is important to know exactly what is meant by the term ‘use’, and whether it is an equivalent to the term ‘exploitation’. 26 While there is a general consensus on the interpretation of the term “exploration” as referring to discovery activities of the space environment for scientific reasons, a large disagreement exists concerning the term ‘use’.27 In this context the Board of Directors of the International Institute of Space Law (IISL) hold that there is no international agreement whether the right of “free use” includes the right to take and consume nonrenewable natural resources, including minerals and water on celestial bodies.28 The authors of this article are of the opinion that the term “use” seems to be broad enough to encompass the exploitation of natural resources. Pursuant to the Vienna Convention on the Law of Treaties, a treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose. First, the term “use” usually refers to both the non-economic and economic utilization and, thus, the use of outer space for economic ends can include exploitation with the objective of making economic profit.29 Second, the OST’s preamble reveals that the treaty does not aim to restrict the use of outer space, but rather to promote free exploration and use of outer space and the opposite interpretation would lead to an unnecessary impediment to the development of the uses of outer space.30 What is more, these conclusions may also be derived from the Moon Agreement. Although this agreement has been ratified only by 18 states, it may help understand the meaning of the international space law principles enshrined in the OST. The preamble of the Moon Agreement refers to the “benefits which may be derived from the exploitation of the natural resources of the moon and other celestial bodies,” and art 11 envisages the establishment of an international regime to govern the exploitation of natural resources of the Moon. In addition, Hobe argues, that specific uses are only excluded if they are explicitly excluded in other provisions of the OST, such as prohibition of certain military activities.31

2.2.2. Does the Utilization of Space Resources Contradict the Principle of NonAppropriation?

The principle of non-appropriation is one of the most fundamental rules regulating the exploration and use of outer space. Art II of the OST reads as follows: “Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.” As a consequence, outer space is generally understood as a res communis omnium, 32 in its legal characterisation similar to the law governing the high seas or the deep seabed. An analysis of these already existing regimes based on the non-appropriation principle reveals that an exploitation of natural resources is perfectly compatible with the principle of nonappropriation.33 Additionally, even the Moon Agreement suggests that the exploitation of the natural resources of the moon does not constitute a means of appropriation. In particular, art 11 of the Moon Agreement reiterates that outer space is not subject to national appropriation and it explicitly envisages the establishment of an international legal regime to govern the exploitation of space resources.34

#### The question of the resolution is not whether private activity on mars is unjust, but rather GIVEN the reality of private use, whether private ownership of real estate on mars ought to be allowed, or not. All of their advantages should be filtered by whether it proves that the private use of space without property rights is better than the use of space with property rights.

#### Natural Persons PIC

#### *the private appropriation of mars by natural persons is just, anything else is unjust.*

#### The individual right to property is a basic human right that should be extended to mars.

Faires 19 [Wes Faires, “The role of the Universal Declaration of Human Rights in supporting space property rights,” The Space Review, August 5, 2019. <https://www.thespacereview.com/article/3771/1>] CT

A long-discussed issue has been the absence of provisions pertaining to private entities under the 1967 Outer Space Treaty. Interpretations in favor of private property rights hold that the purpose of Article II’s ban on “national appropriation” was to place a limitation on member nations’ attempts to exercise territorial and political sovereignty over any part of outer space: to restrict territorial disputes between countries from extending beyond Earth. Without an explicit prohibition of private property rights in the treaty, their development with respect to private entities is unencumbered. Opposition has fluctuated from the position that the prohibition of national appropriation in Article II served to exclude development of property rights for private citizens: without a national entity with the ability to “confer” or pass down property rights to “sub-national” citizens, forward progress is rendered impossible. There were later attempts to classify private citizens as “nationals” in order to apply to them the prohibition of ‘national appropriation’. The 1979 Moon Agreement places an explicit ban on property for a host of entities, including “natural persons,” until such time as an international regime can be formulated. Two nations, the United States and Luxembourg, have enacted legislation favorable to property and mineral rights regarding space resources. This was met with opposition from some in the international community, who called into question whether such unilateral acts were in and of themselves a violation of the non-appropriation principle of the 1967 Outer Space Treaty. Perhaps in the future, the concept of “property rights” will have evolved beyond the terrestrial concepts of ownership, sovereignty, and territorial acquisition, under a new treaty framework structured by private entities, developed outside the auspices of any nation-state or supranational regime. Until such time, what is needed is a base-level favorable affirmation of private property rights in outer space, one that serves as a foundation for their evolution beyond national borders and which is accepted across the board. To this end, the solution to 50 years of ambiguity regarding private property rights under the under the current UN Outer Space Treaty framework is found within the 1948 Universal Declaration of Human Rights (UDHR), Article 17: (1) Everyone has the right to own property alone as well as in association with others. (2) No one shall be arbitrarily deprived of his property. -UN General Assembly. "Universal Declaration of Human Rights." United Nations, 217 (III) A,1948, Paris, Art. 17 The commercial space sector would welcome language favorable to private property rights in space, with specific emphasis on the re-affirmation of Article 17 as it pertains to property rights for private entities. Beyond Article 17, utilization of the UDHR as a default mechanism in situations where legislation is not yet developed can yield an immediate benefit for humanity. On the national level, the Universal Declaration of Human Rights can be seamlessly integrated into national space policy. Adoption of the UDHR into space policy by state parties to the Outer Space Treaty is essentially a reaffirmation of one of the fundamental principles of the United Nations, and can take place without litigation or implementation of new national legislation, and with no accusation of violation of “national appropriation.” In the international arena, the Universal Declaration of Human Rights can be seamlessly into to conducting legislative proceedings pertaining to outer space, given that: The overarching thematic priority for UNISPACE + 50 and beyond is “Sustainable Development in Space.” A critical aspect of this calls for ensuring the principles of the 2030 Agenda for Sustainable Development are upheld. The 2030 Agenda is grounded in, and re-affirms, the Universal Declaration of Human Rights (A/RES/70/1 para. 10, para. 19). The task at hand is to compel the United Nations Committee on Peaceful Uses of Outer Space (UNCOPUOS) to commit to upholding the Universal Declaration of Human Rights. Solidarity on such a core foundational UN principle as the UDHR solidifies reflection of Agenda 2030. I propose that UN Secretariat take this opportunity to move forward with Sustainable Development, and lead the way in incorporation the Universal Declaration of Human Rights into international space policy. It is time to recognize property rights as the universally declared human right that it is: “Everyone has the right to own property alone as well as in association with others.” The definition of property and scope of the UDHR was not limited to any one definition or territory. The UDHR was intended from the outset to be universal: “It is not a treaty; it is not an international agreement […] It is a Declaration of basic principles of human rights and freedoms, to be stamped with the approval of the General Assembly by formal vote of its members, and to serve as a common standard of achievement for all peoples of all nations.” -Eleanor Roosevelt, “On the Adoption of the Universal Declaration of Human Rights” December 9, 1948 Here in its 70th year of adoption, acceptance of the UDHR into space policy by the international community would be both timely and logical. It reaffirms adherence to a fundamental United Nations cornerstone, and provides an opportunity to strengthen the commitment to the 2030 Agenda for Sustainable Development. At a time when feasibility of extraction of minerals from celestial bodies is fast approaching, it is our responsibility to ensure that the transition occurs free of any terrestrial shackles. The Universal Declaration of Human Rights offers an acceptable foundational framework from which property rights can evolve off-planet, that can be embraced by the private sector, adopted across national levels, and upheld in the international arena

#### The CP protects individual property rights while solving case since the aff still applies to corporations.

#### No perms: The CP would expand the rights of individuals in space, from the mere right to use, to the full bundle of rights protected by private property.

Reinstein 99 ]Ezra J. Reinstein, “Owning Outer Space,” 20 Nw. J. Int'l L. & Bus. 59 (1999-2000). <https://scholarlycommons.law.northwestern.edu/cgi/viewcontent.cgi?article=1500&context=njilb>] CT

IV. PROPOSAL: APPROPRJATIVE OWNERSHIP OF REAL PROPERTY

The ideal legal regime should create maximum incentives for efficient development of space, in recognition of the fact that the potential wealth in space will not drop into our laps. But as much as commercial development of space would benefit all mankind, it is just as important that the development be controlled. We must learn from mistakes of the past. Any legal regime should guard against inefficient exploitation, waste, and environmental despoliation. Furthermore, space should not become the next Wild West. Destruction and sabotage must be discouraged. My proposal, which will be developed throughout this essay, is to maximize incentives by giving developers comprehensive property rights. Humanity's welfare demands that we alter the current law to allow real estate ownership -- not just usufructary rights -- to those who would best develop land in space.7 The potential wealth of outer space, in the form of minerals, energy, living space, etc., doesn't do us any good unless we are able to harness it. And, as Jeffrey Kargel, a planetary scientist at the U.S. Geological Survey, has written, "if you want to cross the bridge into the 21st century of space [development], then space must pay its way and give private investors a handsome early return on investment.' 75 What do we mean by "ownership?" Property is commonly recognized as being a "bundle" of disparate rights regulating relations between people with respect to things. The bundle of rights can be unpacked. It includes: the right to possess, the right to use, the right to exclude, and the right to transfer.76 These rights are not on/off affairs; they can each be limited or expanded along a continuum. I use the term "ownership" to describe a state of affairs wherein a person has all four of these rights to their maximum extent with respect to a piece of property. Current space law ostensibly respects the right to use real property in space and to collect and own its fruits. Historically, this has been known as the usufructary right.77 But the current law doesn't even provide this right freely; it seems to be limited by several clauses of the Outer Space Treaty (e.g. use "for the benefit...of all countries").78 Nor does the OST recognize the right to exclude, as is evidenced by article I's prohibition on appropriating what it recognizes as being "the province of all mankind," the guarantee in the same article of "free access to all areas of celestial bodies," and article XII's requirement that "[a]ll stations [and] installations...shall be open to representatives of other States Parties to the Treaty on a basis of reciprocity." Likewise, as illuminated in the SpaceCorp hypothetical, the prohibition on appropriation seems to negate a long-term right of possession. Without the right to exclude or pos- sess, of course, a legal system need not provide the right to transfer real estate. Anyone else may simply help themselves. In sum, the OST demands that "[n]o State can obtain such possessions as will entitle it to claim ownership or sovereignty over them... There can be no exclusive appro- priation of [celestial bodies] and any part thereof as a result of their 'use'..." 79 Under current law, space cannot be owned. A new law of space real property must enliven and support all four rights that comprise ownership. First, there must be a right to permanent possession: barring some ex- traordinary circumstance or the enforcement of a judgment, no one should face dispossession of his real estate on Earth or in space. This rule supplies a needed measure of certainty, in two ways: (1) it's a definite rule and almost any such rule is better than the fogginess of the current regime, and (2) it moves the presumption away from public conversion of private lands, and therefore makes it clear that the OST's statement, that space development must be "for the benefit...of all countries," is a moral exhortation and not a loophole through which the United Nations can dispossess a private party of his site. Second, I suggest that the right to use be unlimited, except by environmental regulations and the developer's domestic law. This rule is a recognition that humanity's fortune is best enhanced not by a centralized command-and-control system, but by private development making market-driven decisions. Like the right to perpetual possession, the third right -- the right to exclude -- creates the certainty vital to an optimal investment environment. As noted, the current system precludes such a right, for it would certainly run afoul of the prohibition on appropriation and the requirement that there be "free access to all areas of celestial bodies. 80 Without the right to exclude, however, pioneer investors would be at the mercy of free riders. After investing countless hours in (or paying someone else for) a survey of the real estate, after setting up a mining colony at great expense, the pioneer would have no recourse if another party took advantage of the pioneer's research and began a copycat mine on the very same site. So the right to exclude must form a part of the new legal system. Finally, the right to transfer must accompany the rights of exclusion and perpetual possession. The Coase Theorem of economics tells us that, in a legal environment supportive of bargaining, property rights will be allocated to the party who values them most, i.e. the most efficient user of the property.81 When transaction costs are high enough to prevent bargaining, property rights only end up in the most productively efficient hands if the law happens to initially assign them that way.82 Without any right to transfer, transaction costs are infinite, and no bargaining can occur. In order to avoid the inevitably inefficient solutions of a command-and-control regime of property usage, the right to transfer -- alienability -- must be a part of our system.83 All these rights together -- possession, use, exclusion, and transfer -- make up ownership. And it is ownership that the modem law of space real property needs.

## Net Benefit

#### Space settlement is coming now and prevents inevitable extinction. Future settlers need protections and the rule of law.

Gesl 18 [Paul M. Gesl (Maj, USAF JD), “PREPARING FOR THE NEXT SPACE RACE: Legislation and Policy Recommendations for Space Colonies,” A Research Report Submitted to the Faculty In Partial Fulfillment of the Graduation Requirements for the Degree of MASTER OF OPERATIONAL ARTS AND SCIENCES (April 2018). <https://apps.dtic.mil/sti/pdfs/AD1053024.pdf>] CT

Why the United States Needs to Think About Space Colonization Now

The United States’ space policies under the previous two Presidential administrations have not matched the ambition of the commercial sector. The author has criticized the National Space Policies of both President Obama and George W. Bush as being too “Earth-Centric.”6 Based on the current state of technologies, it is easy to dismiss space colonization as, at best, a problem to worry about tomorrow and, at worst, mere science fiction. This is irresponsible. Reaching space is difficult. Colonizing it will be even more difficult; however, we cannot overlook it as a likely possibility. NASA viewed space colonization as an endeavor within humanity’s reach in the 1970s.7 Now it is beginning to take shape as a reality. In 2015 at the Pioneering Space National Summit, policy makers, industry leaders and advocates agreed that “The long term goal of the human spaceflight and exploration program of the United States is to expand permanent human presence beyond low-Earth orbit in a way that will enable human settlement and a thriving space economy. This will be best achieved through public-private partnerships and international collaboration (emphasis in original).”8 Additionally, there have been several attempts in Congress to pursue space settlement.9 Private industry appears to be taking the lead in this race. Elon Musk, the CEO of SpaceX intends to establish a colony of a million settlers on the surface of Mars.10 SpaceX is targeting the first manned missions to make this a reality to launch in 2024.11 Mr. Musk envisions the full colonization to take 40-100 years.12 Even if this timeline misses its ambitious deadline by a decade, humanity will be a multi-planetary species in many readers’ lifetimes. It is important to note that Mr. Musk recently stated that SpaceX is “building the first Mars, or interplanetary ship, and I think we’ll be able to do short trips, flights by first half of next year.”13 Even though he joked that the company might miss their timeline, his comments highlight that colonization is an issue that is fast approaching.14 Another factor to consider is that a legal framework needs to be developed before a Martian colony is at its full capacity. Mr. Musk envisions using SpaceX’s BFR to send approximately 100 people per flight to Mars.15 Additionally, SpaceX appears to be planning for humans living on the lunar surface in their Moon Base Alpha.16 SpaceX is not alone in their ambitions. United Launch Alliance (ULA) published their plans to expand the population of humans living and working in space. Their Cis-lunar 1,000 framework is a 30-year plan to develop the cis-lunar economy and grow the population of humans living and working in space from six to 1,000.17 Space colonization is more important to our species than the economic benefits of a space economy and the conquests of exploration. The current world population is 7.4 billion people.18 According to the World Wildlife Foundation and the Global Footprint Network, “the equivalent of 1.7 planets would be needed to produce enough natural resources to match our consumption rates and a growing population.”19 The problem will likely grow worse as the population of the planet continues to grow. According to the United Nations, the Earth’s population will grow to over 11 billion people by 2100.20 Based partially on this, “Prof [Stephen] Hawking said it was only a matter of time before the Earth as we know it is destroyed by an asteroid strike, soaring temperatures or over-population.”21 Hawking further stated that, “When we have reached similar crisis in or (sic.) history there has usually been somewhere else to colonise (sic.). Columbus did it in 1492 when he discovered the new world. But now there is no new world. No Eutopia (sic.) around the corner. We are running out of space and the only places to go are other worlds.”22 The late Professor Hawking is not alone in his view, the National Space Society observed the benefits of expanding into space. “Outer space holds virtually limitless amounts of energy and raw materials, which can be harvested for use both on Earth and in space. Quality of life can be improved directly by utilization of these resources and also indirectly moving hazardous and polluting industries and/or their waste products off planet Earth.”23 These are just several of the many compelling reasons to colonize space advocated by groups such as the National Space Society and the Space Frontier Foundation.24 ULA appears to be taking steps to meet their ambitions for the future. ULA announced the first step towards making their Cis-lunar 1,000 vision a reality. In October 2017, they announced a partnership with Bigelow Aerospace to launch a habitat to low lunar orbit.25 The launch is expected to be completed before the end 2022.26 Some feel that colonization is going to happen, no matter what governments do.27 If colonization is going to happen, then it is in the United States’ best interest to develop a legal framework that supports the efforts and protects our citizens who will travel to and live in these habitats. This is important for several reasons. First, private corporations appear to have an interest in colonizing space, so it is in humanity’s future whether the government is involved nor not. However, governments can take actions that will accelerate things.28 Second, it is in the best interest of the United States’ economy to support commercial companies that are expanding into space. Third, if the United States does not create a favorable legal framework for space colonization, someone else will. Finally, as humanity expands away from the surface of the Earth, it is important to create a free society based on the principles of the Rule of Law rather than some other form of government, or an anarchistic company town.

#### Space settlement with private appropriation is better than settlement without appropriation.

#### State control of space property undermines liberty. Denying ownership in the name of preserving the common heritage of humankind is a form of tyranny.

Cockell 09 [Charles S. Cockell (Center for Earth, Planetary, Space and Astronomical Research – Open University, Milton Keynes), ““LIBERTY AND THE LIMITS TO THE EXTRATERRESTRIAL STATE”,” JBIS, VOL. 62, pp. 139-157, 2009. https://www.researchgate.net/profile/Charles-Cockell/publication/259104003\_Liberty\_and\_the\_Limits\_to\_the\_Extraterrestrial\_State/links/0f3175305397610c17000000/Liberty-and-the-Limits-to-the-Extraterrestrial-State.pdf] CT

8. PRIVATE LAND AND PROPERTY

The acquisition of private property and land becomes a threat much more real to others who lack that property in an environment where the conditions are lethal. However, the usurpation of property and land by the state can no more be tolerated in an extraterrestrial environment than on the Earth if the conditions for liberty are to be nurtured. Thus a paradox faces the extraterrestrial state which revolves around the question of when it is legitimate to seize property in the interests of livelihood and when it is not [42].

It is worth stating again the famous words of William Pitt, ‘necessity is the plea for every infringement of human freedom’ [43]. The simple answer to problem of property is that it should rarely be right for the state to expropriate property since it must set itself the prior objective of resolving any situation that threatens the lives of people before it resorts to seizing property [44].

One cannot imagine war in space, at least in the foreseeable future, although the long-term future may hold a different story. The most common excuse for the expropriation of private property is therefore absent and the only situation in which such extremes can be envisaged is when a body of people are threatened with death in the extraterrestrial environment and no recourse other than the acquisition of others’ property can resolve the situation. An imaginary debacle involving a failed oxygen supply system in which segments of oxygen systems, owned privately by others, must be commandeered to avert an impending disaster in another segment of habitats, might be envisaged. But as with the systematic state claim to private property on the Earth, such situations must be overseen by deep political discussion and misgiving.

The lethal conditions in space do not prevent corporations and other suppliers of commodities from selling their wares to individuals in a traditional type of transaction whereby the property is then within the private domain of the buyer; and a great deal of suspicion and analysis should attend the excuse that the lethal conditions require public ownership of this and that commodity. In situations where early public ownership of resources seems likely, such as food production systems, the state, and the people, must seize upon all means possible to expand the rate of production and accessibility of the resource so that corporate or private ownership and competition becomes possible. Thus, the same principle that applies to the oxygen industry discussed earlier underpins the very notions of private property in space.

We cannot apply exactly the same view to land, where some type of public ownership may be desirable in certain spaces [45], but apart from these rare preserves, land could be available for private transaction both so that private industries can acquire natural resources and use them to better the economic field of play of the extraterrestrial settlements; and so that individuals can themselves seek space and resources independently of others. The transactions by which this land is traded may be by the same regulations as in many nations on the Earth: sold and bought by developers at prices that appeal to those who believe that they can do something useful with the land.

A more obvious question pertains to land that is not already under ownership – how is extraterrestrial land to be claimed in the first place? This is a matter that has occupied a great many people, and despite all the complexities and arguments about planetary protection, UN legalities and so on and so forth, a simple Lockean response to this question [46] seems the most practical way to deal with the problem – any person or individual who can find a use for land and do something productive with it should be able to claim it. Only this policy will maximise the chances that individuals and corporations will risk themselves in the lethal conditions of space to create enterprises beneficially using the land and expanding the human presence in space. The legal condition would be that these people must do something productive with the land, rather than merely claim it in absentia, hence preventing vast tracts of land sitting unused, but claimed by absentee landlords waving pieces of paper with descriptions of their landholdings, a problem that has already manifested itself in the public sale of land throughout the Solar System as gift items.

In this scheme of land the role of the state would be to collate claims on land and verify that productive activity is occurring on it, and to arbitrate and set the general laws that would apply to all subsequent transactions of land, which might be accomplished by estate agents or realtors no differently to the processes that occur on the Earth. On Earth today, this vision of extraterrestrial land is rejected by some people, but the reason seems to be a product of envy – a distaste that land will be claimed by rich corporations or nations that have the spacefaring capacity and denied to those that do not. But what is the point of denying land to those who could do something useful with it to placate those who would prefer to see nothing done with it at all, simply to satisfy their desire to level the whole of humanity to the lowest economic denominator? Land in outer space, barring that of potential biological interest and placed within the remit of planetary protection concerns, and accepting some minor regulations regarding pollution and waste in all other lands, should be free for any person or group to exploit and develop. The control of land by international or national regulations to hinder its free use – and the restriction in its use under the spurious claim that it is the common heritage of all humankind – is a form of tyranny [47]. There is no meaningful argument that can sustain the claim that land is the province or heritage of all humankind. Indeed, from a general point of view there seems to be considerably more greed and hubris bound up in the idea that everything in the Universe belongs to humankind compared with the claim that a few patches of land here and there, an infinitesimally small percentage of the material Universe, should be able to be claimed by corporations or individuals from planet Earth who can find something useful to do with it.

#### Solves whole case because we agree that all pcolonial companies are bad, just not natural persons, aka people, none of their cards talk about people

#### since we solve everything, any risk of nb is enough to vote neg

# CASE

### Colonization Top

#### Every delay kills trillions of humans

Bostrom 3 – Department of Philosophy, Yale University, Director of the Future of Humanity Institute at Oxford University, 2002 (Nick, “Astronomical Waste: The Opportunity Cost of Delayed Technological Development,” Preprint, Utilitas Vol. 15, No. 3, pp. 308-314, http://www.nickbostrom.com/astronomical/waste.html)

As I write these words, suns are illuminating and heating empty rooms, unused energy is being flushed down black holes, and our great common endowment of negentropy is being irreversibly degraded into entropy on a cosmic scale. These are resources that an advanced civilization could have used to create value-structures, such as sentient beings living worthwhile lives. The rate of this loss boggles the mind. One recent paper speculates, using loose theoretical considerations based on the rate of increase of entropy, that the loss of potential human lives in our own galactic supercluster is at least ~10^46 per century of delayed colonization.[1] This estimate assumes that all the lost entropy could have been used for productive purposes, although no currently known technological mechanisms are even remotely capable of doing that. Since the estimate is meant to be a lower bound, this radically unconservative assumption is undesirable. We can, however, get a lower bound more straightforwardly by simply counting the number or stars in our galactic supercluster and multiplying this number with the amount of computing power that the resources of each star could be used to generate using technologies for whose feasibility a strong case has already been made. We can then divide this total with the estimated amount of computing power needed to simulate one human life. As a rough approximation, let us say the Virgo Supercluster contains 10^13 stars. One estimate of the computing power extractable from a star and with an associated planet-sized computational structure, using advanced molecular nanotechnology[2], is 10^42 operations per second.[3] A typical estimate of the human brain’s processing power is roughly 10^17 operations per second or less.[4] Not much more seems to be needed to simulate the relevant parts of the environment in sufficient detail to enable the simulated minds to have experiences indistinguishable from typical current human experiences.[5] Given these estimates, it follows that the potential for approximately 10^38 human lives is lost every century that colonization of our local supercluster is delayed; or equivalently, about 10^31 potential human lives per second. While this estimate is conservative in that it assumes only computational mechanisms whose implementation has been at least outlined in the literature, it is useful to have an even more conservative estimate that does not assume a non-biological instantiation of the potential persons. Suppose that about 10^10 biological humans could be sustained around an average star. Then the Virgo Supercluster could contain 10^23 biological humans. This corresponds to a loss of potential equal to about 10^14 potential human lives per second of delayed colonization. What matters for present purposes is not the exact numbers but the fact that they are huge. Even with the most conservative estimate, assuming a biological implementation of all persons, the potential for one hundred trillion potential human beings is lost for every second of postponement of colonization of our supercluster.[6]

### Multilateralism Defense

#### Multilateralism fails—*diverging interests* and a *lack of faith* guarantee cooperation is at best superficial

Heribert Dieter 14, Senior Associate at the German Institute for International and Security Affairs, Non-Resident Senior Fellow, Chongyang Institute for Financial Studies, Visiting Professor for International Political Economy at Zeppelin University, Doctorate in Political Science and Economics, Free University of Berlin, 1/31/14, The G-20 and the Dilemma of Asymmetric Sovereignty – Why Multilateralism Is Failing in Crisis Prevention, International Relations and Security Network, <http://www.isn.ethz.ch/Digital-Library/Articles/Detail/?lng=en&id=176145>

Yet, tightening the rules for financial market regulation is not the only field where the G-20 is failing. Despite the mantra-like repetition of memoranda of understanding, the trade ministers of the G-20 have not been able to overcome their conflicts of interest and reach a settlement in the Doha Round of the World Trade Organization (WTO). What are the reasons for this failure?Although the G-20 managed to prevent a revival of protectionist measures on a broad front in the midst of the crisis, there is a large gap between the announcements of the G-20 and quantifiable results in trade policy. There is not one final communiqué that lacks a clear statement stressing the importance of the WTO and the necessity to conclude the Doha Round. Nonetheless, the reality of trade policy looks very different. All the states that are preventing the conclusion of the Doha Round through their vetoes are members of the G-20.

Despite there being little public information available on the reasons for the deadlock in the Doha Round, it is known that the US, Brazil, and China are blocking its conclusion. The emerging economies Brazil and China oppose the US’s demand for the complete elimination of tariffs on industrial goods. Conversely, the US resists the request to comprehensively abandon subsidies to the agricultural sector.Thus, the Doha Round is not concluded because three important members of the G-20 no longer believe in multilateral solutions and would rather engage in preferential agreements. For experts in the field of international trade, this is a paradox. There is a broad consensus that a single rulebook for international trade would facilitate economic growth and contribute to a worldwide increase in prosperity. This, however, cannot be said for the currently popular free trade agreements. So why are the countries in the G-20 incapable of further developing the common rules for international trade? One explanation is the lack of a hegemonic power that is willing to guarantee compliance with the rules of the game, but at the same time establish a system that provides member countries with sufficient economic benefits. In any event, this is how the postwar economy emerged: The US enforced the system of Bretton Woods and made sure that the participation in this economic regime remained attractive. Of course, the Bretton Woods regime never was a truly global system, since member countries of the Council on Mutual Economic Assistance did not participate. Still, within the bipolar order of the Cold War, the US managed to keep the system open and stable.¶ After the collapse of the USSR and the following short-lived “unipolar moment” (Charles Krauthammer) of complete hegemony of the US, the multilateral order was being advanced until 1995, the founding year of the WTO. Since the turn of the millennium and the parallel emergence of a multipolar order, nearly all attempts to organize cooperation without hegemony (Bob Keohane) have failed. The present multipolar world is characterized by superficial cooperation. Global Governance, whether in policies to prevent further climate change or in economic policy, remains on hold. Even worse: The world is returning to regulation on the level of the nation-state and non-cooperation. The American political scientist Ian Bremmer refers to the resulting situation as “G-Zero,” an era in which groups such as the G-20 will no longer play a vital role. The negative perception of the international division of labor¶ Apparently, there is no such thing as an identity of interests of individual states, as assumed by the advocates of global regulation and global governance. In other words: The gap between the preferences of individual states is widening rather than narrowing. However, governments must respect the preferences of their societies in the formulation of policies if they do not wish to lose legitimacy. Then again, the different preferences of societies are the immediate result of severely diverging perceptions of the international division of labor. Even in the G-20, individual societies have very different perceptions of the effects of globalization and its economic effects.¶ In Europe and the US, many people are increasingly critical of the international division of labor, if not outright hostile to globalization. According to a number of surveys, only about one-fifth to one-third of the respondents in OECD countries see greater opportunities than risks in globalization. Even in Germany, numerous politicians and citizens have been critical of globalization, although Germany strongly benefits from open markets and the resulting intensification of international trade.¶ Without a political anchoring in the member states, the G-20 has no future¶ The unfavorable perceptions of globalization and the outlined asymmetric sovereignty have resulted in a standstill in the G-20. Instead of a further development of the multilateral order, at best the status quo will be preserved. This is why we can expect nothing substantial – at least in terms of economic policy and financial regulation – from the G-20 summit in St. Petersburg on September 5 and 6. The structural impediments to successful financial regulation and trade policies on a supranational level cannot be overcome by the heads of government and state of the G-20. At least there is some hope in those areas where the countries of the G-20 have identical interests. This applies primarily to measures to close down tax loopholes. In 2008, ambitious expectations of a comprehensive reorganization of international trade relations through the G-20 were raised. Unfortunately, the G-20 cannot and will not deliver on crisis prevention. Today, more modest goals will have to be set. The key obstacle to success in the further development of global rules in trade and finance can be found in the G-20 societies themselves. Perceptions about globalization need to be addressed by policy makers at the national level, as do the widespread reservations about the international division of labor in the OECD countries. If societies continue to show diverging preferences, the development of comprehensive global economic governance in the G-20 will be all but impossible.

### Warming

#### Space colonization by private companies solves risk of climate change within a decade.

Christina **Reedy, 17** - ("When Will the First Human Space Colony Be Established?," Futurism, 8-17-17, 12-26-2021https://futurism.com/when-will-the-first-human-space-colony-be-established)//AW

THE FINAL FRONTIER Our days on Earth may be numbered. Great minds have postulated that humanity must spread itself across multiple planets in order to avoid being entirely wiped out by one natural disaster. Physicist Stephen Hawking has gone so far as to predict such a catastrophe will occur on Earth in the next 100 years, which doesn’t give us much time to pack our rocket ships. Click to View Full Infographic Will humanity be ready to colonize space before doomsday? We asked Futurism readers when they thought humans will colonize off-planet, and the results revealed quite a consensus. More than 70 percent of people who took the poll thought a colony will be established during the first half of the 21st century, and the decade with the most votes — a whopping 36 percent of participants — was the 2030s. Satish Varma, a software engineer, explained why he voted for this decade. Varma wrote in his response that our technological advances in spacecraft design, artificial intelligence (AI), and bionics will be the driving forces that finally propel us into space long term. “Currently there are some promising advances in space exploration and artificial intelligence by companies like SpaceX, Google, and Tesla in a short time frame,” Varma wrote. Varma’s observations are right on — both SpaceX and Blue Origin have recently reached significant milestones in developing reusable rockets, which will be key in making space travel economically viable. Google has recently developed an AI that can learn almost as fast as we can, making the technology much more promising for real-world applications, like flying spaceships. ADVERTISEMENT WHAT THE EXPERTS HAVE TO SAY The technologies have enticed governments and companies around the world to take the idea of space colonization seriously. The two most popular targets for human occupation are currently Mars and the Moon. The Moon gets a little less attention these days, but scientists have estimated that we could build a colony there over the pan of six years and for as little as $10 billion. The Chinese and European space agencies are carefully examining the possibility of a Moon base, as such a resource would greatly reduce the cost of traveling to other planets — including Mars. On the Mars front, the United Arab Emirates (UAE) has announced its intention to establish a settlement on the Red Planet by 2117. Other nations are likely to beat the UAE in reaching this goal, however, as the U.S. government has tasked NASA with getting humans on Mars by 2033, and China has set an even more ambitions goal: by the end of the decade. These government efforts align with readers’ predictions. But SpaceX CEO Elon Musk hopes to prove just how much more efficient private companies are than government bureaucracies. His plan, too, is to send humans to Mars by 2020, but that isn’t his only goal. He wants to make travel to the Red Planet affordable, setting the price cap at $200,000 in his new plan that focuses on establishing a self-sustaining space civilization rather than a simple exploratory expedition. Such an establishment will be paramount to the future of the human species, Musk said. “History suggests there will be some doomsday event, and I would hope you would agree that becoming a multi-planetary species would be the right way to go,” Musk said at a press conference last year. “I want to make Mars seem possible… like something that we can do in our lifetimes.” ADVERTISEMENT With all these efforts to get humans off world over the course of the next few decades, it seems like a good bet a Martian colony is not only something this generation could see, but something it will.

### Space militarization

#### non unique - overnment sector will inevitably militarize space, it is not unjust to do something that will happen no matter what

**Shamas & Holden, 2019**, Victor Shamas &, Oslo Metropolitan University, Work Research Institute (AFI), Oslo, Norway; Thomas Holden, Independent scholar, Oslo, Norway, 2019, Palgrave Communications, One giant leap for capitalistkind: private enterprise in outer space, https://www.nature.com/articles/s41599-019-0218-9

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.

## Debris

#### Treating Mars as a res communis does not solve—does not eliminate satellites going to space

### Solvency

#### Doesn’t solve debris- governments are responsible for 38% of all operational satellites but an even higher percentage of junk.

**We’ll insert this chart from here. Wood 20**- ("Visualizing All of Earth's Satellites: Who Owns Our Orbit?," Therese Wood, Visual Capitalist, Oct 20 2020, 1-20-2022https://www.visualcapitalist.com/visualizing-all-of-earths-satellites/)//AW

Table

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### Pandemics

#### 1. Space exploration non uniques the aff, no reason why app is uniquely bad

#### 2. Why should we believe there are organisms on mars same as there are on earth—affecting humans is a byproduct of evolution- its not like there is some mars flu lying dormant in the rocks

#### No life on Mars

Cape **Canavera**l, 1-16-**2022,** "No proof of life on Mars, says new study of meteorite that struck Antarctica," India Today, https://www.indiatoday.in/science/story/no-proof-of-life-on-mars-new-study-meteorite-that-struck-antarctica-nasa-1900550-2022-01-16

4 billion-year-old meteorite from Mars that caused a splash here on Earth decades ago contains no evidence of ancient, primitive Martian life after all, scientists reported Thursday.

In 1996, a Nasa-led team announced that organic compounds in the rock appeared to have been left by living creatures. Other scientists were sceptical and researchers chipped away at that premise over the decades, most recently by a team led by the Carnegie Institution for Science’s Andrew Steele.Tiny samples from the meteorite show the carbon-rich compounds are actually the result of water -- most likely salty, or briny, water -- flowing over the rock for a prolonged period, Steele said. The findings appear in the journal Science.During Mars’ wet and early past, at least two impacts occurred near the rock, heating the planet’s surrounding surface, before a third impact bounced it off the red planet and into space millions of years ago. The 4-pound (2-kilogram) rock was found in Antarctica in 1984.Groundwater moving through the cracks in the rock, while it was still on Mars, formed the tiny globs of carbon that are present, according to the researchers. The same thing can happen on Earth and could help explain the presence of methane in Mars’ atmosphere, they said.

#### PIC Solves – noncontamintion principles already in place to prevent interplanetary contamination