## Natural persons PIC

#### CP: The private appropriation of outer space is unjust in all instances except for natural persons.

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

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.

#### **Space settlement is coming now and prevents inevitable extinction**. Space settlement with private appropriation is better than settlement without appropriation.

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.

#### Absent legally enforced personal rights, like property, space settlements are likely to be dominated by tyrannical governments or corporations. Turns case.

Cockell 08 [Charles S. Cockell (Center for Earth, Planetary, Space and Astronomical Research – Open University, Milton Keynes), “AN ESSAY ON EXTRATERRESTRIAL LIBERTY,” JBIS, VOL. 61, pp. 255-275, 2008. <https://www.researchgate.net/profile/Charles-Cockell/publication/258317782_An_Essay_on_Extraterrestrial_Liberty/links/0c96053053a02cfb24000000/An-Essay-on-Extraterrestrial-Liberty.pdf>] CT

6. EXTRATERRESTRIAL LIBERTY For Berlin [20], ‘negative’ liberty meant the pursuit of individual liberty by removing those mechanisms that exert control over one’s actions. Western liberal democracies pursue, for the most part, philosophies of negative liberty, by attempting to reduce the role of government in individual lives. A restricted sphere of negative liberty is created by tyrannies, in which encroachment into the lives of individuals reduces the number and scope of activities in which people consider themselves free, or at least able to make decisions that can be implemented independently of the State. Of course, by retreating into a core set of activities in which one is completely free, one is in the process of relinquishing liberty, as the scope of free actions is voluntarily reduced. This is in itself a form of slavery. Societies where the scope of negative liberty is reduced can be described as more enslaved, even if the people there may not describe themselves as such, because they have in fact escaped State slavery by retreating from those very activities in which control is exerted. The crucial point is that the sphere within which negative liberty is possible is necessarily constrained by the environmental conditions under which one exists. The more extreme the environmental conditions, the fewer social activities can occur without collective oversight. More saliently, the people themselves may actually request such oversight, to protect their safety from others who would abuse it, with the resulting dangers. Some of these systems of monitoring can be found in societies on Earth. We cannot drive automobiles without safety checks. Our water must be passed through treatment works— life support systems if you will—that ensure that what we are drinking is safe. Indeed, even in some of the most mature terrestrial democracies, a remarkable quantity of basic consumables and resources come to us through systems of compliance overseen by the State. This is a form of control that most people accept because we consider it in our interest. We do not usually see such invasions of our liberty as tyranny, but rather as benevolent actions by the State to ensure our safekeeping. But they are incursions nevertheless, and while democracy is functioning such oversights need not necessarily concern us; or at least they do not worry most of the public, who are more concerned with having fresh water than more abstract thoughts about the allowable extent to which the State should have influence over their water quality. In extraterrestrial environments, spacesuits, water quality, food production, habitat pressurisation and so on and so forth will be subject to regulation by corporations or the State. As on Earth, perhaps many of these incursions will be regarded as acts of beneficence by the State in the interests of safety, and will be willingly accepted. But one fact is undeniable: the extent of negative liberty must be less in extraterrestrial environments than on Earth, and quite significantly less. Even the air will be subject to quality controls and checks. Forms and permissions will be associated with the very act of breathing. No philosophy of advancing the domain of negative liberty, no clever sophistry, can change this truth, which is brought into being by basic survival needs. An undeniable effect will be to expand the opportunities for tyranny. Where the mechanisms for central control are necessarily enlarged in their scope and diversity, a greater number of levers exist, and enable individuals and organisations to exert control and assume power. A reduction in negative liberty does not necessarily imply greater tyranny, but it certainly makes it possible. In extraterrestrial environments, where centralised interventions must be frequent, how much weaker is freedom and how much easier is tyranny to enforce? We cannot know the answers until we undertake the experiment, but we can be fairly sure that the qualitative answer must be ‘more easily’. More insidiously, the restriction of the borders of negative liberty, caused by the apparent need to protect individuals from the irresponsible actions of others, can itself be perpetuated as a form of liberty. The use of alcohol in extraterrestrial environments is one example. On Earth, the excessive use of alcohol may result in broken windows and arrests, but once the windows are repaired little damage has been done to society as a whole. Hence, although there is a negative social collective impact of excessive alcohol use, the prohibition of alcohol consumption of any kind is generally regarded as an infringement of civil liberties that the public will not tolerate. This is why, of course, attempts to do exactly this in the past have been met by black marketeering. But in extraterrestrial environments, a broken window may imply depressurisation, and the instant death of many individuals. The potential impact on society of the irresponsible and thoughtless actions of individuals is greater, and it might seem justifiable to restrict greatly, or even prohibit, the civil liberty of alcohol use, in the interests of collective safety. This principle can be applied to many diverse social interactions that could be construed as threatening people, and the prevention of which can be advanced as the protection of individual and social freedom through the process of restricting negative liberty. Liberty encompasses the freedom that individuals have to actively pursue their own objectives (‘positive liberty’ sensu Berlin). An obvious mechanism by which this becomes practical is the creation of social mechanisms and institutions through which the ‘active’ pursuit of this ‘positive’ sense of liberty is made possible, for example the welfare State. Organisations established to act as conduits for the free expression of different points of view, or to act as means to achieve practical objectives, are not always liberal. Even in some of the most developed democracies, societies and organisations may become dominated by elite closed circles of people, and media channels may be influenced by moguls who use outlets to perpetuate specific corporate views. What prevents these incursions into the structures of liberty from descending into wholesale tyranny? In reality, very little. The subversion of democratic States, or States on the verge of democracy, into societies more reminiscent of dictatorships has many historical precedents. The principal mechanisms that allow individual freedom to triumph over the slide towards tyranny include the legally agreed freedoms that individuals have to establish competition against dominating organisations, and the culture that ensures that the freedom to create organisations is not then abused to destroy the very democratic organisations that guarantee that freedom. In a society in which the freedom to organise and assemble institutions is protected by law, those organisations that distort and alter their environments, or the information they propagate, are likely to be usurped by institutions that reflect a different style of thinking, by the process of individual choice. However, these alternative visions can only be effective, and one can only assert them over the prevailing opinions with confidence, when one has sufficient information to be confident of their likely veracity. On Earth, to express many ideas and counter-opinions one does not need supreme confidence in the truth. If one’s opinion turns out to be in error one gives up, accepts the viewpoint of the adversary and continues one’s life. These opportunities to challenge, however, are central to the power of the individual to confront institutions. But there is one social situation in which the individual’s power is markedly reduced, even rendered completely ineffective against a collective body. Health and safety is one of the most effective levers of social influence and justified coercion, because it invokes the protection of people confronted with life and death situations. Consider, for example, an oxygen supply system on the Moon. The authority that runs such a system might seek control over a political dissenter by threatening to move him or her and their family to a new zone of habitation, on the grounds that the oxygen supply to their habitat is faulty. By doing this, they will remind these individuals who is in control of their survival, and coerce them through fear into mitigating their dissent, thereby creating a more malleable individual and reducing the challenge to collective authority. Governing organisations have access to a vast realm of information that no single individual can hope to have [21]. They know, for example, about the oxygen demand, its rate of supply, the pipes that supply it, the maintenance history of the oxygen producing machines, and so on and so forth. For an individual to declare that the intention of the authority to move them to another habitat is for controlling political purposes, he or she must also have access to all such information, which they can then use to demonstrate that there is no safety concern. If they do not have access to this information, then it becomes a simple task for the authorities to portray them as dishonourable individuals inveighing against the hard work of other individuals who are working to secure their individual safety and the security of society [22]. They can be then be ostracised, and their general behaviour will be treated as disingenuous. However, to have access to all the information to convincingly uphold a complaint is never possible, because an individual can never know whether they are missing a single crucial fact that makes all the difference to their safety. Even armed with what they perceive to be all the information available, the individual is faced with a choice between allowing an incursion on their home and liberty, or taking the risk that their presumption of having full information is correct. Faced with such a choice, the individual is likely to opt for the former in the interests of caution, particularly in an environment where the other choice may imply death from a failed oxygen system. In the extreme case, this first course of action would be further reinforced in a particularly coercive, venal society where the individual might even be convinced of the capability of the authorities to engineer the failure of their oxygen system and their death, in order to crush dissent, even if their complaint was in fact justified. The end point of this process, when applied across many activities in life, is a colony of automatons performing tasks for an extraterrestrial authority, with their freedom reduced to a withered core of activities in the most private confines of their habitats. Extraterrestrial environments make such an endpoint not merely a possible outcome, but a likely one. This attack on liberty is made possible because the pursuit of individual safety can be made an unchallengeable requirement of a ‘free’ society [23]. Freedom from instantaneous death caused by the external environment is the common freedom on which all individuals should converge, and any social structure or plan that brings people closer to that reality must surely be praiseworthy? The removal of other freedoms to achieve the safety of society is excusable. From this position, the environment can itself become the instrument of positive liberty. In this way, and in a rather unique way, encroachment on freedom of thought and movement, in the interests of ensuring the protection of the freedom of the individual against the lethality of the environment, can be transformed into a justifiable and universalisable doctrine of control [24]. Unfortunately this approach receives succour from every major tradition of social philosophy that we know on Earth. From Grotius to J.S. Mill, the right to self-preservation has been considered the core of individual liberties [25], a point beyond which no State may go, and which every individual has the right to take it upon him or herself to secure—indeed, such a notion has even been referred to as a ‘natural law’ [26]. Even Hobbes’ view of the necessity of sovereign control [27] turns on the right of each individual in a fight to preserve themselves. It is possible to spend much of one’s life on Earth without undue concern for self-preservation. Apart from those unfortunate individuals who confront a burglar or gang, most people will not actually come face to face with the need to infringe others’ rights to self-preservation. Fortunately, although the right to self-preservation is theoretically an unchallengeable right of all people, it remains, in a civil society, one sufficiently protected by the laws, and by regulations against various street crimes that might infringe self-preservation. If, as has been traditional on the Earth, the right to selfpreservation is also held to be a basic right of all people in extraterrestrial environments, then the keys to despotism are handed over to those in control of society. Self-preservation is threatened on a day-to-day basis by the lethality of the environment. In such an environment, each individual does indeed represent a much greater threat to every other individual than on the Earth, because unpredictable and criminal actions against the infrastructure represent a continuously present and potentially catastrophic threat to self-preservation. The authorities therefore have the excuse to implement draconian systems of control to protect the right of every individual to self-preservation. Worse than this, however, the people will voluntarily, in exercising their right to selfpreservation, and to protect themselves, accept more farreaching control over the lives of others [28]. Where death is a more likely outcome of criminal action, the Hobbesian State of nature, and the tendency to vigorously guard against it, becomes a more tangible reality [29].

#### Impact is Democide – Empirically, murder by tyrannical governments is the biggest impact. It outweighs war and cap. There is a direct relationship between the lack of personal freedom and democide.

Wayman 17 summarizing Rummel [Wayman F.W. (2017) Rummel and Singer, DON and COW. In: Gleditsch N. (eds) R.J. Rummel: An Assessment of His Many Contributions. SpringerBriefs on Pioneers in Science and Practice, vol 37. Springer, Cham. <https://doi.org/10.1007/978-3-319-54463-2_9>] CT

At Rummel’s website, the dominant theme is that power kills (http://www.hawaii.edu/powerkills/). As he began one of his books (Rummel, 1994: 1), ‘Power kills; absolute power kills absolutely. This new Power Principle is the message emerging from my previous work on the causes of war and from this work on genocide and government mass murder … The more power a government has, the more it can act arbitrarily.’

A major supporting idea is the term regime, as operationalized by Rummel (1995) and used as the organizing principle for his datasets on ‘democide—genocide and mass murder’ (Rummel, 1998: 1). This idea of a regime is important to his work because there is a lot of variation from regime to regime in the regime’s amount of power, and also in the number of people the regime kills. And Rummel’s dominant theme is that those two characteristics of a regime (power and deaths) co-vary. In my own ordinary language, a regime is a type of government controlling a state apparatus. As Rummel (1995: 9) says, ‘The changes from the Kaiser monarchy to the Weimar Republic to Hitler’s rule … give us three different German regimes. … I count 432 distinct state regimes during the period from 1900 to 1987’. Hence, there would be the czarist regime in Russia until 1917, and then the communist regime from 1917 to 1991. Between February and October 1917, there should I think be a transition period and transitional regime (under Kerensky). Individual rulers, such as general secretaries Stalin, Khrushchev, and Brezhnev, and their governments, do not represent distinct regimes of their own, but instead are all leaders, successively, of different administrations in the communist regime.

To me, Rummel’s (1983) article made the first really convincing case for the inter-liberal or inter-democratic peace. I have since challenged thousands of people, from classrooms to conferences where I am speaking, to name any other proposition in the social sciences that is surprising or counter-intuitive, and that has (according to its advocates at least) no exceptions. No one has ever been able, in my presence, to name such a proposition—other than Rummel’s.

The COW Project generated the data for the bulk of the hypothesis tests in IR for decades (Wayman & Singer, 1990: 247–248). And ‘realist theory informed 90% of the hypotheses tested by IR scholars up to the 1970s’ (Walker, 2013: 148). It was a bit of a shock that an anti-realist hypothesis, the inter-democratic peace, had produced such a paradigm-shattering result. Sadly, I never heard Singer say a good word about Rummel’s studies confirming the inter-democratic peace hypothesis. Rummel had used COW data on wars, plus other people’s data on democracy, Liberalism, and freedom of nations, to contradict one of Singer’s claims (namely, Singer’s contention that the inter-democratic peace was based on too few cases and too flawed in other ways to be taken to be true; Small & Singer, 1976). Deciphering Singer’s true position on this is complicated. When Geller & Singer (1998) produced a literature review of scientific studies of international conflict, while they did caution that the evidence is ‘not indisputable’, they did acknowledge that ‘the evidence in the area of the joint freedom proposition is consistent and cumulative. Democratic dyads are less likely to engage in war than are non-democratic pairs’ (Geller & Singer, 1998: 87–88). But on the other hand, on his own at his weekly COW seminar, Singer was much more skeptical about the inter-democratic peace. So it is not surprising that, four years after Geller & Singer’s assessment, one of Singer’s students, Henderson (2002) wrote a book that constituted an attack on the democratic peace literature. In the opening paragraph, Henderson says, ‘It struck me as strange that one of the doyen of the behavioral revolution would be such an avid critic of what some scholars hail as the closest thing to an empirical law in the field’.

Instead, Singer seemed more interested in the international or interstate system. While Waltz (1979: 94) defined ‘international political structures in terms of states’, Singer spoke of ‘the national state as level of analysis’ (Singer, 1961: 82–89). Thus, whereas Waltz writes of a system whose basic units are sovereign states, Singer ends up with two systems: an inter-state system and an international system. The international system consists of entities that have an international political goal (including … state creation or survival), engage in international political behavior (including inter-state or extra-state conflict, alliances, trade, or international organizations), or engage in political behavior that has international consequences (such as civil wars). The [international] system … includes … terrorist groups (Sarkees & Wayman, 2010: 27).

Nested within this international system is the interstate system, beginning in 1816, distinguished in terms of ‘recurring international interactions between and among the interstate system members’ (Sarkees & Wayman, 2010: 16). Singer’s COW data are organized around a focus on state system membership. Basically, between 1816 and 1919 an entity is a state system member if it has 500,000 people or more and is diplomatically recognized at an adequate level by Britain and France, while after 1919 it is a state if it is a League of Nations or UN member or has 500,000 people and diplomatic recognition by two major powers. (Note that ‘state’ becomes a short-hand for ‘state system member’; Bremer & Ghosn, 2003.)

Much confusion results from the short-hand expressions ‘state’ and ‘system’. ‘Whenever the word “system” was used without a modifier, Singer & Small were referring to the interstate system’ (Sarkees & Wayman, 2010: 16). Likewise, the ‘states’ whose characteristics are listed in the COW datasets are not the population of states, but the population of state system members.

Singer’s most widely-cited explanatory articles on interstate war are probably Deutsch & Singer (1964) and Singer, Bremer & Stuckey (1972). Both operate at the system level of analysis. It may be that Singer’s devotion to the interstate system is part of what made him reluctant to embrace the inter-democratic peace. As he said in another widely-cited article, the international system level of analysis ‘almost inevitably requires that we postulate a high degree of uniformity in the foreign policy codes of our national actors’, and ‘the system-oriented approach tends to produce a sort of “black box” or “billiard ball” concept of national actors’. This is consistent with his foreign policy instincts, which were loath to attribute ‘white hats’ to the ‘free world’ and ‘black hats’ to the Soviet Union, in the assigning of blame for the dangers to world peace in the Cold War era. Singer’s posture was very different from Rummel’s, with Rummel in favor of Reagan’s foreign policy and against détente. In these Cold War contexts, Singer may have been uncomfortable with Rummel’s summary that ‘freedom preserves peace and life’.

Singer wrote ‘it is evident that my research and teaching has unambiguously been problem-driven’, and ‘for reasons that I struggle to articulate, the problem has been, and remains, that of war’ (Singer, 1990: 2). The COW Project was founded by him at the University of Michigan in 1963, the year after the world nearly was destroyed, had the Cuban Missiles Crisis gone badly. International war attracted Singer’s best efforts at finding the ‘causes of war and conditions of peace’ (1990: 3). As he and Small put it, their focus is a ‘preoccupation with the elimination of international war and the possible role of solid explanatory knowledge in that enterprise’ (Small & Singer, 1982: 17). The first COW war handbook, Wages of War (Singer & Small, 1972) was consequently limited to international wars. Karl Deutsch subsequently convinced Singer that there was a need for a comparable list of civil wars. This led to a new handbook, Resort to Arms: International and Civil Wars, 1816–1980, presenting a ‘comprehensive list that will enhance … study of civil wars’ (Small & Singer, 1982: 204). The civil war list is accompanied with a cautionary note, ‘International war remains our major concern … A research assault on [explanation of] civil war … is clearly a task better left to others’ (Small & Singer, 1982: 17). Consequently, the COW project had many datasets (such as the Militarized Interstate Dispute dataset) on the correlates of interstate war, but nothing comparable on the civil war data. Nevertheless, the publication of the civil war data was a valuable contribution to studies of civil war, and was also a step toward the full delineation of the totality of modern war. This was followed, in the third COW handbook (Sarkees & Wayman, 2010) with a definition and list of non-state wars, completing the full reckoning of the patterns of war in the past two centuries. Also, the focus of Singer on international war was somewhat vindicated by his co-authored article revealing that, over the time since the Congress of Vienna, inter-state wars had resulted in 32 million battle deaths, intra-state wars only 18 million (Sarkees, Wayman & Singer, 2003).

Critics often ask if the COW project has a state-centric bias. A more subtle and I think effective line of inquiry is to ask why the COW project has emphasized state-system-membership rather than simple sovereignty and independence as the defining characteristic of the state. This can cause confusion. For example, a number of non-state wars, including the main phase of one of the deadliest wars in history, the Taiping Rebellion, have been fought in areas that would be considered to be states by students of comparative politics. This and other related difficulties have led pioneers outside the COW project (Gleditsch, 2004; Fazal, 2007), as well as Singer’s successor at the COW Project (Bremer & Ghosn, 2003) to propose various revisions and expansions of the concept of the state, to go beyond the COW state membership definition. These difficulties and challenges continue to provide important frontiers for research on war and the state in coming years.

In contrast to Singer, Rummel seems to me to have taken a more inductivist, practical approach to states and similar entities. On his website, powerkills.com, one finds a focus on killing, even of one person. The perpetrators are often leaders of totalitarian states, such as Mao, but can also be rebel leaders (the young Mao) or a king (Leopold of Belgium) who controls what some call a colony (the Belgian Congo) but Rummel calls Leopold’s personal property. The unit of analysis becomes the regime and regime-like power-centers such as Leopold’s Congo or Mao’s rebel territory.

Rummel (1986) concluded that ‘War isn’t this century’s biggest killer’. As he said then, ‘About 35,654,000 people have died in this century’s international and domestic wars, revolutions, and violent conflicts. … The number of people killed by totalitarian or extreme authoritarian governments already far exceeds that for all wars, civil and international. Indeed, this number already approximates the number that might be killed in a nuclear war’. He itemized 95 million killed by communist governments, but only ‘831,000 killed by free democratic governments’. Those killed by free democratic governments were always foreigners:

In no case have I found a democratic government carrying out massacres, genocide and mass executions of its own citizens … Absolutist governments (those that Freedom House would classify as not free) are not only many times deadlier than war, but are themselves the major factor causing war and other forms of violent conflict. They are a major cause of militarism. Indeed, absolutism, not war, is mankind’s deadliest scourge of all. In light of all this, the peaceful, nonviolent fostering of civil liberties and political rights must be made mankind’s highest humanitarian goal … because freedom preserves peace and life (Rummel, 1986).

#### 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.

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

## Legal Trust CP

#### TEXT: The Outer Space Treaty ought to be amended to establish an international legal trust system governing outer space.

#### The Legal trust would include private property rights and would ensure the sustainable development as well as the equitable distribution of space resources.

Fino ’20 – Ivan Fino [Department of Law, University of Turin], “An international legal trust system to deal with the new space era,” 71st International Astronautical Congress (IAC) – The CyberSpace Edition, (12-14 October 2020). <<https://d1wqtxts1xzle7.cloudfront.net/66728932/_IAC_20_E7.VP.8.x58518_An_international_legal_trust_system_to_deal_with_the_new_space_era_BY_IVAN_FINO-with-cover-page-v2.pdf?Expires=1642044926&Signature=asvt6StaK5n9UnpXuJIlo4ziI839WzFYjDZy37bm70ObGy3vFJyHwWNGxhn2beze4QzYDPPX0pVEXAwYvDaINVNxN01Ify8YwG5loNRddlat-grf3iawic7KvwqPowxFe2GuemVvbB-KW8ZVBxigwS-gelSKIVy4KYR9UgiDrM6e6deEBnUTcULSwmsH-JdHNg13ytZ3vNVMMlxZW2MPOCRuB2WlOHdCLoC86VqafSoMwuec-d~Aisbgyt5F2vO-GjvI60bR7h2MSp0iT6P7apIDUUpHUsDGbvcdxp22HSxXdlvr7lSqtLnL5rKxujGDYq~R9B~WuGiorVL2hn74UQ__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA>>CT

Considering the worsening climate change, in the future outer space might be our last Noah’s Ark. Now, humans must look to space as an opportunity to support growing resource requirements. Asteroids are rich in metals, which could be transported back to Earth. Unfortunately, the existing international legal framework discourages investments in the space economy. Once an enterprise invests billions of dollars in discovering and developing a mining site, it cannot claim any ownership because of the non-appropriation principle stipulated in Article 2 of the Outer Space Treaty (OST). Thus, other entities could legally access and exploit the same resource without any participation in the initial financial investment, increasing the risk of potential conflict. Bearing this in mind, the question arises, which legal regime could ensure effective allocation of resources, avoiding a chaotic space race to acquire valuable assets? The aim of this research is to argue that the first two articles of OST should be amended, to set up an international legal trust system which would guarantee different kinds of rights, dependently on the nature of the celestial body. E.g., property rights could be preferable to a lease over asteroids, as they could be exploited to their disappearance. This proposed system would be led by the United Nations Office for Outer Space Affairs (UNOOSA), as the main trustee. The co-trustees would be the nations of the world. Prior to initiating any space activity, every entity would send a request to their national government. If all the legal parameters are respected, the nation would forward the operational request to the UNOOSA. In the case of acceptance, UNOOSA would record the permit on an international public registry. The country in which the company has been registered would investigate whether the activities of its national company are consistent with the permit. This would be the ordinary model. The extraordinary model would be when the applicant for the space activity is a state, then the trustee would be the UN. All lucrative activities would be subject to benefit-sharing. Finally, this research will demonstrate the valuable outcome of the International Legal Trust System and its advantages for all humankind. Private companies would rely on property rights, while the benefit-sharing could be used to finance the 17 Sustainable Development Goals adopted by the UN in 2015, which address peace, climate change, inequalities and poverty.

## Asteroid mining DA

#### The private sector is essential for asteroid mining – competition is key and government development is not effective, efficient, or cheap enough. Thiessen 21:

Marc Thiessen, 6-1, 21, Washington Post, Opinion: SpaceX’s success is one small step for man, one giant leap for capitalism, https://www.washingtonpost.com/opinions/2020/06/01/spacexs-success-is-one-small-step-man-one-giant-leap-capitalism/

It was one small step for man, one giant leap for capitalism. Only three countries have ever launched human beings into orbit. This past weekend, SpaceX became the first private company ever to do so, when it sent its Crew Dragon capsule into space aboard its Falcon 9 rocket and docked with the International Space Station. This was accomplished by a company Elon Musk started in 2002 in a California strip mall warehouse with just a dozen employees and a mariachi band. At a time when our nation is debating the merits of socialism, SpaceX has given us an **incredible testament to the power of American free enterprise.** While the left is advocating unprecedented government intervention in almost every sector of the U.S. economy, from health care to energy, **today Americans are celebrating the successful privatization of space travel.** If you want to see the difference between what government and private enterprise can do, consider: It took a private company to give us the first space vehicle with touch-screen controls instead of antiquated knobs and buttons. It took a private company to give us a capsule that can fly entirely autonomously from launch to landing — including docking — without any participation by its human crew. It also took a private company to invent a reusable rocket that can not only take off but land as well. When the Apollo 11 crew reached the moon on July 20, 1969, Neil Armstrong declared “the Eagle has landed.” On Saturday, SpaceX was able to declare that the Falcon had landed when its rocket settled down on a barge in the Atlantic Ocean — ready to be used again. That last development will save the taxpayers incredible amounts of money. The cost to NASA for launching a man into space on the space shuttle orbiter was **$170 million per seat, compared with just $60 million** to $67 million on the Dragon capsule. The cost for the space shuttle to send a kilogram of cargo into to space was $54,500; with the Falcon rocket, the cost is just $2,720 — **a decrease of 95 percent.** And while the space shuttle cost $27.4 billion to develop, the Crew Dragon was designed and built for just $1.7 **billion — making it the lowest-cost spacecraft developed in six decades.** SpaceX did it in six years — far faster than the time it took to develop the space shuttle. ***The private sector does it better, cheaper, faster and more efficiently than government***. **Why? Competition.** Today, SpaceX has to compete with a constellation of private companies — including legacy aerospace firms such as Orbital ATK and United Launch Alliance and innovative start-ups such as Blue Origin (which is designing a Mars lander and whose owner, Jeff Bezos, also owns The Post) and Virgin Orbit (which is developing rockets than can launch satellites into space from the underside of a 747, avoiding the kinds of weather that delayed the Dragon launch). In the race to put the first privately launched man into orbit, upstart SpaceX had to beat aerospace behemoth Boeing and its Starliner capsule to the punch. It did so — for more than $1 billion less than its competitor. **That spirit of competition and innovation will revolutionize space travel in the years ahead.** Indeed, Musk has his sights set far beyond Earth orbit. Already, SpaceX is working on a much larger version of the Falcon 9 reusable rocket called Super Heavy that will carry a deep-space capsule named Starship capable of carrying up to 100 people to the moon and eventually to Mars. Musk’s goal — the reason he founded SpaceX — is to colonize Mars and make humanity a multiplanetary species. He has set a goal of founding a million-person city on Mars by 2050 complete with iron foundries and pizza joints. Can it be done? Who knows. But this much is certain: **Private-sector innovation is opening the door to a new era of space exploration**. Wouldn’t it be ironic if, just as capitalism is allowing us to explore the farthest reaches of our solar system, Americans decided to embrace socialism back here on Earth?

#### Eliminating property rights scares investors away and spills over to other space activities. Freeland 05

Steven Freeland (BCom, LLB, LLM, University of New South Wales; Senior Lecturer in International Law, University of Western Sydney, Australia; and a member of the Paris-based International Institute of Space Law). “Up, Up and … Back: The Emergence of Space Tourism and Its Impact on the International Law of Outer Space.” Chicago Journal of International Law: Vol. 6: No. 1, Article 4. 2005. JDN. <https://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=1269&context=cjil>

V. THE NEED FOR CELESTIAL PROPERTY RIGHTS? ¶ The fundamental principle of "non-appropriation" upon which the international law of outer space is based stems from the desire of the international community to ensure that outer space remains an area beyond the jurisdiction of any state(s). Similar ideals emerge from UNCLOS (in relation to the High Seas) as well as the Antarctic Treaty, 42 although in the case of the latter treaty, it was finalised after a number of claims of sovereignty had already been made by various States and therefore was structured to "postpone" rather than prejudice or renounce those previously asserted claims.43 In the case of outer space, its exploitation and use is expressed in Article I of the Outer Space Treaty to be "the province of all mankind," a term whose meaning is not entirely clear but has been interpreted by most commentators as evincing the desire to ensure that any State is free to engage in space activities without reference to any sovereign claims of other States. This freedom is reinforced by other parts of the same Article and is repeated in the Moon Agreement (which also applies to "other celestial bodies within the solar system, other than the earth")." Even though both the scope for space activities and the number of private participants have expanded significantly since these treaties were finalised, it has still been suggested that the nonappropriation principle constitutes "**an absolute barrier** in the realization of every kind of space activity., 4 ' **The amount of capital expenditure required to research, scope, trial, and implement a new space activity is significant.** To bring this activity to the point where it can represent a viable "stand alone" commercial venture **takes many years and almost limitless funding.** From the perspective of a private enterprise contemplating such an activity, it would quite obviously be an important element in its decision to devote resources to this activity that it is able to secure the highest degree of legal rights in order to protect its investment. **Security** of patent and other intellectual property rights, for example, are vital prerequisites for private enterprise research activity on the ISS, and these rights are specifically addressed by the ISS Agreement between the partners to the project and were applicable to the experiments undertaken by Mark Shuttleworth when he was onboard the ISS.46

#### Asteroid mining can happen with private sector innovation and is key to solve climate change and asteroid collisions. Taylor 19

Chris Taylor [journalist, was senior news writer for Time.com, San Francisco bureau chief for Time magazine], 19 - ("How asteroid mining will save the Earth — and mint trillionaires," Mashable, 2019, accessed 12-13-2021, https://mashable.com/feature/asteroid-mining-space-economy)//ML

How much, exactly? We’re only just beginning to guess. [Asterank](http://www.asterank.com/), a service that keeps track of some 6,000 asteroids in NASA’s database, prices out the estimated mineral content in each one in the current world market. More than 500 are listed as “>$100 trillion.” The estimated profit on just the top 10 asteroids judged “most cost effective” — that is, the easiest to reach and to mine, subtracting rocket fuel and other operating costs, is around $1.5 trillion.¶ Is it ours for the taking? Well, here’s the thing — we’re taking it already, and have been doing so since we started mining metals thousands of years ago. Asteroid strikes are the only reason rare metals exist in the Earth’s crust; the native ones were all sucked into our planet’s merciless iron core millions of years ago. Why not go to the source?¶ As a side project, space mining can grab water from the rocks and comets — water which, with a little processing makes rocket fuel. Which in turn makes even more currently unimaginable space operations possible, including ones that could give the planet all the energy it needs to avert climate catastrophe. Cislunar space — the bit around us and the moon, the local neighborhood, basically — is about to get very interesting.¶ It’s hard, even for the most asteroid-minded visionaries, to truly believe the full scope of this future space economy right now. Just as hard as it would have been in 1945, when an engineer named Vannevar Bush first proposed [a vast library of shared knowledge that people the world over would access via personal computers](https://en.wikipedia.org/wiki/Memex), to see that mushroom into a global network of streaming movies and grandmas posting photos and trolls and spies who move the needle on presidential elections. ¶ No technology’s pioneer can predict its second-order effects.¶ The space vision thing is particularly difficult in 2019. Not only do we have plenty of urgent problems with democracy and justice to keep us occupied, but the only two companies on the planet to have gone public with asteroid-mining business plans, startups that seemed to be going strong and had launched satellites already, were just bought by larger companies that are, shall we say, less comfortable executing on long-term visions.¶ Planetary Resources was founded in 2012 in a blaze of publicity. Its funding came from, among others, Larry Page, Eric Schmidt, Ross Perot, and the country of Luxembourg. It had inked an orbital launch deal with Virgin Galactic. And it was sold last October to a blockchain software company. (To 21st century readers, this paragraph would look like I’m playing tech world mad libs.)¶ In January, the other company, Deep Space Industries, also partly funded by Luxembourg (way to get in the space race, Luxembourg!), was sold to Bradford Space, owned by a U.S. investment group called the American Industrial Acquisition Corporation. Maybe these new overlords plan on continuing their acquisitions' asteroid mining endeavors rather than stripping the companies for parts. Both companies have been notably silent on the subject. “The asteroid mining bubble has burst,” [declared The Space Review](http://www.thespacereview.com/article/3633/1), one of the few online publications to even pay attention.¶ That’s also to be expected. After all, anyone trying to build Google in 1945 would go bankrupt. Just as the internet needed a half-dozen major leaps forward in computing before it could even exist, space industry needs its launch infrastructure.¶ Currently, the world’s richest person and its most well-known entrepreneur, Jeff Bezos and Elon Musk, respectively, are working on the relatively cheap reusable rockets asteroid pioneers will need. (As I was writing this, Bezos announced in an email blast that one of his New Shepherd rockets had flown to space and back five times like it was nothing, delivering 38 payloads for various customers while remaining entirely intact.) ¶ Meanwhile, quietly, Earth’s scientists are laying the groundwork of research the space economy needs. Japan’s Hayabusa 2 spacecraft has been in orbit around asteroid Ryugu for the last year and a half, learning everything it can. (Ryugu, worth $30 billion according to Asterank, is the website's #1 most cost-effective target.) The craft dropped [tiny hopping robot rovers](https://www.space.com/41941-hayabusa2-asteroid-rovers-hopping-tech.html) and a [small bomb](https://www.space.com/japan-hayabusa2-asteroid-bomb-video.html) on its target; pictures of the small crater that resulted were released afterwards.¶ Officially, the mission is to help us figure out how the solar system formed. Unofficially, it will help us understand whether all those useful metals clump together at the heart of an asteroid, as some theorize. If so, it’s game on for asteroid prospectors. If not, we can still get at the metals with other techniques, such as optical mining (which basically involves sticking an asteroid in a bag and drilling with sunlight; sounds nuts to us, but [NASA has proved it in the lab](https://www.nasa.gov/directorates/spacetech/niac/2017_Phase_I_Phase_II/Sustainable_Human_Exploration/)). It’ll just take more time.¶ Effectively, we’ve just made our first mark at the base of the first space mineshaft. And there’s more to come in 2020 when Hayabusa 2 returns to Earth bearing samples. If its buckets of sand contain a modicum of gold dust, tiny chunks of platinum or pebbles of compressed carbon — aka diamonds — then the Duchy of Luxembourg won’t be the only deep-pocketed investor to sit up and take notice.¶ The possibility of private missions to asteroids, with or without a human crew, is almost here. The next step in the process that takes us from here to where you are? Tell us an inspiring story about it, one that makes people believe, and start to imagine themselves mining in space. How would you explain the world-changing nature of the internet to 1945? How would you persuade them that there was gold to be mined in Vannevar Bush’s idea? You’d let the new economy and its benefits play out in the form of a novel.¶ As Hayabusa dropped a bomb on Ryugu, Daniel Suarez was making the exact same asteroid the target of his fiction. Suarez is a tech consultant and developer turned New York Times bestselling author. His novels thus far have been techno-thrillers: his debut, [Daemon](https://www.amazon.com/dp/B003QP4NPE/ref=dp-kindle-redirect?_encoding=UTF8&btkr=1), a novel of Silicon Valley’s worst nightmare, AI run rampant, made more than a million dollars.¶ So it was a telling shift in cultural mood that Suarez’s latest thriller is also a very in-depth description of — and thinly-disguised advocacy for — asteroid mining. In [Delta-v](https://www.amazon.com/Delta-v-Daniel-Suarez-ebook/dp/B07FLX8V84/ref=sr_1_1?crid=UMNUUSR3NCBX&keywords=delta-v&qid=1556930756&s=digital-text&sprefix=delta-v%2Cdigital-text%2C204&sr=1-1), published in April, a billionaire in the 2030s named Nathan Joyce recruits a team of adventurers who know nothing about space — a world-renowned cave-diver, a world-renowned mountaineer — for the first crewed asteroid mission.¶ Elon Musk fans might expect this to be Joyce’s tale, but he soon fades into the background. The asteroid-nauts are the true heroes of Delta-v. Not only are they offered a massive payday — $6 million each for four years’ work — they also have agency in key decisions in the distant enterprise. Suarez deliberately based them on present-day heroes. The mission is essential, Joyce declares, to save Earth from its major problems. First of all, the fictional billionaire wheels in a fictional Nobel economist to demonstrate the actual truth that the entire global economy is sitting on a [mountain of debt](https://www.washingtonpost.com/opinions/the-247-trillion-global-debt-bomb/2018/07/15/64c5bbaa-86c2-11e8-8f6c-46cb43e3f306_story.html?noredirect=on&utm_term=.5fb3ff1155d9). It has to keep growing or it will implode, so we might as well take the majority of the industrial growth off-world where it can’t do any more harm to the biosphere.¶ Secondly, there’s the climate change fix. Suarez sees asteroid mining as the only way we’re going to build [solar power satellites](https://en.wikipedia.org/wiki/Space-based_solar_power). Which, as you probably know, is a form of uninterrupted solar power collection that is theoretically more effective, inch for inch, than any solar panels on Earth at high noon, but operating 24/7. (In space, basically, it’s always double high noon). ¶ The power collected is beamed back to large receptors on Earth with large, low-power microwaves, which researchers think will be harmless enough to let humans and animals pass through the beam. A space solar power array like [the one China is said to be working on](https://www.forbes.com/sites/scottsnowden/2019/03/12/solar-power-stations-in-space-could-supply-the-world-with-limitless-energy/#2d3f78a54386) could reliably supply 2,000 gigawatts — or over 1,000 times more power than the largest solar farm currently in existence. ¶ “We're looking at a 20-year window to completely replace human civilization's power infrastructure,” Suarez told me, citing the report of the Intergovernmental Panel on Climate Change on the coming catastrophe. Solar satellite technology “has existed since the 1970s. What we were missing is millions of tons of construction materials in orbit. Asteroid mining can place it there.”¶ The Earth-centric early 21st century can’t really wrap its brain around this, but the idea is not to bring all that building material and precious metals down into our gravity well. Far better to create a whole new commodities exchange in space. You mine the useful stuff of asteroids both near to Earth and far, thousands of them taking less energy to reach than the moon. That’s something else we’re still grasping, how relatively easy it is to ship stuff in zero-G environments. ¶ Robot craft can move 10-meter boulders like they’re nothing. You bring it all back to sell to companies that will refine and synthesize it in orbit for a myriad of purposes. Big pharma, to take one controversial industry, would [benefit by taking its manufacturing off-world](https://medium.com/fitch-blog/why-is-big-pharma-interested-in-the-space-economy-c078ac1bf67c). The molecular structure of many chemicals grows better in microgravity.¶ The expectation is that a lot of these space businesses — and all the orbital infrastructure designed to support them — will be automated, controlled remotely via telepresence, and monitored by AI. But Suarez is adamant that thousands if not millions of actual human workers will thrive in the space economy, even as robots take their jobs in old industries back on Earth.¶ “Our initial expansion into space will most likely be unsettled and experimental. Human beings excel in such environments,” he says. “Humans can improvise and figure things out as we go. Robots must be purpose-built, and it's going to take time and experience for us to design and build them.”¶ Which is another way startups back on Earth will get rich in the new economy: designing and building those robots, the nearest thing to selling picks and shovels to prospectors in the space gold rush. Thousands of humans in space at any one time will also require the design and construction of stations that spin to create artificial gravity. Again, this isn’t a great stretch: Using centrifugal force to simulate gravity in space was first proposed by scientists in the 19th century. NASA has had workable designs for spinning cislunar habitats called [O’Neill cylinders](https://en.wikipedia.org/wiki/O%27Neill_cylinder) since the 1970s. We just haven’t funded them. ¶ But the trillionaires clearly will.¶ In short, Suarez has carefully laid out a vision of the orbital economy that offers something for everyone in our divided society. For Green New Deal Millennials, there’s the prospect of removing our reliance on fossil fuels at a stroke and literally lifting dirty industries off the face of the planet. For libertarians and other rugged individualists, there’s a whole new frontier to be developed, largely beyond the reach of government. ¶ For those who worry about asteroids that could wipe out civilization — though luckily, [this isn't likely to happen any time soon](https://mashable.com/article/armageddon-asteroid-threat) — here is a way for humanity to get proficient in moving them out of the way, fast. Indeed, the National Space Society has offered [a proposal](https://space.nss.org/technologies-for-asteroid-capture-into-earth-orbit/) to capture the asteroid Aphosis (which is set to miss Earth in the year 2029, but [not by a very comfortable margin](https://www.space.com/asteroid-apophis-2029-flyby-planetary-defense.html)), keep it in orbit, and turn it into 150 small solar-power satellites, as a proof of concept. ¶ For the woke folks who care about the bloody history of diamond production, there’s the likelihood that space mining would wipe out Earth’s entire diamond industry. “They will be found in quantities unattainable on Earth,” claims Suarez, with good reason. We are starting to discover that there is more crystalized carbon in the cosmos than we ever suspected. Astronomers have identified one [distant planet made entirely of diamond](https://www.nationalgeographic.com/science/phenomena/2014/06/24/diamond-the-size-of-earth/); there may be more, but they are, ironically, hard to see. ¶ We don’t have diamond planets in our solar system (and we can’t do interstellar missions), but we do have diamond-studded asteroids. Mine them for long enough and you will wear diamonds on the soles of your shoes.¶ For investors and entrepreneurs, there is the thrill of racing to be the first member of the four-comma club. ([Neil deGrasse Tyson believes that the first trillionaire will be an asteroid mining mogul](https://www.nbcnews.com/science/space/neil-degrasse-tyson-says-space-ventures-will-spawn-first-trillionaire-n352271); Suarez isn’t sure whether they’ll be the first, but he suspects that asteroid mining “will mint more trillionaires than any industry in history.”) ¶ For the regular guy or gal with a 401K, there’ll be a fast-rising stock market — inflated not by financial shenanigans this time, but an actual increase in what the world counts as wealth.¶ For workers, there is the promise of sharing in the untold riches, both legally and otherwise. It would be hard to stop miners attaining mineral wealth beyond their paycheck, under the table, when your bosses are millions of miles away. Then there’s the likelihood of rapid advancement in this new economy, where the miners fast gain the knowledge necessary to become moguls.¶ “After several tours in space working for others, perhaps on six-month or year-long contracts, it's likely that some workers will partner to set up their own businesses there,” says Suarez. “Either serving the needs of increasing numbers of workers and businesses in space, marketing services to Earth, or launching asteroid mining startups themselves.” All in all, it’s starting to sound a damn sight more beneficial to the human race than the internet economy is. Not a moment too soon. I’ve written encouragingly about asteroid mining several times before, each time touting the massive potential wealth that seems likely to be made. And each time there’s been a sense of disquiet among my readers, a sense that we’re taking our rapacious capitalist ways and exploiting space.¶ Whereas the truth is, this is exactly the version of capitalism humanity has needed all along: the kind where there is no ecosystem to destroy, no marginalized group to make miserable. A safe, dead space where capitalism’s most enthusiastic pioneers can go nuts to their hearts’ content, so long as they clean up their space junk. ¶ ([Space junk](https://mashable.com/category/space-junk) is a real problem in orbital space because it has thousands of vulnerable satellites clustered closely together around our little blue rock. The vast emptiness of cislunar space, not so much.)¶ And because they’re up there making all the wealth on their commodities market, we down here on Earth can certainly afford to focus less on growing our stock market. Maybe even, whisper it low, we can afford a fully functioning social safety net, plus free healthcare and free education for everyone on the planet.¶ It’s also clearly the area where we should have focused space exploration all along. If we settle on Mars, we may disturb as-yet-undiscovered native bacteria — and as the character Nathan Joyce shouts at a group of “Mars-obsessed” entrepreneurs in Delta-V, Mars is basically filled with toxic sand and is thus looking increasingly impossible to colonize. (Sorry, Mark Watney from The Martian, those potatoes would probably kill you.)

#### An asteroid collision would ensure extinction – would fundamentally alter the biosphere, don’t underestimate its risk. Hudson 19

Wesley Hudson ’19, news reporter for Express, “Asteroid alert: NASA warning as kilometre long space rock set to skim Earth at 25,000mph”, 8/28/19, Express, https://www.express.co.uk/news/science/1170826/asteroid-news-NASA-latest-space-rock-asteroid-1998-HL1-earth-danger-apocalypse

AN ASTEROID almost a kilometre wide is currently barreling through space at more than 25,000mph and is due to skim the earth towards the end of October. NASA’s Jet Propulsion Laboratory (JPL) claim the space rock will shoot past the earth within a “close” proximity of the planet in the early hours of October 26. The asteroid, dubbed 1998 HL1, is a so-called Near-Earth Object (NEO) flying on a Close Approach Trajectory. NASA expects the 1998 HL1 to come flying by dangerously close around 1.21am BST (17.21pm PDT). The daunting moment will mark anther journey around the sun for the asteroid since it was discovered in 1998. The asteroid will be travelling at a staggering speed of over 25,000mph as it barrels past the Earth. The JPL predict the asteroid could be between 440m and 990m wide. At its largest an asteroid of this size is bigger than the tallest building in the world, the Burj Khalifa in Dubai. Even at it’s smallest, 1998 HL1 is still bigger than The Shard. Since it was discovered, 1998 HL1 has been seen up to 408 times. An NEO is an asteroid or comet which is on an orbital path intersecting that of the Earth's. This asteroid will miss the Earth by almost four million miles. If it were to strike the Earth, an asteroid of this size would cause catastrophic damage. The extinction of the dinosaurs in the Cretaceous-Tertiary event 65million years ago is famously believed to have been caused by a massive asteroid impact. The Chicxulub Crater in Mexico is the most commonly accepted point of impact, with the responsible body thought to be around 10km in diameter. A car-sized asteroid is estimated to hit the Earth roughly once a year. The majority of asteroids on track for the planet are usually burnt up as they enter the Earth's atmosphere. NASA administrator Jim Bridenstine has previously warned a potential asteroid collision is **more likely** then people realise. He said: "We have to make sure that people understand that this is not about Hollywood, it's not about the movies. "This is about ultimately protecting the only planet we know, right now, to host life - and that is the planet Earth.” NASA is currently in the process of developing the Double Asteroid Redirection Test (DART). DART will test if it is possible to redirect asteroids that are threatening to impact with Earth. SpaceX chief Elon Musk had previously tweeted fears of a deadly collision that Earth was not prepared for. Mr Musk tweeted: “**A big rock will hit Earth eventually & we currently have no defence**.”

## Case

#### The aff can’t solve environmental destruction—even without special fix politicians deny that climate change is real and are paid off by fossil fuel companies

#### Turn-There is no tradeoff between space colonization and climate change AND challenges faced in colonizing space inventivizes making earth habiltable.

Szocik 19 [Konrad Szocik, Ziba Norman & Michael J. Reiss“Ethical challenges in human space missions: a space refuge, scientific value, and human gene editing for space,” Science and Engineering Ethics. 2019 DOI: 10.1007/s11948-019- 00131-1]

Ian Stoner discusses the duty to preserve the human species in terms of a dilemma between the colonization of Mars and the protection of Earth, and he argues for the latter alternative (Stoner 2017). If one accepts that humans are obliged to settle space to increase the chances for our species’ survival, this goal seems likely to trump other competing values including, for example, the scientific or aesthetic value of a pristine Mars. However, the alternatives of shelters in space and on Earth remain. Advocates of Mars colonization are obliged to find strong reasons to show that space settlement offers extra value when compared with various alternatives of terrestrial shelters, and does not threaten other values such as the risk of contamination of Mars or relinquishing environmental protection of Earth (Stoner 2017). The simplest response to those who advocate space colonization is that this is an attempt to increase the chances of human survival and should not be seen as an alternative to looking after our Earth. Indeed, it can even be argued that the difficulties – and there will be difficulties – of establishing a durable colony on Mars will increase the efforts that humans make to protecting our own planet as the risks that there is no ‘Planet B’ become publicly apparent. At the same time, the opposite scenario is possible: humans who learn that a safe life beyond Earth (a Mars settlement) is possible may stop caring about planetary protection on Earth. Opponents of Mars colonization need to show that such a space colony does not offer any added value for protecting humanity. They may argue that even if a successful space colony is launched somewhere in space, it will not be self-sustainable over a long period of time, and Earth will be still the main homeland for most of humanity.3 Reference to terms discussed in existential risk studies may help clear up some conceptual misunderstandings. Alexey Turchin discusses the ‘Plan A, Plan B’ model for the prevention of catastrophes (Turchin 2018). This model states that plan A is aimed at preventing a catastrophe – a so-called problem-centered approach. Plan B is realized when a catastrophe has already happened and is aimed at providing survival – a so-called consequence-centered approach. Another useful distinction is between improbable and bad plans. While some scenarios are worthy of consideration and logically thought-provoking, they are simply unrealistic – this is the case with improbable plans – or hazardous in the longterm for humanity – they become bad plans. Turchin notes that plan A, both logically and pragmatically, precedes plan B, and this regularity expresses the rule that it is better to prevent than to cope with adverse consequences. However, Turchin’s presumption that prevention is the better and simpler approach to catastrophic risk is not necessarily true for all types of catastrophe. Consider the case of an asteroid impact. It might be supposed that such a scenario can always be prevented – for instance, by asteroids on collision courses with the Earth being destroyed by us before they reach our planet. However, there are good reasons to assume that at some point in the future a collision with an asteroid will be impossible to prevent (e.g. because of errors in the technology to detect and destroy such asteroids or because eventually there is an asteroid too massive to deal with). Another point arises in regard to the distinction between plan A (prevention) and plan B (treatment), namely that the idea of space colonization is a case which challenges this distinction. While building a space colony requires time and a long-term perspective apparently appropriate for a plan A, building a space colony is also an example of plan B’s approach, which is aimed at coping with the consequences of an unavoidable catastrophe

. Humanity is obligated to apply plan B as soon as it detects an unavoidable anthropogenic or exogenous risk to the survival of humanity on the Earth. In some cases, plan B may mean a duty to leave Earth. In the light of Turchin’s distinction between plans A and B, Stoner’s dilemma of colonizing Mars or preventing environmental collapse on Earth becomes a false dichotomy. Mars colonization – if considered in terms of a space refuge and not in terms of scientific exploration or resources exploitation – is not a remedy for ‘routine’ environmental challenges, i.e. environmental challenges other than those which threaten the future of humanity on the Earth.

#### Wealthier countries having more power than less rich countries is inevitable—if their companies can’t appropriate space, governmets will

### UV flood

#### pandemics won’t cause human extinction

Sebastian Farquhar 1/23/17, director at Oxford's Global Priorities Project, Owen Cotton-Barratt, a Lecturer in Mathematics at St Hugh’s College, Oxford, John Halstead, Stefan Schubert, Haydn Belfield, Andrew Snyder-Beattie, "Existential Risk Diplomacy and Governance", GLOBAL PRIORITIES PROJECT 2017, https://www.fhi.ox.ac.uk/wp-content/uploads/Existential-Risks-2017-01-23.pdf

1.1.3 Engineered pandemics For most of human history, natural pandemics have posed the greatest risk of mass global fatalities.37 However, there are some reasons to believe that natural pandemics are very unlikely to cause human extinction. Analysis of the International Union for Conservation of Nature (IUCN) red list database has shown that of the 833 recorded plant and animal species extinctions known to have occurred since 1500, less than 4% (31 species) were ascribed to infectious disease.38 None of the mammals and amphibians on this list were globally dispersed, and other factors aside from infectious disease also contributed to their extinction. It therefore seems that our own species, which is very numerous, globally dispersed, and capable of a rational response to problems, is very unlikely to be killed off by a natural pandemic

. One underlying explanation for this is that highly lethal pathogens can kill their hosts before they have a chance to spread, so there is a selective pressure for pathogens not to be highly lethal. Therefore, pathogens are likely to co-evolve with their hosts rather than kill all possible hosts.39

### Ozone depletion

#### Tourism thumps

Marais 21 Eloise Marais 7-19-2021 "Space tourism: rockets emit 100 times more CO₂ per passenger than flights – imagine a whole industry" <https://theconversation.com/space-tourism-rockets-emit-100-times-more-co-per-passenger-than-flights-imagine-a-whole-industry-164601> (Associate Professor in Physical Geography, UCL)//Elmer

The commercial race to get tourists to space is heating up between Virgin Group founder Sir Richard Branson and former Amazon CEO Jeff Bezos. On Sunday 11 July, Branson ascended 80 km to reach the edge of space in his piloted Virgin Galactic VSS Unity spaceplane. Bezos’ autonomous Blue Origin rocket is due to launch on July 20, coinciding with the anniversary of the Apollo 11 Moon landing. Though Bezos loses to Branson in time, he is set to reach higher altitudes (about 120 km). The launch will demonstrate his offering to very wealthy tourists: the opportunity to truly reach outer space. Both tour packages will provide passengers with a brief ten-minute frolic in zero gravity and glimpses of Earth from space. Not to be outdone, Elon Musk’s SpaceX will provide four to five days of orbital travel with its Crew Dragon capsule later in 2021. What are the environmental consequences of a space tourism industry likely to be? Bezos boasts his Blue Origin rockets are greener than Branson’s VSS Unity. The Blue Engine 3 (BE-3) will launch Bezos, his brother and two guests into space using liquid hydrogen and liquid oxygen propellants. VSS Unity used a hybrid propellant comprised of a solid carbon-based fuel, hydroxyl-terminated polybutadiene (HTPB), and a liquid oxidant, nitrous oxide (laughing gas). The SpaceX Falcon series of reusable rockets will propel the Crew Dragon into orbit using liquid kerosene and liquid oxygen. Burning these propellants provides the energy needed to launch rockets into space while also generating greenhouse gases and air pollutants. Large quantities of water vapour are produced by burning the BE-3 propellant, while combustion of both the VSS Unity and Falcon fuels produces CO₂, soot and some water vapour. The nitrogen-based oxidant used by VSS Unity also generates nitrogen oxides, compounds that contribute to air pollution closer to Earth. Roughly two-thirds of the propellant exhaust is released into the stratosphere (12 km-50 km) and mesosphere (50 km-85 km), where it can persist for at least two to three years. The very high temperatures during launch and re-entry (when the protective heat shields of the returning crafts burn up) also convert stable nitrogen in the air into reactive nitrogen oxides. These gases and particles have many negative effects on the atmosphere. In the stratosphere, nitrogen oxides and chemicals formed from the breakdown of water vapour convert ozone into oxygen, depleting the ozone layer which guards life on Earth against harmful UV radiation. Water vapour also produces stratospheric clouds that provide a surface for this reaction to occur at a faster pace than it otherwise would. Space tourism and climate change Exhaust emissions of CO₂ and soot trap heat in the atmosphere, contributing to global warming. Cooling of the atmosphere can also occur, as clouds formed from the emitted water vapour reflect incoming sunlight back to space. A depleted ozone layer would also absorb less incoming sunlight, and so heat the stratosphere less. Figuring out the overall effect of rocket launches on the atmosphere will require detailed modelling, in order to account for these complex processes and the persistence of these pollutants in the upper atmosphere. Equally important is a clear understanding of how the space tourism industry will develop. Virgin Galactic anticipates it will offer 400 spaceflights each year to the privileged few who can afford them. Blue Origin and SpaceX have yet to announce their plans. But globally, rocket launches wouldn’t need to increase by much from the current 100 or so performed each year to induce harmful effects that are competitive with other sources, like ozone-depleting chlorofluorocarbons (CFCs), and CO₂ from aircraft. During launch, rockets can emit between four and ten times more nitrogen oxides than Drax, the largest thermal power plant in the UK, over the same period. CO₂ emissions for the four or so tourists on a space flight will be between 50 and 100 times more than the one to three tonnes per passenger on a long-haul flight. In order for international regulators to keep up with this nascent industry and control its pollution properly, scientists need a better understanding of the effect these billionaire astronauts will have on our planet’s atmosphere.

#### No Ozone Impact.

Ridley 14 (Matthew White Ridley, BA and PhD in Zoology from Oxford. “THE OZONE HOLE WAS EXAGGERATED AS A PROBLEM,” *Rational Optimist*, 9/25/14, <http://www.rationaloptimist.com/blog/the-ozone-hole-was-exaggerated-as-a-problem.aspx>) dwc 19

Serial hyperbole does the environmental movement no favours My recent Times column argued that the alleged healing of the ozone layer is exaggerated, but so was the impact of the ozone hole over Antarctica: The ozone layer is healing. Or so said the news last week. Thanks to a treaty signed in Montreal in 1989 to get rid of refrigerant chemicals called chlorofluorocarbons (CFCs), the planet’s stratospheric sunscreen has at last begun thickening again. Planetary disaster has been averted by politics. For reasons I will explain, this news deserves to be taken with a large pinch of salt. You do not have to dig far to find evidence that the ozone hole was never nearly as dangerous as some people said, that it is not necessarily healing yet and that it might not have been caused mainly by CFCs anyway. The timing of the announcement was plainly political: it came on the 25th anniversary of the treaty, and just before a big United Nations climate conference in New York, the aim of which is to push for a climate treaty modelled on the ozone one. Here’s what was actually announced last week, in the words of a Nasa scientist, Paul Newman: “From 2000 to 2013, ozone levels climbed 4 per cent in the key mid-northern latitudes.” That’s a pretty small change and it is in the wrong place. The ozone thinning that worried everybody in the 1980s was over Antarctica. Over northern latitudes, ozone concentration has been falling by about 4 per cent each March before recovering. Over Antarctica, since 1980, the ozone concentration has fallen by 40 or 50 per cent each September before the sun rebuilds it. So what’s happening to the Antarctic ozone hole? Thanks to a diligent blogger named Anthony Watts, I came across a press release also from Nasa about nine months ago, which said: “ Two new studies show that signs of recovery are not yet present, and that temperature and winds are still driving any annual changes in ozone hole size.” As recently as 2006, Nasa announced, quoting Paul Newman again, that the Antarctic ozone hole that year was “the largest ever recorded”. The following year a paper in Nature magazine from Markus Rex, a German scientist, presented new evidence that suggested CFCs may be responsible for less than 40 per cent of ozone destruction anyway. Besides, nobody knows for sure how big the ozone hole was each spring before CFCs were invented. All we know is that it varies from year to year. How much damage did the ozone hole ever threaten to do anyway? It is fascinating to go back and read what the usual hyperventilating eco-exaggerators said about ozone thinning in the 1980s. As a result of the extra ultraviolet light coming through the Antarctic ozone hole, southernmost parts of Patagonia and New Zealand see about 12 per cent more UV light than expected. This means that the weak September sunshine, though it feels much the same, has the power to cause sunburn more like that of latitudes a few hundred miles north. Hardly Armageddon. The New York Times reported “an increase in Twilight Zone-type reports of sheep and rabbits with cataracts” in southern Chile. Not to be outdone, Al Gore wrote that “hunters now report finding blind rabbits; fisherman catch blind salmon”. Zoologists briefly blamed the near extinction of many amphibian species on thin ozone. Melanoma in people was also said to be on the rise as a result. This was nonsense. Frogs were dying out because of a fungal disease spread from Africa — nothing to do with ozone. Rabbits and fish blinded by a little extra sunlight proved to be as mythical as unicorns. An eye disease in Chilean sheep was happening outside the ozone-depleted zone and was caused by an infection called pinkeye — nothing to do with UV light. And melanoma incidence in people actually levelled out during the period when the ozone got thinner.

# NR card

## Asteroid mining DA

#### Mining asteroids very profitable. Taylor 19

Chris Taylor [journalist, was senior news writer for Time.com, San Francisco bureau chief for Time magazine], 19 - ("How asteroid mining will save the Earth — and mint trillionaires," Mashable, 2019, accessed 12-13-2021, https://mashable.com/feature/asteroid-mining-space-economy)//ML

How much, exactly? We’re only just beginning to guess. [Asterank](http://www.asterank.com/), a service that keeps track of some 6,000 asteroids in NASA’s database, prices out the estimated mineral content in each one in the current world market. More than 500 are listed as “>$100 trillion.” The estimated profit on just the top 10 asteroids judged “most cost effective” — that is, the easiest to reach and to mine, subtracting rocket fuel and other operating costs, is around $1.5 trillion.¶