### 1

#### Interpretation—the aff may not defend a subset of appropriation.

#### Appropriation is a generic indefinite singular. Cohen 01

Ariel Cohen (Ben-Gurion University of the Negev), “On the Generic Use of Indefinite Singulars,” Journal of Semantics 18:3, 2001 <https://core.ac.uk/download/pdf/188590876.pdf>

\*IS generic = Indefinite Singulars

French, then, expresses the two types of reading differently. In English, on¶ the other hand, generic BPs are ambiguous between inductivist and normative¶ readings. But even in English there is one type of generic that can express only¶ one of these readings, and this is the IS generic. While BPs are ambiguous¶ between the inductivist and the rules and regulations readings, ISs are not. In¶ the supermarket scenario discussed above, only (44.b) is true:¶ (44) a. A banana sells for $.49/lb.¶ b. A banana sells for $1.00/lb.¶ The normative force of the generic IS has been noted before. Burton-Roberts¶ (1977) considers the following minimal pair:¶ (45) a. Gentlemen open doors for ladies.¶ b. A gentleman opens doors for ladies.¶ He notes that (45.b), but not (45.a), expresses what he calls “moral necessity.”7¶ Burton-Roberts observes that if Emile does not as a rule open doors for ladies, his mother could utter [(45.b)] and thereby successfully imply that Emile was not, or was¶ not being, a gentleman. Notice that, if she were to utter. . . [(45.a)] she¶ might achieve the same effect (that of getting Emile to open doors for¶ ladies) but would do so by different means. . . For [(45.a)] merely makes a¶ generalisation about gentlemen (p. 188).¶ Sentence (45.b), then, unlike (45.a), does not have a reading where it makes¶ a generalization about gentlemen; it is, rather, a statement about some social¶ norm. It is true just in case this norm is in effect, i.e. it is a member of a set of¶ socially accepted rules and regulations.¶ An IS that, in the null context, cannot be read generically, may receive a¶ generic reading in a context that makes it clear that a rule or a regulation is¶ referred to. For example, Greenberg (1998) notes that, out of the blue, (46.a)¶ and (46.b) do not have a generic reading:¶ (46) a. A Norwegian student whose name ends with ‘s’ or ‘j’ wears green¶ thick socks.¶ b. A tall, left-handed, brown haired neurologist in Hadassa hospital¶ earns more than $50,000 a year.¶ However, Greenberg points out that in the context of (47.a) and (47.b),¶ respectively, the generic readings of the IS subject are quite natural:¶ (47) a. You know, there are very interesting traditions in Norway, concerning the connection between name, profession, and clothing. For¶ example, a Norwegian student. . .¶ b. The new Hadassa manager has some very funny paying criteria. For¶ example, a left-handed. . .¶ Even IS sentences that were claimed above to lack a generic reading, such¶ as (3.b) and (4.b), may, in the appropriate context, receive such a reading:¶ (48) a. Sire, please don’t send her to the axe. Remember, a king is generous!¶ b. How dare you build me such a room? Don’t you know a room is¶ square?

#### Their plan violates. Rules readings are always generalized – specific instances are not consistent. Cohen 01

Ariel Cohen (Ben-Gurion University of the Negev), “On the Generic Use of Indefinite Singulars,” Journal of Semantics 18:3, 2001 https://core.ac.uk/download/pdf/188590876.pdf

In general, as, again, already noted by Aristotle, rules and definitions are not relativized to particular individuals; it is rarely the case that a specific individual¶ forms part of the description of a general rule.¶ Even DPs of the form a certain X or a particular X, which usually receive¶ a wide scope interpretation, cannot, in general, receive such an interpretation in the context of a rule or a definition. This holds of definitions in general, not¶ only of definitions with an IS subject. The following examples from the Cobuild¶ dictionary illustrate this point:¶ (74) a. A fanatic is a person who is very enthusiastic about a particular¶ activity, sport, or way of life.¶ b. Something that is record-breaking is better than the previous¶ record for a particular performance or achievement.¶ c. When a computer outputs something it sorts and produces information as the result of a particular program or operation.¶ d. If something sheers in a particular direction, it suddenly changes¶ direction, for example to avoid hitting something.

#### That outweighs—only our evidence speaks to how indefinite singulars are interpreted in the context of normative statements like the resolution. This means throw out aff counter-interpretations that are purely descriptive

#### Vote neg:

#### 1] Precision –any deviation justifies the aff arbitrarily jettisoning words in the resolution at their whim which decks negative ground and preparation because the aff is no longer bounded by the resolution.

#### 2] Limits—specifying a type of appropriation offers huge explosion in the topic since space is, quite literally, infinite.

#### 3]Topic education—even if you think subsets of appropriation are fine on this topic. If you put “lunar heritage” and “appropriation” in google, there are only 32 results. Not a single one of them are about private approporiation. They need to provide evidence that private entities are appropriating heritage sites. This independently is a reason you can vote neg on presumption

#### Drop the debater to preserve fairness and education – use competing interps –reasonability invites arbitrary judge intervention and a race to the bottom of questionable argumentation

#### Hypothetical neg abuse doesn’t justify aff abuse, and theory checks cheaty CPs

#### No RVIs—it’s their burden to be topical.

### 2

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

Finoa 21 [Ivan Finoa (Department of Law University of Turin), “Building a New Legal Model for Settlements on Mars,” A. Froehlich (ed.), Assessing a Mars Agreement Including Human Settlements, Studies in Space Policy 30, 2021. <https://doi.org/10.1007/978-3-030-65013-1_7>]CT

7.5 A Proposal for an International Legal Trust System

Since several legal and policy issues may arise from the actual legal framework, a new international legal regime for outer space shall: (a) Provide for property rights or a lease allocation system, both incentivising investments in the space sector. The system would be supervised and led by the United Nations (UN) through the United Nations Office for Outer Space Affairs (UNOOSA). (b) Establish the rule of law in outer space. A laissez faire system could turn into anarchy whereby countries and companies could race to grab as many resources as possible bringing considerable potential conflict. (c) Recognise outer space as common heritage of mankind, instead of res communis.24 (d) Provide a sustainable exploitation of celestial bodies, to avoid the uncontrolled production of space debris or to prevent the complete exhaustion of the celestial bodies’ masses or their natural orbits.25 The United Nations should manage the ordered and sustainable economic development in outer space for the present and future generations. (e) Prevent the militarisation of outer space and favours the international collaboration, which are the same aims of the Outer Space Treaty’ drafters. (f) Consider the weak points of the Moon Agreement which led to nations’ refusal to sign. Only a widely accepted agreement would have the power of law in the international context.

The abovementioned requirements could be met by establishing an international Legal Trust System (ILTS). A trust is an arrangement that assigns assets to one or more trustees that will manage them in the interest of one or more beneficiaries. The latter may include the trustee or the settlor.26 Translated in the ILTS, mankind would assume the role of settlor and beneficiary of the outer space resources. The UNOOSA would act as main trustee of outer space resources and trading property rights and leases to companies and countries. The rights over the celestial bodies or over its resources would depend on the nature of the celestial body itself. For example, property rights are preferable to a lease over asteroids, as they could just disappear after the exploitation. Both leases and property rights can be provided over lands and mining sites on Mars. Leases or defeasible titles are preferable for some land mass on those celestial bodies which could hypothetically be used by humankind pending an Earth disaster. In the case of lucrative activities, such as mining, companies will choose whether to get the exclusive use over the resource through payment of the lease or through annual payment linked to net proceeds or to production charges.

7.6 The Functioning of the International Legal Trust System

When a company is interested in leasing or buying an outer space resource, before starting any operations, it must send a plan of work to the United Nations. The plan of work shall include all the details of the activity that would be carried out; it shall be consistent with pre-established parameters of sustainability and shall not interfere with other space activities. If the UN approves the company plan of work, the country of the company assumes the role of co-trustee for the specific resource. Thus, as a cotrustee, countries must investigate whether all activities of their national companies are consistent with the plan of work authorised by the UN. These supervisory duties would be added to the responsibility of nations for all space objects that are launched within their territory.27 The UN, as main trustee, would oversee that countries are performing their duties. This model would be the ordinary one. There would be also an extraordinary model, in which the UN would be the only trustee. This model would be possible in two instances: when the country of the applicant for a private company is not technologically able to act as a trustee or when the applicant of the activity is a country itself. Furthermore, as stated previously, the beneficiaries of this trust are the countries of the world and their citizens; hence all mankind would take concrete profit from lease transactions and benefit sharing. The income from the sales, leases and benefit sharing can be distributed to mankind by financing international global goals, following a similar model of the 17 Sustainable Development Goals adopted by the United Nations in 2015, which addressed poverty, inequality, climate change, environmental degradation, and peace and justice. Finally, the International Legal Trust System would meet acceptance because every country would obtain benefit sharing to improve its living standard and space faring nations would rely on property rights.

#### The legal trust would incentivize investment in space while preventing conflict and ensuring sustainable development and the equitable distributions of resources.

Finoa ’20 – Ivan Finoa [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.

### 3

#### Extinction is possible now, lunar mining is vital to colonizing space and ensuring human survival – provides resources and development of human transportation and settlement

**Lowman 8 –** PhD, geophysicist (14 January 2008. “Why Go Back to the Moon?” <http://www.nasa.gov/centers/goddard/news/series/moon/why_go_back.html>)

Returning to the 21st century: Given these splendid accomplishments by astronauts on the Moon, why bother to go back? Should we not "declare victory" and stay on (or near) Earth? Here are some reasons go back, although not necessarily to "colonize" the Moon.   
First, and most fundamental: the last few decades of space exploration and astronomy have shown that the universe is violent and dangerous, at least with respect to human life. To give a pertinent example: [in 1908 an object of unknown nature – probably a comet – hit Siberia with a force equivalent to a hydrogen bomb.](javascript:openNASAWindow('http://www.psi.edu/projects/siberia/siberia.html')) Had this impact happened a few hours later, allowing for the Earth’s rotation, this object would have destroyed St. Petersburg and probably much else. Going back some 65 million years, it is now essentially proven that an even greater impact wiped out not only the dinosaurs but most species living on Earth at the time. The importance of catastrophic impacts has only been demonstrated in recent decades, and space exploration has played a key role.   
The bleak conclusion to which these facts point is that humanity is vulnerable as long as we are confined to one planet. Obviously, we must increase our efforts to preserve this planet and its biosphere, an effort in which NASA satellites have played a vital role for many years. But uncontrollable external events may destroy our civilization, perhaps our species. We can increase our chances of long-term survival by dispersal to other sites in the solar system.   
Where can we go? At the moment, human life exists only on the Earth. But with modern technology, there are several other possibilities, starting with the Moon itself. Men have lived on the Moon for as long as three days, admittedly in cramped quarters, but they found the lunar surface easy to deal with and the Moon’s gravity comfortable and helpful. (Dropped tools, for example, didn’t float away into space as they do occasionally in Earth orbit.) To be sure, it would be an enormous and probably impossible task to transform the Moon into another Earth. However, it is clear that a lunar outpost comparable to, for example, the Little America of the 1930s, is quite feasible.   
But what could such an outpost accomplish? First, it could continue the exploration of the Moon, whose surface area is roughly that of North and South America combined. Six "landings" in North America would have given us only a superficial knowledge of this continent, and essentially none about its natural resources such as minerals, oil, water power, and soil. The Moon is a whole planet, so to speak, whose value is only beginning to be appreciated.   
The Moon is not only an interesting object of study, but a valuable base for study of the entire Universe, by providing a site for astronomy at all wavelengths from gamma rays to extremely long radio waves. This statement would have been unquestioned 30 years ago. But the succeeding decades of spectacular discoveries by space-based instruments, such as the Hubble Space Telescope, have led many astronomers such as Nobel Laureate John Mather to argue that the Moon can be by-passed, and that instruments in deep space at relatively stable places called Lagrangian points are more effective.   
A meeting was held at the Space Telescope Science Institute in Baltimore, in November 2006, on "Astrophysics Enabled by the Return to the Moon." This institute runs the Hubble Space Telescope program. However, the consensus emerging from the Baltimore meeting was that there are still valuable astronomical uses for instruments on the lunar surface. For example, low-frequency radio astronomy can only be effective from the far side of the Moon, where static from the Earth’s aurora is shielded. Another example of Moon-based astronomy can be the search for extraterrestrial intelligence (SETI), by radio telescopes that on the far side would be shielded from terrestrial interference. Small telescopes on the Moon’s solid surface could be linked to form interferometer arrays with enormous resolving power. Astronomy in a limited sense has already been done from the Moon, namely the Apollo 16 Ultraviolet telescope emplaced by Apollo astronauts and before that, the simple TV observations of Earth-based lasers by the Surveyor spacecraft. The much-feared lunar dust had no effect on these pioneering instruments.   
The Moon may offer mineral resources, so to speak, of great value on Earth. Apollo 17 astronaut Harrison Schmitt, working with the Fusion Technology Institute of the University of Wisconsin, has shown that helium 3, an isotope extremely rare on Earth, exists in quantity in the lunar soil, implanted by the solar wind. If – a very big if – thermonuclear fusion for energy is produced on Earth, helium 3 would be extremely valuable for fusion reactors because it does not make the reactor radioactive. A more practicable use of helium 3, being tested at the University of Wisconsin, is the production of short-lived medical isotopes. Such isotopes must now be manufactured in cyclotrons and quickly delivered before they decay. But Dr. Schmitt suggests that small helium 3 reactors could produce such isotopes at the hospital. In any event, research on the use of helium 3 would clearly benefit if large quantities could be exported to the Earth.   
Returning to the most important reason for a new lunar program, dispersal of the human species, the most promising site for such dispersal is obviously Mars, now known to have an atmosphere and water. Mars itself is obviously a fascinating object for exploration. But it may even now be marginally habitable for astronaut visits, and in the very long view, might be "terraformed," or engineered to have a more Earth-like atmosphere and climate. This was described in Kim Stanley Robinson’s trilogy, Red Mars and its successors Green and Blue Mars. A second Earth, so to speak, would greatly improve our chances of surviving cosmic catastrophes.   
Where does the Moon fit into this possibility? First, it would continue to give us experience with short interplanetary trips, which is what the Apollo missions were. These would demonstrably be relatively short and safe compared to Mars voyages, but would provide invaluable test flights, so to speak. More important, shelters, vehicles, and other equipment built for the Moon could be over-designed, and with modification could be used on Mars after being demonstrated at a lunar outpost.   
Where could humanity expand to beyond Mars and the Moon? At this point, still early in the history of space exploration, it is impossible to say. The Galilean satellites of Jupiter, in particular Ganymede, might be habitable, but we venture here far into the field of science fiction. However, an outpost on the Moon is clearly possible, and would provide an invaluable stepping-stone to Mars. **A species living on three planets would be far more likely to have a long history than one living only on the Earth.**   
To put the arguments for a return to the Moon, and a lunar outpost, in the most general terms: the Moon is essentially a whole planet, one that has so far been barely touched. But this new planet is only a few days travel away and we have already camped on it. To turn our backs on the Moon would be equivalent to European exploration stopping after Columbus’s few landings, or China’s destruction of its giant ships to concentrate on domestic problems in the 15th century.

However, without private appropriation space colonization will not happen – no incentives, and would result in conflict.

Thomas 05 [Jonathan Thomas,“Privatization of Space Ventures: Proposing a Proven Regulatory Theory for Future Extraterrestral Appropriation,” 1 BYU Int'l L. & Mgmt. R. 191 (2005). https://digitalcommons.law.byu.edu/ilmr/vol1/iss1/7]CT

The current corpus juris spatialis based on res communis has received wide criticism by legal commentators, in part because of the practical limitations of its idealistic principles in application. For example, one commentator addressing the potential problems of future colonization of celestial bodies argued that the prohibition against private and national appropriation may cause deleterious effects when colonizers build settlements. Although these colonizers may occupy the property, they will have no legal control of their communities and could be uprooted for the purposes of putting that property to a better use for the benefit of common heritage. This risk may serve as a strong disincentive to the preservation of sectarian colonization in a res communis society.

Other commentators argue that the current corpus juris spatialis based on the idealistic res communis principle has actually slowed the development of outer space exploration because privately and publicly funded organizations cannot appropriate outer space.61 Under the corpus juris spatialis, there exists no probability or possibility of return on investments, which results in insufficient monetary incentive for businesses or private persons. Even with the daunting needs created by increasing population and consumption, and decreasing resources on earth, many states may not even attempt to exploit extraterrestrial resources because the current corpus juris spatialis does not guarantee that their own citizens will benefit from the investments made with their tax dollars. A future lack of resources, combined with a body of law that mandates common ownership of potential resources, may create a black market for extraterrestrial resources, or it may engender armed conflicts over the lack of supplies available to states.63

**Lunar mining is key to get to Mars – provides cheaper launches, fuel, and technological innovation**

**Dolzome et al in 10** (Dolzome, Mining and Explosives specialist. John Millis, About Guide for space and astronomy. David Morrison, NASA Lunar Science Institute Senior Scientist. 2010. “Mining the Moon Makes Mission to Mars Realistic”

Why going to Mars is so important? Is it linked to Mars resources exploitation?

Amongst the [impressive list of (good) reasons](http://www.theatlantic.com/technology/archive/2011/04/the-exploration-of-mars-by-humans-why-mars-why-humans/237143/) to start such a challenging endeavor, there has been, at that stage, very few or no mention of mining resources exploitation.

To which extend lunar mining operations would pave way for mission to mars?

Most of specialists agree on the following:

A lunar base built from locally extracted construction materials and metals would by-pass the limitation in term of embarked weight we are currently facing with Earth’s-launched rockets.

The Moon could be an excellent pit stop for further missions (propellant, energy, water, oxygen).

The Moon would also be a real size laboratory to assess and improved all the technology involved.

Lower attraction (1/6th of Earth’s) and absence of atmosphere, would make easier and cheaper spaceships take off to Mars and beyond.

Discovery of Lunar ice have been a major event.

Chandrayaan-1 detected in 2009 both water and hydroxyl molecules (oxygen and hydrogen atoms) trapped or mixed up in the regolith. This comes to confirm Deep Impact Probe and Cassini Space Probe unexpected readings.

“Finding water on the Moon has surprised and excited scientists. Water was not expected, since the moon rocks brought back by Apollo from the equatorial regions of the Moon were extremely dry. Since then more sensitive instruments have detected small amounts of water in chemical combination with other minerals. But the biggest discovery was of frozen water (ice) in some dark craters near the lunar north pole and south pole. The floors of these craters are among the coldest places in the solar system, so once a water molecule arrives there, it stays forever as ice. The amount of ice on these crater floors turns out to be larger than expected. This ice, which contains other molecules besides water, records the history of comet impacts on the Moon over the past billion years.

In addition, we may someday be able to mine this ice and use the water to make rocket fuel and oxygen for astronauts to use”,[wrote David Morrison](http://lunarscience.arc.nasa.gov/ask-browse), NASA Lunar Science Institute Senior Scientist

In 2010, [John Millis](http://space.about.com/bio/John-Millis-65326.htm), About [Guide for Space & Astronomy wrote](http://space.about.com/od/frequentlyaskedquestions/a/Should_We_Return_To_The_Moon.htm):

“Should We Return to the Moon? Is It Worth the Risk? (…) there are valuable resources on the Moon that we can use for other space missions. Particularly, liquid oxygen is a major component of the propellant needed for current space travel. NASA believes that this resource can be easily extracted from the Moon and stored at deposit sites for use by other missions -- particularly by a manned mission to Mars”.

#### The plan will spur further space exploration, asteroid defense and space tourism

**Schmitt, Apollo 17 astronaut, 4** (October 2004, Harrison H., Popular Mechanics, “Mining the Moon,” vol. 181, no. 10, Academic Search Premier, JMP)

Returning to the moon would be a worthwhile pursuit even if obtaining helium-3 were the only goal. But over time the pioneering venture would pay more valuable dividends. Settlements established for helium-3 mining would branch out into other activities that support space exploration. Even with the next generation of Saturns, it will not be economical to lift the massive quantities of oxygen, water and structural materials needed to create permanent human settlements in space. We must acquire the technical skills to extract these vital materials from locally available resources. Mining the moon for helium-3 would offer a unique opportunity to acquire those resources as byproducts. Other opportunities might be possible through the sale of low-cost access to space. These additional, launch-related businesses will include providing services for government-funded lunar and planetary exploration, astronomical observatories, national defense, and long-term, on-call protection from the impacts of asteroids and comets. Space and lunar tourism also will be enabled by the existence of low-cost, highly reliable rockets.

With such tremendous business potential, the entrepreneurial private sector should support a return to the moon, this time to stay. For an investment of less than $15 billion — about the same as was required for the 1970s Trans Alaska Pipeline — private enterprise could make permanent habitation on the moon the next chapter in human history.

"Learning how to mine the moon for helium-3 will create the technological infrastructure for our inevitable journeys to Mars and beyond."

"A new, modernized Saturn rocket should be capable of launching 100-ton payloads to the moon."

#### Failure to colonize guarantees extinction

Munevar '19 [Gonzalo; 4/19/19; Professor at Lawrence Technical University; "Deflecting Existential Risk with Space Colonization," https://filling--space.com/2019/04/19/deflecting--existential--risk--with--space--colonization/]

Why do you argue that “failure to move into the cosmos would condemn us to oblivion”?

By having a significant presence in the solar system in the next few thousands of years and beyond, we will be in a better position to deflect asteroids and comets that might bring the end of humanity, and much other Earth life, in a horrible collision. And if perchance one such catastrophe proves inevitable (e.g. a rogue planet passing through the solar system), humanity would still survive by having colonized Mars and other bodies, as well as by having built artificial space colonies of the type advocated by Gerard O’Neill.

Once the sun begins to turn into a red giant in a few billion years, we must have long moved into the outer solar system. In the very long run, we have to move into other solar systems. Relativistic--speed starships would be nice, but they are not necessary for the task of moving humanity to the stars. We can reach them, slowly but surely, by propelling some of our space colonies away from the sun, carrying perhaps millions of human beings. They would take advantage of the many resources to be found in the Oort Cloud, and then of equivalent clouds in other solar systems. Even interstellar space has resources to offer. Nuclear energy, probably fusion, would likely be required. It may take us tens of thousands of years, but in the cosmic time scale, that is but a blink in the eye.

What are these catastrophic threats? Are there any records of catastrophic events happening before humans appeared on Earth?

I have already mentioned collisions with asteroids and comets. Although the active geology of our planet tends to erase the record of many collisions, we can find a well--preserved record on the Moon and Venus, the two closest bodies to Earth. On the 600--million--years--old Venusian surface, the spacecraft Magellan discovered about one thousand impact craters at least twice the diameter of meteor craters on Earth. This impact record makes it reasonable to estimate a catastrophic impact on Earth every half a million years or so. Collisions with bodies of 5 km across would happen, on the average, every 20 million years. Apart from the Alvarez asteroid (crater near Yucatan) that led to the extinction of the dinosaurs and the majority of species on Earth 65 million years ago, there have been at least two more impacts by asteroids 10 km or larger in the last 300 million years.

### 4

#### The aff can only restrict or ban appropriation of existing delineations or uses of outer space that are already recognized by international law.

#### Doing otherwise means that they have to take the additional step of making new delimitation of space. All delinations are controversial—ex: diving line between atmosphere and orbital slots so there are

#### Extra T is a voter

### case

#### Circumvention—lunar heritage sites do not exit so private companies could lobby to determine what could be considered lunar heritage

#### The aff solves none of it’s advantage—scientists can just moonbase on other spots. There are the same scientific values of all of the parts of the moon

#### Turn—lunar heritage sites would stop any research on sites because they would prevent there from being any rovers or scientific exploration on thos parts of the moon. Elvis et al ND

Martin Elvis1\* , Alanna Krolikowski2 , Tony Milligan3, xx - ("Concentrated Lunar Resources: Imminent Implications for Governance and Justice,", accessed 1-23-2022, https://arxiv.org/ftp/arxiv/papers/2103/2103.09045.pdf)//ML

2.3 Cultural Sites Finally, there are the historical sites, notably the six Apollo mission landing sites. These have some scientific value, but they are primarily “Lunar Heritage Sites” [41], comparable to UNESCO World Heritage Sites. They meet the first of the 10 qualifying UNESCO criteria “to represent a masterpiece of human creative genius” and may meet criterion (vi) which is best applied in conjunction with other criteria: they are “directly or tangibly associated with events…of outstanding universal significance” [42]. There is also scientific and engineering interest in these sites as they are natural experiments in exposing microbes [43] and manufactured parts to space conditions for over 50 years. 9 There are other historical sites too, of both hard and soft landings, successful and not. In the longer term, they could even become tourist sites. These sites present not only the question of how to responsibly coordinate activities at them, but also, more fundamentally, the question of whether we should exploit them in the first place. Meanwhile, some are working to ensure their preservation, notably the non-profit organization For All Moonkind [44]. NASA has developed preservation recommendations for these sites [45]. These recommendations are strictest for Apollo 11 (the first landing), and Apollo 17 (the last landing). For these two sites, minimum approach distances for rovers are 75 m and 225 m respectively, reflecting the larger distances traversed by the astronauts in the later mission. For the other Apollo sites (15, 18, 19) NASA’s recommendations are for rover buffer distances of just a few meters from the emplaced hardware, while maintaining 200 m landing exclusion zones. (Apollo 12 landed, by design, just 183 m from Surveyor 3 [46]. A more extensive zone there may be advisable.)

#### No environment impact

Hance 18 [Jeremy Hance, wildlife blogger for the Guardian and a journalist with Mongabay focusing on forests, indigenous people, climate change and more. He is also the author of Life is Good: Conservation in an Age of Mass Extinction. Could biodiversity destruction lead to a global tipping point? Jan 16, 2018. https://www.theguardian.com/environment/radical-conservation/2018/jan/16/biodiversity-extinction-tipping-point-planetary-boundary]

Just over 250 million years ago, the planet suffered what may be described as its greatest holocaust: ninety-six percent of marine genera (plural of genus) and seventy percent of land vertebrate vanished for good. Even insects suffered a mass extinction – the only time before or since. Entire classes of animals – like trilobites – went out like a match in the wind.

But what’s arguably most fascinating about this event – known as the Permian-Triassic extinction or more poetically, the Great Dying – is the fact that anything survived at all. Life, it seems, is so ridiculously adaptable that not only did thousands of species make it through whatever killed off nearly everything (no one knows for certain though theories abound) but, somehow, after millions of years life even recovered and went on to write new tales.

Even as the Permian-Triassic extinction event shows the fragility of life, it also proves its resilience in the long-term. The lessons of such mass extinctions – five to date and arguably a sixth happening as I write – inform science today. Given that extinction levels are currently 1,000 (some even say 10,000) times the background rate, researchers have long worried about our current destruction of biodiversity – and what that may mean for our future Earth and ourselves.

In 2009, a group of researchers identified nine global boundaries for the planet that if passed could theoretically push the Earth into an uninhabitable state for our species. These global boundaries include climate change, freshwater use, ocean acidification and, yes, biodiversity loss (among others). The group has since updated the terminology surrounding biodiversity, now calling it “biosphere integrity,” but that hasn’t spared it from critique.

A paper last year in Trends in Ecology & Evolution scathingly attacked the idea of any global biodiversity boundary.

“It makes no sense that there exists a tipping point of biodiversity loss beyond which the Earth will collapse,” said co-author and ecologist, José Montoya, with Paul Sabatier Univeristy in France. “There is no rationale for this.”

Montoya wrote the paper along with Ian Donohue, an ecologist at Trinity College in Ireland and Stuart Pimm, one of the world’s leading experts on extinctions, with Duke University in the US.

Montoya, Donohue and Pimm argue that there isn’t evidence of a point at which loss of species leads to ecosystem collapse, globally or even locally. If the planet didn’t collapse after the Permian-Triassic extinction event, it won’t collapse now – though our descendants may well curse us for the damage we’ve done.

Instead, according to the researchers, every loss of species counts. But the damage is gradual and incremental, not a sudden plunge. Ecosystems, according to them, slowly degrade but never fail outright.

“Of more than 600 experiments of biodiversity effects on various functions, none showed a collapse,” Montoya said. “In general, the loss of species has a detrimental effect on ecosystem functions...We progressively lose pollination services, water quality, plant biomass, and many other important functions as we lose species. But we never observe a critical level of biodiversity over which functions collapse.”

#### No U.S.-Russian war – they’ll never risk it

Galen, 18 – senior fellow in defense and foreign policy studies at the Cato Institute and a contributing editor at the National Interest (Ted, "Russia Is Not the Soviet Union," *National Interest*, 7-28-2018, https://nationalinterest.org/feature/russia-not-soviet-union-27041?page=0%2C1)

The problem with citing such examples is that they applied to a different country: the Soviet Union. Too many Americans act as though there is no meaningful difference between that entity and Russia. Worse still, U.S. leaders have embraced the same kind of uncompromising, hostile policies that Washington pursued to contain Soviet power. It is a major blunder that has increasingly poisoned relations with Moscow since the demise of the Union of Soviet Socialist Republics (USSR) at the end of 1991. One obvious difference between the Soviet Union and Russia is that the Soviet governing elite embraced Marxism-Leninism and its objective of world revolution. Today’s Russia is not a messianic power. Its economic system is a rather mundane variety of corrupt crony capitalism, not rigid state socialism. The political system is a conservative autocracy with aspects of a rigged democracy, not a one-party dictatorship that brooks no dissent whatsoever. Russia is hardly a Western-style democracy, but neither is it a continuation of the Soviet Union’s horrifically brutal totalitarianism. Indeed, the country’s political and social philosophy is quite different from that of its predecessor. For example, the Orthodox Church had no meaningful influence during the Soviet era—something that was unsurprising, given communism’s official policy of atheism. But today, the Orthodox Church has a considerable influence in Putin’s Russia, especially on social issues. The bottom line is that Russia is a conventional, somewhat conservative, power, whereas the Soviet Union was a messianic, totalitarian power. That’s a rather large and significant difference, and U.S. policy needs to reflect that realization. An equally crucial difference is that the Soviet Union was a global power (and, for a time, arguably a superpower) with global ambitions and capabilities to match. It controlled an empire in Eastern Europe and cultivated allies and clients around the world, including in such far-flung places as Cuba, Vietnam, and Angola. The USSR also intensely contested the United States for influence in all of those areas. Conversely, Russia is merely a regional power with very limited extra-regional reach. The Kremlin’s ambitions are focused heavily on the near abroad, aimed at trying to block the eastward creep of the North Atlantic Treaty Organization (NATO) and the U.S.-led intrusion into Russia’s core security zone. The orientation seems far more defensive than offensive. It would be difficult for Russia to execute anything more than a very geographically limited expansionist agenda

, even if it has one. The Soviet Union was the world’s number two economic power, second only to the United States. Russia has an economy roughly the size of Canada’s and is no longer ranked even in the global top ten . It also has only three-quarters of the Soviet Union’s territory (much of which is nearly-empty Siberia) and barely half the population of the old USSR. If that were not enough, that population is shrinking and is afflicted with an assortment of public health problems (especially rampant alcoholism). All of these factors should make it evident that Russia is not a credible rival, much less an existential threat, to the United States and its democratic system . Russia's power is a pale shadow of the Soviet Union's. The only undiminished source of clout is the country's sizeable nuclear arsenal. But while nuclear weapons are the ultimate deterrent, they are not very useful for power projection or warfighting, unless the political leadership wants to risk national suicide. And there is no evidence whatsoever that Putin and his oligarch backers are suicidal. Quite the contrary, they seem wedded to accumulating ever greater wealth and perks.

#### No extinction from warming – adaptation and intervening actors

Sebastian Farquhar 17 – leads the Global Priorities Project (GPP) at the Centre for Effective Altruism, et al., 2017, “Existential Risk: Diplomacy and Governance,” https://www.fhi.ox.ac.uk/wp-content/uploads/Existential-Risks-2017-01-23.pdf

The most likely levels of global warming are very unlikely to cause human extinction.15 The existential risks of climate change instead stem from tail risk climate change – the low probability of extreme levels of warming – and interaction with other sources of risk. It is impossible to say with confidence at what point global warming would become severe enough to pose an existential threat. Research has suggested that warming of 11-12°C would render most of the planet uninhabitable,16 and would completely devastate agriculture.17 This would pose an extreme threat to human civilisation as we know it.18 Warming of around 7°C or more could potentially produce conflict and instability on such a scale that the indirect effects could be an existential risk, although it is extremely uncertain how likely such scenarios are.19 Moreover, the timescales over which such changes might happen could mean that humanity is able to adapt enough to avoid extinction in even very extreme scenarios. The probability of these levels of warming depends on eventual greenhouse gas concentrations. According to some experts, unless strong action is taken soon by major emitters, it is likely that we will pursue a medium-high emissions pathway.20 If we do, the chance of extreme warming is highly uncertain but appears non-negligible. Current concentrations of greenhouse gases are higher than they have been for hundreds of thousands of years,21 which means that there are significant unknown unknowns about how the climate system will respond. Particularly concerning is the risk of positive feedback loops, such as the release of vast amounts of methane from melting of the arctic permafrost, which would cause rapid and disastrous warming.22 The economists Gernot Wagner and Martin Weitzman have used IPCC figures (which do not include modelling of feedback loops such as those from melting permafrost) to estimate that if we continue to pursue a medium-high emissions pathway, the probability of eventual warming of 6°C is around 10%,23 and of 10°C is around 3%.24 These estimates are of course highly uncertain. It is likely that the world will take action against climate change once it begins to impose large costs on human society, long before there is warming of 10°C. Unfortunately, there is significant inertia in the climate system: there is a 25 to 50 year lag between CO2 emissions and eventual warming,25 and it is expected that 40% of the peak concentration of CO2 will remain in the atmosphere 1,000 years after the peak is reached.26 Consequently, it is impossible to reduce temperatures quickly by reducing CO2 emissions. If the world does start to face costly warming, the international community will therefore face strong incentives to find other ways to reduce global temperatures.