### 1

#### TEXT: States

#### ought to amend the The Outer Space Treaty to establish an international legal trust system governing lunar heritage sites

#### reinvest and reinvigorate NASA research on lunar heritage sites

#### The Legal trust would make it so that lunar heritage sites could not be appropriated by private companies unless the world deemed that to be the system of maintianance that would be best for the sites.

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.

### 2

#### 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.

### 3

**Interp: The aff must defend that the appropriation of outer space by private entities in general is unjust.**

**“Private Entities” is a generic bare plural. Generics cannot be affirmed by particular instances, and bare plurals normally express generic generalization**

**Leslie 16–** (Sarah-Jane Leslie, Dean of the Graduate School and Class of 1943 Professor of Philosophy at Princeton University, where she is also affiliated faculty in the Department of Psychology, the University Center for Human Values, the Program in Gender and Sexuality Studies, and the Kahneman-Treisman Center for Behavioral Science and Public Policy. She is known for her work on the cognitive underpinnings of generic generalizations); "Generic Generalizations (Stanford Encyclopedia of Philosophy),"<https://plato.stanford.edu/entries/generics>. KD

Consider the following pairs of sentences:

* (1) a. Tigers are striped.
* b. Tigers are on the front lawn.
* **(2) a. A tiger is striped.**
* **b. A tiger is on the front lawn.**
* (3) a. The tiger is striped.
* b. The tiger is on the front lawn.

The sentence pairs above are *prima facie* syntactically parallel—both are subject-predicate sentences whose subjects consist of the same common noun coupled with the same, or no, article. However, the interpretation of first sentence of each pair is intuitively quite different from the interpretation of the second sentence in the pair. In the second sentences, we are talking about some particular tigers: a group of tigers in ([1b](https://plato.stanford.edu/entries/generics/#ex1b)), some individual tiger in ([2b](https://plato.stanford.edu/entries/generics/#ex2b)), and some unique salient or familiar tiger in ([3b](https://plato.stanford.edu/entries/generics/#ex3b))—a beloved pet, perhaps. **In the first sentences, however, we are saying something *general*.** **There is/are no particular tiger or tigers that we are talking about.**

The second sentences of the pairs receive what is called an existential interpretation. The hallmark of the existential interpretation of a sentence containing a bare plural or an indefinite singular is that it may be paraphrased with “some” with little or no change in meaning; hence the terminology “existential reading”. The application of the term “existential interpretation” is perhaps less appropriate when applied to the definite singular, but it is intended there to cover interpretation of the definite singular as referring to a unique contextually salient/familiar particular individual, not to a *kind*.

There are some tests that are helpful in distinguishing these two readings. For example, the existential interpretation is *upward entailing*, meaning that the statement will always remain true if we replace the subject term with a more inclusive term. Consider our examples above. In ([1b](https://plato.stanford.edu/entries/generics/#ex1b)), we can replace “tiger” with “animal” *salva veritate*, but in ([1a](https://plato.stanford.edu/entries/generics/#ex1a)) we cannot. If “tigers are on the lawn” is true, then “animals are on the lawn” must be true. However, **“tigers are striped” is true, yet “animals are striped” is false. (**[**1a**](https://plato.stanford.edu/entries/generics/#ex1a)**) does not entail that animals are striped,** but ([1b](https://plato.stanford.edu/entries/generics/#ex1b)) entails that animals are on the front lawn (Lawler 1973; Laca 1990; Krifka et al. 1995).

Another test concerns whether we can insert an adverb of quantification with minimal change of meaning (Krifka et al. 1995). For example, inserting “usually” in the sentences in ([1a](https://plato.stanford.edu/entries/generics/#ex1a)) (e.g., “tigers are usually striped”) produces only a small change in meaning, while inserting “usually” in ([1b](https://plato.stanford.edu/entries/generics/#ex1b)) dramatically alters the meaning of the sentence (e.g., “tigers are usually on the front lawn”). (For generics such as “mosquitoes carry malaria”, the adverb “sometimes” is perhaps better used than “usually” to mark off the generic reading.)

**“private entities” is a generic bare plural that must be read with a generic interpretation -**

**a] Fails the Upward-Entailment Test--- “Private entities” doesn’t entail “all entities” since the topic doesn’t extend to public entities as well.**

**b] Adverb of Quantification Test— “most private entities” produces only a small change in meaning**

**Violation: They don’t**

**Vote neg—**

**1] Limits— hundreds of private entities and states that the aff can pick from and limitless combinations under limits the topic and destroys neg prep since there’s no unifying DA against OneWeb UK aff, SpaceX US aff, Airbus UK aff, Rocket Lab USA, Origin Space China aff, India, and Russia affs-- aff gets infinite prep and sets terms for debate so DAs and PICs are inherently reactive and its absurd to say potential neg abuse justifies the aff being flat-out non-T-- limits outweighs – reciprocal prep burden and allows for nuanced engagement**

**2] Topic Lit – the literature always talks about private space companies in relation to the states where they’re based – the aff is an arbitrary constraint on the topic not based in the literature – means this turns functional limits because there’s no solvency advocates for exclusively banning single countries or companies from space**

**DTD on T – the debate shouldn’t have happened if they were abusive**

**Competing Interps on T since its binary and a question of models – Good enough isn’t good—there can be no reasonable interp of what the topic actually means**

**No RVIs on T – 1] Illogical—T is a gateway issue, winning T is meeting a baseline to have the debate to begin with 2] T is reactionary, they shouldn’t win for meeting their preround burden 3] Forcing the 1NC to go all in on theory kills substance education and neg flex—o/w on real world**