## 1

### T – State Action

#### Interp: Affs may only garner offense off of private appropriation being unjust – to clarify, any action through which private appropriation is restricted is extra-topical.

#### Violation: They fiat an OST protocol.

#### Standards:

#### Ground – They can skirt neg ground, especially regulations and process CPs by fiating that an international agreement will solve for these problems. Ground controls the quality of the discussion – there is no guarantee that there is enough academic research to negate any given aff

#### Clash- only the aff is prepared for their policy, making it a one sided discussion. Clash is k2 education because it allows for better and more in depth debates.

#### Voters

#### Fairness – debate is a game and games must be fair

#### Education – it’s the reasons schools fund debate

#### No RVIS – a) you don’t win for being fair b) incentivizes baiting theory which causes maximum abuse

#### DTD – the whole aff is the argument

#### Use competing interps – reasonability invites judge intervention

## 2

### Mining DA

#### Noble materials such as platinum are necessary for future survival, yet they are of limited abundance on earth, while are abundant on asteroids.

Sun et al. 20 (Sun, Daoyuan, Dong, Longjun., Shu, W., & Li, Xibing (School of Resources and Safety Engineering, Central South University, Changsha, China), 3-2-2020, “Exploration: safe and clean mining on Earth and asteroids. Journal of Cleaner Production,” <https://www.sciencedirect.com/science/article/abs/pii/S095965262030946X> Accessed 7-13-21)

Some types of mineral resources are obligatory for an evolving future society, which have great differences in their abundances on Earth and asteroids (e.g., Elvis, 2014). For example, platinum, a noble metal with its total reserve of only about 14,000 tons on Earth, has been widely used in the fields of medicine (e.g., Barefoot, 2001), materials engineering and chemical engineering (e.g., Dong et al., 2015), while most of the platinum has been contained in the ultra-deep deposits as it has large density in the early stage of Earth formation (e.g., Holzheid et al., 2000). With the exhaustion of the limited platinum contained in the surface of Earth, we have to consume more energy and resources to extract the ultra-deep platinum. Hence, there is no doubt that the safe and clean extraction of the deep platinum will be an extremely difficult issue by utilizing current mining techniques and equipment. Meanwhile, it can be expected that the output of platinum on Earth will be scarce as its total reserve is short (Dong et al., 2015). However, the platinum is abundant in other asteroids such as the asteroid 2011 UW158, which was worth 5.4 trillion USD for the platinum that it contained (Gary, 2016). According to the surveys funded by NASA’s Near Earth Object (NEO) Observations Program, the total number of discovered near-Earth asteroids (NEAs) reached to 15,000 up to 13 October 2016 (NASA, 2016). As of January 2018, there were over 18,000 known NEOs, with an average discovery rate about 40 per week (NASA, 2018). Many of NEAs contain high concentrations of platinum group metals (PGMs) such as platinum, rhodium, iridium, and palladium, which are similar to the asteroid 2011 UW158 and can be classified as Metallic Asteroids (Blair, 2000). It can be inferred that the deposits of PGMs on the identified NEAs may exceed the total amount of that found on Earth. Evidently, offmining on asteroids provides new ways for the future society to access the rare and noble metals on Earth.

#### Asteroid mining enables solar power satellites – which limit the effects climate change

**Taylor 19** Chris Taylor is a veteran journalist. Previously senior news writer for Time.com a year later. In 2000, he was named San Francisco bureau chief for Time magazine. He has served as senior editor for Business 2.0, West Coast editor for Fortune Small Business and West Coast web editor for Fast Company. Chris is a graduate of Merton College, Oxford and the Columbia University Graduate School of Journalism. "How asteroid mining will save the Earth — and mint trillionaires." Mashable, 2019, mashable.com/feature/asteroid-mining-space-economy. [Quality Control]

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**. 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.** 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 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.

#### Off- Earth mining reduces emissions.

Dallas, et al. 19 (Dallas, J.A. (Australian Centre for Space Engineering Research, School of Minerals and Energy Resources Engineering, Sydney, Australia) et al. November 2, 2019, "Mining beyond earth for sustainable development: Will humanity benefit from resource extraction in outer space?," *Acta Astronautica*, <https://www.sciencedirect.com/science/article/abs/pii/S0094576519313839>. Accessed 7-12-21)

Off-Earth mining has been hailed by some as the answer to many of the environmental issues associated with mining on Earth (e.g., MacWhorter, 2015), based on the idea that much of the mining that is carried out on Earth 2 could instead be done in space in a bid to reduce pressure on Earth’s environment. In a preliminary study comparing the greenhouse gas emissions resulting from mining platinum (Pt) on Earth compared to asteroids, Hein et al. (2018) found that mining Pt in space produced considerably less greenhouse gas emissions relative to Earth-based mining. However, this study compared greenhouse gas emissions resulting from 1 kg of mined Pt, and did not compare the impact on other areas of the environment. If asteroids were to supply Earth with all, or even most of the demand for Pt, the assumption can be made that this would require a number of space vehicles carrying materials required for mining infrastructure. While the greenhouse gas emissions associated with space launches may be relatively less than Pt mining on Earth, the cumulative impact of frequent space launches on other areas of the environment is likely to be considerable. Numerous studies have documented the environmental impact of space launches (e.g., Madsen, 1981; Malkin, 1978; Murray et al., 2013; NASA, 1983; Nauryzbaev et al., 2005; Ross et al., 2010), and of particular concern when discussing cumulative launches is depletion of the stratospheric ozone layer. Space rocket launches are the only source of ozone depleting substances deposited directly into Earth’s ozone layer, causing concern that an increase in the frequency of launches could have dire consequences for the ozone layer (Ross et al., 2009). Aside from global environmental concerns, both Earth-based mining and space launches impact the local environment, with both being associated with emissions to soil, air, and water. However, the scale of emissions from mining is much greater than those associated with space launches, and this would likely remain the case even with a large increase in the frequency of space launches. While more work is needed to quantify the local environmental impact of the Earth-based mining as well as the space launches associated with off-Earth mining, preliminary evidence suggests that space launches result in environmental impacts of a much smaller magnitude (e.g., Hein et al., 2018). MacWhorter (2015) suggests that the environmental benefits to Earth of moving mining for resources used on Earth to other celestial bodies will be so large that off-Earth mining should be incentivized through a legal framework that grants property rights in extracted minerals on a “first-in-time, first-in-right” basis

#### **Emissions cause extinction.**

Spratt and Dunlop 19, David Spratt [Research Director for Breakthrough National Centre for Climate Restoration, Melbourne, and co-author of Climate Code Red: The case for emergency action] & Ian Dunlop [member of the Club of Rome. Formerly an international oil, gas and coal industry executive, chairman of the Australian Coal Association, chief executive of the Australian Institute of Company Directors, and chair of the Australian Greenhouse Office Experts Group on Emissions Trading 1998-2000], “Existential climate-related security risk: A scenario approach,” Breakthrough - National Centre for Climate Restoration, May 2019, pg. 8-10, beckert. Brackets in original text

2020–2030: Policy-makers fail to act on evidence that the current ​Paris Agreement path — in which global human-caused greenhouse emissions do not peak until 2030 — will lock in at least 3°C of warming. The case for a global, climate-emergency mobilisation of labour and resources to build a zero-emission economy and carbon drawdown in order to have a realistic chance of keeping warming well below 2°C is politely ignored. As projected by Xu and Ramanathan, by 2030 carbon dioxide levels have reached 437 parts per million — which is unprecedented in the last 20 million years — and warming reaches 1.6°C.18 2030–2050: Emissions peak in 2030, and start to fall consistent with an 80 percent reduction in fossil-fuel energy intensity by 2100 compared to 2010 energy intensity. This leads to warming of 2.4°C by 2050, consistent with the Xu and Ramanathan “baseline-fast” scenario.19 However, another 0.6°C of warming occurs — taking the total to 3°C by 2050 — due to the activation of a number of carbon-cycle feedbacks and higher levels of ice albedo and cloud feedbacks than current models assume. [It should be noted that this is far from an extreme scenario: the low-probability, high-impact warming (five percent probability) can exceed 3.5–4°C by 2050 in the Xu and Ramanathan scheme.] 2050: By 2050, there is broad scientific acceptance that system tipping-points for the West Antarctic Ice Sheet and a sea-ice-free Arctic summer were passed well before 1.5°C of warming, for the Greenland Ice Sheet well before 2°C, and for widespread permafrost loss and large-scale Amazon drought and dieback by 2.5°C. The “hothouse Earth” scenario has been realised, and Earth is headed for another degree or more of warming, especially since human greenhouse emissions are still significant.20 While sea levels have risen 0.5 metres by 2050, the increase may be 2–3 metres by 2100, and it is understood from historical analogues that seas may eventually rise by more than 25 metres. Thirty-five percent of the global land area, and 55 percent of the global population, are subject to more than 20 days a year of lethal heat conditions, beyond the threshold of human survivability. The destabilisation of the Jet Stream has very significantly affected the intensity and geographical distribution of the Asian and West African monsoons and, together with the further slowing of the Gulf Stream, is impinging on life support systems in Europe. North America suffers from devastating weather extremes including wildfires, heatwaves, drought and inundation. The summer monsoons in China have failed, and water flows into the great rivers of Asia are severely reduced by the loss of more than one-third of the Himalayan ice sheet. Glacial loss reaches 70 percent in the Andes, and rainfall in Mexico and central America falls by half. Semi-permanent El Nino conditions prevail. Aridification emerges over more than 30 percent of the world’s land surface. Desertification is severe in southern Africa, the southern Mediterranean, west Asia, the Middle East, inland Australia and across the south-western United States. Impacts: A number of ecosystems collapse, including coral reef systems, the Amazon rainforest and in the Arctic. Some poorer nations and regions, which lack capacity to provide artificially-cooled environments for their populations, become unviable. Deadly heat conditions persist for more than 100 days per year in West Africa, tropical South America, the Middle East and South-East Asia, contributing to more than a billion people being displaced from the tropical zone. Water availability decreases sharply in the most affected regions at lower latitudes (dry tropics and subtropics), affecting about two billion people worldwide. Agriculture becomes nonviable in the dry subtropics. Most regions in the world see a significant drop in food production and increasing numbers of extreme weather events, including heat waves, floods and storms. Food production is inadequate to feed the global population and food prices skyrocket, as a consequence of a one-fifth decline in crop yields, a decline in the nutrition content of food crops, a catastrophic decline in insect populations, desertification, monsoon failure and chronic water shortages, and conditions too hot for human habitation in significant food-growing regions. The lower reaches of the agriculturally-important river deltas such as the Mekong, Ganges and Nile are inundated, and significant sectors of some of the world’s most populous cities — including Chennai, Mumbai, Jakarta, Guangzhou, Tianjin, Hong Kong, Ho Chi Minh City, Shanghai, Lagos, Bangkok and Manila — are abandoned. Some small islands become uninhabitable. Ten percent of Bangladesh is inundated, displacing 15 million people. Even for 2°C of warming, more than a billion people may need to be relocated and In high-end scenarios, the scale of destruction is beyond our capacity to model, with a high likelihood of human civilisation coming to an end.21 National security consequences: For pragmatic reasons associated with providing only a sketch of this scenario, we take the conclusion of the ​Age of Consequences ‘Severe’ 3°C scenario developed by a group of senior US national-security figures in 2007 as appropriate for our scenario too: Massive nonlinear events in the global environment give rise to ​massive nonlinear societal events.​ In this scenario, nations around the world will be ​overwhelmed by the scale of change and pernicious challenges, such as pandemic disease. The internal cohesion of nations will be under great stress, including in the United States, both as a result of a dramatic rise in migration and changes in agricultural patterns and water availability. The flooding of coastal communities around the world, especially in the Netherlands, the United States, South Asia, and China, has the potential to challenge regional and even national identities.​ Armed conflict between nations over resources, such as the Nile and its tributaries, is likely and nuclear war is possible. The social consequences range from increased religious fervor to ​outright chaos.​ In this scenario, climate change provokes ​a permanent shift in the relationship of humankind to nature​’.22 (emphasis added) DISCUSSION This scenario provides a glimpse into a world of “outright chaos” on a path to the end of human civilisation and modern society as we have known it, in which the challenges to global security are simply overwhelming and political panic becomes the norm. Yet the world is currently completely unprepared to envisage, and even less deal with, the consequences of catastrophic climate change.23 What can be done to avoid such a probable but catastrophic future? It is clear from our preliminary scenario that dramatic action is required this decade if the “hothouse Earth” scenario is to be avoided. To reduce this risk and protect human civilisation, a massive global mobilisation of resources is needed in the coming decade to build a zero-emissions industrial system and set in train the restoration of a safe climate. This would be akin in scale to the World War II emergency mobilisation. There is an increasing awareness that such a response is now necessary. Prof. Kevin Anderson makes the case for a Marshall Plan-style construction of zero-carbon-dioxide energy supply and major electrification to build a zero-carbon industrial strategy by “a shift in productive capacity of society akin to that in World War II”.24 Others have warned that “only a drastic, economy-wide makeover within the next decade, consistent with limiting warming to 1.5°C”, would avoid the transition of the Earth System to the Pliocene-like conditions that prevailed 3-3.3 million years ago, when temperatures were ~3°C and sea levels 25 metres higher.25 It should be noted here that the 1.5° goal is not safe for a number of Earth System elements, including Arctic sea-ice, West Antarctica and coral reefs.

## 3

### Regulation CP

#### Counterplan text: The Committee on the Peaceful use of Outer Space ought to

#### establish an application system for property rights on celestial bodies. Applications and approval of property rights should be granted upon the condition of

#### open disclosure of data gathered in the exploration of a celestial body

#### Applications must be publicly announced

#### Property Rights will be made tradeable between private entities

#### Property Rights will be set to expire on the conclusion of a successful extraction mission

#### Private Entities will only be allowed one property right grant per celestial body and cannot have more than one grant at a time

#### The counterplan establishes international norms for safe extraction of resources on celestial bodies while increasing R&D in outer space.

**Steffen 21** [Olaf Steffen, Olaf is a scientist at the Institute of Composite Structures and Adaptive Sytems at the German Aerospace Center. 12-2-2021, "Explore to Exploit: A Data-Centred Approach to Space Mining Regulation," Institute of Composite Structures and Adaptive Systems, German Aerospace Center, [https://www.sciencedirect.com/science/article/pii/S0265964621000515 accessed 12/12/21](https://www.sciencedirect.com/science/article/pii/S0265964621000515%20accessed%2012/12/21)] Adam

4. The data-centred approach to space mining regulation

4.1. Core description of the regulatory regime and mining rights acquisition process

The data gathered in the exploration of a [celestial body](https://www.sciencedirect.com/topics/social-sciences/astronomical-systems) is not only of value for space mining companies for informing them whether, where and how to exploit resources from the body in question, but also for science. The irretrievability of information relating to the solar system contained in the body that will be lost during resource exploitation carries a value for humanity and future generations and can thus be assigned the characteristic of a common heritage for all mankind as invoked in the Moon Agreement. This characteristic makes exploration data an exceptional and unique candidate for use in a mechanism for acquiring mining rights because its preservation is of public interest and its disclosure in exchange for exclusive mining rights does not place any additional burden on the mining company. The following principles would form the cornerstones of the proposed regulatory regime and rights acquisition mechanism based on exploration data:

Without preconditions, no entity has a right to mine the resources of a celestial body.

An international regulatory body administers the existing rights of companies for mining a specific celestial body.

Mining rights to such bodies can be applied for from this international regulatory body, with applications made public. The application expires after a pre-set period.

Mining rights are granted on the provision and disclosure of exploration data on the celestial body within the pre-set period, proposedly gathered in situ, characterising this body and its resources in a pre-defined manner.

The explorer's mining right to the resources of the celestial body is published by the regulatory body in a mining rights grant.

The data concerning the celestial body are made public as part of the rights grant within the domain of all participating members of the regulatory regime.

The exclusive mining rights to any specific body are tradeable.

The scope of the regulatory body with respect to the granting of mining rights is not revenue-oriented.

The international regulatory body would thus act as a curator of a rights register and an attached database of exploration data. The concept is superficially comparable to patent law, where exclusive rights are granted following the disclosure of an invention to incentivise the efforts made in the development process. In the following section, the characteristics of such a regulatory regime are further discussed with respect to the formation of [monopolies](https://www.sciencedirect.com/topics/social-sciences/monopolies), market dynamics, conflict avoidance, inclusivity towards less developed countries and the viability of implementation.

4.2. Discussion and means of implementation

The proposed regulatory mechanism has advantages both from a business/investor and society perspective. First, it prevents already highly capitalised companies from acquiring exploitation rights in bulk to deny competitors those objects that are easiest to exploit or most valuable, which would otherwise be possible in any kind of pay-for-right mechanism and could result in preventing market access to smaller, emerging companies. Thus, early monopoly formation can be avoided.

The use of data disclosure for the granting of mining rights ensures the scientific community has access to this invaluable source of information. In this way, space mining prospecting missions can lead to a boost in research on small celestial bodies at a speed unmatchable by pure government/agency funded science probes. This usefulness to the scientific community could lead to sustained partnerships between prospecting companies and scientific institutions and could even provide a source of funding for the companies through R&D grants and public-private partnerships. The results of the exploration efforts contribute to research on the formation of planets and the history of the solar system and provide valuable insight for space defence against asteroids. The transition of exploration from a tailored mission profile with a purpose-built spacecraft to a standard task in space flight would also lead to a cost reduction of the respective exploration spacecraft through [economies of scale](https://www.sciencedirect.com/topics/social-sciences/economies-of-scale). This describes the very benefits Elvis [[24](https://www.sciencedirect.com/science/article/pii/S0265964621000515" \l "bib24)] and Crawford [[25](https://www.sciencedirect.com/science/article/pii/S0265964621000515" \l "bib25)] imagined as possible effects of a space economy. Thus, there is an immediate return for society from the exploitation rights grant. It also reconciles the adverse interests of space development and [space science](https://www.sciencedirect.com/topics/social-sciences/space-sciences) as laid out by Schwartz [[26](https://www.sciencedirect.com/science/article/pii/S0265964621000515" \l "bib26)]. It ensures that, by exploitation, information contained in celestial bodies is not lost for future generations.The application period should not be set in a manner that creates a situation that can be abused through the potential for stockpiling inventory rights. Rather, it is intended to prevent conflict in the phase before exploration data gathered by a mission, as a prerequisite to the mining rights grant, is available. In other words, only one exploration effort at a time can be permitted for a specific body. The time frame between the application and the granting of mining rights (meaning: availability of the required exploration data set) should be tight and should only consider necessary exploration time on site, transit time and possibly a reasonable launch preparation and data processing markup. These contributors to the application period make it clear that the time frame could be dynamic and individualistic, depending on the exploration target (transit time and duration of exploration) and the technology of the exploration probe (transit time). After the expiration of the application period, applications for the exploration target would again be permissible. To prevent the previously mentioned stockpiling of inventory rights, credible proof of an imminent exploration intention would need to be part of the application process, for example, a fixed launch contract or the advanced build status of the exploration probe. Such a mechanism would not contradict the statement in the OST that outer space shall be free for both exploration and scientific investigation. Applications would not apply to purely scientific exploration. An application would only be necessary as a prerequisite for mining. Even resource prospecting could take place without an application (for whatever reason), with a subsequent application comprising in situ data already gathered. For such cases, the application process would need to provide a short period for objections to enable the secretive explorer to make their efforts public. The publication of the application for the mining rights, which is nothing more than a statement of intention to explore, thus provides a strong measure for avoiding conflict.

The transparency of where exploration spacecraft are located and, at a later stage, where mining activities take place, provides additional benefits for the sustainable use of space, trust building and deterrence against malign misuse of mining technology. Involuntary spacecraft collisions of competitors in deep space are prevented by the reduction of exploration efforts at the same destination through the application for mining rights by one applicant at a time. As pointed out by Newman and Williamson [[20](https://www.sciencedirect.com/science/article/pii/S0265964621000515" \l "bib20)], this is relevant because space debris does not de-orbit in deep space as in the case of LEO. Deep space may be vast, but the velocities involved mean that small debris particles are no less dangerous. Considering NEO mining with fleets of small spacecraft, malfunctions and/or destructive events could create debris clouds crossing Earth's orbit around the sun on a regular basis, presenting another danger to satellites in Earth's own orbit. Thus, by effectively preventing the collision of two spacecraft, one source of debris creation can be mitigated through this regulation mechanism. With respect to Deudney's [[11](https://www.sciencedirect.com/science/article/pii/S0265964621000515" \l "bib11)] scepticism of asteroid mining and the dual-use character of technology to manipulate orbits of celestial bodies, it has to be stated that this potential is truly inherent to asteroid mining. An asteroid redirect mission for scientific purposes was pursued by NASA [[49](https://www.sciencedirect.com/science/article/pii/S0265964621000515" \l "bib49)] before reorientation towards a manned lunar mission. In one way or another, each type of asteroid mining will require the delivery of the targeted resource to a destination via a comparable technology as formerly envisioned by NASA, be it as a raw material or a useable resource processed in situ, even if this is not necessarily done through redirecting the whole asteroid and placing it in a lunar orbit. However, to be misused as a weapon, space mined resources would have to surpass a certain mass threshold to survive atmospheric entry at the target. This seems unfeasible for currently discussed mining concepts using small-scale spacecraft as described in this article. Redirecting larger masses or whole asteroids would require far more powerful mining vessels or small amounts of thrust over long periods of time. The continuous, (for a mining activity) untypical change in the orbit of an asteroid would make a redirect attempt with hostile intent easily identifiable, effectively deterring such an activity in the first place by ensuring the identification of the aggressor long before the projectile hits its target. The proposed database would provide a catalogue of asteroids with exploration and mining activities in place that should be tracked more closely because of their interaction with spacecraft. This would, in fact, be necessary per se as a precaution to avoid catastrophic mishaps, such as the accidental change of a NEO's orbit to intercept Earth by changing its mass through mining.

#### Space mining fails now due to profitability and unsafe tech which only the cp solves

**Steffen 21** [Olaf Steffen, Olaf is a scientist at the Institute of Composite Structures and Adaptive Sytems at the German Aerospace Center. 12-2-2021, "Explore to Exploit: A Data-Centred Approach to Space Mining Regulation," Institute of Composite Structures and Adaptive Systems, German Aerospace Center, [https://www.sciencedirect.com/science/article/pii/S0265964621000515 accessed 12/12/21](https://www.sciencedirect.com/science/article/pii/S0265964621000515%20accessed%2012/12/21)] Adam

* answers timeframe deficits
* creates solvency vs inequality/developing nation affs

The data-driven mechanism also addresses another potential risk of an emerging space-based resource economy: the reinforcing of the incontestable market positions of the market leaders based on an advantage in knowledge unattainable by new competitors. Explorations of celestial bodies will have a likelihood of failing from the perspective of the actual value of the explored object vs. the expected value. In this case, the costs of exploration would be a loss for the company, which could be significant and possibly ruinous considering the budgets needed for contemporary space agency-led exploration missions. Sanchez and McInnes [[5](https://www.sciencedirect.com/science/article/pii/S0265964621000515" \l "bib5)] explicitly mention the uncertainties in object distribution models used in their asteroid distribution study and for the conclusions drawn concerning reachable object masses with certain delta-v capabilities of spacecraft. With an increasing number of exploration missions led by a company, the data collected may lead to better in-house models and a higher probability of exploring the ‘right’ body for the value/resources aimed at. This may even provide information on the best spacecraft designs for matching the targeted objects’ orbit distribution. This risk is known from the digital platform economy, where the companies that are now leading have an uncatchable advantage in user data compared with market newcomers, translatable to a more refined and comfortable user experience, attracting additional users and thus offering superior services to business customers. This also holds true for space mining companies. Through their lack of legacy mission data, market newcomers would have a higher risk of misallocating exploration missions, making investments in those companies riskier than in established companies. To avoid the preferred investment in a single or a few companies, the risk of the investment in emerging companies is reduced by the proposed mechanism by ensuring the equal access to data for market newcomers and established companies alike. From a prospecting risk perspective, the market entrance of a new company becomes progressively less risky for investors with increasing amounts of publicly available exploration data, promoting progressive and dynamic development.

The long lead times of asteroid mining ventures coincide with a long time frame for an ROI. The exclusive mining rights granted after the exploration phase give investors security half-way into their space mining endeavours. The proposed tradability of the rights offers an early chance of gaining investment proceeds. It also offers the possibility of new business models: the classical asteroid mining system concept, as shown by Andrews et al. [[43](https://www.sciencedirect.com/science/article/pii/S0265964621000515" \l "bib43)], for example, covers exploration, exploitation and resource transfer. This maximises the investment needed to develop the technologies required for the entire process chain. Giving exploration a value could lead to a division of labour. Dedicated prospecting companies could emerge, providing mining companies with the data and mining rights to a body with the specific resource profile they are seeking. In this way, the investment needed for a successful mining endeavour is divided between different specialised companies. This considerably reduces the risk for investors as well as the investment needed for a company to meet their business goals, which are now aimed at just a particular part of the overall space mining endeavour. Third-party applications for mining rights should be possible to allow a mining company to subcontract to exploration companies. Such a regulatory mechanism design would also be more easily inclusive of less developed countries. They could simply contract exploration missions made affordable through economies of scale to become part of the emerging space mining economy as holders of tradeable mining rights. Through a wise selection of such missions’ targets, they could gain powerful positions of influence.

## 4

### Security K

#### Be skeptical of their claims that private appropriation of space is the only cause of militarization in space – there are several other causes of space weaponization, like security rhetoric that the AC engages in.

Peoples 10 (Dr. Columba Peoples, is Lecturer in International Relations in the Department of Politics, University of Bristol. His primary research interests are in the field of critical security studies, with particular focus on how narratives of technological development are employed within the issue areas of nuclear security, ballistic missile defence and space security., Cambridge University Press, 2010, "The Securitization of Outer Space: Challenges for Arms Control",www.bristol.ac.uk/media-library/sites/spais/migrated/documents/peoples0210i.pdf)

Buzan et al consequently argue that security, as a concept, is fundamentally about survival: it is when an issue is represented as posing an existential threat to the survival of a referent object. Here the term „referent object‟ can be defined simply as „that to which one can point and say, “It has to survive, therefore it is necessary to…”‟. 42 This is the same basic principle that underpins the conventional focus of national security and defence: war threatens the very existence of a referent object, the state. Within the concept of national security it is assumed that the state „has to survive‟, therefore it is assumed that it is necessary for the state to maintain standing armies, weapons production and procurement, intelligence agencies and so on. One of the ways we can distinguish an existential threat, then, is the level of response it generates. When an issue is successfully presented as an existential threat, it legitimises the use of exceptional political measures. A classic (military) example in 9 international relations is a state‟s right to self-defence: if a state is under attack, it can legitimately use extraordinary measures that go beyond normal day-to-day politics. A state under attack can declare a state of emergency during which it suspends or changes its functions. It may declare martial law, for example, ration the provision of certain services, close roads and schools and so on. Commonly, the (discursive) identification of existential threats set in chain a number of effects that characterize the specific quality of security problems: urgency – the issue takes priority; and extraordinary measures – authorities claim powers that they would not otherwise have, or curtail rights and liberties that might otherwise apply. 43 On this basis, Buzan et al argue, the meaning of security is in many ways secondary to „the essential quality of security in general‟44 that resides in the act of saying „security‟ rather than in any essential meaning of the word: That quality is the staging of existential issues in politics to lift them above politics. In security discourse, an issue is dramatized and presented as an issue of supreme priority; thus, by labelling it as security, an agent claims a need for and a right to treat it by extraordinary means. 45 Threats and vulnerabilities can arise in many different areas, military and non-military, but to count as security issues they have to meet strictly defined criteria that distinguish them from the normal run of the merely political. They have to be staged as existential threats to a referent object by a securitizing actor who thereby generates endorsement of emergency measures beyond rules that would otherwise bind.46 In short, securitization is used in attempts to legitimate the application of extraordinary measures by positioning an issue as equivalent to with a threat to (military) national security as it is more traditionally understood. Waever argues that we can think of this process of securitization in terms of spectrum that runs from nonpoliticized (meaning that an issue is not a political issue), through politicised (meaning it is part of a public policy debate) to securitized (meaning that the issue is thought of as an existential threat and therefore justifies responses that go beyond normal political practices). The movement of an issue along the spectrum from „politicized‟ to „securitized‟ is initiated through what is known as a speech act: a securitizing speech act – or, „securitizing move‟ – occurs when an issue not previously thought of as a security threat come to be spoken of as a security issue by key political actors. As is noted by Buzan, Waever and de Wilde, „The obvious method [for the analysis of securitization] is discourse analysis, since we are interested in when and how something is established by whom as a security threat.‟47 This is particularly apposite to discussion of space security, where policy currently tends to lead practice, 48 and hence discursive constructions, and not just technical capabilities and space physics, are important when considering the prospects for international cooperation on the issue of space security.49 Rigidly interpreted, then, we might say that the application of a securitization framework to space policy involves an assessment of the extent to which outer space has become „securitized‟ within these policy discourses: that is, the degree to which the current use, access and dependence on outer space has become framed as an „existential threat‟ and has come to be accepted as such by a relevant audience.50 In methodological terms, Buzan, Waever and de Wilde in their original formulation of 10 securitization theory argue that securitizing moves will follow the „grammar‟ of security: that is, securitizing speech acts will present an issue in terms of threats and countermeasures to reduce or defeat identified threats.51 In turn, the members of the Copenhagen School, particularly Ole Waever, suggest a normative preference for „desecuritization‟ of issues: that is, in this case, the extent to which states and international organizations seek to move issues related to outer space into the „ordinary public sphere‟ of politicization rather than view them in terms of threats and countermeasures associated with securitization.52 Although generally drawing on the same terminology and sharing the same perspective, more recent applications and extensions of securitization theory have focused less exclusively on the „speech act‟ formula suggested by the Copenhagen School, looking additionally to ways in which technocratic and institutional practices can entrench securitization,53 and on the role visual media (as well as speech) can play in securitization. 54 In keeping with these approaches to securitization theory, this paper, although adhering broadly to the framework outlined by the Copenhagen School, focuses less on the „success‟ of securitizing moves (in terms of audience reception) than it does on the presence, occurrence and implications of these moves within space policy. In short, the emphasis in this paper is more on the political effects of such securitizing moves within space policy, particularly with regard to arms control and the regulation of outer space more generally. The reasoning behind this introduction of securitization theory is that the militarization/weaponization debate only partially captures (at best) the multiple ways in which outer space is being linked to security in the policy discourses of leading states – ways that encompass not only „traditional‟ military security but also the security of economic, environmental, scientific and technical infrastructures. In this sense it is possible to argue that outer space is rapidly becoming „securitized‟ in important aspects that are potentially missed by current academic debates focused on the vagaries of space militarization versus space weaponization. Such securitizing moves have, as is illustrated below, been used to justify particular shifts in space policy, and are an important feature of the current context that debates on arms control/CMV need to take account of. It is worth stressing that what can be termed as the „securitization of outer space‟ is, in itself, not a novel phenomenon or development. The extent to which ostensibly civil uses of outer space have been driven by, and have overlapped with, national security functions historically – or, as in the case of the space race between the US and USSR, have acted as a surrogate for direct military engagement – is well documented.55 Similarly, the characterization of the Sputnik launch in 1957 as placing the US „in the greatest danger in its history‟ suggests that the representation of space technologies as potential existential threats is not entirely new either.56 What is of significance, though, is the intensification, expansion and entrenchment of „securitizing moves‟ as features of national space policies. The Space Security Index report Space Security 2009, in its overview of national policies, explicitly noted that, on the one hand, „National space policies consistently emphasize international cooperation and the peaceful uses of outer space‟, but on the other hand that there is a „Growing focus within national policies on the security uses of outer space‟.57 The report cited as evidence: Japan‟s 2008 space law framework, which lifted its previous ban on national security and military space activities; China‟s 2006 National Defense 11 White Paper, which identifies national security as principle of China‟s emerging space programme; France‟s White Paper on Defense and National Security, which calls for an overhaul of its national space strategy; and the renewed priority on „space for security‟ within EU policy.58 Within recent US space policy securitization has been most noticeably prevalent, which is significant given the continued pre-eminence of the US as a space power. As is noted in one recent assessment, around fifty countries, intergovernmental consortia, and nongovernmental organizations have at least one satellite in space, „mostly for reasons that have more to do with economic performance and Earth monitoring than with military applications.‟59 The same assessment notes, though, that current patterns of space utilization „have not yet lived up to the predictions made in the late 1990s that market forces would overwhelm military factors in shaping investment choices, technology, development, and regulatory rules.‟60 In spite of the increasing diversity of interests in space and the increased range of functions space-based technologies now fulfil, the US defence budget still remains the single largest source of investment in space technologies. In part this sustained investment arises out of US deployment and development of missile defence systems. Space security and missile defences have been intimately connected issues historically and there are obvious technological overlaps between the two. Missile defence systems, including the ground-based system (Ground-Based Midcourse Defence or GMD) currently deployed by the US at sites in Alaska and California, are dependent on satellite and space-based tracking technologies to detect and track incoming missiles, and there is a possibility that the future connection between missile defence and space will be even stronger if current plans for missile defence are pursued to their fullest extent. Two such systems are already in the early stage of their development: the Space-Based Laser (SBL), which, like the Strategic Defence Initiative or „Star Wars‟ proposals of the 1980s, envisages using lasers to shoot down missiles in flight;61 and the “NFIRE” or Near Field Infrared Experiment, a proposal to launch interceptor missiles not from the ground, as in the currently deployed GMD, but from space.62 These proposals to place missile defence intercept technologies in space are, it should be noted, currently in a very early stage of development. To date programmes such as the SBL and NFIRE have been plagued by development problems and their future prospects, along with the that of the US Missile Defense Agency‟s space test bed for space based interceptors, remain somewhat uncertain, particularly in light of budgetary constraints.63 Even a conservative estimate puts the full cost of a 20- satellite constellation of Space-Based Lasers at a prohibitive „$40 billion, plus launch costs.‟64 Yet even if the status of space-based missile defence interceptors remains uncertain, the currently deployed ground-based system also poses a complex issue in terms of arms control. Though ostensibly intended for defensive purposes, ground and sea-based components of US missile defence could theoretically be employed as an ASAT – Anti-Satellite attack – device. The fear that has been expressed by critics of the US, particularly those in Russia and China, is that it is effectively using missile defence as a cover for ASAT development,65 and the use of sea-based „Aegis‟ ballistic missile defence capabilities and its Standard Missile 3 (SM3) to shoot down the malfunctioning USA-193 spy satellite in February 2008 has done little to dispel concerns over the offensive applications of current missile defence capabilities.66 In addition to potential dual applications of missile defense systems, the US also conducts research into more „exotic‟ forms of space weaponry, and funds a variety of 12 technologies aimed at creating a „force application‟ capacity from space. Although the actual status of such programmes is opaque, the Department of Defense has reportedly explored several high-concept space weapons systems such as „Hypervelocity Rod Bundles‟ (tungsten rods dropped on targets from space that would theoretically use gravity as accelerant in a manner akin to a meteor, or “rods from God” as they are also colloquially known), the „Experimental Spacecraft System‟ (XSS) (a manoeuvrable microsatellite weighing only 100 kilograms which could prospectively be used to attack other satellites), and the „Common Aerospace Vehicle‟ or CAV (this so-called „Spaceplane‟ would be unmanned and would orbit the earth, entering the atmosphere when needed to deploy precision guided munitions against selected targets). 67 Such programmes with possible space weapons applications (beyond ground-to-space ASAT capabilities) are still in their relative infancy, and the technical prospects for such technologies, as with the more “exotic” missile defence proposals outlined above, are far from certain.68 Yet much of the rhetoric emanating from the US in recent years has made expansive claims to „space dominance‟, and has often tended to lead reality in terms of the capabilities that are claimed. In short, rather than seeking to control the means of violence in and from space, much of the military discourse on space has generally cast the US as a “trailblazer” in this regard, with exotic systems cited as a necessity for future military dominance in and from space.69 Historically these claims have tended to emanate primarily from the Air Force and Air Force Space Command. In 1998, Space Command defined the control of space („space control‟) as „The ability to assure access to space, freedom of operations within the space medium, and an ability to deny others use of space, if required‟70, and space was also considered as part of the remit for „full spectrum dominance‟ in Joint Vision 2020.71 Space warriors within and beyond the US military also make frequent reference to „…importance of dominating space in peace and war.‟72 Yet, „The decision to weaponize space does not lie within the military (seeking shortterm military advantage in support of national security) but at the higher-level of national policy (seeking long-term national security, economic well-being, and worldwide legitimacy of US constitutional values).‟73 Instances of the securitization of outer space within military circles are hardly surprising, given vested interests and the perceived utility of space support for US forces74; what is more significant though is the extent to which national policy, though stopping short of explicit advocating space weapons, has tended to similarly maintain the centrality of space for national security. As Moore‟s „biography‟ of the idea of unilateral space dominance in the US attests to, this line of thinking has long held a prominent place in American strategic thinking.75 Of significance, though, is the extent to which this type of thinking has migrated into official policy, portraying US access to, and dominance of, outer space as key to national survival in the process. The tenure of the George W. Bush administration in particular saw military and policy discourse move much closer in terms of goals and language used, entrenching securitization within US space policy as a whole. In the terms used above, the views of „space warriors‟ made much greater inroads in recent times into US space policy, and this has had a significant bearing on how the US has positioned itself in terms of arms control and how other states – particularly China and Russia – have defined their own positions.76

#### **The logic of threat construction in the 1ac is determined by the fears of the elite, not by the fears of the average person. The probability of nuke war is low because of restraint, but allowing the fears of the elite to dominate the discussion causes real harm. You should reject the representations of the 1ac.**

Van Rythoven 15 (Eric Van Rythoven, Department of Political Science, Carleton University, “The Perils of Realist Advocacy and the Promise of Securitization Theory”) //zuga

Threat construction, including both practices of securitization and desecuritization can be thought of as a form of statecraft whose emphasis on practical knowledge cuts across both schools of thought. This form of explicitly political knowledge can be explored in at least two concrete areas: the advocacy of restraint and the politics of emotion in security debates. In the aftermath of the 2003 Iraq War and the subsequent excesses of the Global War on Terror, realist advocacy has gravitated towards a more active promotion of restraint. Walt’s (2006) Taming American Power makes the case to a popular audience for the value of the US exercising restraint on the global stage. Similarly, Posen (2013, 2014) has argued for a grand strategy of restraint against an increasingly expansive liberal hegemony. Rosato and Schuessler’s (2011: 813) realist foreign policy manifesto explicitly ‘counsels restraint’ in dealing with minor powers such as Iran. While less visible, a similar concern with restraint is also evident in securitization theory. Increasingly, its proponents are carving out a nuanced middle ground, where the dangers of intense patterns of threat construction mean that the practice of ‘desecuritization is preferable in the abstract, but concrete situations might call for securitization’ (Wæver, 2011: 469). Vibeke Schou Tjalve goes even further by pointing to how visions of civil society inspired by early 20th-century Atlantic republicanism could be used to curb, but never altogether eliminate, securitizing moves. She argues: Ultimately, human beings can only restrain each other. The creation of a system of checks and balances, of playing interest against interest, was the only viable means of restraining the monopoly of ideas or the advance of uncontested demonizing, securitizing moves. (Tjalve, 2011: 446, emphasis in original) Tjalve’s work represents a stark departure from the metaphor of the marketplace by focusing on an agonistic and competitive public sphere. Yet, it shares with US realists a distinct understanding of restraint as a virtue in security discourse. How one advocates for the importance of this virtue to contemporary forms of statecraft is possibly one of the most fruitful grounds for dialogue between these two approaches today. Yet, restraint in security debates is typically held to be elusive, especially when such debates play to populist impulses such as fears over terrorism or nuclear proliferation. As noted in the previous section, both realism and securitization theory are beholden to a vision of fearful publics acquiescing to security arguments. The problem with this logic is that it artificially narrows the range of emotional dynamics at play. Reducing security debates to popular and elite fears ignores how such debates circulate and are sustained by a variety of different emotions and affects. Great power politics is frequently punctuated by a diplomacy of anger, which may escalate into conflict in the absence of conciliatory gestures (Hall, 2011). Honour and shame have powerful catalyzing effects for security policy, as exemplified by the broadly circulating feelings of shame in the US after 9/11 (Saurette, 2006). Humanitarian operations, such as the Western intervention in Libya, may be wellsprings of joy and jubilation for liberal internationalists, who envision them as heroic efforts that avert near-genocides and produce deeply grateful local populations (e.g. Kristof, 2011). Nor is the role of emotions purely facilitative in making security arguments. In some cases, societies may come to fear the politics of fear itself as it allows for the ‘collective concentrations of power that make possible “institutionalized cruelty” (Williams, 2011: 455). Thus, the use of torture by the US may have left an enduring anxiety over how public fears have been manipulated to support and sustain institutionalized cruelty. The broader point is that as long as these emotional dynamics are part and parcel of security debates — in ways that both inhibit and expand the security agenda — they should be of special interest to both realist and securitization studies.21

#### Representations come before the policy effects of the plan—separating discursive and non-discursive practices is impossible. The representations used are vital to testing the truth claims of the affirmative. Even if fiat exists and policy is important, representations outweigh—they shape policy outcomes and ignoring them causes serial policy failure. Reject the aff right there.

Jourde 6 – Ph.D., Political Science, University of Wisconsin-Madison, M.A., Political Science, University of Wisconsin-Madison, B.Sc., Political Science, Université de Montréal (Cedric, 2006, “1995 Hegemony or Empire?: The redefinition of US Power under George W Bush,” Ed. David and Grondin p. 182-3)

Relations between states are, at least in part, constructed upon representations. Representations are interpretative prisms through which decision-makers make sense of a political reality, through which they define and assign a subjective value to the other states and non-state actors of the international system, and through which they determine what are significant international political issues.2 For instance, officials of a given state will represent other states as 'allies', 'rivals', or simply 'insignificant', thus assigning a subjective value to these states. Such subjective categorizations often derive from representations of these states' domestic politics, which can for instance be perceived as 'unstable\*, 'prosperous', or 'ethnically divided'. It must be clear that representations are not objective or truthful depictions of reality; rather they are subjective and political ways of seeing the world, making certain things 'seen' by and significant for an actor while making other things 'unseen' and 'insignificant'.3 In other words, they are founded on each actor's and group of actors' cognitive, cultural-social, and emotional standpoints**.** Being fundamentally political, representations are the object of tense struggles and tensions, as some actors or groups of actors can impose on others their own representations of the world, of what they consider to be appropriate political orders, or appropriate economic relations, while others may in turn accept, subvert or contest these representations. Representations of a foreign political reality influence how decision-making actors will act upon that reality. In other words, as subjective and politically infused interpretations of reality, representations constrain and enable the policies that decision-makers will adopt vis-a-vis other states; they limit the courses of action that are politically thinkable and imaginable, making certain policies conceivable while relegating other policies to the realm of the unthinkable.4 Accordingly, identifying how a state represents another state or non-state actor helps to understand how and why certain foreign policies have been adopted while other policies have been excluded. To take a now famous example, if a transnational organization is represented as a group of 'freedom fighters', such as the multi-national mujahideen in Afghanistan in the 1980s, then military cooperation is conceivable with that organization; if on the other hand the same organization is represented as a 'terrorist network', such as Al-Qaida, then military cooperation as a policy is simply not an option. In sum, the way in which one sees, interprets and imagines the 'other\* delineates the course of action one will adopt in order to deal with this 'other'.

## Case

### US/Russia

#### CP reduces the appropriation that American companies can do which reduces risk of the impact scenario

#### Lisner does not say “extinction” once – be skeptical of their impact - we’re the only ones with an extinction scenario

### Collisions

#### They say unregulated mining is bad but the cp makes it safer – Steffen 21 tells you that it reduces the risk of collisions and reduces debris

#### Space Debris -

#### Non – unique - PUBLIC entities will still put debris in space – There is no explanation of how their debris impacts are caused by private entitites so be skeptical of their offense

#### Private entities appropriating space can be a method of maintaining space through debris removal and traffic-management systems

**Moore 21** (Moore, Adrian. “It's Time For US To Get Serious About Cleaning Up Space Junk,”.” TheHill. July 27, 2021. Web. December 13, 2021. <https://thehill.com/opinion/technology/564945- its-time-for-us-to-get-serious-about-cleaning-up-space-junk>.)

Orbital debris management is not well organized within the government. Right now, the Department of Defense (DOD) does most tracking of space debris for the U.S. out of the need to protect military satellites and national security interests. NASA has its own less advanced systems for tracking debris. However, orbital debris management is not just about tracking debris anymore. It is also about forming collision warning systems and safely managing traffic in space. To do this efficiently, we need a civil repository for all orbital debris components, something that many commercial space companies have already created on their own to stay aware of orbital debris and help protect their satellites in space. Tracking debris may be a national security priority, but providing space traffic control is not really in the Defense Department’s mission. We should be utilizing the private sector’s expertise and advancements in this area. For example, Astroscale has contracts with both the Japanese and European space agencies to develop orbital debris removal capability. And responsibility for developing collision warnings and space traffic management would be best suited for the Office of Space Commerce, an office with existing connections to the commercial space industry, NASA and DOD. Partnering with the debris tracking and removal systems private companies are developing while freeing up DOD to focus on military awareness and NASA to focus on research and development would be the most efficient way forward. If government works with private industry through strategic public-private partnerships, the U.S. can best address the threats posed by orbital debris and create sustainable policies for safe space exploration.

#### Private entities empirically reduce debris.

**INN '20,** Innovation News Network, "Innovation in space: the private sector’s role in the 2020 space race", 6-11-2020, accessed 7-11-2021, <https://www.innovationnewsnetwork.com/innovation-in->space-the-private-sectors-role-in-the-2020-space-race/5490/ DHS//JL

SpaceX has paved the way for a new wave of commercial space technologies. However, private actors have been influencing the space industry for many years. In May 2003, Scaled Composites first launched SpaceShipOne, an experimental and reusable space plane that uses a hybrid rocket to achieve speeds of up to speeds of up to 900 m/s. SpaceShipOne completed the first crewed private spaceflight in 2004, which was then retired that year. In 2013, The Spaceship Company announced the first powered flight of SpaceShipTwo, another suborbital spaceplane designed for space tourism. Unfortunately, in October 2014, the first SpaceShipTwo VSS Enterprise crashed in the Mojave Desert. Further investigation suggested that the craft’s descent device deployed too early, killing the pilot, Michael Alsbury. Virgin Galactic plans to operate a fleet of five improved SpaceShipTwo spaceplanes in a private passenger-carrying service and has been taking bookings for some time, with a suborbital flight carrying an updated ticket price of $250,000. SpaceX is responsible for some of the most innovative space technologies produced in the last decade. SpaceX has created the most powerful rocket ever developed, Falcon Heavy, which can lift more than twice the payload of the next closest operational vehicle, the Delta IV Heavy. Although the nature is of the commercial space sector is competitive, many private companies share common goals. How can commercialisation reduce overcrowding in space? Almost 60 years of space activities and more than 5,450 launches have resulted in approximately 23,000 objects remaining in orbit. Around 24% of the catalogued objects are satellites. This catastrophic waste of technology can have a negative effect of future launches and it has been theorised that sending objects into Earth’s orbit could become impossible due the risk of collision. This debris must be removed from orbit if the space industry is to continue to grow. Many **private companies have taken on the burden of removing debris** from Earth’s orbit.Aviosonic Space Tech has pioneered the first Debris Collision Alert System (DeCAS) for the monitoring of space vehicles and satellites as they re-enter Earth’s atmosphere. Avisonic’s patented space debris management system, DeCAS, addresses the vital issue of protecting people and institutions across the globe through a precise, efficient, and cost-effective system which will make the world a safer place. Although the removal of space debris is an important step in sustainable space travel, many businesses are developing nanosatellites to reduce the volume of technology in orbit. Another benefit of developing nanosatellites is that they can do almost everything a conventional satellite does at a fraction of the cost, making this technology more popular in the commercial sector.

### Solvency

#### Outer Space Laws are unclear – private entities can circumvent due to loopholes in the plan.

**Green and Stark 17** [Christopher and Eda, “Outer Space Treaty and Beyond: Do Existing Space Laws Put an Astronomical Barrier to Private IP Rights in Space?”, JDSUPRA. 8 September 2020 https://www.jdsupra.com/legalnews/outer-space-treaty-beyond-do-existing-44028/] //DebateDrills LC

Our **limited body of space law provides little guidance**. The first international treaty, the “Outer Space Treaty,” was signed by the U.S., Russia, and the U.K. in 1967, quickly followed by the Rescue Agreement. Over the next two decades, three other treaties—the Liability Convention, the Registration Convention, and the Moon Agreement—were also signed by these nations, with most countries following in their footsteps.[3] But after that rapid succession of international treaties, there have since been few others. These five documents form the basis of the international space law we have today, but **none address the issue of**[**intellectual property rights in space**](https://www.fr.com/fish-litigation/ip-rights-outer-space/). Rather, upon inspection, it appears that **the stated purpose of these treaties may be antithetical to intellectual property protection.**

The “Outer Space Treaty” espouses communal themes in characterizing space as the “province of all mankind,” the “common heritage of mankind” and to the “benefit of all countries.”[4] Unsurprisingly, Article II of the Outer Space Treaty prohibits any appropriation of areas in space, keeping in line with its principle of communal property.[5] On the other hand, **patents are fundamentally territorial and grant monopoly rights for a period of time. Applied to space, it is unclear just what is open for patent protections.**

For example, **can private companies patent orbital patterns of satellites**? Currently, companies may patent the technology or design of satellites that stay in a particular orbit, even if not the orbital pattern itself.[6] The practical implications of this are significant, especially with the advent of satellite constellations. If particular satellite technologies, and, indirectly, their orbital patterns, are patentable, then a significant portion of space may be occupied by one satellite constellation, i.e. one company alone.[7] Does this private apportionment of space run counter to our notions of sharing space? Some argue that **the Outer Space Treaty only bans sovereign appropriation and does not limit private entities from exerting claims**. Others counter that private property rights flow from sovereign property claims, so the former is meaningless without the latter.[8] So the question remains, **can the stated goals of sharing outer space be reconciled with the proprietary nature of patents**?

**Our current corpus of space treaties comes from a period of history when space exploration was undertaken primarily by governments** rather than private actors. The cooperative goals were likely a reaction to the time, as the world was coming out of a charged space race. **The silence of these space treaties on intellectual property rights presents an opportunity for modern-day agreements to provide patent protections for private companies**. Without robust international agreement on patents for space, we may even see less international cooperation as companies refuse to divulge their discoveries.[9] Now, as more and more private companies enter space exploration and carry the torch of innovation, **it is more important than ever to strike a balance between sharing our “common heritage” and providing patent protections that incentivize invention.**[10]