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#### Counterplan: The United States should enter into a prior and binding consultation with the International Court of Justice over ending commercial space exploration. The United Stats will implement the results of the consultation.

#### Unilateral space policy undermines international law – that hampers traffic management, debris remediation, transparency, and enforcement mechanisms

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The preference to develop domestic policies over international agreements reflects both the emerging value of commercial space and the stagnation of international space governance. The U.S. and Russia stand apart from other nations, as they have the most robust set of national laws and regulatory organizations designed with international space commitments in mind. But among the 28 nations with domestic space policies, there is little policy convergence. States’ decisions to develop unilateral space policies with little concern for international cooperation is creating more limitations than benefits. Failing to cooperate only aggravates existing policy confusion, stalling the development of commercial space activities. Prominent examples include satellite servicing operations and space traffic management, both of which hold significant economic value but cannot be fully developed without improved cooperation due to their need for shared norms and best practices, much in the same way civil aviation could not function effectively if states did not agree on norms and best practices for air traffic control or flight safety. As a global commons, if the goal is to take advantage fully of the economic value of near-Earth space, then unilateral national policies cannot replace international agreements. Current trends suggest that the number of space actors and their interests will increase over the coming years. Consequently, competition over the utilization of space will likely expand and intensify with more actors pursuing their interests and disagreements becoming more common. Current international space governance will not be able to handle the changing nature of space development. New governance, structured differently, is needed. Next Steps for Responsible Space Governance Space has unquestionably undergone some significant changes since the turn of the century and therefore, so has its threat landscape. Although space was once seen as a peaceful sanctuary for scientific purposes, it has become the new playing arena for great power competition between the U.S., Russia, and China. Besides the superpowers, there are now a greater number of nations and non-state actors partaking in space activities and the role of commercial actors in space is becoming more considerable by the day. Although the privatization of space has so-far proven to be primarily a Western phenomenon, nations around the world are beginning to adopt the public-private partnership model and will continue to follow suit. As such, since an increasingly democratized and more accessible space will inevitably bring with it more [hu]man-made threats and challenges to space sustainability, the current system of space governance will need to be strengthened to effectively deal with near-future challenges. The process of developing new rules of the road in space has been complicated by the rapid proliferation of space technology among novel actors. Throughout the Cold War era, when technology was in the hands of few states, reaching consensus on treaties was much easier due to a shared interest by the permanent members of the U.N. Security Council to control the spread of technology. Today, the same technologies that were in the hands of a select few are in the hands of dozens of countries. As such, there is less incentive to collaborate on amending or updating Cold War era provisions, which has led to gridlock in the international bodies originally established to advance global space governance. In the absence of multilateral consensus on managing space activities through intergovernmental organizations (IGOs), namely the U.N., and specialized international fora stemming from the U.N. (i.e. UNOOSA, UNCOPUOS, and the CD), non-state actors have played an increasingly influential role in the development of space law. Currently, the international space law regime gives legal authority to regulate and manage space activities to nation states, not international bodies, through Article VI of the Outer Space Treaty. International bodies—such as UNCOPUOS—play a critical role in establishing standards and facilitating coordination, but the licensing and enforcement of those standards is at the national level. Non-state actors' successful contributions to global space governance are directly correlated to the broader trend of a strained multilateral order where international norms, standards, and voluntary (or non-binding) agreements are preferred over legally binding treaties. The declining ability of IGOs to create widely accepted treaties and agreements that effectively manage space activities consequently means that non-space faring nations are losing what little access they already had to shaping space governance. Hence, it is no surprise that successful governance through the paragon of space law—legally binding and verifiable measures—has become impossible to achieve in the current international political climate. States today have shifted their attention to creating norms through voluntary, non-legal measures with the goal of achieving mutual understanding and reducing suspicion, competition, rivalry between states bypassing international legal bodies altogether. For space governance to continue being successful, states must think through modern challenges creatively and collaboratively—in the long-run, strictly bilateral agreements, national policies, and passive support on non-binding agreements will not be sufficient. It is important to note that ineffective and outdated multilateral treaties and agreements are not obstacles unique to global space governance alone, but rather, global governance and multilateralism more broadly. In order to stay ahead of adversaries especially in the context of the rapid development of LEO, the U.S. should aim to lead in the creation of new space governance policies, focusing on creating functionally specific and effective bilateral agreements between like-minded allies and partners. The path to developing new rules of the road for space activities with space sustainability in mind is through partnership with allies and partners and would serve to overcome the current gridlock in COPUOS. It is also important to note that historically, bilateral agreements between leading countries have influenced broader global governance behavior. One area ripe for both norms-based and formal international collaboration is space situational awareness (SSA) and space traffic management (STM). New agreements on SSA and STM would allow greater transparency on different actors’ activities in space, and would further reduce concerns about dual-use technologies, make on-orbit operations more precise, and ease concerns related to orbital debris management. Furthermore, it is essential that better traffic management practices and regulations be initiated to prevent incidents in space. For instance, though the U.S. Department of Defense and various countries and commercial actors currently engage in SSA cooperation through memoranda of understanding, an increasing amount of space activity is straining the Defense Department’s ability to provide safe and actionable data. More formal cooperation between the U.S. and its allies and partners is needed, potentially through support from COPUOS. Another key challenge which would benefit from both norms-based and formal international collaboration is space debris mitigation. Novel agreements on space debris mitigation should follow guidance from existing guidelines of leading space agencies—such as the Inter-Agency Space Debris Coordination Committee’s (IADC) Space Debris Mitigation Guidelines— AND be adapted and formalized as official treaties and executed through national regulations. It is important to highlight that the full value of space cannot be realized if the challenges posed by space debris are not addressed at the level of binding agreements, which would legally mandate states to comply by mutually agreed-upon rules.

#### Advisory opinions from the ICJ are necessary to clarify and develop international space law

Simpson and Johnson 17 [Michael Simpson, International Space University · Space Policy and Law; Business and Management, Chris Johnson is the Space Law Advisor at the Secure World Foundation, a non-governmental organization (NGO) focused on the sustainable uses of outer space. Christopher does research, writes, and speaks about international and national space law with a special focus on peaceful uses of outer space, emerging governance challenges with non-traditional space activities, and identifying and characterizing deficiencies in existing space law., September 2017, Lacunae and Silence in International Space Law – A Hypothetical Advisory Opinion from the International Court of Justice, ResearchGate, https://www.researchgate.net/publication/320596144\_Lacunae\_and\_Silence\_in\_International\_Space\_Law\_-\_A\_Hypothetical\_Advisory\_Opinion\_from\_the\_International\_Court\_of\_Justice 12-16-2021] rohan (GOAT) \*\*we do not endorse ableist language

* lacunae = situation where there is no applicable law
* non liquet = no answer from governing system

Since international space law has developed for at least 60 years in an environment devoid of judicial opinions on live controversies, it lacks the judicial contribution to clarification and elaboration of terms and principles normally enjoyed by a body of law. For this reason, advisory opinions may be particularly useful in this area. The mechanism for seizing the Court also appears to be favorably developed. In the nuclear weapons case, the ICJ turned down a 1993 request from the World Meteorological Organization on the grounds that WMO, acting ultra vires lacked standing. Only when the UN General Assembly later made the request in its own name did the Court take up the question. Since many of the questions amenable to illumination through advisory opinions are within the remit of the UN Committee for the Peaceful Uses of Outer Space (UNCOPUOS), which itself reports through Fourth Committee to the General Assembly, the procedural pathway to a UNGA request is both established and clear. Equally as helpful is that UNCOPUOS operates by consensus. Thus, early requests for clarification, could easily establish that the necessary political will to seek increased clarity was present and permit to begin with less controversial concepts. Once the efficacy of advisory opinions to clarify elements of space law is established, the General Assembly could possibly decide to forward more challenging issues even where consensus in COPUOS could not be expected. III. NON-LIQUET AT THE ICJ. It is a general principle of law at both the national and international level (indeed inherited from ancient Roman law) that when asked to deliver a judgement, a court knows the law (Iura novit curia). So it should seem as an unexpected and rare surprise when a court does not, indeed, know the law. In the Nuclear Weapons advisory opinion, the Court considered the existing law applicable to the threat or use of nuclear weapons, and their treatment under the various sources and bodies of law. The Court was asked to consider “is the threat or use of nuclear weapons in any circumstances permitted under international law?” However, the Court slightly rephrased that question merely to “determine the legality or illegality of the threat or use of nuclear weapons.”11 In seeking an answer, the Court looked to custom and to treaties, and looking to a diverse field of special regimes of international law, including the law of armed conflict (LOAC) a.k.a. International Humanitarian Law (IHL) (including jus ad bellum and jus in bellow), environmental law, and human rights law. However, the law, as a system and as a whole, was weighed and found wanting. The Court concluded: 11 20 Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, I.C.J. Reports (1996) p. 226, 238 para. 97. Accordingly, in view of the present state of international law viewed as a whole, as examined above by the Court, and of the elements of fact at its disposal, the Court is led to observe that it cannot reach a definitive conclusion as to the legality or illegality of the use of nuclear weapons by a State in such circumstance of self-defense, in which its very survival would be at stake. Non liquet, meaning, it is not clear, is where a court finds the law insufficient, and does not permit a conclusion one way or the other regarding the issue it is presented with. 12 IV. SPACE LAW, LACUNAE, AND NON-LIQUET The idea that gaps in the law or uncertainty with its provisions can render judicial decisions impossible, difficult, or unwise is at least as old as Roman law. As such the concepts of lacunae and non liquet still bear the Latin names that would have been familiar to lawyers and legal scholars throughout the Roman Empire. As explained by Mark Bogdansky, non liquet can be extended to cover both the case where no legal rule can be found that applies to a case under consideration and to the case where lack of clarity in the facts or in a principle of law makes it impossible to discern clearly the implications of that principle in light of the facts presented. Bogdansky refers to the former situation as ontological non liquet and to the latter as epistemological. We will use lacunae to refer to apparent gaps in international space law and will confine our use of “non liquet” to situations where a principle has been articulated but is not clear. Definitions become extremely important in discussing the impact of lacunae and non liquet on international space law. Note for example the list of lacunae in José Monserrat Filho’s excellent paper, “Space Law In The Light Of Bobbio's Theory Of Legal Ordering,” IAC-12.E7. 5. 6. 1. Definition of “space object”, “space debris”, “space activities”, “space launching”; 2. Binding “Space Debris Mitigation Guidelines”; 3. Prohibition of all kind of weapons in Earth orbits; 4. Definition and delimitation of the outer space; 5. Regulation of commercialization of space activities; 6. Environmental damage in Liability Convention; 7. Industrial exploitation of lunar natural resources; 8. Remote sensing activities in the XXI century; 9. Satellite data as evidence in criminal proceedings; 10. The use of nuclear power sources in space; 11. The human presence in space. 12 While items 2, 3, 6, and 11 fit clearly into our definition of lacunae, the others represent cases where legal principles have been articulated, but are subject to substantial disagreement as to their application to various fact situations. Where lacunae exist, the utility of advisory opinions is greatly constrained. The foundational principles of positivism and sovereignty that are key pillars of international law do not lend themselves to judicial activism in creating legal rules in the absence of political action to create them. On the other hand, where a situation of non liquet emerges from disagreement over definitions or the application of a legal principle to a particular situation, an advisory opinion could have either one of two beneficial outcomes. In the first case an advisory opinion could clarify the meaning of terms where uncertainty exists. This situation would require strong arguments to support the opinion and justify it. It might be elaborated on the basis of original intent reflected in the travaux préparatoires, clear patterns of application of terms and principles in the action of States parties to the agreements where uncertainty exists or lack of clarity is perceived, or lucid reasoning by analogy to similar situations where greater certainty can be demonstrated. The second case could result from an opinion that clarification cannot be provided and that the matter remains non liquet. In this case, there would be an unambiguous signal that political/ diplomatic action would be required to clarify the issues in dispute. Take for example the hypothetical example of a case seeking clarification of the non-appropriation clause of the Outer Space Treaty. A non liquet in such a case would leave those wishing to assert that a prohibition against off Earth mining existed in international law without a legal vindication of their position while those wishing to engage in such mining would face uncertainty because the Court had not ruled definitively that non appropriation did not apply to them. Since the mining advocates would be ~~handicapped~~ by uncertainty in their approaches to potential investors, both sides would have an incentive to seek a political resolution with the compromises that was likely to entail.

#### International space legal regime are needed to solve space war --- malleable laws are key in outer space

Hart 21 [Amalyah Hart, Amalyah Hart is a science journalist based in Melbourne, 11-19-2021, "Do we need new space law to prevent space war", Cosmos Magazine, https://cosmosmagazine.com/people/society/space-law-to-prevent-space-war/] simha

The week before last, a UN panel approved the creation of a working group to discuss next-generation laws to prevent the militarisation of space. The move comes as space 2.0 seems to be going into hyper-drive, with countries and corporations racing to claim their stake in the final frontier. It’s timely, as the potential for friction is gathering by the day, with China, India, Russia and the US testing anti-satellite missiles on their own satellites and creating worrisome clouds of debris. This week’s destruction by Russia of its “dead” satellite, Cosmos 1408, underlined the issue. Meanwhile, the orbital space around Earth is becoming jammed with machinery; currently, there are 3,372 active satellites whizzing around Earth, but in one or two decades that number is set to leap to potentially 100,000 or more. And that’s ignoring the space stations, telescopes and spyware already in orbit as countries flex their aerospace muscles. It’s a cosmic fracas. And contested territory is prime fodder for international disputes, as we know. It’s these kinds of disputes the group of UK diplomats who proposed the UN motion want to prevent, by coming to an agreed-upon set of norms for behaviour in space. Space law: what are the issues at stake? The current international framework for law in space is the UN’s 1967 Outer Space Treaty (OST), which sets governing principles for the exploration of space, including that space should be free for use by all nations, that celestial bodies like the Moon should be used exclusively for peaceful purposes, and that outer space should not be subject to national appropriation. Under international law, any and all objects being launched into space must be registered to avoid collisions. On top of these global laws, each nation-state has its own legal framework around the registering and launching of objects into space. But as technology evolves and new opportunities arise, are these old laws equipped to govern new problems? The UN’s 1967 Outer Space Treaty sets governing principles for the exploration of space, including that space should be free for use by all nations. “There exists an incredible amount of applicable law already, and it has served us really well,” says space law expert Steven Freeland, an emeritus professor at Western Sydney University and professorial fellow at Bond University. Freeland is vice-chair of a UN Committee on the Peaceful Uses of Outer Space (COPUOS) working group that is developing laws around the exploitation of resources in space. “There’s a lot of law at the multilateral level that then filters down to other layers of bilateral or ‘minilateral’ agreements and national laws. But clearly things move so quickly with technology, we’re doing so many more things in space that were beyond the contemplation of the drafters of the original treaties. Ideally we need more.” Freeland says there are myriad complex, interconnected issues in space that need tighter laws. These include the increasing militarisation of space; the proliferation of satellites, which can lead to overcrowding of “popular” orbits and increased demand for radio-wave spectra; ethical issues around human spaceflight; and the possible extraction of resources on celestial bodies like the Moon. Resource exploitation It might sound like science fiction, but mining in outer space is looking increasingly likely in the not-too-distant future. In September 2020, NASA announced that it would award contracts to private companies for the extraction and purchase of lunar regolith (rock matter) from the surface of the Moon, which could be mined and then studied in situ by the company, before the data and rights are transferred to the space agency. The move heralds what our space-based future might look like, with private companies mining celestial bodies for their precious resources. In our solar system, composed of millions of celestial bodies both large and small, the opportunities for cashing in look potentially endless – provided technology advances to the level of practical spaceflight. “Most wars on Earth have historically been fought over a quest for resources,” says Freeland, “so it’s incredibly important [to have appropriate space laws].” Just last month, scientists announced the discovery of two extraordinarily metal-rich near-Earth asteroids (NEAs), comprised of roughly 85% metals like iron, nickel and cobalt, which are thought to exceed Earth’s entire known metallic reserves. These three highly valuable metals, often known as the “iron triad”, are particularly critical for the energy supply chain and a renewable energy future; they’re used to build lithium-ion batteries, electrochemical capacitators for storing energy, and nano-catalysts for use in the energy sector. Under the OST, outer-space resources cannot be appropriated by nations, but the law and principle around the commercial use of space resources is less clear. The 1979 Moon Treaty holds that any celestial body is under the jurisdiction of the international community and therefore subject to international law. The treaty outlaws the military use of any celestial body as well as providing a legal framing for the “responsible” exploitation of celestial resources. But, to date, no space-capable nation has ratified the treaty. Militarisation That brings us to the militarisation of space. As technology advances, the potential avenues for weapons that cross the border from terrestrial to cosmic continue to proliferate. So, what laws protect us from a space war? “The issues about security in space have historically been dealt with by the CD, the Conference of Disarmament, but more recently the UK has led discussions at the United Nations that effectively seek to change the diplomatic language and thinking about space security,” says Freeland. Currently, the principles for governing space under the OST forbid the military use of space, but space is already used for military purposes such as surveillance, and some missiles carve a path through outer space on their journeys to their targets. As it currently stands, the only weapons found in space are the TP-82 Cosmonaut survival pistols that Russian astronauts regularly take on board the Soyuz spacecraft, intended to protect them from a potential wild animal attack if they are forced to emergency land in “off-the-map” territory. But as technology proliferates, the opportunities for space-based militarisation also grow. The existing laws were drafted long before many of these technologies were even dreamed up. The most worrisome technologies currently being trialled are anti-satellite missiles. “We have this strategic competition going on amongst the major powers,” says Gilles Doucet, a space security consultant based in Canada who worked for 35 years with the Canadian Department of National Defence. Doucet is both an engineer and an expert in space law. “They all wish to be dominant and make sure that their national security is secured by controlling, or at least not having other people control, outer space.” But what kinds of defence technologies are being developed in space? Doucet says the most worrisome technologies currently being trialled are anti-satellite missiles of the sort that Russia deployed earlier this week. Known as direct-ascent anti-satellite missiles (DA-ASAT), they can destroy satellites in low Earth orbit. “This essentially looks a lot like ballistic missile defence, but it’s happening in outer space against satellites,” he says. In fact, DA-ASAT technology is dependent on the same technology used for midcourse ballistic missile defence – the technology that the US, for example, deploys to defend itself from potential ballistic missile attacks on North America. These missiles fly at altitudes of around 3,000 to 4,000 kilometres, well within the low-Earth orbit many satellites operate in. This technology is being developed and tested by the US, China, India and Russia. “Destroying another country’s satellites would only occur in an armed conflict scenario,” Doucet says. “It would be because the other country’s satellite is providing an important military role – for example, a GPS satellite for directing munitions or an imagery satellite for locating your forces.” Other military applications in space, Doucet says, include the jamming of satellite communications and navigation, as well as interference with some GNSS signals, of which GPS – the satellite navigation system we all use for things like Google Maps – is one. Satellite jamming can have major disruptive potential. “You might be conducting an operation in a conflict – let’s say you wish to target a certain facility. Your missile system or your drone-launching missiles rely on GPS to guide them,” Doucet says. “So if you’re on the other end of it wanting to protect yourself, then you’ll send out jamming signals.” But while these signals can help defend a military target, Doucet says many satellites provide services for military and civilian companies and organisations at once. In this case, jamming a satellite’s signal may also interfere with civilian services it provides, including aircraft and ship navigation, car mapping, even timing signals for financial transactions. This means satellite jamming has major disruptive potential. And there are other areas where satellite technology could have duplicitous or combative potential. “Close proximity operations seem to get countries a bit upset,” says Doucet. Close proximity operations, as the name suggests, involve satellites moving close to other satellites. “One reason might be intelligence or inspection, just to take close images to understand how it’s built. But you may be getting close to intercept signals or to interfere with signals. “So that is a concern, because it’s one thing to get close for passively collecting information, but if you’re close you may also be in a position to interfere.” What might new space law systems look like? “We have a lot of space systems that are dual use, that have the potential to do harm,” Doucet says. “I’d like to see some transparency on the mission, on what you’re doing, to help alleviate concerns. “That might sound like a small step, but to militaries it’s actually a really big step to provide transparency.” Doucet says he’d also like to see clarification of the existing principles for space law already set out in the OST and other treaties. In fact, he’s currently working on the MILAMOS Project, developing a Manual on International Law Applicable to Military Uses of Outer Space at Canada’s McGill University. “I would like to see the existing legal regime being given a bit of life,” he says. “We’ve got tremendously good outer space principles, but over several decades countries have kind of refused to give them life because it’s too controversial. “The third thing I’d like to see is the major space powers sit down and talk. They’re all potentially losers if this keeps going down this path. I don’t think there’s a winner in a space war.” For all these complex problems, Doucet is cautiously optimistic about our chances of avoiding a space war. “I don’t think the issue about space security is as unique as people think,” he says. “Yes, it’s a very unique domain, but the actors are all the same, the interests are all the same. It’s the same people that have struggled over ballistic missile proliferation, nuclear weapons proliferation, treaties about the high seas, about aviation and all kinds of things. “So, we shouldn’t think this is an unsolvable problem. We may take lessons from how we’ve managed to agree to disagree in other areas beyond national jurisdiction.” Freeland agrees that even if international tensions may simmer at home, it’s in the best interest of major global powers to come to agreements about laws in space. “When it comes to these really big issues, particularly issues that have the propensity to go horribly wrong if we follow an irresponsible path, in the end it’s in [governments’] common interest to agree to the rules of the road,” he says. “The important element is that they have had the opportunity to buy in on the framing of those rules.“I think we need to be optimistic. With a great deal of caution, cool heads will prevail.”

#### Otherwise, space conflicts go nuclear---both fast and probable

Laura Grego 15, a physicist in the Global Security program at UCS. She is an expert in space weapons and security; ballistic missile proliferation, and ballistic missile defense, "Preventing Space War", https://allthingsnuclear.org/lgrego/preventing-space-war

So says a very good New York Times editorial “Preventing a Space War” this week. Sounds right, if X-Wing fighters come to mind when you think space conflict. But in reality conflict in space is both more likely than one would think and less likely to be so photogenic. Space as a locus of conflict The Pentagon has known that space could be a flash point at least since the late 1990s when it began including satellites and space weapons in earnest as part of its wargames. The early games revealed some surprises. For example, attacking an adversary’s ground-based anti-satellite weapons before they were used could be the “trip wire” that starts a war: in the one of the first war games, an attack on an enemy’s ground-based lasers was meant to defuse a potential conflict and protect space assets, but instead was interpreted as an act of war and initiated hostilities. The games also revealed that disrupting space-based communication and information flow or “~~blinding~~” could rapidly escalate a war, eventually leading to nuclear weapon exchange. The war games have continued over the years with increased sophistication, but continue to find that conflicts can rapidly escalate and become global when space weapons are involved, and that even minor opponents can create big problems. The report back from the 2012 game, which included NATO partners, said these insights have become “virtually axiomatic.” Participants in the most recent Schriever war games found that when space weapons were introduced in a regional crisis, it escalated quickly and was difficult to stop from spreading. The compressed timelines, the global as well as dual-use nature of space assets, the difficulty of attribution and seeing what is happening, and the inherent vulnerability of satellites all contribute to this problem. Satellite vulnerability & solutions Satellites are valuable but, at least on an individual basis, physically vulnerable. Vulnerable in that they are relatively fragile, as launch mass is at a premium and so protective armor is too expensive, and a large number of low-earth-orbiting satellites are no farther from the earth’s surface than the distance from Boston to Washington, DC.

## 2

#### Space tech advancements and control will produce a qualitative military advantage – REMs, fusion power, AI, lunar base, intelligence, and space weapon platforms. US space privatization maintains a shaky but tenable US lead.

Sergeant **Duke 20** served as a US Army intelligence analyst, holds a BA in intelligence studies with a concentration in counterintelligence from American Military University and research national security autonomous weaponry armed conflict, and the space domain, , 9-25-2020, "Conflict and Controversy in the Space Domain: Legalities, Lethalities, and Celestial Secur," Air University (AU), <https://www.airuniversity.af.edu/Wild-Blue-Yonder/Article-Display/Article/2362296/conflict-and-controversy-in-the-space-domain-legalities-lethalities-and-celesti/>

Advancements in space technology are quickly leading to an inevitable conflict over control in space, which includes control over the Moon through lunar bases and potentially control over the colonization of Mars. The PRC has added the capability to "physically attack satellites using antisatellite [ASAT] interceptors, miniature space mines, and ground-based lasers" into its military space program.1 These capabilities fall under the guise of the Outer Space Treaty’s permission to destroy militarized satellites.2 These technologies could easily be used offensively to create a decision advantage in combat. Some analysts believe that the deliberate collision of PRC satellites with older satellites shows that the PRC has experimented with "parasitic satellites" designed to lie dormant in the vicinity of a target until activated, potentially for hacking purposes.3 The PRC even "reportedly launched a hypersonic 'prototype space fighter' " in 2010. It continues to be locked in an intense space race with the rest of the space-savvy international community—particularly Russia, the United States, and India—with a short-term goal of controlling the Moon with a lunar base and a longer-term goal of populating Mars under the rule of the PRC.4

The development of maneuverable space planes and lunar bases is not unique to the PRC. The National Aeronautical and Space Administration (NASA) developed the X-37 and X-37B space planes, and the Russian Federation is developing a maneuverable space plane using nuclear technology for power.5 All of these nations (as well as several others, including India and Japan) intend to establish lunar bases within the next 20 years.6 Despite the array of international treaties and agreements promoting peaceful global development of space resources in the name of science and humanity, it is unlikely that space will remain weapon free and likely that it will become the next frontier of global combat. Space weapons in development may use robotics, nanotechnology, and directed energy such as microwaves and lasers.7 With the establishment of a lunar base, a nation with advanced laser technology, advanced cyber weaponry, maneuverable space planes, satellite targeting capabilities, nano-science stealth technology, artificial intelligence, and self-guiding nanotechnology bullets would undoubtedly have the capacity to rule the Earth as it sees fit. All of these technologies already exist or are in development phases, and they are the future of intelligence and warfare.8

The US government and NASA, unlike the PRC and the RF, have been encouraging the commercialization of space cargo transportation to meet future American needs for access to the International Space Station (ISS) and to improve the research and development of spaceborne technologies and other developments.9 Private sector involvement has also opened the market for alternative rocket propulsion technologies that can achieve government and commercial goals for space at lower costs and faster than possible under the existing bureaucracy of NASA. Enhanced private sector involvement in space travel utilizes the free-market system to foster radical developments and investment for both government and private sector programs, incentivizing broader participation, which benefits both. Commercializing aspects of standard space operations, such as the recent partnership with SpaceX, will also pave the way for space tourism. This will free up resources for NASA and the newly minted US Space Force to pursue broader goals, such as manned deep space travel, a lunar base, and manned missions to Mars.

Part 2: Lunar Power

Rare earth metals and other minerals are quickly becoming scarce in the United States to the point where the international space race to claim the Moon and Mars has become a top priority, not just for control over them but for the resources available for exploitation. Uranium has even entered the economic radar as a good idea for boosting the American economy instead of remaining too dangerous to mine due to the associated health risks and environmental hazards. This resource is in abundance on the Moon.10 Estimates suggest there may be up to five million tons of Helium-3 (3He) contained within the lunar regolith.11 This has the potential to meet all of [hu]mankind's power needs for thousands of years when used with fusion power.12 On top of the resources potentially available, the Moon provides a unique launching position for future missions to Mars with a faster, more direct, and more efficient path to the Red Planet.13 Control over the Moon is an inherent factor in the future of the human race.

Uranium has long been a part of the nuclear fission enterprise on Earth but comes with high costs, including radioactive waste and extreme health and environmental hazards due to the radiation produced in the fission process. Terrestrial reserves of other energy-producing resources, like oil and natural gas, have also been projected to be exhausted within 50–100 years under current and projected mining and usage rates.14 Alternatively, the element tritium (T), which has a half-life of 12.32 years, naturally decays into 3He,15 which can be used to create a new kind of power—fusion power. Fusion power can be generated by combining deuterium (D) with either more D, T, or 3He, using the following calculations shown in order of their ignition temperatures: D + T = 4He [Helium-4] + n [neutrons] + 17.6 MeV [Million electron Volts] D + D = T + H [Hydrogen] + 4.0 MeV (50%) = 3He + n + 3.3 MeV (50%) D + 3He = 4He + H + 18.4 MeV16 Fusion power can also be created by combining 3He with more 3He, creating Helium-4 (4He).17 The combination of 3He and 3He is the most energy efficient, producing the greatest net energy,18 but also requires the highest ignition temperature to achieve fusion.19 Unfortunately, 3He exists only in minute amounts on Earth.20 The nation that establishes a mining and transportation industry capable of bringing lunar 3He to Earth, and develops a fusion plant network that transforms 3He into power, could control a substantial portion of the planet’s energy industry for decades. Some scientific estimates discount both the estimates of the potential amount of extractable 3He in the lunar regolith and the potential to achieve industrial fusion reactors on Earth capable of processing it. Exemplifying this scientific stance are the calculations of Ian Crawford, who believes both prospects are greatly exaggerated and that there are only approximately 220,507 tons of 3He available in logical extraction areas, such as the titanium-rich lunar basalt flats.21 Despite his dissent, Crawford admits even lunar resources that seem impractical and economically inefficient to transport resources to Earth may provide substantial economic benefits for space-based uses, such as solar power systems and spacecraft fusion engines, for example,22 which would not require transport back to Earth. Earth's finite resources make lunar and space resource exploitation an inevitability. The most pertinent factor governing future human resource exploitation in space is the question of which nation will achieve a successful and effective industrial supply chain first. The most probable three nations to achieve this are the US, the PRC, and the RF, and the three areas that need to be navigated to succeed are facility establishment, production/refinement, and transportation. Establishing lunar facilities is the easiest of these goals, especially when lunar resources that can be used for building are taken into account, which decreases the amount of materials needed to be brought to the Moon and the time needed for construction. In 2008, a NASA experiment found that lunar regolith has potential construction properties. When scientists heated the regolith and used sulfur as a binding agent, they made "waterless concrete," which can be molded and is nearly as strong as concrete when it hardens.23 This process requires minimal effort and relies primarily on direct heat application and the ability to shape the regolith. Consequently, the entire process can be automated by robots with the appropriate tools on the lunar surface, such as the ones NASA began developing specifically for this purpose in 2009.24 The simplicity of the operational requirements means that these three nations already have the technical capability to begin construction using lunar soil after arriving on the Moon. They will also all be capable of bringing any other materials that would be necessary to construct facilities or bases on the lunar surface. Unlike the US, and contrary to existing international law, the PRC's stance on the Moon is that it is territory,25 despite the prohibition on "national appropriation" of celestial bodies outlined in Article II of the Outer Space Treaty.26 The PRC has also proposed mining 3He for future fusion power opportunities.27 The RF, while not openly pursuing a territorial ambition for the Moon, is certainly exploring and advancing prospects of economic development, including 3He extraction and tourism.28 Facility development and resource exploitation areas on the Moon are limited. This will exacerbate the race for prime locations and desirable resources, particularly at the poles, where water ice is believed to exist in large quantities (which can be used to sustain lunar human habitation), and in the titanium- and 3He-rich basalt flats of Mare Tranquillitatis and Oceanus Procellarum.29 Once established, facility operations can begin to extract and refine resources either for use on the lunar surface or for transportation to Earth. Transportation of materials from the Moon to Earth is a substantial financial and logistical undertaking. It will not be easy to show a profit after the considerable expenses associated with it. Nevertheless, extraction and transportation of 3He and other resources to Earth, specifically for fusion power production, have been expressed as long-term goals of the PRC and the RF within decades. Interestingly, the US has not stated this as a goal but has already shifted its space transportation industry sufficiently toward the private sector. The private sector will have the most viable opportunity to build the first industrial space transportation system, specifically because of advantages in the American free-market system.30 By encouraging private sector participation in the space industry and commercializing space transportation, the US has made production of space technologies competitive with proposals in the National Space Policy.31 A competitive industry makes substantial investments in research, development, and production of space transports; engine components for space travel; and tools for use in zero gravity. America cannot afford to fall behind in the race for lunar facility establishment and resource exploitation. This is for reasons of economic and national security and the future security of human expansion into space as the Moon offers the most efficient launching position for missions to Earth's red neighbor, Mars. Part 3: Mars Domination Mars is widely accepted by the scientific community to be the most plausible planet for the first human habitation on a celestial body and, consequently, the most likely location for the first space colony and eventually a second planet for humankind. Thus, Mars is a desirable goal for nations involved in space exploration for many reasons. The territory on Mars, for example, will most likely become marketable for economic value to civilians in the long term. The Outer Space Treaty prevents ownership of territory on celestial bodies but makes no mention of ownership or sale for profit of structures built on, or items brought to, celestial bodies, just as there is no explicit language in the treaty preventing profit-based resource exploitation on celestial bodies by either governments, organizations, or private nationals.32 Additionally, the inevitability of Mars becoming a second planet inhabited by humanity must be considered, along with all of the implications of living spaces and ownership of property that will eventually follow. Denying this inevitability and claiming it as outlawed by international law due to the prohibition on appropriating territory on a celestial body would essentially equate owning property on Earth as also outlawed by international law. After all, Earth is also a celestial body. Language in the treaty encourages expansion into space and essentially says that if persons, governments, or organizations build something on a celestial body, they own that building33 and can do what they want with it, including selling it. They cannot, however, claim to own the planet's ground outside the building—yet. Resources on Mars, while still not mapped out as substantially as lunar resources have been, will likewise create new markets for economic prosperity and national wealth, including more 3He deposits from solar winds like those found in lunar regolith along with substantially high concentrations of iron.34 In addition to buildings constructed on celestial bodies, spacecraft and facilities constructed in space and on celestial bodies are also considered to be the territory of the owning nation, which means that the UN Charter applies to facilities and spacecraft in space and on celestial bodies. UN Charter Article 2(4), in particular, protects space explorers and potential future residents on Mars by prohibiting the "use of force against the territorial integrity" of another nation party to the treaty,35 which all space-faring nations are. Article 51 further dictates that if attacked, "the inherent right of . . . self-defense" shall not be impaired.36 Article V of the Outer Space Treaty prescribes that, in space, all humans are bound to "render all possible assistance to" each other as "envoys of Mankind."37 Essentially, a peaceful international course is possible—even mandated—for human expansion into space. Unfortunately, the PRC and the RF regard space and celestial bodies as territorial goals,38 leading to the assumption that attempts will be made to control and defend such territories as necessary to achieve space superiority, control over space resources, and managerial power over the future colonization of Mars. Control over Mars, in addition to affecting resource exploitation, transportation, and scientific advancements, also has implications for the direction of humanity in space. Establishment of a human colony, or human colonies, on Mars will eventually lead to territorial spaces, development of the land and air (potentially involving terraforming the planet for atmospheric enhancement), and security issues. While an established colony on the Red Planet is still likely decades away, trends within the PRC and RF governments suggest that any established colony on Mars under their jurisdiction would be authoritarian, weaponized, and secret. Given the nature of weather on Mars, fortified structures are easily justified, and the lack of a conventional weapons ban on celestial bodies makes weaponization of such a colony both legal and desirable, mainly because of the third inherently desired factor—secrecy. The inevitability of PRC and RF presence on Mars also suggests that any US developments will also include fortifications and weaponization. While the Outer Space Treaty mandates cooperation between nations on celestial bodies, the extreme distance between Earth and Mars means that a compliance verification system with effective monitoring and enforcement will be complicated, if not impossible, for the foreseeable future. For these reasons, a nation that effectively controls near-Earth space and establishes a security presence on the Moon will effectively be in a position to control Mars. Part 4: Space Control Celestial bodies are not the only potential fields of conflict in space, and in the short term, space itself has become a much more immediately relevant focus for spacefaring nations and the world. This is particularly the case in the vicinity of Earth, including orbital paths for communication technologies, weapon platforms, and sensors. Technological improvements and the proliferation of nation-state and private sector interest and capacity to enter space are causing the acceleration of an inevitability—usable orbital space around Earth is diminishing.39 Satellites and other spaceborne assets orbiting Earth are quickly filling up all of the most useful places to perform their assigned functions within Earth's various orbits, and space debris is complicating matters even further. Increasing numbers of space objects are causing difficulty in establishing safe orbital paths for newly launched spacecraft while increasing the risk to launches destined for deep space.40 Adding to these complications are international developments of ASAT weapons, many of which add to the more than 500,000 pieces of space debris traveling as fast as 17,500 mph41 already orbiting Earth.42 ASATs in use and under development include essentially two broad areas: kinetic energy (KE), such as missiles and rail guns, which impact targets in space; and directed energy (DE), which includes lasers, particle beams, and cyber weapons.43 The Outer Space Treaty, while prohibiting nuclear weapons from being used in any way in space including being stationed in space, "has no specific provision prohibiting the use of conventional weapons, [including lasers], in outer space,"44 which inherently authorizes them. The Outer Space Treaty also contains no prohibition of such weapons being stationed on space-based platforms, including on celestial bodies, or of them being used to target objects on Earth, in space, or on celestial bodies.45 In other words, these weapons are legal in every way, regardless of the potential damage they can cause to international stability and humanity. There are, however, multiple ongoing debates over the nature, definitions, and classifications of several kinds of ASATs currently in operation or in developmental phases. Nearly every KE ASAT results in a large amount of space debris, which causes an abundance of future and immediate problems for space activities, including endangerment of the basic military and commercial functions of satellites for the Global Positioning System (GPS), communications, and recreation. Space debris is therefore a highly undesirable side effect for any nation to risk and potentially dangerous to the integrity of a nation's armed forces. David Koplow addresses this issue in a substantially relevant and logical way in his article “An Inference about Interference: A Surprising Application of Existing International Law to Inhibit Anti-Satellite Weapons.” His stated thesis is as follows: “The [National Technical Means] NTM-protection provisions of arms control treaties already prohibit the testing and use of destructive, debris-creating ASATs, because it is foreseeable that the resulting cloud of space junk will, sooner or later, impermissibly interfere with the operation of another state's NTM satellite, such as by colliding with it or causing it to maneuver away from its preferred orbital parameters into a safer, but less useful, location.”46 By "interfering" with these NTM verifications mandated by multiple treaties, Koplow suggests that intentional actions creating space debris are already outlawed by international law, and that the development of debris creating KE ASATs should cease and be banned immediately.47 Laser weapons, particle beams, and weapons containing depleted uranium are also under debate due to their radioactivity as well as nuclear processes used for some of their operations. Some posit that nuclear activities or materials within a weapon system should constitute classifying them as nuclear weapons, thereby outlawing them in space per the Outer Space Treaty's nuclear weapons ban.48 Advocates for these weapons declare that the weapons are not nuclear. Of the three primary types debated, laser weapons use a nuclear or chemical reaction process to fire a radioactive beam, particle beams rapidly fire atomic charged particles at a target, and hypervelocity rod bundle weapons and railguns use depleted uranium as ammunition.49 Finally, the potential exists for the use of a nuclear explosion in space designed to generate an electromagnetic pulse (EMP) attack on an Earth target, which the RF "has worked on developing" in the form of an “EMP ASAT.”50 With the RF’s recent developments in ASATs and its stated intent “to station weapons in space,”51 the complete weaponization of space by the RF and other nations—including the US and the PRC—is inevitable. The RF and PRC are aggressively pursuing ASAT weapon advancements and preparing for space combat operations, including the RF recently fielding a "ground-based laser weapon" even as it publicly advocated for space not to be weaponized.52 Part 5: The Future of Space Space exploration converges on two of Sun Tzu's concepts of the strategic battlespace: “open ground” and the “ground of intersecting highways.” The former consists of areas where all sides have "liberty of movement" and the latter of areas where "contiguous states" converge.53 On open ground, Sun Tzu advises not "to block the enemy’s way," and on intersecting grounds he suggests to "join hands with your allies.54 Space is essentially a combination of these types of ground, where all nations are contiguously connected, and yet it consists of a legally recognized area of free movement for all persons and nations. Interestingly, Sun Tzu’s The Art of War, written over 2,000 years ago, advocates indirectly for peaceful human expansion into space, where allied nations proceed forth together while intentionally avoiding negative engagements with potential adversaries. This ancient concept of human cooperation and peaceful coexistence is also consistent with the Department of Defense's (DOD) and intelligence community's (IC) National Security Space Policy55 and the National Space Policy of the United States of America.56 Executive Order (EO) 13914, signed on 6 April 2020, clarifies the position of the US government that while international cooperation in space exploration is essentially mandatory, America "does not view [space] as a global commons,"57 reiterating that the Outer Space Treaty does in fact protect the individual interests of nations in space, including the right to self-defense. The policy further clarifies the intent of the United States to harvest materials from celestial bodies and strengthens the implied relationships with both the international community and the private sector concerning space exploration and related developments.58 By combining these principles, this renewed position on space developments further complements Sun Tzu’s ideas of the strategic battlespace in relation to the space domain moving into the future, regarding space as an area that can be used and exploited by everyone, but acknowledging that claims, defense, and security are also going to be essential factors in the way mankind moves forward in the space domain. In addressing the impact of space exploration, and the subsequent superiority gained by the PRC, the RF, or the US in the process, it is important to recognize the three principle issues of the strategic space environment outlined in these national policies: congestion, contestation, and competitiveness. The US IC is mandated by section 1.1 of EO 12333 to "provide . . . the necessary information on which to base decisions concerning the development and conduct of foreign, defense, and economic policies, and the protection of United States national interests from foreign security threats,"59 which now include threats from space and threats toward US space assets. Congestion, contestation, and competitiveness in space now directly impact the IC's ability to effectively pursue its mandate under EO 12333 and must be addressed collectively to ensure the future national security of the United States on Earth and in space. Enhancing the space industrial base’s ability to innovate and participate in the expansion of humankind into space fosters a unique opportunity to share with, and benefit from, research and development initiatives related to activities in space. Combining private sector and government resources together has the potential to greatly accelerate advancements across a wide range of space assets—including spacecraft developments, zero gravity research, energy production, and weapon applications—all of which will help minimize the risks of congestion, contestation, and competitiveness. Congestion in space refers to objects, including active devices and dangerous debris, filling up the usable orbital paths used for government and commercial purposes, primarily satellites. It also applies to finite amounts of bandwidth and frequencies used for transmissions that are currently being exhausted by demand threatening to exceed supply.60 Congestion will also inherently refer to space traffic once an industry exists that requires transportation between the Earth and the Moon, as well as to physical locations for lunar and Martian resource exploitation facilities and extraction points and places to build and operate on celestial bodies, including the Moon and Mars. This will eventually include a significant focus on the colonization of Mars since large portions of the planet are unsuitable for human habitation due to terrain, radiation, meteoroids, and weather. Short-term intelligence and counterintelligence impacts from the congestion of near-Earth space consist of primarily radio interference, protecting satellites from becoming compromised, effective deployment and concealment of collection platforms, and ensuring the integrity of protected information in transit.

Sharing space in accordance with Sun Tzu’s ancient wisdom does not mean ceding it, and while space debris is the primary factor in congestion, contestation is becoming an issue due to potential adversarial ASATs. Contestation is an anticipated inevitability and one that will grow exponentially as more nations enter space and with further developments and potential use of ASATs, either in war, by accident, or for other reasons. Murphy’s Law applies, even in space. Currently, competitiveness is driving both the potential for contestation as well as the congestion in near-Earth space. Commercial and multi-governmental competition is increasing for space-related research and development, deployment of assets, and physical space for occupation by those assets. Intelligence agencies in many nations, including allies and adversaries of the US, are now advancing the deployment, use, and decision advantages of spaceborne intelligence assets, including space-based surveillance and weapons platforms. Reasserting US superiority over the space environment is vital to the continuation of American leadership on Earth and the effectiveness of IC assurance of national security through space superiority. American leadership in space exploration is the only way to ensure that humanity's expansion into the stars is undertaken with the ideologies of liberty and free-market economics leading the way.

America’s leadership in ingenuity and technological developments, combined with free-market capitalism, has transformed the face of the world for more than two centuries. Its leadership has created the environment necessary to explore game-changing space technologies. These technologies will revolutionize the entire space industry. For example, the Variable Specific Impulse Magnetoplasma Rocket (VASIMR) is an experimental electromagnetic thruster for spacecraft propulsion that will dramatically reduce travel time to Mars and other destinations.61 Commercial spacecraft like the Dream Chaser Cargo System will result in a private sector space travel industry, incentivizing space tourism and, potentially, a space cargo transportation industry. 62 In February 2020, the US Department of Energy announced a $50 million investment in fusion research and development projects across the country.63 One of these is the Plasma Science and Fusion Center at the Massachusetts Institute of Technology with the goal of keeping the United States at the forefront of fusion energy development.64 Another is the Fusion Technology Institute at the University of Wisconsin, which is focusing on advancing research in the field of helium-based fusion power production technologies on Earth.65 This technology will address finite terrestrial energy resources and production of 3He-based electricity from lunar regolith.

These are just a few examples of the future of space technology research and development, and such technologies were all made possible because of the structure of the American free-market system. The biggest challenge for the IC will be to balance President Dwight Eisenhower’s vision with Sun Tzu’s battlefield strategies. Eisenhower understood in 1958 that “through [space] exploration, man hopes to broaden his horizons, add to his knowledge, [and] improve his way of living on earth.”66 Sun Tzu knew that “all warfare is based on deception,” “the highest form of generalship is to balk the enemy's plans,” and the greatest fighters “put themselves beyond the possibility of defeat” to achieve victory.67 American leaders participating in seizing and maintaining US space superiority shoulder this responsibility and must forge a new path forward that enhances human life on Earth, denies the possibility of victory to US adversaries, and ensures the integrity and security of American assets in the space domain as the world moves forward together into the future.

#### Private property rights are key to economic investment in space

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Current space law is unclear as to whether private entities may claim possession of resources extracted from their endeavors in outer space. The lack of certainty prevents private entities from entirely investing in infrastructure and capabilities to access new deposits of resources due to the depletion of minerals and resources on Earth. The establishment of a new space regime devoid of non-appropriation principles found in international law is necessary to motivate private entities to invest the capital in extracting and transporting space resources back to Earth. This Comment seeks to understand how the current framework of space law impacts the property rights of private entities and their claim to resources in space. The 1967 Outer Space Treaty prohibited the claiming of property by sovereign nations. However, the concept of private entities now having the capability to extract resources from outer space has reignited the issue of property rights in outer space. With resources becoming scarcer or priced out of the market, the solution of mining these resources from celestial bodies has caused a new space race. Past multilateral agreements have dealt with similar discoveries such as the polymetallic nodules on the ocean floor; however, these agreements led to disputes as to ownership and the rights to extract said resources. With little to no support from the industrialized nations, the structure of any new regime must ensure access for the benefit of humankind. The benefit of allowing these private entities the right to claim mined resources must be weighed against potential drawbacks in order to create a framework that balances the interest of the free market with that of the common heritage principle. In determining that a suitable framework fails to guide a new space regime, this Comment proposes that a new governing body comprising a rotation of space-faring and nonspacefaring nations act as a regulatory body for the interest of all of humankind.

I. INTRODUCTION On October 4, 1957, the Space Age officially began when the Soviet Union launched Sputnik into orbit, the first successful, human made satellite.1 A little more than a decade later, on July 20, 1969, American astronauts Neil Armstrong and Edwin “Buzz” Aldrin became the first humans to land and step foot on the moon.2 Neil Armstrong marked the completion of John F. Kenney’s national goal of landing an astronaut on the moon when he radioed back to Earth “[t]hat’s one small step for man, one giant leap for mankind.”3 The launch of Sputnik, the moon landing, and other endeavors achieved by the scientific community, kick-started a chain of events leading to the current ambition of exploring outer space and mining resources throughout the solar system. The push for unlocking low-cost space travel and space industrialization by entrepreneurs, like Elon Musk and Jeff Bezos, propels the search for extraterrestrial materials such as water and minerals.4 According to NASA, minerals found in the asteroid belt between Mars and Jupiter contain an estimated value of approximately $100 billion for every person on Earth.5 However, uncertainty lingers because private entities are unsure that they will possess property rights to their payload or the mined celestial body.6 Celestial bodies refer to naturally occurring objects in space. The United States Commercial Space Transportation Advisory Committee (“COMSTAC”), an advisory body to the Federal Aviation Administration’s (“FAA”) Office of Commercial Space Transportation (“FAA-AST”), has undertaken review regarding the granting of private property licenses.7 COMSTAC expressed a desire to confirm that private entity resource extractions may be owned and utilized as it deems appropriate.8

The current framework of space law is a combination of agreements with the foundation of space law consisting of the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (“Outer Space Treaty”).9 At the time of signing, the Outer Space Treaty hoped to foster cooperative and peaceful exploration of outer space without discrimination of any kind.10 However, Article II of the Outer Space Treaty contains the bane of private property rights in outer space, which forbids the national appropriation of the moon and other celestial bodies.11 While the Outer Space Treaty explicitly mentions the prohibition of public entities claiming celestial bodies, private enterprises risk failing to have their interest in property rights recognized by the global community. Private entities and investors grapple with the issues pertaining to their rights to mine and extract resources from outer space legally. Without further international recognition of their property rights, private entities may shy away from exploring the concept of celestial mining. The issue of not knowing what laws are applicable, or to whom private companies are accountable, impedes the progress private entities make in achieving their goal of harvesting extraterrestrial resources. Private entities fear that the non-appropriation clause of Article II of the Outer Space Treaty, the epicenter of the issue, will strip them of the right to transport their mined resources back to Earth. A new legal regime will likely need to be formed that facilitates the continuation of innovation and promotes the exploration of outer space. Whether or not past private and public international doctrines, i.e., the law of the sea, may provide guidance in creating a new doctrine of space law is yet to be determined.

The advancement in modern technology, along with the depletion of natural resources, creates a unique opportunity for private entities to resolve this issue through the exploitation of outer space. Space law is once again relevant due to its inadequacies in protecting the property rights of said entities in space. Part II will explore the different treaties and principles that gave rise to space law, and Part III will analyze whether the application of such principles should continue, or if the establishment of a new regime offers a more beneficial long-term solution. Part IV will then explore the structure of a new outer space regime and the enforcement of property rights. II. LEGAL PRINCIPLES INFLUENCING THE DEVELOPMENT OF SPACE LAW As the world continues to transform and evolve, lawmakers across the globe must adapt past laws or develop and ratify new laws to address current events and situations. The venture into outer space is similar to that of famous past explorations in which customary laws guided journeys, providing a framework of starting points for the crafting of the present-age space law. Space law must adapt and evolve as engineers and the science community make discoveries that past generations could only dream about. The United Nations General Assembly (“General Assembly”) maintains the view that “International Law” is not spatially restricted, and that its charter is relevant even in the outer reaches of outer space and to celestial bodies.12 When analogizing to present international treaties, the most applicable set of principles is that of the high seas.13 Based on the principle of res communis, issues arise because there is a lack of precise rules.14 Since the beginning of the space race in 1957, the United Nations facilitated general agreements on how space exploration should be conducted. However, an understanding of past and current laws is necessary to determine how to proceed in recognizing property rights in space for private entities.

A. History of the Current Space Law Framework Space law is the body of law applicable to and involved in governing space-related activities.15 Space law is “associated with the rules, principles, and standards of international law appearing in the five international treaties and five sets of principles governing outer space,” originating under the supervision of the United Nations Organization.16 The foundation of space law, similar to general international law, is composed of matters such as international agreements, treaties, conventions, rules and regulations of international organizations, General Assembly resolutions, national laws, executive and administrative orders, and judicial decisions.17 Following the launch of Sputnik in 1957, the General Assembly created an ad hoc committee concerned with identifying legal issues involving outer space activities.18 The Committee on the Peaceful Uses of Outer Space (“COPUOS”) was established in 1958 and was made permanent on December 12, 1959.19 COPUOS is intended to endorse peaceful international collaboration and establish the common interest of humankind in outer space.20 It is the preeminent body regarding the formation of international space law, drafting five international treaties and five sets of principles regarding space-related activities.21 Topics covered by the treaties include nonappropriation of outer space by any one country, arms control within space, and the freedom of exploration.22 The primary focus of the treaties being any and all activities performed in outer space be done so to enhance the well-being of humankind and the promotion of international cooperation.23 In 1966, COPUOS proposed the Outer Space Treaty, which was ratified soon after in 1967.24 The Outer Space Treaty forms the bedrock for international cooperation in the peaceful exploration of space and the development of new law.25 The Outer Space Treaty’s principles focus on exploration carried out for the benefit and in the interest of all countries (Art. I), preclusion of sovereign states from appropriating celestial bodies in outer space (Art. II), the performance of activities in outer space in accordance with international law (Art. III), and the prohibition of launching any kinds of objects or armaments into orbit that possess nuclear weapons or any other kinds of weapons of mass destruction (Art. IV).26 Of importance to this Comment is the language of Article II. Article II does not explicitly mention the property rights of private entities; the failure to do so led to a split regarding whether such rights breach the Outer Space Treaty.27 COPUOS concluded four more treaties following the ratification of the Outer Space Treaty.28 The second treaty was the Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space (“Rescue Agreement”), which entered into force in 1968.29 The Rescue Agreement elaborates on Articles V and VII of the Outer Space Treaty.30 It provides that nations rescue and assist distressed astronauts, which also includes returning them to their launching state.31 Also, states, upon request, are to provide assistance in recovering space objects that re-enter Earth outside of the territory of its proper owner.32 The Convention on International Liability for Damage Caused by Space Objects (“Liability Convention”), the third of the five COPUOS treaties, was under the scrutiny of the Legal Subcommittee of COPUOS for approximately nine years.33 The General Assembly ultimately reached an agreement in 1971, and the Liability Convention entered into force in 1972.34 The Liability Convention expounds on Article VII of the Outer Space Treaty providing “that a launching [s]tate shall be absolutely liable to pay compensation for damage caused by its space objects on the surface of the Earth or to aircraft, and liable for damage due to its faults in space.”35 The Liability Convention possesses the procedures regarding claim settlement for damages.36 The COPUOS Legal Subcommittee drafted the Convention on Registration of Objects Launched into Outer Space (“Registration Convention”), the fourth treaty, from 1962 until the General Assembly adopted the treaty in 1974.37 The convention entered into force in September 1976.38 This treaty builds upon desires in prior treaties to provide a mechanism to assist identifying space objects.39 The Registration Convention made a request for the Secretary-General to maintain the registration and provide open admittance to the information.40 The fifth and final treaty by COPUOS was the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (“Moon Agreement”).41 The General Assembly adopted the agreement in 1979; however, the Moon Agreement lacked widespread ratification, with only five countries signing by July 1984.42 The overall purpose of the Moon Agreement was to reinforce the principles highlighted in the provisions of the Outer Space Treaty and their application to the Moon and other celestial bodies.43 The Moon Agreement seeks to encourage peaceful exploration, avoid disruption of celestial environments, and alert the United Nations of the location and purpose of any construction of a station on a celestial body.44 In addition, the Moon and its natural resources are identified as belonging to the common heritage of humankind and, should exploitation of these resources become feasible, an international regime should be created to oversee such progress.45 Since its inception, the Moon Agreement, containing the resource limitation found within the common heritage principle, garnered little support internationally, particularly within the United States.46 With only fourteen signatories, none being spacefaring nations, the Moon Agreement lacks international recognition as law.47 However, the provisions of the Moon Agreement may block the full economic potential and development of space.48 A comprehension of international law aids in understanding the principle of the common heritage of humankind emphasized in the Moon Agreement

#### Primacy solves arms races and great power war – unipolarity is sustainable, and prevents power vacuums and global escalation

Brands 18 [(Hal, Henry Kissinger Distinguished Professor at Johns Hopkins University's School of Advanced International Studies and a senior fellow at the Center for Strategic and Budgetary Assessments) "American Grand Strategy in the Age of Trump," Page 129-133]

Since World War II, the United States has had a military second to none. Since the Cold War, America has committed to having overwhelming military primacy. The idea, as George W. Bush declared in 2002, that America must possess “strengths beyond challenge” has featured in every major U.S. strategy document for a quarter century; it has also been reflected in concrete terms.6

From the early 1990s, for example, the United States consistently accounted for around 35 to 45 percent of world defense spending and maintained peerless global power-projection capabilities.7 Perhaps more important, U.S. primacy was also unrivaled in key overseas strategic regions—Europe, East Asia, the Middle East. From thrashing Saddam Hussein’s million-man Iraqi military during Operation Desert Storm, to deploying—with impunity—two carrier strike groups off Taiwan during the China-Taiwan crisis of 1995– 96, Washington has been able to project military power superior to anything a regional rival could employ even on its own geopolitical doorstep.

This military dominance has constituted the hard-power backbone of an ambitious global strategy. After the Cold War, U.S. policymakers committed to averting a return to the unstable multipolarity of earlier eras, and to perpetuating the more favorable unipolar order. They committed to building on the successes of the postwar era by further advancing liberal political values and an open international economy, and to suppressing international scourges such as rogue states, nuclear proliferation, and catastrophic terrorism. And because they recognized that military force remained the ultima ratio regum, they understood the centrality of military preponderance.

Washington would need the military power necessary to underwrite worldwide alliance commitments. It would have to preserve substantial overmatch versus any potential great-power rival. It must be able to answer the sharpest challenges to the international system, such as Saddam’s invasion of Kuwait in 1990 or jihadist extremism after 9/11. Finally, because prevailing global norms generally reflect hard-power realities, America would need the superiority to assure that its own values remained ascendant. It was impolitic to say that U.S. strategy and the international order required “strengths beyond challenge,” but it was not at all inaccurate.

American primacy, moreover, was eminently affordable. At the height of the Cold War, the United States spent over 12 percent of GDP on defense. Since the mid-1990s, the number has usually been between 3 and 4 percent.8 In a historically favorable international environment, Washington could enjoy primacy—and its geopolitical fruits—on the cheap.

Yet U.S. strategy also heeded, at least until recently, the fact that there was a limit to how cheaply that primacy could be had. The American military did shrink significantly during the 1990s, but U.S. officials understood that if Washington cut back too far, its primacy would erode to a point where it ceased to deliver its geopolitical benefits. Alliances would lose credibility; the stability of key regions would be eroded; rivals would be emboldened; international crises would go unaddressed. American primacy was thus like a reasonably priced insurance policy. It required nontrivial expenditures, but protected against far costlier outcomes.9 Washington paid its insurance premiums for two decades after the Cold War. But more recently American primacy and strategic solvency have been imperiled.

THE DARKENING HORIZON For most of the post–Cold War era, the international system was— by historical standards—remarkably benign. Dangers existed, and as the terrorist attacks of September 11, 2001, demonstrated, they could manifest with horrific effect. But for two decades after the Soviet collapse, the world was characterized by remarkably low levels of great-power competition, high levels of security in key theaters such as Europe and East Asia, and the comparative weakness of those “rogue” actors—Iran, Iraq, North Korea, al-Qaeda—who most aggressively challenged American power. During the 1990s, some observers even spoke of a “strategic pause,” the idea being that the end of the Cold War had afforded the United States a respite from normal levels of geopolitical danger and competition. Now, however, the strategic horizon is darkening, due to four factors.

First, great-power military competition is back. The world’s two leading authoritarian powers—China and Russia—are seeking regional hegemony, contesting global norms such as nonaggression and freedom of navigation, and developing the military punch to underwrite these ambitions. Notwithstanding severe economic and demographic problems, Russia has conducted a major military modernization emphasizing nuclear weapons, high-end conventional capabilities, and rapid-deployment and special operations forces— and utilized many of these capabilities in conflicts in Ukraine and Syria.10 China, meanwhile, has carried out a buildup of historic proportions, with constant-dollar defense outlays rising from US$26 billion in 1995 to US$226 billion in 2016.11 Ominously, these expenditures have funded development of power-projection and antiaccess/area denial (A2/AD) tools necessary to threaten China’s neighbors and complicate U.S. intervention on their behalf. Washington has grown accustomed to having a generational military lead; Russian and Chinese modernization efforts are now creating a far more competitive environment.

## 3

#### Customary international law is needed to fill in the gaps in space law – conventional law is *stagnant*

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In the near future, the nature, order of magnitude, complexity of, and dependence upon space operations and services will increase exponentially, alongside the significant growth in the number and range of space stakeholders. In other words, the importance of space for humanitarian, economic, political, military and strategic purposes will continue to grow for states, communities, private enterprises and, more importantly, individuals. There will certainly be a push for exclusive interests and control over space ‘benefits’ as space activities become even more globalized. Coupled with this, experience over the past four decades has seen a stalemate in the conclusion of binding conventional instruments under international law relating to the peaceful exploration and use of space. This position is unlikely to change in the short-medium term. There is therefore an increasing disconnect between the growth of space activities and space ‘actors’, and the need for new codification of the international rules of law governing space activities. With this backdrop, the evolution of customary international space law, based on, in particular, key provisions of the Outer Space Treaty, represent an important additional means of regulating these new activities, and further reinforce that space is not ‘lawless’ when it comes to issues such as the proposed commercial exploitation of space resources. It remains to be seen if such customary international space law will be adequate to maintain public order in relation to some proposed space activities, or instead a ‘law of the jungle’ mentality may develop, particularly when it relates to potentially very significant economic benefits. All those associated with the regulation of the peaceful exploration and use of outer space, both at the international but also at the national level, will be called upon to play their part in objectively identifying these rules of customary international space law, and how, in particular, they both compliment and supplement the principal terms of the treaties, such as articles I, II, VI and VII of the Outer Space Treaty. This certainly presents some interesting future challenges for space lawyers!

#### Private business actions are k2 develop CIL in space – attribution lends it legitimacy

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The Article uses the space law debate as a test case for a theory of international lawmaking I call "attributed lawmaking." The theory asserts that private conduct can contribute to the formation of uncodified international law-customary international law and treaty practice-when that private conduct is attributed or imputed to the state.9 The theory exposes the relevance of new facts that could (for better or for worse) resolve the space law debate. Yet its implications reach far beyond this debate. It uncovers the potentially disquieting consequence that private business entities can have a legally sanctioned role to play in creating law in a variety of areas when the state fails so to do. Conventionally, customary international law is the product of acts and assertions of nations that aggregate over time like precedents in a common law system." When a sufficient number of nations have converged upon a legal rule through their actions or reactions, the rule becomes binding law, 12 and can be invoked in national and international courts, as well as in diplomatic contexts.' Customary international law was once the predominant form of international law, and its importance persists. Indeed, in an era of nationalist retraction, where major multilateral treaty regimes are facing existential threats, 14 international custom may be experiencing a resurgence.1 The conventional account of how customary international law is created is, however, incomplete.' 6 It does not account for the acts and assertions of private business entities, which take on lawmaking significance in certain circumstances.' 7 In particular, the theory of attributed lawmaking asserts that when the conduct of a private actor becomes attributed or imputed to the state under existing international legal doctrines, this conduct counts among the behavioral building blocks that contribute to the formation of customary international law. That is, because the private conduct is attributed to the state, it contributes to the formation of a customary legal rule. The challenge is to determine when private conduct becomes attributed to the state. For example, a private business entity can be an "organ" or "agent" of the state,' 8 or nations can take responsibility for certain business activity through treaties.19 These principles are not new. What the attributed lawmaking theory contributes is the observation that attribution for the purposes of state responsibility also has significant and underappreciated lawmaking implications. Space law offers a case study. In the space law arena, it is possible to argue that private companies are themselves developing the international law of outer space. They can do this by advancing the legal principles of their choice-to legislators, investors, and the popular press, and with their actual rocket launches.20 Under this argument, the behavior of these companies is itself the "subsequent practice" that determines how the Outer Space Treaty should be interpreted. 2 ' Because private missions are defined by the Outer Space treaty as "national" missions, which are attributed to the home nation and for which home nations are responsible,2 2 these private acts can also be attributed to those nations for the purposes of customary law formation and treaty interpretation. This is because when a corporation whose activity is attributed to the state publicly asserts a legal rule and acts on it, and a nation does nothing, that nation implicitly accepts the corporate rule.23 In the absence of direct evidence of a nation's acts and assertions in support of a customary rule, the actions of private space companies-which are attributed to the nation-become the best evidence of a nation's embrace of a particular interpretation of the Outer Space Treaty. The result, the Article shows, is that private companies may be forcing development of an international legal rule that is permissive to appropriation of space resources. The Article stops short of concluding that attributed lawmaking offers a final resolution to the debate.2 4 Rather, it identifies a potential legal argument that attributed treaty practice on this topic exists and bolsters arguments that the Outer Space Treaty does not prohibit commercial appropriation.

#### X app But a lack of property rights / Moon treaty disincentivizes space commercialization

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Current space law is unclear as to whether private entities may claim possession of resources extracted from their endeavors in outer space. The lack of certainty prevents private entities from entirely investing in infrastructure and capabilities to access new deposits of resources due to the depletion of minerals and resources on Earth. The establishment of a new space regime devoid of non-appropriation principles found in international law is necessary to motivate private entities to invest the capital in extracting and transporting space resources back to Earth. This Comment seeks to understand how the current framework of space law impacts the property rights of private entities and their claim to resources in space. The 1967 Outer Space Treaty prohibited the claiming of property by sovereign nations. However, the concept of private entities now having the capability to extract resources from outer space has reignited the issue of property rights in outer space. With resources becoming scarcer or priced out of the market, the solution of mining these resources from celestial bodies has caused a new space race. Past multilateral agreements have dealt with similar discoveries such as the polymetallic nodules on the ocean floor; however, these agreements led to disputes as to ownership and the rights to extract said resources. With little to no support from the industrialized nations, the structure of any new regime must ensure access for the benefit of humankind. The benefit of allowing these private entities the right to claim mined resources must be weighed against potential drawbacks in order to create a framework that balances the interest of the free market with that of the common heritage principle. In determining that a suitable framework fails to guide a new space regime, this Comment proposes that a new governing body comprising a rotation of space-faring and nonspacefaring nations act as a regulatory body for the interest of all of humankind.

I. INTRODUCTION On October 4, 1957, the Space Age officially began when the Soviet Union launched Sputnik into orbit, the first successful, human made satellite.1 A little more than a decade later, on July 20, 1969, American astronauts Neil Armstrong and Edwin “Buzz” Aldrin became the first humans to land and step foot on the moon.2 Neil Armstrong marked the completion of John F. Kenney’s national goal of landing an astronaut on the moon when he radioed back to Earth “[t]hat’s one small step for man, one giant leap for mankind.”3 The launch of Sputnik, the moon landing, and other endeavors achieved by the scientific community, kick-started a chain of events leading to the current ambition of exploring outer space and mining resources throughout the solar system. The push for unlocking low-cost space travel and space industrialization by entrepreneurs, like Elon Musk and Jeff Bezos, propels the search for extraterrestrial materials such as water and minerals.4 According to NASA, minerals found in the asteroid belt between Mars and Jupiter contain an estimated value of approximately $100 billion for every person on Earth.5 However, uncertainty lingers because private entities are unsure that they will possess property rights to their payload or the mined celestial body.6 Celestial bodies refer to naturally occurring objects in space. The United States Commercial Space Transportation Advisory Committee (“COMSTAC”), an advisory body to the Federal Aviation Administration’s (“FAA”) Office of Commercial Space Transportation (“FAA-AST”), has undertaken review regarding the granting of private property licenses.7 COMSTAC expressed a desire to confirm that private entity resource extractions may be owned and utilized as it deems appropriate.8

The current framework of space law is a combination of agreements with the foundation of space law consisting of the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (“Outer Space Treaty”).9 At the time of signing, the Outer Space Treaty hoped to foster cooperative and peaceful exploration of outer space without discrimination of any kind.10 However, Article II of the Outer Space Treaty contains the bane of private property rights in outer space, which forbids the national appropriation of the moon and other celestial bodies.11 While the Outer Space Treaty explicitly mentions the prohibition of public entities claiming celestial bodies, private enterprises risk failing to have their interest in property rights recognized by the global community. Private entities and investors grapple with the issues pertaining to their rights to mine and extract resources from outer space legally. Without further international recognition of their property rights, private entities may shy away from exploring the concept of celestial mining. The issue of not knowing what laws are applicable, or to whom private companies are accountable, impedes the progress private entities make in achieving their goal of harvesting extraterrestrial resources. Private entities fear that the non-appropriation clause of Article II of the Outer Space Treaty, the epicenter of the issue, will strip them of the right to transport their mined resources back to Earth. A new legal regime will likely need to be formed that facilitates the continuation of innovation and promotes the exploration of outer space. Whether or not past private and public international doctrines, i.e., the law of the sea, may provide guidance in creating a new doctrine of space law is yet to be determined.

The advancement in modern technology, along with the depletion of natural resources, creates a unique opportunity for private entities to resolve this issue through the exploitation of outer space. Space law is once again relevant due to its inadequacies in protecting the property rights of said entities in space. Part II will explore the different treaties and principles that gave rise to space law, and Part III will analyze whether the application of such principles should continue, or if the establishment of a new regime offers a more beneficial long-term solution. Part IV will then explore the structure of a new outer space regime and the enforcement of property rights. II. LEGAL PRINCIPLES INFLUENCING THE DEVELOPMENT OF SPACE LAW As the world continues to transform and evolve, lawmakers across the globe must adapt past laws or develop and ratify new laws to address current events and situations. The venture into outer space is similar to that of famous past explorations in which customary laws guided journeys, providing a framework of starting points for the crafting of the present-age space law. Space law must adapt and evolve as engineers and the science community make discoveries that past generations could only dream about. The United Nations General Assembly (“General Assembly”) maintains the view that “International Law” is not spatially restricted, and that its charter is relevant even in the outer reaches of outer space and to celestial bodies.12 When analogizing to present international treaties, the most applicable set of principles is that of the high seas.13 Based on the principle of res communis, issues arise because there is a lack of precise rules.14 Since the beginning of the space race in 1957, the United Nations facilitated general agreements on how space exploration should be conducted. However, an understanding of past and current laws is necessary to determine how to proceed in recognizing property rights in space for private entities.

A. History of the Current Space Law Framework Space law is the body of law applicable to and involved in governing space-related activities.15 Space law is “associated with the rules, principles, and standards of international law appearing in the five international treaties and five sets of principles governing outer space,” originating under the supervision of the United Nations Organization.16 The foundation of space law, similar to general international law, is composed of matters such as international agreements, treaties, conventions, rules and regulations of international organizations, General Assembly resolutions, national laws, executive and administrative orders, and judicial decisions.17 Following the launch of Sputnik in 1957, the General Assembly created an ad hoc committee concerned with identifying legal issues involving outer space activities.18 The Committee on the Peaceful Uses of Outer Space (“COPUOS”) was established in 1958 and was made permanent on December 12, 1959.19 COPUOS is intended to endorse peaceful international collaboration and establish the common interest of humankind in outer space.20 It is the preeminent body regarding the formation of international space law, drafting five international treaties and five sets of principles regarding space-related activities.21 Topics covered by the treaties include nonappropriation of outer space by any one country, arms control within space, and the freedom of exploration.22 The primary focus of the treaties being any and all activities performed in outer space be done so to enhance the well-being of humankind and the promotion of international cooperation.23 In 1966, COPUOS proposed the Outer Space Treaty, which was ratified soon after in 1967.24 The Outer Space Treaty forms the bedrock for international cooperation in the peaceful exploration of space and the development of new law.25 The Outer Space Treaty’s principles focus on exploration carried out for the benefit and in the interest of all countries (Art. I), preclusion of sovereign states from appropriating celestial bodies in outer space (Art. II), the performance of activities in outer space in accordance with international law (Art. III), and the prohibition of launching any kinds of objects or armaments into orbit that possess nuclear weapons or any other kinds of weapons of mass destruction (Art. IV).26 Of importance to this Comment is the language of Article II. Article II does not explicitly mention the property rights of private entities; the failure to do so led to a split regarding whether such rights breach the Outer Space Treaty.27 COPUOS concluded four more treaties following the ratification of the Outer Space Treaty.28 The second treaty was the Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space (“Rescue Agreement”), which entered into force in 1968.29 The Rescue Agreement elaborates on Articles V and VII of the Outer Space Treaty.30 It provides that nations rescue and assist distressed astronauts, which also includes returning them to their launching state.31 Also, states, upon request, are to provide assistance in recovering space objects that re-enter Earth outside of the territory of its proper owner.32 The Convention on International Liability for Damage Caused by Space Objects (“Liability Convention”), the third of the five COPUOS treaties, was under the scrutiny of the Legal Subcommittee of COPUOS for approximately nine years.33 The General Assembly ultimately reached an agreement in 1971, and the Liability Convention entered into force in 1972.34 The Liability Convention expounds on Article VII of the Outer Space Treaty providing “that a launching [s]tate shall be absolutely liable to pay compensation for damage caused by its space objects on the surface of the Earth or to aircraft, and liable for damage due to its faults in space.”35 The Liability Convention possesses the procedures regarding claim settlement for damages.36 The COPUOS Legal Subcommittee drafted the Convention on Registration of Objects Launched into Outer Space (“Registration Convention”), the fourth treaty, from 1962 until the General Assembly adopted the treaty in 1974.37 The convention entered into force in September 1976.38 This treaty builds upon desires in prior treaties to provide a mechanism to assist identifying space objects.39 The Registration Convention made a request for the Secretary-General to maintain the registration and provide open admittance to the information.40 The fifth and final treaty by COPUOS was the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (“Moon Agreement”).41 The General Assembly adopted the agreement in 1979; however, the Moon Agreement lacked widespread ratification, with only five countries signing by July 1984.42 The overall purpose of the Moon Agreement was to reinforce the principles highlighted in the provisions of the Outer Space Treaty and their application to the Moon and other celestial bodies.43 The Moon Agreement seeks to encourage peaceful exploration, avoid disruption of celestial environments, and alert the United Nations of the location and purpose of any construction of a station on a celestial body.44 In addition, the Moon and its natural resources are identified as belonging to the common heritage of humankind and, should exploitation of these resources become feasible, an international regime should be created to oversee such progress.45 Since its inception, the Moon Agreement, containing the resource limitation found within the common heritage principle, garnered little support internationally, particularly within the United States.46 With only fourteen signatories, none being spacefaring nations, the Moon Agreement lacks international recognition as law.47 However, the provisions of the Moon Agreement may block the full economic potential and development of space.48 A comprehension of international law aids in understanding the principle of the common heritage of humankind emphasized in the Moon Agreement.