## Case

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## Case

#### Plan: The appropriation of outer space through asteroid mining by private entities should be banned.

#### We’ll defend normal means as the signatories of the OST adding an optional protocol under Article II.

Tronchetii 7[Fabio Tronchetti is a professor at the International Institute of Air and Space Law, Leiden University, The Netherlands, 2007, <https://iislweb.org/docs/Diederiks2007.pdf>, 12-15-2021 amrita]

ARTICLE II OF THE OUTER SPACE TREATY: A MATTER OF DEBATE The legal content of Article II of the Outer Space Treaty is one of the most debated and analysed topic in the field of space law. Indeed, several interpretations have been put forward to explain the meaning of its provisions. Article II states that: “Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means”. **The text of Article II represents** the final point of a process, formally initiated with Resolution 1721, aimed at conferring to outer space the status of res communis omnium, namely a thing open for the **free exploration** and use by all States **without the possibility of being appropriated**. By prohibiting the possibility of making territorial claims over outer space or any part thereof based on use or occupation, Article II **makes clear that** the customary procedures of **i**nternational **law allowing** subjects to obtain **sovereignty rights over un-owed lands**, namely discovery, occupatio and effective possession, **do not apply to** outer **space.** This prohibition was considered by the drafters of the Outer Space Treaty the best guarantee for preserving outer space for peaceful activities only and for stimulating the exploration and use of the space environment in the name of all mankind. What has been the object of controversy among legal scholars is the question of whether both States and private individuals are subjected to the provisions of Article II. Indeed, **while Article II forbids** expressis verbis the national **appropriation by** claims of **sovereignty**, by means of use and occupation or other means of outer space, **it does not** make **a**ny explicit **mention** **to** its **private** appropriation. Relying on this consideration, some authors have argued that the private appropriation of outer space and celestial bodies is allowed. For instance, in 1968 Gorove wrote: “Thus, at present an individual acting on his own behalf or on behalf of another individual or private association or an international organisation could lawfully appropriate any parts of outer space…”6 . The same argument is used today by the enterprises selling extraterrestrial acres. They base their claim to the Moon and other celestial bodies on the consideration that Article II does not explicitly forbid private individuals and enterprises to claim, exploit or appropriate the celestial bodies for profit7 . However, it must be said, that nowadays there is a general consensus on the fact that **both national appropriation and private** property rights **are denied** under the Outer Space Treaty. Several way of reasoning have been advanced to support this view. Sters and Tennen affirm that the argument that Article II does not apply to private entities since they are not expressly mentioned fails for the reason that they do not need to be explicitly listed in Article II to be fully subject to the non-appropriation principle8 . **Private entities are allowed to carry out** space **activities but**, according to Article VI of the Outer Space Treaty, they **must be authorized** to conduct such activities **by the** appropriate **State** of nationality. But if the State is prohibited from engaging in certain conduct, then it lacks the authority to license its nationals or other entities subject to its jurisdiction to engage in that prohibited activity. Jenks argues that “States bear international responsibility for national activities in space; it follows that what is forbidden to a State is not permitted to a chartered company created by a State or to one of its nationals acting as a private adventurer”9 . It has been also suggested that **the prohibition of national** appropriation **implies prohibition of private** appropriation because the latter cannot exist independently from the former10. In order to exist, indeed, private property requires a superior authority to enforce it, be in the form of a State or some other recognised entity. In outer space, however, this practice of State endorsement is forbidden. Should a State recognise or protect the territorial acquisitions of any of its subjects, this would constitute a form of national appropriation in violation of Article II. Moreover, it is possible to use some historical elements to support the argument that both the acquisition of State sovereignty and the creation of private property rights are forbidden by the words of Article II. During the negotiations of the Outer Space Treaty, the Delegate of Belgium affirmed that his delegation “had taken note of the interpretation of the non-appropriation advanced by several delegations-apparently without contradiction-as covering both the establishment of sovereignty and the creation of titles to property in private law”11. The French Delegate stated that: “…there was reason to be satisfied that three basic principles were affirmed, namely: the prohibition of any claim of sovereignty or property rights in space…”12. The fact that the accessions to the Outer Space Treaty were not accompanied by reservations or interpretations of the meaning of Article II, it is an evidence of the fact that this issue was considered to be settled during the negotiation phase. Thus, summing up, we may say that **prohibition of appropriation of outer space** and its parts is a rule which **is valid for both private and public entity**. The theory that private operators are not subject to this rule represents a myth that is not supported by any valid legal argument. Moreover, it can be also added that if any subject was allowed to appropriate parts of outer space, the basic aim of the drafters of the Treaty, namely to prevent a colonial competition in outer space and to create the conditions and premises for an exploration and use of outer space carried out for the benefit of all States, would be betrayed. Therefore, **the need to protect the non-appropriative nature o**f outer **space emerges** in all its relevance.

## 1AC—Advantages

### Advantage – Asteroid Mining

#### Countries and their companies are making their own rules through patchwork

#### which creates conflict—an international body is key

Foster 16 – Craig, J.D., University of Illinois College of Law, “EXCUSE ME, YOU’RE MINING MY ASTEROID: SPACE PROPERTY RIGHTS AND THE U.S. SPACE RESOURCE EXPLORATION AND UTILIZATION ACT OF 2015”, *JOURNAL OF LAW, TECHNOLOGY & POLICY*, No. 2, page 428-430, http://illinoisjltp.com/journal/wp-content/uploads/2016/11/Foster.pdf

There are many reasons to be excited about the prospect of mining resources from space. Hopes are high that these mining efforts will provide an economic boon by producing jobs and injecting more money into the economy. 214 Additionally, the negative impact of mining natural resources on Earth is widely reported215 and might be mitigated by space mining. If mining precious resources from space can minimize the burden on Earth, then this would lend even greater support for asteroid mining. Finally, little enchants the human mind and propels innovation more than sending people and manmade objects into space. For good reason, there is much enthusiasm about the prospect of space mining. On the other hand, it is troublesome to some that private, commercial entities will be paving the way and making up many of the rules as they go. Might this lead to repeating many of the mistakes humans have made on Earth? Might there be unforeseen problems that could spell trouble if mining efforts are not properly regulated? The answer to these questions is likely “yes” as well. It will be important in the coming years to balance the former excitement against the latter caution. Space might seem limitless and impossible to affect in any significant fashion; but, history must be a major voice for the spacemining industry.216 It must be remembered that humans can make an impact that will be felt for generations to come. Thus, it will be important that lawmakers and the international community be as proactive as possible—both in outlining property rights and protecting the final frontier from being harmed by an industry that might become overzealous if left unchecked. Specifically, it will be vital for countries to enter into some sort of international agreement. One option is to create an agreement similar to UNCLOS, which would regulate how individual states and their citizens interact with resources mined from space.217 Such an agreement should recognize not only the property rights of the extracting commercial entities but also the rights of non-spacefaring countries to benefit from the minerals as well. This might include the creation of an international body, much like the ISA, that will ensure that the interests of all nations are maintained by distributing funds and technology to less wealthy or non-spacefaring nations. The U.S. would do well to help create and ratify such an agreement— something they have failed to do with UNCLOS. If the U.S. and other countries are uneasy about entering into such a restrictive agreement, they might also consider an international regulatory body and scheme much like the one used for satellites. The International Telecommunications Union (ITU) is a United Nations agency that, among other services, provides the international community with uniform satellite orbit oversight and regulatory guidance.218 Currently, 193 countries follow the ITU regulations and utilize their services, which have been likened to domain name registration.219 In the same way, spacefaring countries could form an international body that helps create and maintain a uniform space-mining legal framework.220 Without some sort of international framework as described above, the U.S. and other space-mining countries leave themselves open to great conflict and will be required to patch together a multitude of treaties between themselves as problems inevitably arise.221 V. CONCLUSION The idea of mining resources from celestial bodies is something that has always been relegated to video games and sci-fi movies. But as technology continues to progress at an exponential rate, such mining is starting to come within the realm of possibility. A number of companies are currently creating prospecting technologies that will allow them to determine exactly what an individual asteroid holds. They hope to eventually harvest these resources and sell them for lucrative profits. Fortunately for these companies, the current legal regime governing property rights to space resources is undergoing rapid change at the national level. The U.S. recently passed the Space Resource Exploration and Utilization Act of 2015, which explicitly entitles U.S. citizens to property rights over any space resources they obtain. This is certain to induce confidence in U.S. investors. The situation at the international level is different. Current international space agreements are vague, lacking in consensus, and provide little precedent for ownership of space resources. This has led the international community to move in the direction of creating a better regulatory framework, but this movement is still in discussion stages and is likely to take a while to come to fruition.

#### Current space treaties have zero clarity—which creates ineffective regulations

MacWhorter 16 – Kevin, J.D from William and Mary College and Contributor to the William & Mary Environmental Law and Policy Review, “Sustainable Mining: Incentivizing Asteroid Mining in the Name of Environmentalism”, *William & Mary Environmental Law and Policy Review,* 2016, <https://scholarship.law.wm.edu/cgi/viewcontent.cgi?article=1653&context=wmelpr>

Although an academic debate at this point, the legal status of property in space is necessary for any future exploration and exploitation of natural resources in space. Until then, private exploration is severely disincentivized. Further, the technology behind asteroid mining is fast becoming a reality.108 The law must respond. In order to evaluate what the international community needs to accomplish to ensure future exploration, one must explore the international agreements already in place that speak to the issue of property rights. To begin, the United Nations (UN) established the UN Office of Outer Space Affairs (UNOOSA) in 1958 109 to promote international cooperation in space and promote its peaceful use.110 UNOOSA oversees the UN’s Committee on the Peaceful Uses of Outer Space (COPUOS) and implements its decisions.111 The UN founded COPUOS to avoid international rivalries in space.112 The OST, the Liability Convention,113 and the Moon Agreement114 are all within the jurisdiction of COPUOS. There are five international agreements that lay a framework of space law and, more importantly, ownership of objects and celestial bodies in space: • The Treaty on Principles Governing the Activities of Space, Including the Moon and Other Celestial Bodies (OST); 115 • The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Space Objects Launched into Outer Space(ARRA); 116 • The Convention on International Liability for Damage Caused by Space Objects (Liability Convention); 117 • TheConvention on RegistrationofObjectsLaunched intoOuterSpace (Registration Convention); 118 and • The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Treaty). 119 As with all international law, however, the actual authority of these treaties is debatable, because countries often ignore their precepts or disagree on the meaning of their substance.120 International custom, therefore, is the major indication of what international law exactly is.121 The Law of the Sea is an instructive analogy on that point, and as Lyall and Larsen explain, The practice need not be wholly uniform, but must be undertaken in the belief it is binding and required by law as opposed to being merely convenient or mutually beneficial. 122 Further, international law in general was conceived to deal with relations between States, not to deal with private claims of property. 123 International.

#### Disputes and misperceptions create cascading effects towards space weaponization and an arms race—an international framework solves BUT unilateral action causes escalating space wars

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The first concern is establishing clear regulations regarding asteroid mining. With an intent to establish clear regulations with respect to asteroid mining and to legalise material extraction from the moon and other celestial bodies by private companies in the US, the US government legalised space mining in 2015 by introducing the US Commercial Space Launch Competitiveness Act, 2015.[xxvii] This move was heartily welcomed by the private companies as it provided legitimacy to their planned activities. Subsequently in 2017, Luxembourg followed suit.[xxviii] While the US has been a spacefaring nation for many decades now, Luxembourg aspires to become a global leader in the nascent race to mine resources in outer space. In the 1980s the tiny European nation arose out of almost nowhere to become a leader in the satellite communications industry; today it is looking to the skies again, hoping to be the Silicon Valley of asteroid mining.[xxix] In the backdrop of a thriving steel industry that faced trade recession during the oil crisis of 1973, Luxembourg is trying to capitalise on the potential of space mining. As Prime Minister Xavier Bettel put it, “We realized it wouldn't be forever, the steel, so we decided to do other things.”[xxx] Similarly, looking beyond oil, the UAE is framing its policy approaches to make advances in two key areas: human space exploration, and commercial activities of resource extraction through mining.[xxxi] The two formal pieces of legislation (passed by the US and Luxembourg) provide an answer to the complex question of ownership in outer space; the two-word answer appears to be, “finders, keepers”. The US Commercial Space Launch Competitiveness Act, 2015 states: “A US citizen engaged in commercial recovery of an asteroid resource or a space resource shall be entitled to any asteroid resource or space resource obtained.”[xxxii] This legislation gives US space firms the right to own, keep, use, and sell the spoils of the cosmos as they deem fit. Luxembourg’s legislation is fairly analogous to the US Act, giving mining companies the right to keep their plunder. However, unlike the US law, Luxembourg’s does not require a company’s major stakeholders to be based in the country to enjoy its safeguards; the only requirement is for that company to have an office in the country.[xxxiii] In 2017, Japan entered into a five-year agreement with Luxembourg for mining operations in celestial bodies. Japan today appears a step closer to realising its objective of asteroid mining with two Japanese rovers, Minerva II-1, of JAXA landing on the surface of the asteroid named Ryugu in September 2018.[xxxiv] Earlier, Portugal and the UAE signed similar cooperation agreements with Luxembourg.[xxxv] Meanwhile, a few other countries—which have been critical of the US and Luxembourg, at the forefront of the space mining efforts**—**have also decided to join the field. The increasingly competitive and contested nature of outer space activities is spurring major spacefaring nations to push the boundaries in their space exploration. Asteroid mining could possibly become the next big thing and is already seeing a race among the space powers. The US and Luxembourg are at the forefront in space resource extraction in terms of the policy frameworks and funding.[xxxvi] Even as the US has clarified that the US Space Act 2015 is being misunderstood and that there is no change in the US policy towards national appropriation of space, the reality is that it has already spurred a major debate**.[xxxvii]** China and Russia are among those countries that are following on the path of the US and Luxembourg in undertaking mining missions in space. According to media reports, Ye Peijian, chief commander and designer of China’s lunar exploration programme has stated that China would send the first batch of asteroid exploration spacecraft around 2020.[xxxviii] Speaking to China’s Ministry of Science and Technology-run newspaper, Science and Technology Daily, Ye said that these asteroids have a high concentration of precious metals, which could rationalise the huge cost and risks involved in these activities as their economic value could run into the trillions of US dollars. Therefore, extraction, mining and transporting them back to Earth through robotic equipment will be a significant activity. Chinese scientists are working on missions to “bring back a whole asteroid weighing several hundred tonnes, which could turn asteroids with a potential threat to Earth into usable resources**.**”[xxxix] Ye was also quoted as saying that China has plans of “using an asteroid as the base for a permanent space station.”**[xl]** Helium mining on the moon is also part of China’s goals.[xli] Russia, for its part, is also responding to the space-mining developments of the last decade. For one, it plans to have a permanent lunar base somewhere between 2015 and 2020 for possible extraction of Helium.[xlii] Even as Russia’s official position on asteroid mining is that it is forbidden under the 1967 OST—which states that space is the “province of mankind”—the Russian industry players are of the view that they must follow the lead taken by the US and Luxembourg.[xliii] In early 2018, the director of the Scientific-Educational Center for Innovative Mining Technologies of the Moscow-based National University of Science and Technology MISIS (NUST MISIS), Pavel Ananyev, spoke about the Russian ambitions and proposed activities including space drilling rigs, water extraction on the Moon and 3D printers at space stations.[xliv] Russia’s private space companies including Dauria Aerospace, one of the first Russian private space companies, also hold the opinion that they must go forward in the same direction and call for a larger space to private sector to engage in extracting space resources.[xlv] Moscow may not have yet actively pursued space mining and resource extraction, but it is likely to pick up pace in the coming years alongside global efforts. Moscow clearly has a capacity gap in terms of funding because its earlier plans to have a permanent base in the Moon by 2015 is yet to happen. India, too, has ambitions in extraterrestrial resource extraction. In fact, a year after the US legislation, Prabhat Ranjan, executive director of Technology Information, Forecasting and Assessment Council (TIFAC), a policy organisation within the Department of Science and Technology, made a case for India to push ahead with lunar and asteroid mining. He said, “Moon is already being seen as a mineral wealth and further one can go up to the asteroids and start exploiting this. This can be a big game changer and if India doesn’t do this, we will lag behind.”[xlvi] More recently, Dr. K Sivan, Chairman of the country’s civil space organisation, Indian Space Research Organisation (ISRO), talked about ISRO’s plans for helium-3 extraction and said, “the countries which have the capacity to bring that source from the moon to Earth will dictate the process. I don’t want to be just a part of them, I want to lead them.”[xlvii] However, gaining proficiency in such missions is not easy – the NASA and ESA (the European Space Agency) have been discussing these possibilities for a longer time, albeit quietly. The ISRO Chairman’s response was characterised by an Indian commentator as “aspirational” and “emotional”, clearly conceding that the country’s technological wherewithal is yet to be adequate.[xlviii] Importantly, it is not clear how the legal and regulatory aspects of space mining operations are being dealt with. There was one instance, though, when Luxembourg and Japan in a joint press statement said, “The exchange of information may cover all the issues of the exploration and commercial utilization of space resources, including legal, regulatory, technological, economic, and other aspects.”[xlix] Whether such legalisation is truly legal is arguable. Space Mining: Legal or Not? The Outer Space Treaty (OST) of 1967, considered the global foundation of the outer space legal regime, along with the other four associated international instruments have provided the fundamental basis for outer space activities by prohibiting certain activities and emphasising aspects such as the “common heritage of mankind”. These agreements have been useful in highlighting the global common nature of outer space. At the same time, however, they have been insufficient and ambiguous in providing clear regulations to newer space activities such as asteroid mining. Based on the premise of ‘res communis’, the magna carta of space law, the OST, illustrates outer space as “the province of all mankind”.[l] Under Article I, States are free to explore and use outer space and to access all celestial bodies “on the basis of equality and in accordance with international law.”[li] Although the OST does not explicitly mention “mining” activities, under Article II, outer space including the Moon and other celestial bodies are “not subject to national appropriation by claim of sovereignty” through use, occupation or any other means.[lii] Furthermore, the Moon Agreement, 1979, not only defines outer space as “common heritage of mankind” but also proscribes commercial exploitation of planets and asteroids by States unless an international regime is established to govern such activities for “rational management,” “equitable sharing” and “expansion of opportunities” in the use of these resources.[liii] Slipping conveniently through the loophole in the OST, both the US and Luxembourg have authorised companies to claim exclusive ownership over extracted resources (but not of the asteroid itself). Proponents argue that since no sovereign nation is actually asserting rights over an area of outer space, instead, it is only a private unit claiming rights over singular resources, the treaty norm, “national appropriation by claim of sovereignty”, is not being violated. In the words of renowned space lawyer, Frans von der Dunk, “In terms of the law, yes it’s true that no country can claim any part of outer space as national territory — but that doesn’t mean private industry can’t mine resources.”[liv] Quoting reference from maritime law, Luxembourg regards space resources as appropriable akin to fish and shellfish, but celestial bodies and asteroids are not, just like the high sea. It is noteworthy that out of the only 18 nations that have ratified the Moon Agreement,[lv] none are major spacefaring nations, thereby giving themselves a convenient leeway to not abide by the same. These unilateral initiatives have set off a critical response from the international community. Applying literal interpretation of the OST, there is certainly room to construe that space mining may be legal, compared to the Moon Agreement whose prohibition is absolute. However, taking into consideration the letter and spirit of the OST, strengthened by the Moon Agreement, the argument that “national appropriation” only extends to appropriation of territory and not appropriation of resources is a far reach. That resource extraction is contemplated, albeit implicitly, in the OST, is nothing but logical. Not only have such claims of possessory rights not been recognised in the past, there is also global consensus regarding its illegality.[lvi] It therefore forms a part of customary international law, despite the Moon Agreement not having been widely ratified. In this light, the legalisation of space mining is a sheer violation of the elemental principles of international space law. Yet, there is no clarity on what activity is allowed and what is prohibited in outer space under the existing law.[lvii] There is ambiguity around most issues—from “who would license and regulate asteroid mining operations” to the legality of these activities as per the existing international space law.[lviii] When comparing it to the law of the seas, resource appropriation in the high seas and deep seabed is governed by the United Nations Convention on the Law of the Sea (UNCLOS), 1982, and that in Antarctica, as per the Protocol on Environmental Protection to the Antarctic Treaty, 1991. While the former is strictly regulated under Part XI of UNCLOS, the latter is completely forbidden but for scientific purposes. The law of the sea argument—“owning the fish, not the sea”—cannot be applied to outer space primarily because fish are living resources that can reproduce and therefore are renewable. Outer space resources, on the other hand, are depletable: once harvested, they cannot be replenished. The analogy with fish and seas, therefore, is not a fair one and its transposition to outer space and celestial bodies would be inaccurate. Perhaps a more comparable regime is the deep seabed, which contemplates property rights over mineral extraction. The utilisation and ownership of the deep seabed’s resources are exclusively structured around the International Seabed Authority (ISA), which is responsible for organising, carrying out and controlling all activities in the seabed.[lix] Not only must State parties seek sanction from the ISA before beginning resource exploitation, but the fiscal benefits from seabed mining must also be shared among all.[lx] Evidently, even the UNCLOS upholds State ownership and fair distribution over individual ownership and self-centred gains.[lxi] By allowing private ownership, the US and Luxembourg are once again in contravention of the very same law they are relying on. The touchstone principle, “province of all mankind” is also being defeated. Therefore, to even reap the limited benefits as under UNCLOS, at least the derivation must be made alike. This argument too falls flat. The Way Ahead Undoubtedly, growing technological adeptness has made space mining inevitable and, therefore, the question is no longer “if” but “when”. Nevertheless, a scenario where companies can, solely based on domestic laws, steadily exploit mineral resources in outer space, would be universally unacceptable. Minus regulations, the realisation of space exploitation will create great disparity between nations and disrupt dynamics of the world economy. Regulations are particularly important in the context of the space debris problem. We definitely do not wish for a future, befittingly described by renowned engineer and inventor Graham Hawkes, thus: “Space exploration promised us alien life, lucrative planetary mining, and fabulous lunar colonies. News flash, ladies and gents: Space is nearly empty. It’s a sterile vacuum, filled mostly with the junk we put up there.”[lxii] Therefore, it is extremely important that resource appropriation is carried out in an ethical manner, without interrupting safe and secure access to outer space, simultaneously allowing all countries a share in the proceeds. Technological advances and financial readiness are pushing both, states and non-state players towards new ventures in outer space. Yet, the rules of engagement especially dealing with the new commercial activities are far from ideal. There is a clear and urgent need to debate and come up with either a new regulation or accommodate the space mining activities within the existing international legal measures. Experts have articulated that these could possibly be addressed under the existing property law principles or old mining law principles.[lxiii] However, given the scale of activities that states and non-state parties will engage in, the ability of the existing regime to address space mining could be highly inadequate. The second option would be to develop a new instrument including an institutional architecture that would set out the parameters for activities related to resource extraction and space mining. Since there are a good number of commercial players playing a formidable role in asteroid mining, there has to be space for commercial players in the new gig, which might be a big departure from the earlier era institutions that saw states being the sole authority in regulating activities in outer space. A clear role for commercial players has been articulated for some time but the global space community has yet to reach a consensus in how they can be incorporated into the global governance debates. The apprehension on the part of a number of states is driven by the fact that private sector participation is still largely a western phenomenon. This trend may be undergoing change in other parts of the world but until there is a sizeable private sector community in other major spacefaring powers, there is a fear that the western bloc of countries may stand to gain from the industry being represented in the global governance debates. A third possible option is to get a larger global endorsement of the Moon Treaty, which highlights the common heritage of mankind. The Moon Treaty is important as it addresses a “loophole” of the OST “by banning any ownership of any extraterrestrial property by any organization or private person, unless that organization is international and governmental.”[lxiv] But the fact that it has been endorsed only by a handful of countries makes it a “failure” from the international law perspective.[lxv] Nevertheless, efforts must be made to strengthen the support base for the Moon Agreement given the potential pitfalls of resource extraction and space mining activities in outer space. Signatories to the Moon Treaty can take the lead within multilateral platforms such as the UN to debate the usefulness of the treaty in the changed context of technological advancements and new geopolitical dynamics, and potentially find compromises where there are disagreements. Pursuing a collective approach is ideal. An example is UNCLOS, which demonstrates that the international society possesses the capability of regulating mining quarters deemed to be the “province of mankind”. However, a sui generis legal framework must be crafted because the difference between the marines and outer space and their resources is wide, and the regulations are too region-specific to permit a superimposition of the oceanic regime to outer space. A sound legal environment will protect both the company performing operations and its beneficiaries, while ensuring even-handed resource allocation. In addition, regulations spelling out safety standards and identifying safety zones around mining operations could be useful in ensuring safe and secure operations in outer space. It would be wrong, however, to say that the international community has not debated over this. In fact, one of the main agenda points of the fifty-seventh session of UNCOPUS Legal Committee held in April 2018, was especially devoted to “general exchange of views on potential legal models for activities in the exploration, exploitation and utilization of space resources.”[lxvi] Upon evaluation, it is clear that countries are not against space mining as such; rather the contentious points are vis-à-vis authorisation, regulation, and where to place responsibility. There also appears to be concurrence regarding the need for international coordination efforts of some sort. Over the last two years, The Hague Space Resources Governance Working Group,[lxvii] established with the purpose of “assess[ing] the need for a regulatory framework for space resource activities, has identified 19 “building blocks”,[lxviii] encompassing subject matters that could be included in such a regulatory framework. Although this leaves a lot of hope for the legitimate mining of space resources, its status is still pending. Also, several questions need to be agreed upon by the global space policy community before the establishment of a framework. First, there must be an agreement among all the space powers on the need for a global governance framework for the use of space resources. This must be followed by detailed deliberations on the scope, mandate and objectives of such a framework. Can and should there be safety zones and exclusive rights be recognised under such a framework and how one can ensure equitable sharing of the resources, and lastly, the role of industries and how the interests of the industry as pioneers in this area can be secured. These are all pertinent questions that need to be considered and debated before an international regime for extraction and use of space resources can be established.[lxix] Even legal space mining activity could have serious impacts in two ways. For instance, any technological spinoffs that a country might have could add to the space weaponisation debate. Two, the erosion of norms with regard to space mining could have a cascading effect on other norms in the same issue area such as weaponisation of space. It is imperative for nations to actively combine their efforts to ensure that this activity transpires in the most globally acceptable manner and not one which stirs anarchism. The ancient Roman maxim, ‘Quod omnes tangit ab omnibus approbatur’ (What touches all must be approved by all) gains due traction in this kind of a scenario. Therefore, a universal activity like space exploration mandates an international guideline; or else, the first haul from mining, instead of earning admiration and exultation, will only be enmeshed in litigation.

#### 2 impact scenarios:

#### 1] First is space wars

#### Inevitable market expansion guarantees wars over property rights—governments get quickly involved

Funnell 18 – Anthony, Writer for Future Tense News Citing Dean of Law at University of Adelaide, “War in space 'inevitable' because there's so much money to be made, expert warns”, ABC News, 8/23/2018, https://www.abc.net.au/news/2018-08-24/conflict-in-space-is-inevitable-expert-warns/10146314

A leading Australian space law expert has warned conflict over space assets is "inevitable", and more needs to be done now to avert the potential for hostility. Professor Melissa de Zwart, the Dean of Law at the University of Adelaide, says growing commercial interest in the mining of precious minerals on asteroids and planets has heightened the danger. "I think you have to be a realist about that," she said. "Where you have resources, where you have competition for those resources, where you have investment of money in the extraction of those resources ... there will be an expectation of security around that investment." While full-scale mining is yet to be tried, there is significant international interest. Japanese aerospace agency Jaxa has already successfully landed a robotic craft on an asteroid and taken samples. It currently has another probe hovering over an asteroid named Ryugu. Artist's impression of Hayabusa 2 PHOTO: Artist's impression of Jaxa's robotic craft flying above Ryugu. (Source: JAXA) Two American companies — Deep Space Industries and Planetary Resources — are thought to be the leaders in the field, but in May this year a UK firm called Asteroid Mining Corporation also entered the race. "Those corporations will be looking to the nation-state to say, well, are you going to protect our investment in this business?" Professor de Zwart said. A very crowded space The US Government and American firms continue to play a dominant role in more traditional space technology development and deployment. SpaceX, for example, is a major private supplier of rockets, while the US Air Force currently coordinates international satellite traffic, providing advanced warnings about potentially dangerous space debris. Listen to the episode Are we moving away from the notion that space is for all humankind? And is conflict in space inevitable? But the number of players is rapidly increasing. The OECD's Space Forum says more than 80 countries now have some form of space program, mostly concentrated on rockets, satellites and satellite-related services and technology. They estimate the global industry is worth somewhere around $US400 billion and growing quickly. And that figure could skyrocket if, and when, asteroid mining kicks off. Eric Stallmer, the president of the US-based Commercial Spaceflight Federation, a consortium of 85 space-related organisations and businesses, believes that moment is fast approaching. "I think we are looking at a five to 10-year timetable for developing that technology. It makes for an exciting time," he said

#### Asteroid mining furthers tensions between the US, China and Russia and escalates

Jamasmie 21 Cecilia Jamasmie [Cecilia has covered mining for more than a decade. She is particularly interested in Corporate Social Responsibility (CSR), Diamonds and Latin America. Cecilia has been interviewed by BBC News and CBC among others and has been a guest speaker at mining conventions, including MINExpo 2016 and the World’s Copper Conference 2018. She is also member of the expert panel on Social License to Operate (SLO) at the European project MIREU (Mining and Metallurgic Regions EU). She holds a Master of Journalism from the University of British Columbia, and is based in Nova Scotia.], 2-2-2021, "Experts warn of brewing space mining war among US, China and Russia," MINING, <https://www.mining.com/experts-warn-of-brewing-space-mining-war-among-us-china-and-russia/> DD AG

A brewing war to set a mining base in space is likely to see China and Russia joining forces to keep the US increasing attempts to dominate extra-terrestrial commerce at bay**, experts warn. The** Trump Administration took an active interest in space**,** announcing that America would return astronauts to the moon by 2024 andcreating the Space Force as the newest branch of the US military.It also proposed global legal framework for mining on the moon, called the Artemis Accords, encouraging citizens to mine the Earth’s natural satellite and other celestial bodies with commercial purposes. The directive classified outer space as a “legally and physically unique domain of human activity” instead of a “global commons,” paving the way for mining the moon without any sort of international treaty. Spearheaded by the US National Aeronautics and Space Administration (NASA), the Artemis Accords were signed in October by Australia, Canada, England, Japan, Luxembourg, Italy and the United Emirates “Unfortunately, the Trump Administration exacerbated a national security threat and risked the economic opportunity it hoped to secure in outer space by failing to engage Russia or China as potential partners,” says Elya Taichman, former legislative director for then-Republican Michelle Lujan Grisham. “Instead, the Artemis Accords have driven China and Russia toward increased cooperation in space out of fear and necessity,” he writes.Russia’s space agency Roscosmos was the first to speak up, likening the policy to colonialism. “There have already been examples in history when one country decided to start seizing territories in its interest — everyone remembers what came of it,” Roscosmos’ deputy general director for international cooperation, Sergey Saveliev, said at the time.China, which made history in 2019 by becoming the first country to land a probe on the far side of the Moon, chose a different approach. Since the Artemis Accords were first announced, Beijing has approached Russia to jointly build a lunar research base. President Xi Jinping has also he made sure China planted its flag on the Moon, which happened in December 2020, more than 50 years after the US reached the lunar surface.

#### Space wars go nuclear

Grego 18 – Laura, Senior Scientist in the Global Security Program at the Union of Concerned Scientists, Postdoctoral Researcher at the Harvard-Smithsonian Center for Astrophysics, PhD in Experimental Physics at the California Institute of Technology, Space and Crisis Stability, Union of Concerned Scientists, 3-19-18, <https://www.law.upenn.edu/live/files/7804-grego-space-and-crisis-stabilitypdf>

Why space is a particular problem for crisis stability For a number of reasons, space poses particular challenges in preventing a crisis from starting or from being managed well. Some of these are to do with the physical nature of space, such as the short timelines and difficulty of attribution inherent in space operations. Some are due to the way space is used, such as the entanglement of strategic and tactical missions and the prevalence of dual-use technologies. Some are due to the history of space, such the absence of a shared understanding of appropriate behaviors and consequences, and a dearth of stabilizing personal and institutional relationships. While some of these have terrestrial equivalents, taken together, they present a special challenge. The vulnerability of satellites and first strike incentives Satellites are inherently fragile and difficult to protect; in the language of strategic planners, space is an “offense-dominant” regime. This can lead to a number of pressures to strike first that don‘t exist for other, better-protected domains. Satellites travel on predictable orbits, and many pass repeatedly over all of the earth‘s nations. Low-earth orbiting satellites are reachable by missiles much less capable than those needed to launch satellites into orbit, as well as by directed energy which can interfere with sensors or with communications channels. Because launch mass is at a premium, satellite armor is impractical. Maneuvers on orbit need costly amounts of fuel, which has to be brought along on launch, limiting satellites‘ ability to move away from threats. And so, these very valuable satellites are also inherently vulnerable and may present as attractive targets. Thus, an actor with substantial dependence on space has an incentive to strike first if hostilities look probable, to ensure these valuable assets are not lost. Even if both (or all) sides in a conflict prefer not to engage in war, this weakness may provide an incentive to approach it closely anyway. A RAND Corporation monograph commissioned by the Air Force15 described the issue this way: First-strike stability is a concept that Glenn Kent and David Thaler developed in 1989 to examine the structural dynamics of mutual deterrence between two or more nuclear states.16 It is similar to crisis stability, which Charles Glaser described as ―a measure of the countries‘ incentives not to preempt in a crisis, that is, not to attack first in order to beat the attack of the enemy,‖17 except that it does not delve into the psychological factors present in specific crises. Rather, first strike stability focuses on each side‘s force posture and the balance of capabilities and vulnerabilities that could make a crisis unstable should a confrontation occur. For example, in the case of the United States, the fact that conventional weapons are so heavily dependent on vulnerable satellites may create incentives for the US to strike first terrestrially in the lead up to a confrontation, before its space-derived advantages are eroded by anti-satellite attacks.18 Indeed, any actor for which satellites or space-based weapons are an important part of its military posture, whether for support missions or on-orbit weapons, will feel “use it or lose it” pressure because of the inherent vulnerability of satellites. Short timelines and difficulty of attribution The compressed timelines characteristic of crises combine with these “use it or lose it” pressures to shrink timelines. This dynamic couples dangerously with the inherent difficulty of determining the causes of satellite degradation, whether malicious or from natural causes, in a timely way. Space is a difficult environment in which to operate. Satellites orbit amidst increasing amounts of debris. A collision with a debris object the size of a marble could be catastrophic for a satellite, but objects of that size cannot be reliably tracked. So a failure due to a collision with a small piece of untracked debris may be left open to other interpretations. Satellite electronics are also subject to high levels of damaging radiation. Because of their remoteness, satellites as a rule cannot be repaired or maintained. While on-board diagnostics and space surveillance can help the user understand what went wrong, it is difficult to have a complete picture on short timescales. Satellite failure on-orbit is a regular occurrence19 (indeed, many satellites are kept in service long past their intended lifetimes). In the past, when fewer actors had access to satellite-disrupting technologies, satellite failures were usually ascribed to “natural” causes. But increasingly, even during times of peace operators may assume malicious intent. More to the point, in a crisis when the costs of inaction may be perceived to be costly, there is an incentive to choose the worst-case interpretation of events even if the information is incomplete or inconclusive. Entanglement of strategic and tactical missions During the Cold War, nuclear and conventional arms were well separated, and escalation pathways were relatively clear. While space-based assets performed critical strategic missions, including early warning of ballistic missile launch and secure communications in a crisis, there was a relatively clear sense that these targets were off limits, as attacks could undermine nuclear deterrence. In the Strategic Arms Limitation Treaty, the US and Soviet Union pledged not to interfere with each other‘s ―national technical means‖ of verifying compliance with the agreement, yet another recognition that attacking strategically important satellites could be destabilizing.20 There was also restraint in building the hardware that could hold these assets at risk. However, where the lines between strategic satellite missions and other missions are blurred, these norms can be weakened. For example, the satellites that provide early warning of ballistic missile launch are associated with nuclear deterrent posture, but also are critical sensors for missile defenses. Strategic surveillance and missile warning satellites also support efforts to locate and destroy mobile conventional missile launchers. Interfering with an early warning sensor satellite might be intended to dissuade an adversary from using nuclear weapons first by degrading their missile defenses and thus hindering their first-strike posture. However, for a state that uses early warning satellites to enable a “hair trigger” or launch-on-attack posture, the interference with such a satellite might instead be interpreted as a precursor to a nuclear attack. It may accelerate the use of nuclear weapons rather than inhibit it. Misperception and dual-use technologies Some space technologies and activities can be used both for relatively benign purposes but also for hostile ones. It may be difficult for an actor to understand the intent behind the development, testing, use, and stockpiling of these technologies, and see threats where there are none. (Or miss a threat until it is too late.) This may start a cycle of action and reaction based on misperception. For example, relatively low-mass satellites can now maneuver autonomously and closely approach other satellites without their cooperation; this may be for peaceful purposes such as satellite maintenance or the building of complex space structures, or for more controversial reasons such as intelligence-gathering or anti-satellite attacks. Ground-based lasers can be used to dazzle the sensors of an adversary‘s remote sensing satellites, and with sufficient power, they may damage those sensors. The power needed to dazzle a satellite is low, achievable with commercially available lasers coupled to a mirror which can track the satellite. Laser ranging networks use low-powered lasers to track satellites and to monitor precisely the Earth‘s shape and gravitational field, and use similar technologies. 21 Higher-powered lasers coupled with satellite-tracking optics have fewer legitimate uses. Because midcourse missile defense systems are intended to destroy long-range ballistic missile warheads, which travel at speeds and altitudes comparable to those of satellites, such defense systems also have inherent ASAT capabilities. In fact, while the technologies being developed for long-range missile defenses might not prove very effective against ballistic missiles—for example, because of the countermeasure problems associated with midcourse missile defense— they could be far more effective against satellites. This capacity is not just theoretical. In 2007, China demonstrated a direct-ascent anti-satellite capability which could be used both in an ASAT and missile defense role, and in 2009, the United States used a ship-based missile defense interceptor to destroy a satellite, as well. US plans indicated a projected inventory of missile defense interceptors with capability to reach all low earth orbiting satellites in the dozens in the 2020s, and in the hundreds by 2030.22 Discrimination The consequences of interfering with a satellite may be vastly different depending on who is affected and how, and whether the satellite represents a legitimate military objective. However, it will not always be clear who the owners and operators of a satellite are, and users of a satellite‘s services may be numerous and not public. Registration of satellites is incomplete23 and current ownership is not necessarily updated in a readily available repository. The identification of a satellite as military or civilian may be deliberately obscured. Or its value as a military asset may change over time; for example, the share of capacity of a commercial satellite used by military customers may wax and wane. A potential adversary‘s satellite may have different or additional missions that are more vital to that adversary than an outsider may perceive. An ASAT attack that creates persistent debris could result in significant collateral damage to a wide range of other actors; unlike terrestrial attacks, these consequences are not limited geographically, and could harm other users unpredictably. In 2015, the Pentagon‘s annual wargame**,** or simulated conflict, involving space assets focused on a future regional conflict. The official report out24warnedthatit was hard to keep the conflict contained geographically when using anti-satellite weapons: As the wargame unfolded, a regional crisis quickly escalated, partly because of the interconnectedness of a multi-domain fight involving a capable adversary. The wargame participants emphasized the challenges in containing horizontal escalation once space control capabilities are employedto achieve limited national objectives. Lack of shared understanding of consequences/proportionalityStates havefairly similar understandings of the implications of military actions on the ground, in the air, and at sea,built over decades of experience. The United States and the Soviet Union/Russia have built some shared understanding of each other‘s strategic thinking on nuclear weapons, though this is less true for other states with nuclear weapons. But in the context of nuclear weapons, there is an arguable understanding about the crisis escalation based on the type of weapon (strategic or tactical) and the target (counterforce—against other nuclear targets, or countervalue—against civilian targets). Because of a lack of experience in hostilities that target space-based capabilities, it is not entirely clear what the proper response to a space activity is and where the escalation thresholds or “red lines” lie. Exacerbating this is the asymmetry in space investments; not all actors will assign the same value to a given target or same escalatory nature to different weapons.

#### Nuclear war causes extinction.

Starr ’17 (Steven; director of the University of Missouri’s Clinical Laboratory Science Program, senior scientist at the Physicians for Social Responsibility, Associate member of the Nuclear Age Peace Foundation, expert in the environmental consequences of nuclear war; 1/9/17; “Turning a Blind Eye Towards Armageddon — U.S. Leaders Reject Nuclear Winter Studies”; <https://fas.org/2017/01/turning-a-blind-eye-towards-armageddon-u-s-leaders-reject-nuclear-winter-studies/>; Federation of American Scientists; accessed 11/24/18; TV) [AV]

The detonation of an atomic bomb with this explosive power will **instantly ignite fires** over a surface area of three to five square miles. In the recent studies, the scientists calculated that the **blast**, **fire**, and **radiation** from a war fought with 100 atomic bombs could produce **direct fatalities** comparable to all of those worldwide in World War II, or to those once estimated for a “**counterforce**” **nuclear war** between the superpowers. However, the **long-term environmental effects** of the war **could** significantly disrupt the global weather for at least a decade, which would likely **result in** a vast **global famine**. The scientists predicted that **nuclear firestorms** in the burning cities would cause at least five million tons of **black carbon smoke** to quickly rise above cloud level into the stratosphere, where it could not be rained out. The smoke would circle the Earth in **less than two weeks** and would form **a** global **stratospheric smoke layer** that **would remain for** more than **a decade**. The smoke would absorb warming sunlight, which would **heat the smoke** to temperatures near the boiling point of water, producing **ozone losses of** 20 to **50 percent** over populated areas. This would almost double the amount of UV-B reaching the most populated regions of the mid-latitudes, and it would create UV-B indices unprecedented in human history. In North America and Central Europe, the time required to get a painful sunburn at mid-day in June could decrease to as little as six minutes for fair-skinned individuals. As the smoke layer blocked warming sunlight from reaching the Earth’s surface, it would produce the **coldest** average **surface temperatures** in the last 1,000 years. The scientists calculated that global **food production would decrease** by 20 to **40 percent** during a five-year period following such a war. Medical experts have predicted that the shortening of growing seasons and corresponding decreases in agricultural production could cause up to **two billion** people to perish from **famine**. The climatologists also investigated the effects of a nuclear war fought with the vastly more powerful modern **thermonuclear** weapons possessed by the United States, Russia, China, France, and England. Some of the thermonuclear weapons constructed during the 1950s and 1960s were 1,000 times more powerful than an atomic bomb. During the last 30 years, the average size of thermonuclear or “strategic” nuclear weapons has decreased. Yet today, each of the approximately 3,540 strategic weapons deployed by the United States and Russia is seven to **80 times** more powerful than the atomic bombs modeled in the India-Pakistan study. The smallest strategic nuclear weapon has an explosive power of **100,000 tons of TNT**, compared to an atomic bomb with an average explosive power of 15,000 tons of TNT. Strategic nuclear weapons produce much larger nuclear firestorms than do atomic bombs. For example, a standard Russian 800-kiloton warhead, on an average day, will ignite fires covering a surface area of 90 to 152 square miles. A **war** fought with hundreds or thousands of U.S. and Russian strategic nuclear weapons would **ignite immense** **nuclear firestorms** covering land surface areas of many thousands or **tens of thousands** of square miles. The scientists calculated that these fires would produce up to **180 million tons** of black carbon soot and **smoke**, which would form a dense, **global stratospheric smoke layer**. The smoke would remain in the stratosphere for 10 to **20 years**, and it **would block** as much as **70 percent of sunlight** from reaching the surface of the Northern Hemisphere and 35 percent from the Southern Hemisphere. So much sunlight would be blocked by the smoke that the noonday sun would resemble a full moon at midnight. Under such conditions, it would only require a matter of days or weeks for daily minimum **temperatures** to **fall below freezing** in the largest agricultural areas of the Northern Hemisphere, where freezing temperatures would occur every day for a period of between one to more than two years. Average surface temperatures would become colder than those experienced 18,000 years ago at the height of the last Ice Age, and the prolonged cold would cause average rainfall to decrease by up to 90%. Growing seasons would be completely eliminated for more than a decade; it would be **too cold and dark** to grow food crops, **which would doom the** majority of the **human population.** NUCLEAR WINTER IN BRIEF The profound cold and darkness following nuclear war became known as nuclear winter and was first predicted in 1983 by a group of NASA scientists led by Carl Sagan. During the mid-1980s, a large body of research was done by such groups as the Scientific Committee on Problems of the Environment (SCOPE), the World Meteorological Organization, and the U.S. National Research Council of the U.S. National Academy of Sciences; their work essentially supported the initial findings of the 1983 studies. The idea of nuclear winter, published and supported by prominent scientists, generated extensive public alarm and put political pressure on the United States and Soviet Union to reverse a runaway nuclear arms race, which, by 1986, had created a global nuclear arsenal of more than 65,000 nuclear weapons. Unfortunately, this created a backlash among many powerful military and industrial interests, who undertook an extensive media campaign to brand nuclear winter as “bad science” and the scientists who discovered it as “irresponsible.” Critics used various uncertainties in the studies and the first climate models (which are primitive by today’s standards) as a basis to criticize and reject the concept of nuclear winter. In 1986, the Council on Foreign Relations published an article by scientists from the National Center for Atmospheric Research, who predicted drops in global cooling about half as large as those first predicted by the 1983 studies and described this as a “nuclear autumn.”

#### ] Second is astroterror

#### Unregulated mining causes asteroid deflection and astroterror

Drmola and Mareš 15 - Jakub Drmola is a PhD student and Miroslav Mareš professor, at the Divison of Security and Strategic Studies, Masaryk University, Czech Republic, "Revisiting the deflection dilemma", *Astronomy & Geophysics*, Volume 56, Issue 5, October 2015, Pages 5.15–5.18, <https://academic.oup.com/astrogeo/article/56/5/5.15/235650>

There are two basic ways to go about moving the resources contained within a given asteroid to the Earth. They can be extracted from the asteroid during its natural orbit and then transported to the Earth, or the entire asteroid might be moved closer to a more convenient location before starting mining. Thus repositioned, it might even be used as a shielded habitat, once hollowed out (Ostro 1999). There are different speculative costs and benefits associated with either option, which would vary with the size, orbit and composition of the asteroid. But, crucially, the second option would entail putting asteroids into orbit around the Earth, the Moon or possibly at one of the Earth’s Lagrangian points. Indeed, NASA has already planned a mission to capture a small asteroid and place it in a high cislunar orbit, where it would serve as a destination for future manned missions and experiments. This “Asteroid Redirect Mission” is to take place in the next decade and is being pitched mainly as a stepping stone towards a future mission to Mars (see box “NASA’s Asteroid Redirect Mission”; Brophy et al. 2012, Burchell 2014, Gates et al. 2015). Programmes to redirect asteroids and, especially, plans to mine asteroids on an industrial scale essentially resurrect the deflection dilemma. But it is no longer a matter of superpowers intentionally misusing technology designed to prevent dangerous impacts. It becomes an issue of proliferation among private entities. Once private mining companies acquire the technical ability to redirect suitable NEOs (Baoyin et al. 2011) in order to extract platinum or water from them, perilous inflections become more likely. The probability of accidents will rise with the number of asteroids whose trajectories we decide to manipulate. Such accidents might be very unlikely, but even a tiny technical or human error in the execution of an inflection meant to place an asteroid into the lunar or geocentric orbit might send it crashing into the Earth with potentially devastating consequences. And while we might find solace in the low probabilities associated with such an accident, even contemporary industries which are considered very safe suffer from unlikely tragedies. Despite being dependable and reliable, airliners do crash; there are a lot of them flying and very improbable accidents do happen if the dice are rolled often enough. Undoubtedly, we will not be steering as many asteroids as we steer planes any time soon, but industries tend to be more accident-prone during their infancy. Furthermore, a single asteroid can do a lot more damage than a single plane. And who is to say how much metal or water we are going to need in space over the course of the 21st century, or the next? The second source of risk is the intentional misuse, similar to the original deflection dilemma. But the entry barrier for asteroid weaponization gets much lower if mining them and moving them around becomes a common industrial activity. This is in stark contrast to the original scenario which envisioned this technology to be used solely for planetary defence and under control of a very small number of the most powerful countries (Morrison 2010). If such a powerful technology becomes widely and commercially available, even rogue states and wellfunded terrorist groups might be tempted to use it for an unexpected and devastating attack. In addition, an active asteroid mining industry would make it more difficult to detect any hostile inflection attempts among the number of legitimate and benign ones. Policy implications Considering these possible future dangers, it seems prudent to consider what to do about them sooner rather than later. The most obvious “solution” would be a blanket ban on the development of any technology that might lead to artificially inflected asteroids crashing into the Earth. However, such a ban would be incompatible with the dream of increased presence of humans in the solar system. It would stymie both scientific exploration and economic development here on Earth, which is increasingly dependent on precious metals and spacebased technologies. Furthermore, this approach would leave us more vulnerable to natural impacts which, in the long view, seems less than desirable. Another approach might be similar to the current regime of non-proliferation of nuclear weapons, aiming to support peaceful civilian use of nuclear power while at the same time prohibiting the spread of weapons of mass destruction. The regime mostly works (with caveats, see Wood et al. 2008) because these applications require different infrastructures and fissile materials enriched to different levels of purity. This makes it possible, at least in principle, to tell apart operations meant for the production of electricity and those designed to create weapons. Unfortunately, the difference between legitimate and hostile trajectory modification would lie only in the acceleration imparted on the asteroid and not in the technical means to do it. As the spacecraft launched with the intent to cause impact with the Earth might be identical to those sent off to retrieve resources, telling them apart would be nearly impossible, until it was too late. And this approach makes no difference to the chances of an industrial accident. If monitoring equipment on Earth is unhelpful, the focus changes to space. In other words, all asteroid movement missions should be constantly monitored. For an attacker, it would make most sense to delay the final course adjustment for as long as possible in order to give the least warning and make the timeframe for reaction as short as possible. So an asteroid might head towards a safe orbit fit for resource extraction for most of its altered flight time, but be further accelerated at the last possible moment onto an impact trajectory, perhaps mere days before it hits a major city. Our current programmes cataloguing NEOs (such as CSS or Pan-STARRS), which look for new, previously unknown objects, are not ideally suited for the task of constantly tracking a number of different, already known asteroids. New instruments would be needed to track them in order to immediately detect any hazardous inflection, whether intentional or accidental. Once such a detection is made, emergency measures to evacuate the population or, preferably, to “re-deflect” the incoming object can be executed right away, regardless of the cause. Accidents and hostilities could be treated the same way and countered by the same system (initially, at least). Such a system would be more akin to an air traffic control than a non-proliferation regulation, offering security through vigilance, rather than absence. Additionally, development of a system able to deflect incoming objects at relatively short notice would be beneficial in case of an impending natural impact. Conclusion Perhaps none of these concerns will become relevant. Maybe the idea of asteroid mining will soon fizzle out because we will discover cheaper and more efficient local alternatives. Maybe humanity will lose the will or the capability to explore space any further. Or perhaps manipulating asteroid trajectories will prove impractical or too costly. Certainly, it would not be the first time that a promising and seemingly obvious future does not come about. In the 1960s it seemed almost self-evident that by the second decade of the 21st century we would have flying cars and a base on the Moon. Yet we do not. Asteroid mining might be a similar case of unfulfilled promises and misplaced visions. On the other hand, there are examples of industries that developed surprisingly fast despite being considered unrealistic, not too long ago: air travel, nuclear power generation, or commercial satellites. The spread of the internet and the accompanying digital information revolution is another example; hardly anyone anticipated having virtually the entire repository of human knowledge at our fingertips at all times (except Douglas Adams). Whether the deflection dilemma forever remains an unmaterialized threat or it becomes a palpable problem, it is something to be mindful of now, as the foundations of the prospective asteroid mining industry are being laid. In the end, the purpose of this paper is not to predict the future. Instead it aims to merely update a conscientious warning which called for our diligence more than 20 years ago. While the world has changed somewhat, the basic idea remains valid. Whether the danger comes from warring superpowers, terrorists or negligent corporations, we must be aware of the realistic risks in order to avoid being either stumped by unforeseen catastrophes or paralysed by unwarranted fear. Either extreme would be harmful for our future.●

#### major collisions cause extinction

Baum ’19 - executive director of the Global Catastrophic Risk Institute, Ph.D in Geography

Seth Baum, “Risk-Risk Tradeoff Analysis of Nuclear Explosives for Asteroid Deflection,” SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, May 31, 2019), <https://papers.ssrn.com/abstract=3397559>.

The most severe asteroid collisions and nuclear wars can cause global environmental effects. The core mechanism is the transport of particulate matter into the stratosphere, where it can spread worldwide and remain aloft for years or decades. Large asteroid collisions create large quantities of dust and large fireballs; the fire heats the dust so that some portion of it rises into the stratosphere. The largest collisions, such as the 10km Chicxulub impactor, can also eject debris from the collision site into space; upon reentry into the atmosphere, the debris heats up enough to spark global fires (Toon, Zahnle, Morrison, Turco, & Covey, 1997). The fires are a major impact in their own right and can send additional smoke into the stratosphere. For nuclear explosions, there is also a fireball and smoke, in this case from the burning of cities or other military targets. While in the stratosphere, the particulate matter blocks sunlight and destroys ozone (Toon et al., 2007). The ozone loss increases the amount of ultraviolet radiation reaching the surface, causing skin cancer and other harms (Mills, Toon, Turco, Kinnison, & Garcia, 2008). The blocked sunlight causes abrupt cooling of Earth’s surface and in turn reduced precipitation due to a weakened hydrological cycle. The cool, dry, and dark conditions reduce plant growth. Recent studies use modern climate and crop models to examine the effects for a hypothetical IndiaPakistan nuclear war scenario with 100 weapons (50 per side) each of 15KT yield. The studies find agriculture declines in the range of approximately 2% to 50% depending on the crop and location.11 Another study compares the crop data to existing poverty and malnourishment and estimates that the crop declines could threaten starvation for two billion people (Helfand, 2013). However, the aforementioned studies do not account for new nuclear explosion fire simulations that find approximately five times less particulate matter reaching the stratosphere, and correspondingly weaker global environmental effects (Reisner et al., 2018). Note also that the 100 weapon scenario used in these studies is not the largest potential scenario. Larger nuclear wars and large asteroid collisions could cause greater harm. The largest asteroid collisions could even reduce sunlight below the minimum needed for vision (Toon et al., 1997). Asteroid risk analyses have proposed that the global environmental disruption from large collisions could cause one billion deaths (NRC, 2010) or the death of 25% of all humans (Chapman, 2004; Chapman & Morrison, 1994; Morrison, 1992), though these figures have not been rigorously justified (Baum, 2018a). The harms from asteroid collisions and nuclear wars can also include important secondary effects. The food shortages from severe global environmental disruption could lead to infectious disease outbreaks as public health conditions deteriorate (Helfand, 2013). Law and order could be lost in at least some locations as people struggle for survival (Maher & Baum, 2013). Today’s complex global political-economic system already shows fragility to shocks such as the 2007- 2008 financial crisis (Centeno, Nag, Patterson, Shaver, & Windawi, 2015); an asteroid collision or nuclear war could be an extremely large shock. The systemic consequences of a nuclear war would be further worsened by the likely loss of major world cities that serve as important hubs in the global economy. Even a single detonation in nuclear terrorism would have ripple effects across the global political-economic system (similar to, but likely larger than, the response prompted by the terrorist attacks of 11 September 2001). It is possible for asteroid collisions to cause nuclear war. An asteroid explosion could be misinterpreted as a nuclear attack, prompting nuclear attack that is believed to be retaliation. For example, the 2013 Chelyabinsk event occurred near an important Russian military installation, prompting concerns about the event’s interpretation (Harris et al., 2015). The ultimate severity of an asteroid collision or violent nuclear conflict use would depend on how human society reacts. Would the reaction be disciplined and constructive: bury the dead, heal the sick, feed the hungry, and rebuild all that has fallen? Or would the reaction be disorderly and destructive: leave the rubble in place, fight for scarce resources, and descend into minimalist tribalism or worse? Prior studies have identified some key issues, including the viability of trade (Cantor, Henry, & Rayner, 1989) and the self-sufficiency of local communities (Maher & Baum, 2013). However, the issue has received little research attention and remains poorly understood. This leaves considerable uncertainty in the total human harm from an asteroid collision or nuclear weapons use. Previously published point estimates of the human consequences of asteroid collisions12 and nuclear wars (Helfand, 2013) do not account for this uncertainty and are likely to be inaccurate. Of particular importance are the consequences for future generations, which could vastly outnumber the present generation. If an asteroid collision or nuclear war would cause human extinction, then there would be no future generations. Alternatively, if survivors fail to recover a large population and advanced technological civilization, then future generations would be permanently diminished. The largest long-term factor is whether future generations would colonize space and benefit from its astronomically large amount of resources (Tonn, 1999). However, it is not presently known which asteroid collisions or nuclear wars (if any) would cause the permanent collapse of human civilization and thus the loss of the large future benefits (Baum et al., 2019). Given the enormous stakes, prudent risk management would aim for very low probabilities of permanent collapse (Tonn, 2009). It should be noted that the severity of violent nuclear conflict could depend on more than just the effects of nuclear explosions, because the overall conflict scenario could include non-nuclear violence. Indeed, it is possible for the nuclear explosions to constitute a relatively small portion of the total severity, as was the case in World War II. 4.4 Risk of Violent Non-Nuclear Conflict Finally, it is necessary to discuss the risk of violent non-nuclear conflict. Only a small portion of violent non-nuclear conflicts are applicable, specifically the portion affected by nuclear weapons. More precisely, this section discusses non-nuclear conflicts involving one or more countries that possess nuclear weapons at some point during the lifetime of a nuclear deflection program. Nuclear deterrence theory predicts that nuclear-armed adversaries will not initiate major wars against each other because both sides could be destroyed in a nuclear war. However, the theory does permit limited, small-scale violent conflicts between nuclear-armed countries. These conflicts likely would not involve nuclear weapons. Indeed, nuclear deterrence may even make small violent conflicts more likely, because the countries know that neither side wants to escalate the conflict into major war. This idea is known as the stability-instability paradox: nuclear deterrence brings stability with respect to major wars but instability with respect to minor conflicts. Empirical support for the stability-instability paradox has been found by some research (Rauchhaus, 2009),while other research has found no significant effect of the possession of nuclear weapons on the probability of conflicts of any scale (Bell & Miller, 2015; Gartzke & Jo, 2009). If countries fully disarm their nuclear arsenals, such that they would never have nuclear weapons again, then there would be no nuclear deterrence to prevent the onset of major wars. A simple risk analysis could assume that the risk of major wars would be comparable to the risk prior to the development of nuclear weapons. The two twentieth century World Wars combined for around 100 million deaths in 50 years,13 suggesting an annualized risk of two million deaths. However, two World Wars do not make for a robust dataset. Indeed, the robustness of these two data points is called into question by historical analysis finding that both world wars might not have occurred in the reasonably plausible event that the 1914 assassination of Archduke Ferdinand had failed (Lebow, 2014). Similarly, another historical analysis finds that the U.S. and Soviet Union would probably not have waged major war against each other even in the absence of nuclear deterrence (Mueller, 1988). Furthermore, these past events are not necessarily applicable to the future conditions of a post-nuclear-disarmament world. To the best of the present author’s knowledge, no studies have analyzed the risk of major wars in a post-nucleardisarmament world.

### Advantage – US/Russia

#### Russo-US relations suck—we’re on the brink of Putin bombing all our space tech to oblivion.

Koffler 11-17[Rebekah Koffler is a former Defense Intelligence Agency officer and author of “Putin’s Playbook: Russia’s Secret Plan to Defeat America.”, Opinion, 11-17 2021,WSJ,https://www.wsj.com/articles/space-armageddon-and-putins-threats-to-ukraine-russia-antisatellite-weapon-11637183651, 12-15-2021 amrita]

**Russia successfully conducted a test** in which a direct-ascent missile destroyed a nearly 40-year-old defunct Soviet spy satellite, U.S. Space Command announced Monday. This unsettling development is noteworthy because it coincides with Russia’s massive military buildup along the Ukrainian border. Moscow’s pre-positioning of more than 100,000 soldiers, tanks and heavy weaponry has spurred the Pentagon’s concerns about a possible Russian invasion of Ukraine. **Moscow’s posturing on what the Russians call a “space weapon” signals a rapidly escalating crisis in U.S.-Russia relations**. Washington’s foreign policy and Moscow’s view of its national interests are on a geopolitical collision course. Russia views the formerly Soviet Ukraine as part of its strategic security perimeter, on which Moscow has relied for centuries as a geographical buffer against foreign invasion. President Vladimir Putin has repeatedly said the U.S. is crossing a red line by attempting to pull Ukraine out of Russia’s orbit. In April, at his annual address to the Russian Parliament, Mr. Putin threatened a “swift, asymmetric and harsh response,” if the U.S. and the North Atlantic Treaty Organization intervene on Ukraine’s behalf. A trained intelligence operative, Mr. **Putin maintains strategic ambiguity** regarding what U.S. action precisely would constitute the crossing of Moscow’s red line with regard to former Soviet states, such as Ukraine. Ukraine’s admission into the European Union and NATO would almost certainly be unacceptable to the Kremlin. Mr. Putin is prepared to fight a war against the West to prevent this from happening. But how could Russia win a war against a much stronger adversary? That’s where Monday’s antisatellite test comes in. It’s a preview of Mr. Putin’s Space Armageddon strategy. **Russian strategists have observed** American **war fighters’ tactics in conflict zones** for nearly a quarter-century—in Kosovo, Iraq, Afghanistan, Libya and Syria. They **learned that America’s** superior **space capability is its Achilles’ heel** because of the U.S. military’s near-total dependence on it. Many civilian drivers would be lost without directions from their smartphones. **U.S. troops in war zones rely on the same constellation of 31 GPS** satellites for tasks like synchronizing operations, pinpointing targets and locating personnel. Moscow therefore seeks to deafen and blind U.S. forces in conflicts. By attacking U.S. satellites, the Russians would attempt to offset superior U.S. conventional firepower. They also hope to paralyze U.S. forces psychologically by rendering them helpless. Russian military theorists often write about the importance of targeting both the technical capabilities and the mind of an adversary, planning to disorganize its troops and weaken their will to fight. This is the essence of Mr. Putin’s asymmetric approach to warfare. Moscow believes it can win an all-out space war with America, which stands to lose a lot more since its entire society, from ATMs to home offices, is connected via satellites. Alarmingly, Washington is as unprepared for Mr. Putin’s star wars as it was for Russia’s determination to wage cyberwarfare. Monday’s test executed only a single page out of Mr. Putin’s playbook, which includes lasers, jammers and other satellite killers. Before the situation in Ukraine escalates into war, the **Pentagon** had **better develop a strategy to counter** Mr. **Putin**’s plan for Space Armageddon.

#### American private appropriation of outer space is a core issue that tanks our relations- specifically asteroid mining.

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U.S. Commercial Space Launch Competitiveness Act of 2015 (“Space Act”): The Dawn of the Second Space Age **Until recently, it did not matter that the OST was unclear**, and the Moon Treaty failed to garner support. Space exploration remained the province of state actors like NASA because the sheer expense of rocketry and other technologies remained beyond the reach of private corporations and investors throughout the twentieth century.61 However, over the last two decades the industry has changed rapidly. **In the U**nited **S**tates alone, several of the most **innovative companies have invested in space exploration tech**nology.62 As the research accelerates, costs have decreased, and the potential for profits is tremendous – in 2018 the space economy was $360 billion.63 By 2040, its estimated worth is anywhere between $1.1 trillion and $1.7 trillion.64 However, investors demand certainty, and the uncertainty surrounding OST interpretation was reason to pause.65 After all, no investor or company wanted to pour millions, or even billions, into a company designed to mine liquid ice on the Moon only to discover that this violated international law and that the United States had decided to stop licensing such ventures. Just as President Eisenhower feared, the military-industrial complex, augmented by private industry, lobbied Congress heavily to reduce regulatory hurdles and legal uncertainty in space investment.66 In 2015, their efforts bore fruit **when Congress passed the Space Act**, which President Obama signed into law.67 Chapter 513 of Subtitle V – “Space Resource Commercial Exploration and Utilization” – was the shift **that enabled the** American **private** space **industry to flourish**. This **affirmed tha**t American **citizens could own and sell any “space resources”** that were **obtained through “commercial recovery**.”68 In one stroke, **Congress guaranteed property rights to American** citizens and **companies on a “first come, first served basis.”**69 Moreover, American courts would not permit foreign lawsuits accusing entrepreneurs and businesses of violating the OST.70 The law also required the executive branch to “discourage government barriers” to development and for regulation to “facilitate commercial utilization” in space.71 Finally, it required the President to promote the interest of the American space industry.72 Ever wary of the ambiguities of the OST, and likely out of concern that the Space Act might violate the treaty, the law included a disclaimer that it was the sense of Congress that nothing in the Space Act asserted American sovereignty over any celestial body.73 This disclaimer should be read as opinio juris of American interpretation of the OST. In 1967, the United States and the Soviet Union shared a concern that other nations would challenge their technological preeminence in space.74 In 2015, this proved no different, except, this time, the United States was alone in its preeminence. **Russia**, in fact, **strongly objected and claimed that the Space Act violated i**nternational **law.**75 Russia **submit**ted **an objection to** the United Nations Committee on the Peaceful Uses of Outer Space (“**COPUOS**”), claiming the Space Act demonstrated “total disrespect for international law order [sic].”76 **Russia** went on to **declare that this law manifested a “doctrine of domination in outer space**.”77 Nonetheless, a careful reading of Russia’s complaint to COPUOS elucidates that Russia never actually asserted that the United States violated the OST.78 To be sure, **Russia came as close as possible** to this, but never outright said it.79 Indeed, the Russians lag behind in investment in outer space and technology and fear American exploitation of space’s vast resources in space without their participation.80 American private investment has accelerated this gap with NASA paying companies like SpaceX $55 million per seat to ferry astronauts to the ISS instead paying the Russians more than $90 million to do the same.81 In fact, in its objection to the Space Act, **Russia stated that the U**nited **S**tates “**could propose** discussing the possibility to reach **uniform understanding** of the status of resources and set forth the structure of the doctrine that would include safety and security aspects.”82 It seems Russia is pining for its prior role of crafting space law with the United States. This also suggests that if Russia had the same capabilities as the United States, its policy would likely be comparable.83

#### US asteroid mining pushes Russia to do the same despite it violating international law- increases the likelihood for tensions to escalate.

Mallick and Rajagopalan 19 [Senjuti Mallick and Rajeswari Pillai Rajagopalan, If space is ‘the province of mankind’, who owns its resources?, 1-24-2019,ORF,https://www.orfonline.org/research/if-space-is-the-province-of-mankind-who-owns-its-resources-47561/, 12-16-2021 amrita]

Meanwhile, **a few other countries**—**which have been critical of the US and** Luxembourg, **at the forefront of** the **space mining** efforts—**have** also **decided to join** the field. **The increasingly competitive and contested nature** of outer space activities is spurring major spacefaring nations to **push the boundaries in** their **space exploration**. **Asteroid mining** could possibly become the next big thing and **is** already **seeing a race** among the space powers. The US and Luxembourg are at the forefront in space resource extraction in terms of the policy frameworks and funding.[xxxvi] **Even as the US has clarified that the** US Space **Act** 2015 **is** being **misunderstood** and that there is no change in the US policy towards national appropriation of space, **the reality** is that it has already **spurred a** major **debate**.[xxxvii] China and Russia are among those countries that are following on the path of the US and Luxembourg in undertaking mining missions in space. According to media reports, Ye Peijian, chief commander and designer of China’s lunar exploration programme has stated that China would send the first batch of asteroid exploration spacecraft around 2020.[xxxviii] Speaking to China’s Ministry of Science and Technology-run newspaper, Science and Technology Daily, Ye said that these asteroids have a high concentration of precious metals, which could rationalise the huge cost and risks involved in these activities as their economic value could run into the trillions of US dollars. Therefore, extraction, mining and transporting them back to Earth through robotic equipment will be a significant activity. Chinese scientists are working on missions to “bring back a whole asteroid weighing several hundred tonnes, which could turn asteroids with a potential threat to Earth into usable resources.”[xxxix] Ye was also quoted as saying that China has plans of “using an asteroid as the base for a permanent space station.”[xl] Helium mining on the moon is also part of China’s goals.[xli] **Russia,** for its part, **is** also **responding to the space-mining developments** of the last decade. For one, it plans to have a permanent lunar base somewhere between 2015 and 2020 for possible extraction of Helium.[xlii] **Even as** Russia’s **official position** on asteroid mining **is that it is forbidden** under the 1967 OST—which states that space is the “province of mankind”—the Russian **industry players** are of the view that they **must follow the** lead taken by the **US** and Luxembourg.[xliii] In early 2018, the director of the Scientific-Educational Center for Innovative Mining Technologies of the Moscow-based National University of Science and Technology MISIS (NUST MISIS), Pavel Ananyev, spoke about the Russian ambitions and proposed activities including space drilling rigs, water extraction on the Moon and 3D printers at space stations.[xliv] **Russia’s private space companies** including Dauria Aerospace, one of the first Russian private space companies, also **hold the opinion that they must go forward** in the same direction and call for a larger space to private sector to engage in extracting space resources.[xlv] **Moscow may not have** yet **actively pursued space mining** and resource extraction, **but it is likely to pick up pace** in the coming years alongside global efforts. Moscow clearly has a capacity gap in terms of funding because its earlier plans to have a permanent base in the Moon by 2015 is yet to happen.

#### Rocky relations with Russia on space issues cause China-Russian alliances—a recommitment is needed.

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The Artemis **Accords are a culmination of American space policy to enable commercialization** of outer space. However, they pose a variety of problems. To start, any future agreements under the accords **may violate** international law – both **the OST** and the VCLT. While the Trump Administration appears willing to ignore this issue, violating international law **is a dangerous precedent and should be avoided**.118 Further, the dual nature of all space technology means that **any commercial activity in space** that the Artemis Accords enable **could** readily **be converted for belligerent purposes**.119 This would both violate international law and threaten national security. Despite these inherent dangers, the **Trump** Administration has **maintained a bellicose rhetoric** on its space policy.120 Although American technology and investments surpass those of Russia and China, such rhetoric serves **to inflame** already **tense relations.** **Russia and China are** each **pursuing** their own space **programs which threaten national security** interests, but the United States has engaged neither in Artemis Accords diplomacy.121 A. Violations of International Law? **At best**, future Artemis Accords agreements **exist in a gray area** of international law. After all, the Moon Treaty failed to update and clarify the gaps in the OST on space exploration and resource exploitation by non-state actors. The Space Act and the Artemis Accords together represent American state practice and opinio juris as to the meaning of the OST. At worst, the Trump Administration would be blatantly and knowingly violating international law, in particular the ban on national appropriation. Certainly, the Artemis Accords **signal a willingness to push i**nternational **law to the limit**, if not to step over the line. In addition to potentially violating the OST, the Artemis Accords may also violate the VCLT. Though the United States has not ratified the VCLT, the “treaty on treaties” is customary international law and thus binding on all states. Article 41 of the VCLT permits two or more parties to a treaty to make bilateral, inter-se agreements or to modify a treaty among themselves.122 Yet, if these side deals are “incompatible with the effective execution of the object and purpose of the treaty as a whole” then the VCLT forbids them.123 NASA made clear that bilateral Artemis Accords agreements with other nations will be “grounded in the Outer Space Treaty” and that resource utilization will be conducted under the “auspices of the Outer Space Treaty.”124 Therefore, the United States appears ready to create bilateral, inter-se agreements every time it signs an Artemis Accords agreement. **Because Article II** of the OST clearly **bans national appropriation, licensing non-state actors** to create mining colonies on the Moon in safety zones **verges on appropriation**, especially when coupled with Article VI’s responsibility clause based on national activity.125 Overall, the Administration advances on very uneven legal footing, which is further **compounded by** the fact that **space tech**nologies **are** inherently **dual purpose**. B. Dual Purpose Any technology – from rocketry, to satellites, to mining equipment – introduced into space is inherently dual purpose. That is, it may readily be converted to military uses. The OST makes clear that nuclear weapons are prohibited in space. It also completely demilitarizes the Moon, under Article IV.126 However, military **personal may** **participate in** scientific research or other peaceful purposes – i.e., **commercial ones**.127 Hence, from a national security standpoint it would be legal for other rival nations, namely Russia and China, to create lunar bases or asteroid mines. But **should conflict arise, such tech**nology and infrastructure could readily **be turned hostile** and harnessed against American infrastructure in space. **This is troubling because for** a country like **China there is no** obvious **distinction between public and private** industry.128 And from China’s perspective, NASA is still teaming up with SpaceX in public-private partnerships and the DoD has many of similar agreements as well. In fact, in its 2020 Defense Space Strategy, the DoD proclaimed its eagerness to “[l]everage commercial technological advancements and acquisition processes.”129 An incident with Russia highlights the dangers of dual-purpose space technologies. On November 26, 2019, Russia launched what appeared to be a single satellite.130 Eleven days later the single satellite “birthed” a second.131 In mid-January the pair floated near KH-11, a multi-billion- dollar U.S. military reconnaissance satellite. The United States complained to Moscow, which moved the satellites away from KH-11. However, on July 15, 2020, the “birthed” satellite launched a missile into outer space. This is the first time the United States has alleged a space-based anti-satellite missile test.132 Although Russia claimed that the satellites are peaceful, it proved that even a so-called peaceful satellite could be secretly armed with military capabilities. Ironically, in a speech that same day to his counterparts in Brazil, India, China, and South Africa, Dmitry Rogozin, head of Russia’s space program, called for a “space free of weapons of any type, to keep it fit for long-term and sustainable use as it is today.”133 It requires little imagination to envision a Chinese or Russian base on the Moon doubling as a commercial mining post and as a secret military garrison. After all, when the Soviets feared American ICBM superiority and a first-strike capability in the early 1960s they chose to place missiles in Cuba.134 Nowadays, a similar dynamic exists, with the US enjoying a comparable advantage. C. Bellicose American Rhetoric The Trump Administration has provided mixed signals to rivals about American intentions in outer space. In 2017, Vice President Mike Pence declared that “America must be as dominant in the heavens as it is on Earth.”135 Citing the fear that Sputnik instilled in Americans, Pence later warned that Russia and China were racing to pass the United States in space technology, especially with respect to the military.136 In its 2020 Defense Space Strategy, the DoD pronounced, “China and Russia present the greatest strategic threat due to their development, testing, and deployment of counterspace capabilities and their associated military doctrine for employment in conflict extending to space.”137 More modestly, however, Stephen Kitay, Deputy Assistant Secretary of Defense for Space Policy, made clear that the United States is still superior in space capabilities; however, the gap is rapidly diminishing.138 Still, this rhetoric is somewhat misleading. American public investment in space dwarfs Russian and Chinese investments combined: in 2018, the United States invested $41 billion whereas China invested $5.8 billion, and Russia invested $4.2 billion.139 Moreover, this spending does not account for private investment in space. Unfortunately, this author has been unable to procure aggregate data on total U.S. private investment. However, for reference, Jeff Bezos has claimed he invests $1 billion each year of Amazon stock to finance Blue Origins.140 Elon Musk spent $100 million to found SpaceX in 2002.141 In 2019, the company raised $1.33 billion in three rounds of funding.142 Additionally, SpaceX has estimated its broadband satellite project, Starlink, will cost at least $10 billion to build and deploy.143 Finally, Bryce Technology reported that start up space ventures raised $5.7 billion in funding in 2019.144 Whatever the total number is, it is quite large and likely in the tens of billions a year. Russia and China simply do not have the same level of private investment. This is not to say that the Administration is wrong for taking foreign threats in outer space seriously. It should, precisely **because the Russians and Chinese take these threats seriously**. The **U**nited **S**tates **should not**, however, **start a space race** when it is already light years ahead of its rivals, **as this would** repeat the mistake of the first space race – **permit**ting **private industry**, which Eisenhower warned against, **to dictate** American **policy and** thereby **create a technocracy**.145 Naturally, this talk of competition begs the question, what do the Russians and Chinese actually want in outer space? D. Engagement with Russia and China? i. Russia **Russia has** strongly **rejected the** Artemis **Accords as a violation of** **i**nternational **law**.146 After the United States excluded Russia from the Artemis Accords, Dmitry Rogozin, Chief of Roscosmos, fumed, “The principle of invasion is the same, whether it be the Moon or Iraq. The creation of a ‘coalition of the willing’ is initiated. Only Iraq or Afghanistan will come out of this.”147 More recently, he called the Artemis Accords a “political project,” and compared it to NATO.148 When asked if Russia would partner with NASA on Artemis, Rogozin answered, “Frankly speaking, we are not interested in participating in such a project.”149 **Ominously**, Rogozin signaled **a Russian shift towards partnering with the Chinese**, “We respect their results…[China] is definitely our partner.”150 In a sign **of how quickly this partnership is forming**, just a few weeks later, Rogozin announced that he and the Director of the China National Space Administration, Zhang Kejian, had agreed to “probably” build a lunar research base together.151 On March 9, 2021, **Russia and China** signed an agreement to **build** **this base** together.152 This partnership is dripping with irony. Recall that, in 2016, Russia issued a complaint about the Space Act before COPUOS.153 But that complaint walked a fine line and never directly claimed that American resource exploitation in space violated the OST.154 Indeed, the Russians appeared more interested in signaling to the United States their interest in “discussing the possibility to reach uniform understanding of the status of resources and set forth the structure of the doctrine that would include safety and security aspects.”155 As discussed, the Russians care less about complying with international law than being able to shape it to suit their own interests. Though they may lack the level of investment and advanced technologies of the United States, they appear willing to join the Chinese who have a long-term plan to achieve space supremacy. Of course, **the creation of Russo-Chinese partnership** and system in space to challenge the Artemis Accords **would render** Rogozin’s **fear of NATO a self-fulfilling** prophecy.

#### A strong Sino-Russian alliance sets the stage for the replacement of the ILO and a new hegemonic era.

Kevin 3-25 [Tony Kevin, Russia and China are sending Biden a message: don't judge us or try to change us. Those days are over, 3-25-2021,Conversation,https://theconversation.com/russia-and-china-are-sending-biden-a-message-dont-judge-us-or-try-to-change-us-those-days-are-over-157771, 12-15-2021 amrita]

Putin’s message to the new US president The tense test of strength began when Biden was asked about Putin in an interview with ABC News’ George Stephanopoulos and agreed he was “a killer” and didn’t have a soul. He also said Putin will “pay a price” for his actions. Putin then took the unusual step of going on the state broadcaster VGTRK with a prepared five-minute statement in response to Biden**. In an unusually pointed manner, Puti**n recalled the US history of genocide of its Indigenous people, the cruel experience of slavery, the continuing repression of Black Americans today and the unprovoked US nuclear bombing of Hiroshima and Nagasaki in the second world war. He **suggested states should not judge others by their own standards:** Whatever you say about others is what you are yourself. Some American journalists and observers have reacted to this as “trolling”. It was not. It was the preamble to Putin’s most important message in years to what he called the American “establishment, the ruling class”. He said the US leadership is determined to have relations with Russia, but only “on its own terms”. Although they think that we are the same as they are, we are different people. We have a different genetic, cultural and moral code. But we know how to defend our own interests. And we will work with them, but in those areas in which we ourselves are interested, and on those conditions that we consider beneficial for ourselves. And they will have to reckon with it. They will have to reckon with this, despite all attempts to stop our development. Despite the sanctions, insults, they will have to reckon with this. **This is new** for Putin. He has **for years made the point**, always politely, **that Western powers need to deal with Russia on a basis of correct diplomatic protocols and mutual respect** for national sovereignty, if they want to ease tensions. But never before has he been as blunt as this, saying in effect: do not dare try to judge us or punish us for not meeting what you say are universal standards, because we are different from you. Those days are now over. **China pushing back against the US**, too Putin’s forceful statement is remarkably similar to the equally firm public statements made by senior Chinese diplomats to US Secretary of State Antony Blinken in Alaska last week. Blinken opened the meeting by lambasting China’s increasing authoritarianism and aggressiveness at home and abroad - in Tibet, Xinjiang, Hong Kong and the South China Sea. He **claimed** such **conduct was threatening “the rules-based order that maintains global stability**”. Yang Jiechi, Chinese Communist Party foreign affairs chief, responded by denouncing American hypocrisy. He said The US does not have the qualification to say that it wants to speak to China from a position of strength. The US uses its military force and financial hegemony to carry out long-arm jurisdiction and suppress other countries. It abuses so-called notions of national security to obstruct normal trade exchanges, and to incite some countries to attack China. He said the US had no right to push its own version of democracy when it was dealing with so much discontent and human rights problems at home. **Russia and China drawing closer together** Putin’s statement was given added weight by two diplomatic actions: Russia’s recalling of its ambassador in the US, and Foreign Minister Sergey Lavrov’s meeting in China with his counterpart, Wang Yi. Beijing and Moscow agreed at the summit to stand firm against Western sanctions **and boost ties between their countries to reduce** their **dependence on the US** dollar in international trade and settlements. Lavrov also said, We both believe the US has a destabilising role. It relies on Cold War military alliances and is trying to set up new alliances to undermine the world order. Though Biden’s undiplomatic comments about Putin may have been unscripted, the impact has nonetheless been profound. Together with the harsh tone of the US-China foreign ministers meeting in Alaska — also provoked by the US side — **it is** clear there has been **a major change** in the atmosphere of US-China-Russia relations. What will this mean in practice? Both Russia and China are signalling they will only deal with the West where and when it suits them. Sanctions no longer worry them. The two powers are also showing they are increasingly comfortable working together as close partners, if not yet military allies. They will step up their cooperation in areas where they have mutual interests and the development of alternatives to the Western-dominated trade and payments systems.**Countries** in Asia and further afield **are closely watching** the development of **this alternative international order**, led by Moscow and Beijing. And they **can also recognise** the **signs of increasing US econ**omic and political **decline**. It is a new kind of Cold War, but not one based on ideology like the first incarnation. It is **a war for international legitimacy**, a struggle for hearts and minds and money in the **very large part** of the world **not aligned to the US** or NATO. The US and its allies will continue to operate under their narrative, while Russia and China will push their competing narrative. This was made crystal clear over these past few dramatic days of major power diplomacy. **The global balance of power is shifting**, and for many nations, the smart money might be on Russia and China now.

#### Extinction- stability collapses :/

Rebecca Friedman Lissner & Mira Rapp-Hooper 18, \*Lissner: a Research Fellow at Perry World House, the University of Pennsylvania’s global policy research center, \*\*Rapp-Hooper: a Senior Fellow at the Paul Tsai China Center and Senior Research Scholar at Yale Law School, “The Liberal Order Is More Than a Myth,” Foreign Affairs, July 31, 2018, <https://www.foreignaffairs.com/articles/world/2018-07-31/liberal-order-more-myth>

Eighteen months into U.S. President Donald Trump’s administration, domestic and foreign policy analysts alike are in the midst of a bitter awakening: U.S. policy, whether social, economic, or international, may never be the same again. Among the most common refrains from the foreign policy cognoscenti is the warning that Trump has imperiled the liberal international order—the norms, rules, laws, and institutions that have supported U.S. power since 1945. The president’s vengeful unilateralism, we are told, is dismantling a cherished system that has brought peace and stability to the world. In his recent Foreign Affairs article (“The Myth of the Liberal Order,” July/August 2018), Graham Allison provides a useful corrective to this baleful narrative, joining a chorus of contrarian foreign policy thinkers who decry the “myth of the liberal order.” Defenders of the myth, Allison argues, mistakenly credit the liberal order with 70 years of great power peace and misattribute the motivations behind U.S. overseas engagement. The post–World War II system led by the United States was never fully liberal, international, rules based, or orderly. At its core, it was driven by a struggle for global dominance between the United States and the Soviet Union. It was the balance of power between these two nuclear behemoths—and U.S. hegemony in more recent decades—that prevented another world war. For Allison, Trump’s disregard for liberal values may be worrisome, but rather than dreaming of a bygone era of unrivaled liberal hegemony, the United States should focus on rebuilding a robust democracy at home. Although a welcome antidote to the many reverent paeans to the liberal international order and attendant calls for its pristine preservation, Allison’s critique does not fully rhyme with his conclusions. Liberal order may not have been the sole determinant of 70 years of geopolitics, but that does not warrant a wholesale dismissal of the concept as a matter of statecraft or scholarship. And although a restoration of the same liberal system propped up by an indispensable United States is a fantasy, U.S. grand strategy should not discard altogether the notion of international order, even if the world becomes more multipolar and the United States focuses on the defense of democracy at home. MORE THAN A MYTH Critics of the liberal international order are right to draw attention to this often praised but rarely scrutinized concept. Far from a single crystalline structure with ubiquitous reach, the post–World War II order emerged and evolved gradually over the course of the twentieth century. It was initially created as a largely Western project designed for postwar rehabilitation and flourished during the Cold War. It diffused into Asia, Africa, and Latin America following decolonization, cracked and listed during the economic stagnation of the 1970s, and claimed universalism only with its competitors’ demise in the 1990s. To obscure this often disjointed, 70-plus-year evolution by appealing to some monolithic ideal does little justice to the liberal order’s complex history. Yet this labyrinthine trajectory does not obviate the notion of liberal order writ large, whether as an analytic construct or as a grand strategic goal. Granted, the phrase “liberal international order” has always been shorthand for U.S. global leadership—a structure sustained by American power in service of largely Western preferences. As the most powerful state in the system, the United States has disproportionately shaped its rules while reserving the right to periodically flout them. But acknowledging this relationship does not imply that the international liberal system order is purely a reflection of raw power. Even as the U.S.-Soviet Cold War rivalry emerged from bipolarity, the United States’ embrace of liberal internationalism guided its approach to international institutions and structured cooperation within the Western bloc. Unrivaled in the unipolar moment, U.S. grand strategy has been more remarkable for its restraint than its unfettered exercise of coercive power, despite a slew of regrettable excesses. Indeed, the concept of international order is relevant even in a hard power world precisely because it is not reducible to unilateral U.S. interests or to the global distribution of military and economic might. Rather, it emerged and endured through many states’ collective efforts. Where rules are institutionalized in organizations or legal regimes, they reflect painstaking diplomatic efforts to identify convergent interests and codify standards of state behavior. Where rules develop organically, in norms or customary law, they reflect decades of strategic interaction, during which repeated patterns of conflict and cooperation have generated predictability. By design, the U.S.-led liberal system incorporated such attributes. As a result, it offered both stability and considerable political, economic, and security gains to other states. When Canadian Prime Minister Justin Trudeau, German Chancellor Angela Merkel, Japanese Premier Shinzo Abe, and other U.S. allies invoke the beleaguered liberal order today, it is because they want to preserve those advantages. Far from dismissing the order as a mere euphemism for U.S. hegemony, they see their own national interests at stake in it. They also recognize that those interests cannot be protected without a powerful—and committed—United States. Even China, the order’s most formidable challenger-in-waiting, finds value in selectively embracing its tenets. THE COMING ENTROPY? The liberal international order is a useful frame for understanding the contours and endurance of U.S. grand strategy over the past 70 years, but it will not persist immutably for another seven decades. Never having achieved the universal acceptance to which post–Cold War triumphalists aspired, the present order is threatened by adverse shifts in the balance of power: China is revisionist in its ascent, and Russia is revanchist in its decline. Global influence is shifting eastward, pushing the United States and Europe into second place. The formal and informal arrangements that govern interstate interaction—which is to say, the international order—must adapt to this new reality if it is to avoid abject decay. But changing power balances alone do not make the order’s demise a foregone conclusion. For the next several decades, the United States will still remain the world’s most powerful state in military, economic, and diplomatic terms. No other country will have the same capacity to shape international order, even as Washington will wield its authority on fundamentally different terms. Put differently, the twilight of the unipolar moment is not the same as the end of U.S. global leadership or preeminence. Given this, how the United States adapts its grand strategy to domestic turmoil and considerable flux abroad will matter a great deal for the future of global order. Other states, chief among them China, will cement their own power in regional and global rules and institutions. This trend is well under way, and some aspects of it are nonthreatening, such as when Beijing requests a greater voting share at the International Monetary Fund. Elsewhere, however, Beijing is fashioning new institutions governed by rules that are decidedly illiberal, as with its Belt and Road Initiative. It would be a grave mistake for the United States to abandon the idea of international order as an empty grand strategic ambition and settle for regional influence over its own neighborhood. Spheres of influence are a form of balance-of-power order but have historically been a fundamentally less stable one and would certainly degrade U.S. security and prosperity. Instead of letting rivals carve out spheres of influence, the United States needs a novel grand strategic vision that rejects both radical retreat and creativity-numbing nostalgia. Any new approach must account for rapidly shifting power relations and technological change. It should also reflect more critically on the universalist ambitions of post–Cold War U.S. grand strategy and may require a greater tolerance for regime diversity than liberal triumphalists could have possibly imagined at the apex of U.S. power. For the United States to lead abroad, it must also confront the dysfunction that is hollowing out support for internationalism at home. As we have argued, and as Allison rightly points out, Trump may be more avatar than architect of the United States’ domestic unraveling. To be sure, Trump’s transactional and visceral approach to foreign policy is itself wreaking havoc on the predictability underlying the postwar order and will require global recompense of epochal proportions from any new leader. But we cannot assess the extent or endurance of his destructiveness just 18 months into his term. What we do know is that Trump’s victory was not an isolated political shock—a fact that many analysts miss by fixating on Trump’s heterodox administration and anticipating his eventual exit. In some ways, Trump’s policies are merely a modern projection of old impulses, most notably the deep unilateralism of the Jacksonian school of foreign policy. Trump’s contemporary version, however, rests on populist and nativist impulses activated in part by socioeconomic dislocation that will only intensify. Automation and the changing nature of work, inequality, political and media polarization, and demographic changes are likely to intersect with an increasingly turbulent international environment, making it more difficult still to articulate a coherent foreign policy built around age-old liberal values and institutions. These domestic undercurrents must be faced squarely—not only for the sake of restoring a sustainable U.S. social compact but in order to build a consensus on the United States’ role in the world. NEW ORDER Less than halfway through Trump’s first term, the U.S. foreign policy establishment, cut off from the levers of power, watches in a state of shock as the country stumbles from one international indignity to another. But the domestic and international forces that carried Trump to power will accelerate with his presidency and outlast his tenure. The United States, in other words, is only just commencing a strategic reckoning, the likes of which it has not undertaken since the years immediately following World War II. In the new strategic environment, the old liberal order built on unrivaled U.S. power will no doubt prove obsolete and untenable. But that should not imply giving up on the system altogether—particularly since it has advanced U.S. interests at a lower cost than any known alternative. As in previous eras, the United States’ global power position will condition, but not predetermine, Washington’s strategic choices. In this process of reorientation, domestic renewal and international restoration are not, as Allison suggests, mutually exclusive. In fact, they are complements, and any serious reevaluation of U.S. strategy must address them simultaneously. The liberal international order may be less foundational than often argued, but it serves more than just narrative purposes. In its hour of duress, a new vision for U.S. strategy must assess threats and advantages at home and abroad and adapt the institutions that have been the foundation of American power. If successful, the United States will navigate an epoch of disruptive change, both domestic and international, in a manner that is peaceful and redounds to U.S. interests. It is a formidable task to be sure, but this moment demands no less.

## Framework

V: Morality

VC: Util

1. Actor spec
2. Lex prereq