# ---Novice Outer Space Aff---

### FMWK

#### I affirm the resolution: “Resolved: The appropriation of outer space by private entities is unjust.”

#### The standard is maximizing expected wellbeing, defined as doing the greatest good for the greatest number.

#### Governments ought to use utilitarian ethics – policymaking requires tradeoffs and value-distinctions

Woller 97 [Gary Woller, Professor of Philosophy at BYU, 1997, “An Overview by Gary Woller.” A Forum on the Role of Environmental Ethics, [https://web.archive.org/web/20011010172519/http://apsapolicysection.org/vol7\_2/72.pdf]/Kankee](https://web.archive.org/web/20011010172519/http://apsapolicysection.org/vol7_2/72.pdf%5d/Kankee)

\*only accessible through the Way Back Machine

As Kurt Baier reminds us, in a democracy “the moral rules and convictions of any group can and should be subjected to certain tests” (1958, p. 12). That test is the submission of those moral rules and convictions to the sovereign public. While policymakers are expected to sort out the value conflicts that arise in light of their duty to serve the public interest, they are seldom entitled to act solely according to some perceived a priori moral imperative. (Those who would act this way in the case of environmental policy are aptly described by Bob Taylor as “environmental ethicists who discover 'truth' even though this truth can't or won't be seen by their fellow citizens.”) Herein lies one of the important moral dilemmas of democratic government. Individuals are free, within the constraints of law, to act on perceived moral imperatives; democratic governments are not. It is, for example, one thing for individuals to donate their property for environmental preservation, but it is quite another thing for the government to seize private lands (i.e., redefine property rights) for the same purpose. Moreover, virtually all public policies entail some redistribution of economic or political resources, such that one group's gains must come at another group’s expense. Consequently, public policies in a democracy must be justified to the public, and especially to those who pay the costs of those policies. Such justification cannot simply be assumed a priori by invoking some higher-order moral principle. Appeals to a priori moral principles, such as environmental preservation, also often fail to acknowledge that public policies inevitably entail trade-offs among competing values. Thus since policymakers cannot justify inherent value conflicts to the public in any philosophical sense, and since public policies inherently imply winners and losers, the policymakers' duty to the public interest requires them to demonstrate that the redistributive effects and value trade-offs implied by their polices are somehow to the overall advantage of society. At the same time, deontologically based ethical systems have severe practical limitations as a basis for public policy. At best, a priori moral principles provide only general guidance to ethical dilemmas in public affairs and do not themselves suggest appropriate public policies, and at worst, they create a regimen of regulatory unreasonableness while failing to adequately address the problem or actually making it worse. For example, a moral obligation to preserve the environment by no means implies the best way, or any way for that matter, to do so, just as there is no a priori reason to believe that any policy that claims to preserve the environment will actually do so. Any number of policies might work, and others, although seemingly consistent with the moral principle, will fail utterly. That deontological principles are an inadequate basis for environmental policy is evident in the rather significant irony that most forms of deontologically based environmental laws and regulations tend to be implemented in a very utilitarian manner by street-level enforcement officials. Moreover, ignoring the relevant costs and benefits of environmental policy and their attendant incentive structures can, as alluded to above, actually work at cross purposes to environmental preservation. (There exists an extensive literature on this aspect of regulatory enforcement and the often perverse outcomes of regulatory policy. See, for example, Ackerman, 1981; Bartrip and Fenn, 1983; Hawkins, 1983, 1984; Hawkins and Thomas, 1984.) Even the most die-hard preservationist/deontologist would, I believe, be troubled by this outcome. The above points are perhaps best expressed by Richard Flathman, The number of values typically involved in public policy decisions, the broad categories which must be employed and above all, the scope and complexity of the consequences to be anticipated militate against reasoning so conclusively that they generate an imperative to institute a specific policy. It is seldom the case that only one policy will meet the criteria of the public interest (1958, p. 12). It therefore follows that in a democracy, policymakers have an ethical duty to establish a plausible link between policy alternatives and the problems they address, and the public must be reasonably assured that a policy will actually do something about an existing problem; this requires the means-end language and methodology of utilitarian ethics. Good intentions, lofty rhetoric, and moral piety are an insufficient.

### ADV---International Law

#### Our sole contention is that space property rights harms international law and encourages arms races in outer space

#### US space commercialization is in violation of international law and encourages powerful countries to weaponize space for military means

Delgado-Perez 20 [Veronica Delgado-Perez, staff contributor to International Scholar with a Master’s degree in Public International Law from Utrecht University and a Bachelor of Laws at the Universidad Externado de Colombia, with a focus on sovereignty and outer space law, 4-6-2020, "Commercialization of Space Risks Launching a Militarized Space Race," International Scholar, <https://www.theintlscholar.com/periodical/12/14/2020/analysis-commercialization-space-risk-international-law-military-space-race>]/Kankee

International law must immediately and proactively address questions surrounding extraterrestrial commercial activity — or risk the unraveling of the international legal neutrality of space and the launch of a new militarized space race fueled by resurgent great power competition. On April 6, 2020, U.S. former President Donald Trump announced an executive order encouraging the use and recovery of space resources, which includes hard rock minerals, helium, and regolith, among others. The order argued that outer space was not a "global commons," as is established in international law, but rather that space is considered as public and private property within the limits of applicable law. The private commercialization of resources in outer space was long a goal of the Trump administration. However, President Biden’s space policies are much more speculative given the lack of information about his views on outer space. There is only one document from the Democratic Party, titled “Building a Stronger, Fairer Economy,” which hints at a Biden administration approach to space interests. According to the platform, the Democratic Party remains committed to continuing space exploration and supporting NASA’s programs.Following Trump’s decision, SpaceX launched the Crew Dragon with NASA astronauts to the International Space Station (ISS) on May 30, 2020. Though in years past, NASA chose state-owned Russian rockets to send astronauts to outer space, the Crew Dragon is a rocket built, operated, and launched by a private American company. In the same month, NASA announced the Artemis Accords, which establish a new set of principles including the extraction and use of resources on the Moon, Mars, and asteroids. The commercial crew program appears to remain in operation, launching its first operational flight of the Crew Dragon by Space X on November 16th of this year. While nonetheless a remarkable technical achievement, the Crew Dragon’s mission, and the policies that enabled it, will inevitably lead to a drawn-out geopolitical and legal conflict. The U.S.’ commercial activities could violate several international instruments and ignore U.N.’s resolutions, compromise a vital foundation of international law, weaken the U.S.’ standing and respectability around the world, and undermine the principle of maintaining international peace and security and promoting international cooperation and understanding, all while fueling a new space race between the world’s great powers. For all of these reasons, every effort should be made to foster an international response to the U.S. policy and to shore up international legal mechanisms to prevent the commercialization of space. Fundamentals of the Final Frontier It is a geopolitical imperative to determine what, if any, commercial activities and use of extraterrestrial resources are permitted within the confines of international law. Without clear-cut agreements on what activity is recognized by international law, the world will undoubtedly see states push the boundaries ever further in an attempt to gain the edge over geopolitical competitors — even more-so in an era of renewed great power competition. Yet to date, there exists no comprehensive treaty or legal reference to commercial activity in space. However, this should come as no surprise. It has only been since the turn of the century that technology and markets have progressed to the point where commercial space exploration and exploitation has become possible. Only recently have experts and analysts of geopolitics and international law begun to seriously examine questions surrounding the legal framework that would govern extraterrestrial resource-mining and other commercial activities. In the last decade, the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) dealt with commercial aspects in outer space. In one of their last reports, the Committee expressed that the era of the commercial utilization of outer space’s resources is intrinsically linked to the escalation of international competition over resources, which could threaten international peace and security. By encouraging the international community to engage in outer space’s activities for the benefit of humankind as a whole, “some delegations” have expressed that states should avoid the promotion of laws and regulations related to the commercialization of outer space, arguing that it should be considered the heritage of all humanity. In that regard, states must then ensure that domestic law on the use of outer space complies with international space law, which means that states should respect the principles outlined in the Outer Space Treaty and ensure that national regulations do not contravene international provisions. Even though the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies (which entered into force in 1967), refers to the exploration and use of outer space, it does not address questions of a commercial nature, which compromises the ability of states and international actors to address new challenges to extraterrestrial activities. In several provisions, the treaty highlights that these activities may be carried out for peaceful purposes and the benefit of all people, reaffirming that outer space is not subject to national appropriation. Were outer space not considered a global commons, that would imply that the resources and results of commercial exploration may fall within the jurisdiction of a country. It is thus incumbent upon Washington — and its commercial enterprises — to demonstrate how American commercial exploration of space benefits other countries and complies with international space law, or otherwise to adhere to the spirit of past treaties which emphasize the impartiality of outer space until such time as the law is clarified. International Law is Adrift in Space The potential benefits of commercial space exploration cannot be ignored. From an economic standpoint, the space industry would generate a significant economic boon for both states and private companies, due to the abundance and variety of resources — particularly scarce minerals that are difficult to extract on Earth. As one example of the vastness of resources held in outer space, one asteroid has the potential to contain more than the total supply of platinum extracted throughout the history of mankind. It may very well open the door to an advanced era of space navigation, building extraterrestrial infrastructure that facilitates the exploration and use of space’s resources, and extra-planetary human habitation. Inevitably, there are significant drawbacks to the commercialization of space exploration. These can vary, for instance, from the commercial dominance of space’s natural resources only by those states with the technical and financial capital to support space missions, to geopolitical competition over extraterrestrial resources that threatens world peace and security, to the potential for the monopolization of extraterrestrial resources by states and private companies. As was the case during the Cold War, the Soviet Union and the United States began a Space Race in which they struggled to achieve supremacy in space exploration and domination of science. Today, the number of space powers has increased thanks to continual advancements in flight, combustion, and fueling technologies. In the three decades since the end of the Cold War, technologically advanced countries like China, Japan, and France which previously had no space program have successfully navigated to the top tier of space-faring agencies and programs. In 2018, the U.S. allocated $41 billion to space programs, followed by China at $5.8 billion, and Russia at $3.1 billion. Collectively, the three major space powers control almost 65% of the global industry, showing space powers are monopolizing space and reinforcing the inequality gap between states that do not have sufficient economic and technological capacity to invest. With new actors on the game stage, conflicts of interest may arise. There is a risk that each actor adopts a kind of short-term Realist approach to space policy — one which is driven by self-interest in reaping the greatest benefits of extraterrestrial exploration and commercialization while controlling access to others. If unmitigated, states may choose to militarize outer space to gain a strategic edge over competitors and adversaries. This process has already begun. Under the Trump administration, the Pentagon established the U.S. Space Force as a new branch of the Armed Forces to protect the country and allied interests in space. Already, Delta 4 — one of the U.S. Space Force’s missions — conducts strategic and theater missile warnings, manages weapon systems, and provides information to missile defense forces. The measure shows that for the U.S., outer space is not only a domain of scientific exploration but has the potential to become increasingly securitized. With the impending expiration of the Strategic Arms Reduction Treaty (START) between the U.S. and Russia on February 5, 2021, a number of security dilemmas could arise. If the world’s two largest nuclear powers do not edge toward extending the treaty, Washington and Moscow risk returning to the era of unrestricted expansion of launch platforms and strategically-deployed nuclear warheads — potentially with the aid of military infrastructure in space. Although President-elect Biden has expressed his interest in negotiating an extension of New START, how Moscow and Washington might proceed remains an open question. Bilateral progress towards a new arms-control regime would require establishing limits on the number and range of long- and mid-range missiles, establishing measures to limit the expansion of traditional missile deployment to space, and banning the deployment of nuclear weapons and weapons of mass destruction in outer space. More than the risk of the securitization of space, state, and private actors could begin to claim exclusive legal rights over the resources they discover. Indeed, the U.S. Commercial Space Launch Competitiveness Act, which came into force in 2015, expressly recognizes the right of U.S. Citizens to possess, own, transport, use, and sell space resources. By this means, domestic law already acknowledges the legal claim to property by individuals, which is prohibited by international law. Under the Outer Space Treaty, states renounced any traditional form of acquisition of territories and agreed not to foray unilaterally into space to extend their national policies on Earth or to exercise any kind of sovereignty over celestial bodies or resources. The absence of a modern international treaty that addresses these issues should be received with grave concern, as there is significant potential for risk to become reality. Existing UN treaties lack the technological context and foresight to address legal questions regarding the potential for commercial exploration and exploitation of outer space or its resources. During the sixties and seventies, when international instruments like the Outer Space treaty were conceived, the principal aim of states was to support and expand the scale of the state’s national capacity for operation in space and the development of legal instruments to guide state’s international cooperation in the peaceful exploration of outer space. These instruments were never designed to respond to commercial questions over mining or tourism in space, private investment in space activities, or the emergence of non-state private enterprises operating in space. As a result, private enterprises operating in the vacuum of space also float in an unstable legal vacuum which threatens to implode in geopolitical competition. Beyond Stars and States In an increasingly commercial outer space in which there are no set limits to the exploitation of resources or claim to property, states and private companies will inevitably pursue the development of new extraterrestrial industries to suit their geoeconomic interests. If unchecked, the legal protection of outer space as a domain of exploration for the benefit of all humanity would functionally fail. To protect investments and profit from national space industries, states would likely resort to military force to protect and secure private assets. Over time, space would ultimately become a fourth border domain over which states claim, exercise, and defend sovereignty — including through the use of force. The challenge is thus to prevent the circumstances that could lead to space-borne conflict before it is made possible. Notwithstanding, commercial exploration and the use of natural resources need not lead to predation among actors involved in space. The potential rewards — both technological and environmental — that could come from investment in the harvesting of resources in space are immense. International law cannot afford to wait for the security dilemma posed by commercial activity in space to manifest before addressing it but must anticipate and proactively adopt measures to address future issues that govern extraterrestrial human activity. The only remedy for the lack of legal governance over commercial activity in space is the creation of new international laws through a comprehensive international treaty on commercial operations in space. The new treaty must expressly regulate commercial activities by states and private companies, enshrine an international liability and compensation regime covering damages caused with workable sanction provisions, and reinforce norms that restrict any militarization of outer space. The international community should focus its efforts on establishing a legal regime, with mandatory provisions (rather than non-binding resolutions, observations, commentaries, and conclusions) which generate both international responsibility and provide enforceable sanctions in the event of violations. The effort should be borne out by expanding the scope and strengthening the oversight powers of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS), rather than creating a new organ with redundant bureaucracy. Beyond the tasks of encouraging space research programs, studying space activities, and addressing legal questions, COPUOS should be granted the necessary powers to perform control and oversight monitoring functions. Experience has taught the international community that cooperative arrangements between states and international organizations can prevent competition for resources from escalating to kinetic conflict. Through cooperation, there is a chance to preserve extraterrestrial resources for future generations, secure an equitable allocation of resources and benefits with a mind to each country’s specific needs, and prevent the expansion of geopolitical conflict to the domain of space. Space powers must recognize the value in partnering with other states to advance the development of space programs more efficiently. It should be clear now that all nations could reap the benefits of collective action, exploration, and commercialization of resources from beyond Earth’s atmosphere while preventing a drawn-out international conflict to the final frontier. The will of states not to jeopardize the fundamental basis of international law must be reflected in coordination and surveillance efforts to ensure that the advantages derived from space exploration allow humanity to continue evolving.

#### Private companies circumvent obligations under international space law, specifically the Outer Space Treaty

Yuan 21 [Alda Yuan, Public Health Analyst U.S. Department of Health and Human Services and visiting attorney at the Enivornmental Law Institute with a JD from Yale, 2021, “FILLING THE VACUUM: ADAPTING INTERNATIONAL SPACE LAW TO MEET THE PRESSURES CREATED BY PRIVATE SPACE ENTERPRISES,” Hein Online, https://heinonline.org/HOL/P?h=hein.journals/denilp49&i=27]/Kankee

Finally, since the end of the Cold War and the fall of the Soviet Union, there have been no additional binding space treaties. 192 Instead, as the number of parties, both state and non-state, have increased, non-binding guidelines have been released instead. 193 The U.N. COPOUS has also adopted non-binding procedures and announcements rather than pass binding resolutions, or propose guidelines for the General Assembly to pass. At least part of this difference is due to the types of agreements being forged. 194 Whereas the Outer Space Treaty is foundational and necessarily vague in some places, many of the recent guidelines deal with a single aspect of the space regime, such as the recommendations on the categorization, tracking, and mitigation of space debris. 195 These are technical guidelines and will necessarily change over time in response to both technological advances and the development of better practices.196 Surely, there is something to this. But it is also the case that U.N. COPOUS and other such bodies are not making the new comprehensive agreements necessary to lay proper ground rules to smooth the path to space for private parties. That is to say, there is a need for new guidelines and rules, many of which are not technical in nature. Yet, there has been little activity on this front. At least some of the reason for this is the proliferation of actors and the difficulty of reaching a consensus that takes into account the interests of private parties, developing as well as developed nations. The unwillingness to develop and sign on to new treaties is yet another indication that nations are not following the precepts of the Outer Space Treaty out of mere convenience but instead because of the belief they have real legal obligations to act in certain ways. These examples show the states acting in accordance with the interpretation of the principle of preserving space as the province of all humankind are indeed doing so out of a sense of legal obligation. Thus, this principle, which involves non-appropriation and free access, has passed into customary international law. IV. PRIVATE ACTORS ARE ANALOGOUS TO NEW STATES AND SUBJECT TO CUSTOMARY INTERNATIONAL LAW Application of customary international legal duties directly to non-state actors is particularly apt in space because private parties enter a vacuum of sovereignty. In that respect, they are analogous to new states. Though these private nonstate actors are not henceforth welcomed into the community of states, they achieve an independence from external control that is like new states becoming sovereign. Analogizing private non-state actors to new states means the main principle derived from the Outer Space Treaty attaches as a customary international law obligation. This analogy offers a path by which the legal duty to preserve space as the province of humankind may be extended. The analogy to new states is particularly useful because while international law generally relies upon consent, new states are subject to customary international law whether or not they offer explicit consent. This means that, for instance, the International Court of Justice could rely upon a principle of customary international law in a case involving a state that never signed a treaty consenting to the principle. 197 When a new state is created and joins the international community, recognition of nationhood transmits certain obligations including adherence to customary international law.198 Newly formed states are expected to abide by the principles and practices of the international community they enter, regardless of whether they offer explicit consent. 199 States have no right to reject customary international law even though they never had an opportunity to be a persistent objector.200 Instead, to be recognized as members of the international community, new states must accept the limitations and be obliged to respect the norms of the legal system they are entering. So it should be with private, non-state actors entering space. Just as the behavior of new states affects the interpretation of customary international law, private companies will necessarily help shape and determine general practice in outer space. As private non-state actors begin to outnumber and outweigh state actors, their actions will alter common practice and, thus, what is considered legal in space. Though they do not address international space law specifically, international law scholars, such as Wolfgang Friedmann, have been arguing since the 1960s that corporations participate in the evolution of international law. 201 The argument is stronger fifty years later given the size and power of multinational corporations, especially in space. If corporations will be creating or at least affecting customary space practice, they should also be subject to it. Thus, this is, above all, a pragmatic approach aimed at preserving the long-term accessibility of space and the legitimacy of space law. Nation-states are simply a centrally controlled unit that possesses a monopoly over the legitimate use of force in a given area. That is to say, states are a useful organizing unit, but there is nothing divinely ordained about nation-states. Surely when we say there is a jus cogens standard against the use of torture, we do not mean an action is wrong when a state engages in it but not when a different entity does the same. Rather, we mean this standard should be common to all governments and peoples. Indeed, the doctrine on International Humanitarian Law offers a good example of how this is so. Recently, the ICRC has interpreted Common Article I202 of the Geneva Convention as saying states have a responsibility to make sure non-state actors are working with and supplying, respect the customary international law standards articulated and proliferated by the Geneva Convention.203 In this case, it makes sense to try to affect the behavior of non-state actors by binding states because a direct relationship exists that is reminiscent of agency. Additionally, when the activities are bounded by territory, in the sense that they happen in a location covered by a well-defined jurisdiction, it makes sense to use states as a proxy and medium to ensure that the central precepts of international law are followed by all parties and not only sovereign states. In space law, exclusive use of states as the unit of control may endanger international law. Without beginning to think about the way international law should best operate in a world where private parties take on activities previously limited to states, the international community of states risks irrelevancy. Thus far, states have proved a workable avenue by which to develop global legal standards and duties. States will doubtlessly remain important, but in some arenas, the centrality of nation-states is already beginning to erode. This is very apparent in international space law because states are, by their very nature, bounded to a certain territory. Yet, private commercial space enterprises act primarily, perhaps soon exclusively, in space, which is beyond the territorial control of any nation. Applying practices developed for entities bounded to land fails to recognize the changing circumstances and underlying assumptions with respect to territorial control. It is also a waste of an opportunity to ensure that customary international law and other legal structures that reflect the will of the international community are strengthened rather than weakened by changing technologies and new geopolitical realities. Customary international law should not be permitted to collapse and become outdated. Instead, it should be extended over the actors that have taken up the activities those principles were developed to affect. The expansion of international law to include private actors is necessary in many fields of international law but is especially pressing in the law of outer space where attachment to state-mediated regulation in the face of proliferating non-state actors risks an existential threat to the accessibility of space. The expansion has been developed in human rights law, 204 and it should likewise be developed in space law. V. CUSTOMARY INTERNATIONAL LAW SHOULD APPLY DIRECTLY TO PRIVATE ACTORS A. Extending Legal Duties to Private, Non-state Actors Ever since the first spacecraft owned by a private corporation soared into space, legal scholars have been conscious of the need to adapt the international space law scheme. 205 Yet, most of their proposals still focus on the states alone or else do not engage deeply with the problem of how authority should be extended over private actors to coordinate and regulate their behavior in an area beyond the jurisdiction of any individual nation. The method outlined in this paper, of analogizing states to new states and applying direct legal duties under customary international law responds to the unique coordination problems in space and the outsize position of non-state actors. Born in the wake of the digital revolution, these companies may have the capability to place people on new planets and to exploit resources that can change the way humankind uses energy.206 A single unified and internally consistent body of law is crucial particularly in space where entities will be forced to plan decades in advance and rely on technologies still in development. The potential benefits of space travel will not be realized unless parties accessing space have clear cut legal principles. So, while regulations may sometimes limit the activity of particular entities in the short term, a stable legal order can only lead to a more robust industry in the long run which may be more mindful of sustainable practices and more likely to cooperate for collective benefit. The preceding sections have discussed how applying customary international law obligations to private, non-state actors in space is based on the existential threat to a global commons and the fact that the private actors will be entering a vacuum of sovereignty in a manner that is analogous to the creation of new states. Because of all the practical coordination problems and legal barriers already discussed, space cannot be preserved as a global commons or the 'province of all humankind,' without centralized coordination and the application of direct legal duties to permit it. Other proposals to regulate these entities are not sufficiently attentive to the unique problems of space law, nor do they lay the groundwork for the evolution of human interaction in space. B. Existing Models ofInternational Regulation and Coordination Don't Address the Unique Problems Presented by Space Law B. Existing Models ofInternational Regulation and Coordination Don't Address the Unique Problems Presented by Space Law

International space law often evokes comparisons to the U.N. Convention on the Law of the Sea (UNCLOS) and the Antarctica Treaty. In both cases, the international community sought to address pressing coordination problems. To be sure, both offer lessons but these models cannot be lifted wholesale into the international space context because they are not adapted to its unique risks. The U.N. Convention on the Law of the Sea (UNCLOS) establishes the International Seabed Authority as the trustee for the deep seabed. 207 The seabed is like outer space in that no single country may own it and that it must remain open for use. 208 The International Space Authority has the authority to grant exclusive but temporary rights to qualified parties for the exploitation of deep seabed resources. 209 Yet, the seabed is not so easily weaponized as space. Even though pollution is a problem in the seabed as well, the seabed doesn't present the same potential for disaster at even small concentrations.210 Additionally, private vessels on the seabed are only transitory. That is, they originate from one jurisdiction and end their journey in another. That need not be the case with private, non-state actors in space, who may have their endpoints or staring points on extraterrestrial bodies. A model designed to merely distribute property rights will not solve the coordination problems in space, nor mitigate the existential threat private companies present to the preservation of outer space. The authority managing Antarctica is not as systemized as the one governing the deep seabed for the simple reason that there is less activity. Nations with territorial claims upon Antarctica formed a consultative body and have developed a series of treaties and protocols over the years to avoid direct conflict and ensure the continent is open to researchers of all nations. 211 The most important agreement is the Protocol to the Antarctic Treaty on Environmental Protection, also known as the Madrid Protocol.21 It provides for a fifty-year moratorium on mining for resources in Antarctica. 213 This compromise was reached because the parties failed to agree on environmental protections sufficient to protect the continent from pollution created by mining practices.214 The Madrid Protocol, produced by the consultative body on Antarctica, didn't so much solve the problems as delay them. The moratorium on mining prevents further conflict and protects the Antarctic environment; but not in the long term.2m This model is untenable for space because there are more actors, there is already activity in space, and the principal actors would be extremely unlikely to agree to cease extractive efforts. Indeed, as long as they can be performed in a safe, sustainable, and equitable manner, these efforts have the potential to address terrestrial resource limits and catalyze technological transformation. C. Other Proposals Do Not Offer Long Term Solutions One interesting proposal advocates the creation of a system of space visas. 2 1 6 These would license individuals to go into outer space while extending jurisdiction over them. 217 Space visas would solve certain problems created by the rise of space tourism and the employees of private corporations entering space. Space visas would permit personal liability for crimes to attach and enable spacefaring countries to control traffic in and out of their airspace. 218 However, space visas are not enough because they fail to account for the ease with which commercial space programs will be able to move their base of operations to evade jurisdiction. Space visas also fail to extend jurisdiction over corporations and their instrumentalities, which is crucial in the coming space age. A space visa program for corporations is possible but a mere license to operate, especially if issued by states without robust regulatory regimes, will not solve the coordination problems which endanger space travel for all. Most critically, however, this does not provide an answer to the issue of what will happen if, in the not too distant future, individuals or companies are able to launch from non-terrestrial locations. Another proposal calls for a whole new international treaty,219 but this risks undoing the good practices and customs built up under the existing treaty system. With more actors and varied interests than ever, many of whom have become increasingly unwilling to sign on to binding treaties,2 2 0 the effort to draft and convene for a new international treaty might require years of mobilization. Thus, an international treaty neither offers an immediate solution nor promises a better regime under which both states and non-states will cooperate and coordinate to minimize the collective dangers of operating in outer space. Yet another proposal recognizes the difficulties of arranging for a binding agreement. Instead, it advocates for continuing with the current model, which involves various non-binding agreements.2 2 1 Though flexibility certainly needs to be preserved for technical matters that will need to respond rapidly to changes in available technology,2 2 2 too much flexibility can also cause unacceptable uncertainty. This would endanger the whole enterprise, allowing a few opportunistic actors to strong-arm and crowd out their competitors or else trigger disasters that curtail our ability to access space in the near future. Additionally, these non-binding agreements would not apply to non-state actors. As mentioned earlier, some have argued that the key to spurring private innovation is to recognize that the admonition in the Outer Space Treaty and in subsequent treaties against the appropriation of celestial bodies only applies to nation-states. 2 23 This means that private companies should be permitted not only to claim land- but to also have permanent property rights.224 This proposal is irresponsible for a number of reasons. Not only does this proposal fail to respect existing treaties thereby eroding the legitimacy of space law, but it also wildly disadvantages the vast majority of states without space programs and sets up perhaps insurmountable barriers. This failure to take into account the needs of all parties would reduce buy-in. Finally, this proposal would also fail to produce the efficient result its advocates aim for. Permanent grants of private property rights without proper governmental structure could easily result in monopolies and extreme barriers to entry. This would eliminate competition and contravene the responsibilities states accepted in the Outer Space Treaty to ensure space remains open for all. Finally, many have proposed the creation of an international space agency.225 It could certainly provide the type of centralized coordination that is necessary to preserve space as the province of all humankind. Yet these proposals largely deal with the appropriation of property rights and fail to engage with the need for establishing jurisdiction over private parties or the larger scale coordination problems that threaten space travel. Nor do they generally deal with the issues of where such a space agency would derive the authority to regulate. The method of grappling with these problems outlined in this paper, extending rules of customary international law to private parties entering space by analogy to new states, permits clear rules and lines of authority, providing desperately needed clarity to both state and non-state actors. Though the potential dangers mentioned throughout this paper may not be immediately apparent, a legal framework that can deal properly with them and prevent disasters from coming to fruition must be delineated now. It is crucial to establish firm law for private actors in space while preserving flexibility as the Outer Space Treaty did for states by outright banning military uses of space while still allowing states to develop their space programs.2 2 6 The legal framework must be robust and capable of lasting in the long run, not just for the near future. Thus, it cannot be content exercising indirect control over private commercial space corporations through states that may themselves not be members of the space-faring community. In the short term, it is possible to imagine such a scheme ordering the behavior of private corporations. Even in that case, such indirect authority would cause coordination problems and may well trigger the adverse consequences described in the first part of this paper. In the long term, however, such an indirect system becomes patently unworkable. What will the international community do when the spacecraft of states are dwarfed in number by those owned by private corporations and most states are unable to control or extend jurisdiction over private spacecrafts even if they are operating in adjacent space? How will international law, as it is currently interpreted, cover the activity of corporations who remove themselves from the jurisdiction of states by establishing a base in space? The proposal of this paper is to take the instruments of international law that already exist and interpret them in a way that is both legally defensible and pragmatic. Customary international law, like the concept of nation-states, is shaped by practice and bounded by reality. These are important legal constructs because of their utility for ordering a global legal system. Nation-states have their place as the units upon which international law acts because of the functions they carry out. Importing the single-minded focus on states into international space law is inefficient and impractical both because such an approach endangers the effort to preserve space and because private corporations have and will continue to take over many of the functions thus far taken on by states in space. Due to the necessity of coordination and the extreme negative externalities that can be caused by even carelessness, direct authority to modify behavior needs to be extended over non-state actors. VI. CONCLUSION This paper makes the case that space is a unique arena because of the existential threat to a principle of customary international law, all of which provide support for legal duties to attach directly. It is certainly true these problems are exacerbated in space. Yet, some of the factors outlined here may also exist in other areas of the law. One salient example is in international environmental law. Here, as in space, the law is a patchwork of international and domestic standards, more or less stringent and better or worse enforced. Here, as in space, non-state actors have a high degree of independence, with the capability to move both their headquarters and their factories in response to changes in the laws. The method of extending direct duties to non-state actors and requiring them to abide by customary international law may thus also be applicable in international environmental law. Thus, a legal framework that can help to make space safer might ask us to question the existing international law regime as a whole. As states lose their prominence in some areas as the primary actors while national borders and identity bleed into cosmopolitanism, international law will require new tools to protect the interests of all and to maintain a legal order that provides certainty and reliability. The decline of states in some areas of activity should not entail the decline of international law. In fact, the practices and customs of states, codified in customary international law, should become binding on the parties that take over some of their functions. In the international space law context, this means analogizing private commercial enterprises to new states subject to the binding power of customary international law. Only then can the final frontier be made open and safe for all who wish to go boldly into it.

#### Abiding by international law’s prohibition on the appropriation of space prevents space arms races– also turns any commercial development impacts

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ABSTRACT Since the beginning of the space era, States agreed to consider outer space, including the Moon and other celestial bodies as a res communis omnium, i.e. as an area open for free exploration and use by all States which is not subject to national appropriation. The non-appropriative nature of outer space, first declared in the UN General Assembly Resolution 1721 and 1962, was formally laid down in Article II of the 1967 Outer Space Treaty. Since then, the non-appropriation principle has provided guidance and direction for all activities in the space beyond the earth’s atmosphere. Nowadays, however, the non-appropriation principle is under attack. Some proposals, arguing the need of abolishing this principle in order to promote commercial use of outer space or claiming private ownership rights over the Moon and other celestial bodies, are undermining its importance and questioning its role as a guiding principle for present and future space activities. In order to counter such proposals and to demonstrate their fallacy, this paper stresses the binding legal value of the non-appropriation principle contained in Article II of the Outer Space Treaty by arguing that such principle should be considered a rule of customary international law holding a special character. Indeed, not only is the principle prohibiting national appropriation of outer space affirmed in the main space law treaties and declarations, but it also represents the basis of approach followed by States in elaborating and setting up international space law itself. Therefore, following this interpretation, neither States nor private entities are allowed to act in contrast with the nonappropriation principle and any amendment or modification thereof should only be carried out by all States acting collectively. PRELIMINARY CONSIDERATIONS The non-appropriation principle represents the cardinal rule of the space law system. Since this principle was incorporated in Article II of the Outer Space Treaty (OST)1 in 1967, first declared in the United Nations General Assembly (UNGA) Resolutions 17212 and 19623 , it has provided guidance and basis for space activities and has contributed to 40 years of peaceful exploration and use of outer space. The importance of the non-appropriation principle stems from the fact that it has prevented outer space from becoming an area of international conflict among States. By prohibiting States from obtaining territorial sovereignty rights over outer space or any of its parts, it has avoided the risk that rivalries and tensions could arise in relation to the management of outer space and its resources. Moreover, its presence has represented the best guarantee for the realization of one of the fundamental principles of space law, namely the exploration and use of outer space to be carried out for the benefit and in the interest of all States, irrespective of their stage of development. When in the end of the 1950’s and in the beginning of the 1960’s States renounced any potential claims of sovereignty over outer space, indeed, they agreed to consider it as a res belonging to all mankind, whose utilization and development was to be aimed to encounter not only the needs of the few States involved in space activities but also of all countries irrespective of their degree of development. If we analyse the status of outer space 40 years after the entry into force of the Outer Space Treaty, it is possible to affirm that the non-appropriation principle has been successful in allowing the safe and orderly development of space activities. Nowadays, however, despite its merits and its undisputable contribution to the success of the system of space law, the non-appropriation principle is the object of direct and indirect attacks. On one side, there are some legal proposals arguing the need for amending or abolishing it in order to promote the commercial development of outer space4 . In these proposals the non-appropriation principle is considered to be an obstacle to the exploitation of extraterrestrial resources and an anti-economic measure preventing the free-market approach to be applied to outer space. On the other side, there is day-by-day an increasing number of websites where it is possible to buy acres of the lunar and other celestial bodies’ surface5 . The enterprises behind these questionable business, which claim to be allowed to carry on such activities by relying on an erroneous interpretation of Article II of the Outer Space Treaty, substantially operate as the non-appropriation principle was not in force. Indeed, these enterprises promise to their customers the enjoyment of full property rights over the acquired acres, thus acting in flagrant violation of the non-appropriative nature of outer space. All these practices are undermining the importance and value of the nonappropriation principle and questioning its leading role in the upcoming commercial era of outer space. Hence, the need to protect the non-appropriation principle arises. This paper aims to fulfil this purpose by proposing a new interpretation of the nonappropriation principle which is based on the idea that this principle represents a customary rule of international law holding a special character. Simply stated, this special character comes from the consideration that the nonappropriative nature of outer space and other celestial bodies is the fundamental concept on which the entire system of space law is based. If this concept is applied and properly respected, this system works; if not, this system is likely to collapse and to generate unforeseeable consequences. These factors make the non-appropriation principle a rule whose legal value and implications are unique not only in the context of space law but also in that of public international law as such. Hence, I propose an interpretation of the nonappropriation principle that appropriately expands upon its classic definition in terms of a customary rule and suggest to consider it something more than a usual customary rule but less than a jus cogens norm. Thus, having in mind the special characteristics and importance of the non-appropriation principle, the above mentioned theories proposing its abolition or its non-relevance must be rejected. 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 international 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 any 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 of outer space emerges in all its relevance.

CUSTOM VS JUS COGENS: SHOULD THE NONAPPROPRIATION PRINCIPLE CONSIDERED A CUSTOMARY RULE? As anticipated, this paper is based on the idea that the non-appropriation principle is a customary rule holding a special character. In order to understand the reasons of this special status, it is necessary to clarify the legal meaning of the word custom and to explain why the interpretation of the nonappropriation principle in terms of a customary rule, and not, for instance, in terms of a rule of jus cogens, has received so large support in the legal literature. Let’s start with this last example13. According to Article 53 of the Vienna Convention on the Law of Treaties the expression jus cogens refers to a peremptory norm that is “accepted and recognised by the international community of States as a whole as a norm from which no derogation is permitted and which can be modified only by a subsequent norm of general international law having the same character”. The primary purpose of a jus cogens rule is to protect values and principles constituting the basis of the modern system of international law. Because of their fundamental role, the rules of jus cogens have a higher rank than ordinary rules deriving from treaty or custom. Hence, they do not permit derogation and once a State breaches their provisions, it becomes responsible towards the whole international community. Classic examples of jus cogens rules are: the prohibition of aggression, slavery, genocide and apartheid. Despite playing a fundamental role within the system of space law and despite being aimed to protect the interests of all mankind in relation to the utilization of outer space, the non-appropriation principle does not have the requisites and importance to be considered a jus cogens rule. Therefore, a hypothetic interpretation of the non-appropriation principle in terms of a peremptory norm should be refused. On the contrary, the nonappropriation principle shows the characteristics required to be classified as a customary rule. In accordance with Article 38.1 (b) of the Statute of the International Court of Justice international custom is defined as “evidence of a general practice accepted as law”. This definition reflects the widely accepted view that custom consists of two elements: general practice, or usus, and the conviction that such practice reflects, or amounts to, law (opinio juris). As for the practice, its features have been indicated by the ICJ in the North Sea Continental Shelf cases, where the Court stated that “State practice, including that of States whose interests are specially affected should…(be) both extensive and uniform”14. These elements were considered indispensable for the formation of a customary rule. Moreover, in the Nicaragua v. United States, the Court added that it was not necessary that the practice in question had to be “in absolute rigorous conformity” with the customary rule but that “the conduct of States should, in general, be consistent with such rule, and that instances of State conduct inconsistent with a given rule should generally have been treated as breaches of that rule, not as indications of the recognition of a new rule”15. Usually, a practice emerges among certain States under the impulse of economic and political demands. If such practice does not encounter strong and consistent opposition from other States but is increasingly accepted, a customary rule comes into being. At this latter stage, it may be said that this practice becomes dictated by international law. In other words, now States start to believe that they must conform to the practice because an international rule obliges them to do so. Therefore, an opinio juris is formed. Thus, in order to support the view which considers the non-appropriation principle a customary rule, it is necessary to prove the existence of a States’ practice and opinio juris confirming this theory. The analysis of the practice before the conclusion of the 1967 Outer Space Treaty shows that the prohibition of the extension of State sovereignty to outer space was one of the first principles on which States agreed upon. Since the beginning of the space era, indeed, the US and the Soviet Union, the only two superpowers able to carry out space activities at that time, decided to consider outer space as non-appropriable and their behaviours confirmed such interpretation. Indeed, when space activities began, no territorial claims were put forward. The first incorporation of the nonappropriation principle into a legal document was made by means of UNGA Resolution 1721 (XVI) of 20 December 1961 which declared “Outer space and celestial bodies…are not subject to national appropriation”. Two years later Resolution 1962 (XVIII) of 13 December 1963 stated that “Outer space and celestial bodies are not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means”. The formulation and content of these two Resolution was largely influenced by the willing of the two superpowers. Nonetheless, both Resolutions encountered the full support of the rest of the members of the United Nations and were adopted unanimously. This fact was the evidence of the existence of an opinio juris among the UN members confirming that the principles contained in the Resolution, and in particular the non-appropriation one, were accepted by the community of States. As affirmed by the Canadian Delegate in 1963, “the legal principles contained in the draft resolution…reflected international law as it was currently accepted by Member States”16. The US Delegate supported this view by declaring: “We believe these legal principles reflect international law as it is accepted by the Member of the United Nations”17. The above mentioned text of Resolution 1962 was restated and spelled out in Article II of the Outer Space Treaty. From a legal point of view, the Treaty transformed the nonappropriation principle into a binding legal obligation. Indeed, the legal effect of a principle set out in a treaty or convention ratified by Governments is not comparable to that of a principle laid down in a Resolution by the General Assembly. However, in my opinion, Article II simply reaffirmed a principle that was already part of general law and, as a consequence, already valid erga omnes and binding upon all States, being or not active in space operations. Article II, indeed, was declaratory of a formerly set out rule of customary law. SPECIAL NATURE OF THE NONAPPROPRIATION PRINCIPLE: CHARACTERISTICS OF A STRUCTURAL RULE OF INTERNATIONAL LAW The interpretation of the non-appropriation principle in terms of a rule of customary law has received a broad support in the legal literature. I fully agree with such interpretation. However, I suggest to goes further this classic interpretation and to give the non-appropriation principle a special character. Having in mind the fundamental role that the non-appropriation principle plays in the proper functioning of space activities and the numerous examples deriving from States practice which attest its importance, I think that the non-appropriation principle should be considered a rule holding a legal effect which is superior to that of a classic customary norm. In short words, along with the typical characteristics belonging to a customary rule, the non-appropriation principle incorporates some other elements which provides it with a peculiar status and that allow this author to collocate the nonappropriation principle in a intermediate position between a customary and a jus cogens rule. Using as a starting point the words of the ICJ, which in the North Sea Continental Shelf Case, affirmed the existence of a particular category of provisions of “a fundamentally norm-creating character…”18, I propose to classify the non-appropriation principle as a “structural” norm. The adjective structural refers to the fact that this principle represents the essence of the space law system. In my opinion, in order to identify a principle as a “structural” norm, such principle needs to hold the following characteristics: 1) It must represent the basis of the legal framework regulating a field of international law, i.e., it must constitute the fundamental pillar on which such framework is built on. 2) Its presence ensures that the other principles constituting such legal framework can operate and fulfil the purpose for which they are set out. Thus, we may say that without this structural principle the other rules of the above mentioned legal system lose their significance. 3) There must be a historical and present evidence of the special status of the norm in question. 4) If the structural norm is abolished, the legal system of which such norm constitutes the basis will collapse. 5) Its violation generates a special regime of responsibility for the State involved. Let’s see now if the non-appropriation principle incorporates these features. 1) The non-appropriation principle: the basis of space law The non-appropriative nature of outer space is the basic concept of space law. Since the first satellite was launched States agreed to renounce to any sovereignty claim on outer space and to consider outer space as nonappropriable. The upcoming space era was seen as an unrepeatable opportunity for all mankind and as a possible instrument to improve the quality of live of all people on Earth. The non-appropriation principle represented the best guarantee that this “humanitarian” and idealistic approach to the management of the space environment was put in practice. Its presence, indeed, was a manifest promise that States were willing to base space activities on a cooperative basis and to carry out the exploration and use of outer space for the benefit of all. 2) Predominance of the non-appropriation principle over the other space law rules The non-appropriation principle constitutes the premise for the putting into practice and realization of the other principles set out in the Outer Space Treaty. First of all, the freedom of exploration and use by all States of outer space (Article I, par. 2 of the Outer Space Treaty) may exist only in the presence of the non-appropriation principle. If each State was allowed to acquire territorial rights over parts of outer space, the freedom to accede to and use outer space would be reduced or completely abolished. The nonappropriation principle, indeed, is to be considered the crucial component of the res communis idea. Secondly, if national appropriation in space was allowed, the preservation of outer space for peaceful purposes only would cease to exist (Article III of the Outer Space Treaty). As analysed, the non-appropriative nature of outer space has prevented to transport terrestrial conflicts and rivalries into outer space so far. Moreover, if States were free to “nationalize” parts of outer space I seriously doubt that the principle of cooperation and mutual assistance (Article IX of the Outer Space Treaty) would keep guiding the activities of States in outer space. 3) Evidences of the structural status of the non-appropriation principle It is possible to enumerate numerous examples which support and confirm the structural status of the non-appropriation principle. These examples come both form the past, namely from the process leading to the setting up of space law, and from the current practice of States and private operators in space. Therefore, I have classified such evidences as either historical or modern. 3.1) Historical evidences The res communis omnium nature of outer space found support in legal theory and in official declarations since the beginning of the space era. Already in 1947, D. Manuilsky, UN Delegate of the USSR, proposed to submit a resolution to the UN with the purpose to declare outer space “an international entity”19. Such proposal did not find any echo. However, in the literature of the pre and post satellite era there was a generally accepted view that outer space could not be subject to national appropriation. For instance Prof. Jenks in 1965 stated “Space beyond the atmosphere is and must always be a res extra commercium incapable of appropriation by the protection into such space of any particular sovereignty based on a fraction of the earth’s surface”20, while M.S. Smirnoff in 1959 declared that “The right of occupation and discovery does not exist in space which is considered as res communis”21. The principle that outer space was non-appropriable was also affirmed in the 1960 Resolution of the International Law Association declaring “outer space may not be subject to the sovereignty or other exclusive rights of any State”22 and in the 1962 Draft Code of the David Davies Memorial Institute laying down: “Outer space , and the celestial bodies, therein, are recognized as being res communis omnium,…and neither outer space nor celestial bodies in it are capable of appropriation or exclusive use by any State”23. As to the official declarations, already in 1958 Senator Johnson addressed the United Nations by declaring that: “We of the United States have recognized and recognize, as most all men, that the penetration into outer space is the concern of all mankind. If nations proceed unilaterally, then their penetration into space becomes only extension of their policies on earth. Today outer space is free. It is unscarred by conflict. No nation holds a concession there. It must remain that way”. On 14 September 1959, the Soviet space device Lunik-2 crashed on the surface of the Moon by carrying metal emblems bearing the coat of arms of the Soviet Union and the Soviet Republics. Immediately after the Lunik’s reaching the Moon, the soviet academics L.I. Sedov and A.V. Topchiyev declared that the coat of arm did not symbolize any territorial claim24. This interpretation was confirmed by Premier Khruschev during his staying in the US. He stated: “The Soviet pennant as an old resident, will then welcome your pennant and they will live together in peace and friendship and as well as people should live who inhabit our common mother the earth…We regard the sending of the rocket into outer space and the deliverance of our pennant to the Moon as our achievement, and by this word ‘our’ we mean the countries the countries of the entire world, i.e. we mean that this is also your achievement and the accomplishment of all the people living on the earth”25. From the United States side, we can quote the significant declaration of President Eisenhower which on September 22, 1960, addressed the United Nations General Assembly by indicating some basic concepts that in his opinion had to constitute the basis for international space cooperation. Among those there were the following principles: “We agree that celestial bodies are not subject to national appropriation by any claims of sovereignty”26. Later, as we have seen, the non-appropriation principle was incorporate in UNGA Resolution 1721 and 1962. In June, 1966, both the United States and the Soviet Union submitted to the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) drafts of an instrument that would become the Outer Space Treaty. These drafts were based on the nonappropriative nature of outer space. In 1967, the non-appropriation principle of outer space was formally laid down in Article II of the Outer Space Treaty. Nine years after the signature of the Outer Space Treaty, an international case took place confirming the importance and the general acceptance of the non-appropriative nature of outer space. In 1976, eight equatorial States which were not parties to the Outer Space Treaty, claimed, by means of the Bogotà Declaration, sovereignty rights on the part of the geostationary orbit above their territory27. These States affirmed their non-acceptance of the principles of the Treaty, especially regarding the principle of non-appropriation. Their claim was rejected by the overwhelming majority of States on the ground that the non-appropriative nature of outer space was a rule binding all States independently by their participation to the Treaty. 3.2 Modern evidences As indicated in the beginning of this paper, there is an increasing number of legal authors who consider the non-appropriation principle the major obstacle to the commercial development of outer space. With particular regard to the possibility to use and exploit extraterrestrial mineral resources, these authors affirm that the current space law regime, which prohibits the creation of property rights in outer space, fails to guarantee predictability for space entrepreneurs and to protect the rewards of their efforts. Therefore, private operators are discouraged to undertake missions to exploit such resources. In order to make these exploitative activities possible these authors propose the following theories: 1) To amend or simply to remove Article II of the Outer Space Treaty and to replace it with a clause allowing for the creation of titles of property rights in outer space28; 2) To extend the existing terrestrial regime of property rights in outer space. As a consequence, all individuals would be entitled to use, exclude and dispose of outer space and its resources29; 3) The United States should ignore the 1967 non-sovereignty provision and start to appropriate parts of outer space30; 4) The United States should recognise the claim of those who discover valuable mineral resources31. According to this theory the recognition of these claims would not constitute national appropriation, but rather the exercise of the US jurisdiction over its citizens. All these theories must be rejected because they lack a solid legal basis and because none of these proposals is able to prove that a system allowing the creation of property rights, would guarantee the orderly and coordinated development of space exploitative activities. The important consideration for this paper is that, in my opinion, all these attacks on the non-appropriation principle symbolize a confirmation of the special status of such principle within the context of space law. The more such authors attack the nonappropriation principle, the more its importance and the need for keeping it as the basis of space activities emerge. The fact that this authors only focus on this principle and not on the others, such as the one establishing that the exploration and use of outer space shall be carried out for the benefit and in the interests of all mankind, is an indication that it is the essence of the space law system. Apart from these theories, the other major threat to the non-appropriation principle comes from companies which sell lunar and other celestial bodies’ acres. Among these companies one of the most popular is Lunar Embassy. Lunar Embassy has established the practice of setting out twin companies and to nominate ambassadors from around the world. Recently a juridical controversy has emerged involving the so-called Lunar Embassy in China. The legal consequences of this controversy are particularly relevant for the purpose of this paper. In October 2005 Beijing industrial and commercial authorities suspended the license of Lunar Embassy in China for having engaged in speculation and profiteering and fined it 50,000 yuan. Lunar Embassy in China sued the Beijing Administration32. The Haidian District People’s Court ruled against the company in November 2005. Then, the company decided to appeal against the Court’s decision33. In March 2007 the Beijing First Intermediate People’s Court ruled against the company, stating that no individual or State could claim ownership of the Moon34. In its pronunciation the Court cited the fact that China was part of the Outer Space Treaty, which prohibits appropriation of outer space and its parts, since 1983.

The ruling of the Chinese Court represents a very significant confirmation of the nonappropriative nature of outer space after forty years of its entry into force. It is a clear-cut indication of the fact that the nonappropriation principle holds a special status. Individuals are not allowed to act in contrast to it because its presence is vital for the safe management of outer space. If violation to the non-appropriation principle were allowed, the consequences for the whole space law system would be catastrophic. Another important re-affirmation of the importance of the non-appropriation principle has been made in 2004 by the Board of Directors of the IISL by means of the “Statement of the Board of Directors of the International Institute of Space Law on Claims to Property Rights Regarding the Moon and Other Celestial Bodies35. The Statements reads: “The prohibition of national appropriation…precludes the application of any legislation on a territorial basis to validate a private claim. Hence, it is not sufficient for sellers of lunar deeds to point to national law, or the silence of national authorities, to justify their claims…”. The Statements also calls the States Parties to the Outer Space Treaty to: “comply with their obligation under Articles II and VI of the Outer Space Treaty…under a duty to ensure that, in their legal systems, transactions regarding claims to property rights to the Moon and other celestial bodies or parts thereof, have no legal significance or recognised legal effect”. The Statement on one side rejects those theories supporting the national registration of private claims to the Moon and other celestial bodies and on the other restates the special obligation relying on States to respect and to ensure the respect of the non-appropriative nature of outer space. 4) The abrogation of the non-appropriation principle will generate the collapse of the system of space law If the non-appropriation principle was removed, it is very likely that the system of space law as we have know it so far would cease to exist. In a future space scenario without the presence of the non-appropriation principle, conflicting claims among States would arise. This situation would engender international tension and increase the risk for armed conflict in outer space. Moreover, as soon as a State was able to gain control over an area of a celestial body, there would be nothing to prevent such a State to impose taxes and royalties for the acquisition of rights by private operators to use such area and its resources. As indicated by Sters and Tennen, in a similar scenario the costs for utilizing space resources and for carrying out exploitative missions would increase36. Therefore, the abrogation of the nonappropriation principle would prevent instead of favour, as it is suggested by some, the commercial development of outer space. Additionally, if States were allowed to acquire sovereignty rights over parts of outer space, obviously they would pursue their own purposes and interests. Thus, the idea that the exploration and use of outer space is the “province of all mankind” would lose its relevance. 5) Special responsibility and consequences for the violation of the non-appropriation principle As we have just seen, if the non-appropriation principle was removed, the risk for an armed conflict in outer space would be high. Therefore, States have a special duty to act in conformity with such principle. But what if a State should suddenly decide to violate such principle and to appropriate one part of outer space? What would be the legal consequences of such behaviour? Considering the fact that Article III of the OST makes international law, including the Charter of the United Nations, applicable to the exploration and use of outer space and having in mind that Article I (1) of the UN Charter lays down the obligation to maintain peace and security, and to prevent or remove threats to peace, the individual violation by a State of the principle contained in Article II of the OST should be considered a threat to international peace. Such a State should be seen as responsible for an act of particular gravity towards the whole community of States. Therefore, in a similar situation the other States would be entitled to act collectively through the United Nations to stop such behaviour and to remove this threat to peace. A joint effort and pressure in that direction should be likely to restore the status quo ante. The argument could be put forward that if a State should decide to withdraw from the Outer Space Treaty, it would be no longer bound by the provisions of Article II and thus it could appropriate parts of outer space. This argument should be rejected on the basis that even after that withdrawal, such a State would be obliged to respect the non-appropriation principle in consideration of its structural and special status. CONCLUSION The non-appropriation principle represents the basic principle of space law. Considering its importance and its role in providing the conditions for the peaceful and orderly management and development of space activities, this paper has put forward the hypothesis of considering that principle a structural rule of international law. As it has been shown, there exist several historical and modern examples which confirm the peculiar status of the principle contained in Article II of the Outer Space Treaty. Having in mind the special characteristics of the non-appropriation principle, the theories proposing its abrogation or suggesting unilateral State actions against it are unacceptable. If these theories were put into practice, the use of outer space would evolve into a situation of chaos and, moreover, its commercial development would be hindered instead of favoured. Any hypothetical amendment of the nonappropriation principle should be carried out by all States acting collectively. This would be the only option to prevent the risk of war in outer space and to allow the harmonized management of space activities in the era of space commercialisation.

#### Strong space law deters conflict in space

Loon 21 [Fabio van Loon, Researcher and Writer Consortium of Indo-Pacific Researchers with a Master of International Policy National Security & Diplomacy from Texas A&M University and a Bachelor of Arts in Politics, Philosophy and Economics From Luiss Guido Carli University, 2021, “Codifying Jus in Bello Spatialis— The Space Law of Tomorrow,” Strategic Studies Quarterly, https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-15\_Issue-1/VanLoon.pdf]/Kankee

With a deep-rooted history of customary space law, state activities in outer space have largely been established for the areas of research, exploration, and scientific inquiry.3 The teleological origins of today’s space law—namely the principles of peaceful exploration and the freedom of navigation—were candidly expressed by President Dwight D. Eisenhower in a letter he wrote to then-Soviet premier Nikolai Bulganin in 1958. He stated, “I propose that we agree that outer space should be used only for peaceful purposes. We face a decisive moment in history in relation to this matter. . . . Should not outer space be dedicated to the peaceful uses of mankind and denied to the purposes of war?”4 President Eisenhower’s commitment to cosmic peace in the opening months of the space race proved foundational to the negotiation of the historic Outer Space Treaty (OST) a decade later, the keystone of today’s corpus juris spatialis—the body of law in space. The 1967 Outer Space Treaty, similar to the landmark 1963 Limited Test Ban Treaty (LTBT) and 1972 Anti-Ballistic Missile (ABM) Treaty, epitomized the success of international legal cooperation. Mutual restraint, advanced through the treaty’s notion of space as “the province of all mankind,” effectively prevented the likely weaponization of space both during and after the Cold War.5 Washington’s leadership in defining and upholding the principles of international space law has since guaranteed peace in the cosmos for over 60 years, a testament to the successes of American space diplomacy and the strength of international space law. Today, evolving security challenges in the outer space environment have placed an unprecedented strain on the stability of the international space regime. The challenges of the return to great power competition in space have been compounded by the seemingly unavoidable militarization of the cosmos. This issue has highlighted how the “customary principles of this body of law are probably neither sufficiently specific nor entirely appropriate for military action in outer space.”6 Filling this normative void in the spirit of national and international security must be at the center of US-led efforts to draft and define tomorrow’s jus in bello spatialis. Ultimately, to determine tomorrow’s law of war in space, strategists must pay particular attention to the normative applicability of the UN Charter, the compelling analogy of the high seas, the law of armed conflict (LOAC), and existing protections for astronauts and satellites. The Applicability of the UN Charter

#### Space war destroys the global economy and civilization by attacking satellites necessary for every industry on Earth

Jakhu 20 [Ram S. Jakhu, educator at McGill University, Kuan-Wei Chen, educator at McGill University, and Bayar Goswami, educator at McGill University, 2020 “Threats to Peaceful Purposes of Outer Space: Politics and Law,” Taylor and Francis, https://www.tandfonline.com/doi/full/10.1080/14777622.2020.1729061?casa\_token=2-pAUhd67FYAAAAA%3Ai1tUdxDhefbV2RIzp13qpi77okEw0tqhG16gu2KDP2QloC9DSDMQGSwqRAnQoKLi-02at9tLbDtULg]/Kankee

Significance of space on Earth Over the last sixty years, the generally accepted international principle of peaceful exploration and use of outer space generated unprecedented scientific, economic, and social benefits to humanity as a whole.22 Among the many benefits, satellites provide [include] global, instant, and inexpensive communications; navigation aids for aviation, ground transportation, and maritime shipping; Earth observation for managing forest fires and predicting tsunamis; weather forecasting; and monitoring violation of human rights, commission of war crimes, and verification of disarmament agreements. September 2018 marked an exceptionally significant and unique month in the history of human civilization. With about 3.8 billion people considered to be part of the middle class, this is the first time ever that half of the world is enjoying such levels of wealth, with the most significant proportion of this key demographic being in Asia.23 Undoubtedly, space technologies and activities played an important role in reaching this global tipping point. The largest number of users of satellite phones are in the Middle East and Africa. Today, private companies like O3B, OneWeb, SpaceX, as well as Iridium and Amazon, are investing billions of dollars for the launch and operation of thousands of satellites for providing internet connectivity globally, especially in rural areas of the developing countries in Asia, Africa, and Latin America.24 The space sector is a significant industry on its own, as well as an important catalyst for a host of other industries. Currently, there are over 2200 satellites25 that belong to more than 80 countries and provide services of various kinds to almost all the nations of the world.26 More than half of these satellites belong to countries other than the United States. If not all, at least 60 States, both big and small, are deemed as being spacefaring, and the number of states with the ability to conduct space activities is increasing. Moreover, thirteen states possess independent launch capability. The global space economy was estimated to be U.S. $ 360 billion in early 2019.27 A Goldman Sachs report expects that by the 2040s the space economy will grow to U.S. $ 1 trillion, and a study by Bank of America – Merrill Lynch estimates the space sector will be valued at around U.S. $ 2.7 trillion.28 Another study conducted in early 2018 indicates that globally space industry “is emerging as one of the most lucrative industry” and is estimated to expand at a compound annual growth rate (CAGR) of 5.6%.29 Indeed, more than half of U.S. satellites are owned by the American private sector. We are seeing an emergence of a new space industry for safe, private, affordable, and routine human space travel, including for the purposes of space tourism, scientific experiments, and launch of cubesats and nanosats.30 Like the aviation industry in the 20th Century, sub-orbital and orbital operations with reusable aerospace vehicles manufactured by small groups of companies generate benefits for all states, simply by making appropriate modifications to exiting airports. Spurred by this emerging mode of transportation that will revolutionize travel and significantly reduce point-to-point travel on Earth, several companies are pursuing space travel activities. According to Analytical Research Cognizance, the global space tourism market is expected to reach U.S. $1.27 billion by 2023 at a CAGR of 17.3%.31 With the rapid depletion of natural resources on Earth, mining the natural resources of asteroids and the Moon are attracting serious attention of private companies and governments. Though there are no fully reliable and fixed figures about the possible revenue to be generated by space mining, it is mentioned that this activity will in the future generate trillions of dollars.32 By 2030, the market for asteroidal minerals will exceed U.S. $1.5 billion.33 Without a conflict-free, peaceful outer space environment, the benefits derived from space and space applications are impeded. Can we imagine a day without space?34 This is a day without satellite communications, guided navigation, reliable weather forecasts, and the ease of search and rescue in the vastness of the Earth’s oceans. Without space systems, modern life in most parts of the Earth, especially in the developed countries, is not possible.

Preserving outer space for peaceful purposes Peaceful purposes: evolving term of art Before describing the recent geopolitics and military interests that are threating the fundamental objective of preserving outer space for peaceful purposes, it is important to understand how the meaning of the term peaceful purposes evolved since the first consideration of legal regime for outer space was taken up by the UNGA. The spirit and narrative of outer space governance began with ideas of outer space for “exclusively peaceful purposes”35 or “peaceful purposes only”.36 Such language was reflective of text of the Antarctic Treaty, which was drafted and adopted almost contemporaneously as the humankind just began exploring outer space. The Antarctic Treaty in essence called for complete demilitarization and de-weaponization.37 Realizing the value of outer space as an ultimate high ground for military operations, both the Soviet Union and the United States began weakening the notion that outer space be explored and used exclusively for peaceful purposes.38 The geopolitical climate of the Cold War at the time of the drafting and negotiation of the OST resulted in the dilution of the principle and term peaceful purposes, which the only two spacefaring states agreed to mean allowance of exploration and use of outer space for non-aggressive military uses.39 Both the unanimously adopted UNGA Resolution 1963 Declaration of Legal Principles of Outer Space,40 and the 1967 OST,41 which incorporate verbatim the provisions of the 1963 Declaration, recognize “the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes”42 and the desire to contribute to “legal aspects of the exploration and use of outer space for peaceful purposes”.43 This is in stark contrast to the express provision of using Antarctica “for peaceful purposes only”, as contained in the Antarctic Treaty.44 Though the OST is ratified by 109 states,45 including all spacefaring states, and serves as the foundation for the global space governance regime, the peaceful purposes language is only contained in the Preamble of the OST. Nevertheless, an in-depth reading of the OST does stress upon an overall peaceful in substance, as well as spirit, of the treaty, particularly Articles IV, IX and XI. However, this does denote that there is no direct and unambiguous legally binding obligation expressly and specifically imposed by the OST.46 Indeed, the first paragraph of Article IV of the OST prohibits states parties from placing “in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction” and from installing “such weapons on celestial bodies, or station such weapons in outer space in any other manner”.47 While this prohibition does not prohibit the placement or stationing of conventional weapons, anti-satellite weapons (ASATs), and fractional orbital bombardment weapon systems (FOBS),48 general international law otherwise may prohibit use of such weapons in space. In contrast to orbital space, under the second paragraph of Article IV of the OST, the Moon and other celestial bodies must be used “exclusively for peaceful purposes”. The clarifying exclusive nomenclature expressly prohibits the “establishment of military bases, installations, and fortifications”, and “the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies”.49 Nevertheless, there is no prohibition on the use of military personnel, any equipment or facility for scientific research, or for any other peaceful exploration of the Moon and other celestial bodies. The effect of these provisions is that the OST does not expressly prohibit military uses of outer space per se, and only partially de-weaponized it in relation to nuclear weapons and other weapons of mass destruction. Nonetheless, the OST obliges states to use the Moon and other celestial bodies exclusively for peaceful purposes. The term peaceful purpose thus lacks precise and authoritative definition, and continues to be a source of contention.50 After the adoption of the 1963 Declaration of Legal Principles of Outer Space and the 1967 OST, it became generally understood that outer space is used both for non-aggressive civilian and military purposes. Though not authoritatively defined, the term, “aggressive purpose” includes activities that amount to aggression as understood under the UNGA resolution defining this concept.51 It is common knowledge that hundreds of space objects are launched and operated for military purposes. As is well known, in intentionally destroying their space objects, the United States, Russia, China, and India carried out activities in space that are non-peaceful even though the destroyed objects were their own and not of any other state.52 Other than the OST regime, there are two important treaties that attempt to constrain military activities in outer space, namely the 1963 Partial Test Ban Treaty (PTBT)53 and the 1978 Convention on the Prohibition of Use of Environmental Techniques (ENMOD).54 The 1963 PTBT is the first international agreement of significance that became applicable to outer space, adopted with the goal of putting “an end to the contamination of man’s environment by radioactive substances”.55 During the height of Cold War, the Soviet Union and the United States tested numerous nuclear weapons in the Earth’s atmosphere. That raised serious concerns about worldwide radioactive fallout on human beings and the marine environment.56 The PTBT prohibits the conduct of any nuclear weapon test explosion, or any other nuclear explosion, in the atmosphere, including outer space, or under water, including territorial waters or high seas. Underground nuclear tests are permitted subject to the condition that the nuclear explosion must not cause radioactive debris outside the territorial limits of the state under whose jurisdiction or control such explosion is conducted.57 Though there are 125 states parties to the PTBT, major nuclear powers China and France are non-parties and therefore remain outside the prohibitions of the treaty. Since the coming into force of the PTBT, no nuclear test was conducted in the atmosphere and outer space. As far as the legal regime of outer space is concerned, it is generally believed that the PTBT is successful.58 ENMOD is the second instrument that pertains to the military activities in space. Though environmental modification techniques were not considered important in military planning in the 1970s, it was perceived that such techniques might be developed in the future for military or hostile purposes with the risk of damage to the Earth’s environment and to outer space.59 The convention recognized that military or any other hostile use of environmental modification techniques are harmful to human welfare.60 ENMOD prohibits the military or any other hostile use of environmental modification techniques “having widespread, long-lasting or severe effects as the means of destruction, damage, or injury to any other State Party” to the Convention.61 The term “environmental modification techniques” is defined to mean “any technique for changing – through the deliberate manipulation of natural processes – the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere, and atmosphere, or of outer space”.62 This international convention is a precautionary measure to prevent environmental damage of the atmosphere and outer space. Despite the existence and merits of these two binding instruments, PTBT and ENMOD, and mainly due to the above-discussed dilution of the peaceful purposes principle in the OST, militarization of outer space continues and is expanding. Militarized but not weaponized Space systems, since the beginning of the space age, are indispensable for armed forces, especially of the developed countries.63 Space systems are the eyes and ears of modern militaries and intelligence agencies, indispensable in peacetime, but equally integral during conflict situations as well.64 We have witnessed an increase in the number of military space objects and in the number of states launching such objects, and billions are being spent to enhance and protect these vital strategic assets.65 Space objects are used in the conduct of wars on Earth. For example, the 1991 Persian Gulf War was labelled as the “first space war” because many satellites were used to aid actual warfighting.66 Since then, space assets are indispensable tools for the defense forces of various countries. Private civilian and commercial satellites are also used by armed forces of countries.67 Moreover, satellites are often dual-use hosting both commercial and military payloads.68 ASATs are known to exist as they were tested by four countries, namely the United States, Russia, China, and most recently by India. The development of other types of space weapons, be they ground-based, air-based or space-based, is not fully known because of the secrecy surrounding them. However, several reports released to the public and newspapers indicate there are impressive advances in space weaponry.69 Indeed, at the 2019 COPUOS meeting, it was expressed that “tasks of preventing conflicts in outer space and preserving outer space for peaceful purposes had become more relevant than ever and that there was a lack of measures undertaken by states in that regard”.70 Military policies and doctrines for warfighting in space71 are being developed and propagated. In several military manuals and rules of engagement, there are mentions of operations in the space domain,72 the latest of which is the open declaration of space as an “operational domain” by the North Atlantic Treaty Organization (NATO).73 It is often reported, at least in the Western media, that preparations for fighting wars in space are being made. To this effect, many governments, particularly the United States, are involved in strategies, as evidenced by the annual U.S. Shriever Wargame involving both civilian and military experts from Australia, Canada, New Zealand, the United Kingdom, and the United States to simulate situational threats and the possible outbreak of hostilities in outer space, and how to respond to such events.74 A similar exercise was carried out by India under the name of “IndSpaceEx”, which involved input from all three of its defense forces with an objective “to gain a better understanding of the current and emerging challenges in the space security domain” and “to have better appreciation of the capabilities that India must develop to protect its national interests”.75 It is often asserted that since space assets are crucial for national security, they must be protected.76 Therefore, it is frequently argued that armed forces must have appropriate weapons and must be fully prepared for fighting space wars when, or even before, these assets are threatened.77 This sort of thinking has resulted in the propagation of simple, but powerful and often repeated, rhetoric, such as “space is a warfighting domain, just like the land, air and sea”,78 and “war in space is inevitable”.79 In March 2018, U.S. President Donald Trump announced the creation of a Space Force, one that is “separate but equal” with the other five branches of the armed forces, for securing “American dominance in space.”80 In August 2018, U.S. Vice-President Pence elaborated the reasons for a Space Force, The space environment has fundamentally changed in the last generation. What was once peaceful and uncontested is now crowded and adversarial. Today, other nations are seeking to disrupt our space-based systems and challenge American supremacy in space as never before. For many years, nations from Russia and China to North Korea and Iran have pursued weapons to jam, blind, and disable our navigation and communications satellites via electronic attacks from the ground.81 In December 2019, the United States established an independent Space Force as its sixth branch of the U.S. Armed Forces.82 The actions of the United States triggered similar reactions, in varying degrees, from other states, such as France, which announced similar plans to establish its own space force83 with a hint to equip its next-generation satellites with weapons like “machine guns capable of destroying the aggressor’s solar panels or by laser to blind or destroy an enemy satellite”.84 Similarly, Japan decided to set up its own Space Defence Force and India set up a distinct Defence Space Agency to consolidate commanding of all of its defence space assets with a distant possibility to even establishing “Indian Space Force”.85 Russia and China are also known to have specialized military space agencies. Competing interests for gaining dominance in a crowded and strategically important environment destabilizes international peace and security. Regardless of space forces, the development of space weapons is expected to continue. In brief, since the emergence of the space age, the purposes of space exploration and use evolved and transitioned from exclusively for peaceful purposes, to military but non-aggressive, and to being an important aid in actual warfighting on Earth. Geopolitical tensions and rapidly developing technologies further propelled the development and testing of anti-satellite capabilities, and other types of space weapons capable of disabling or disrupting the space applications, or destroying space objects.86 The adoption and propagation of military doctrines, the conduct of space wargames, the planning for launching satellite armed with weapons, and the realization of political agendas that advocate preparing for war in space prompted several governments to establish a new branch of armed forces with specialty in space warfighting for the purpose of achieving dominance in space. We are, indeed, on a slippery slope, descending from that rude awakening that we must have “peace in our time”, lest we face death and the shattering of our world to a worrying reality and future filled with the beating drums of war and doom of inevitability. Fear and paranoia beget suspicion and distrust. Once one seizes arms, others often are jolted to do the same. This trend is likely to continue with stronger momentum and wider participation by states and non-state actors alike. Moreover, some spacefaring states may withdraw from the OST to enhance their interests in national security,87 or to unilaterally pursue exploitation of space natural resources88 in ways that are contrary to the existing and established legal framework. Though several provisions of the OST are accepted and customary in nature,89 withdrawal from the OST, which is the backbone of global space governance, will create a global chaotic situation that undermines or weakens the whole space governance system that maintained peace and security for the past six decades.90 Current situation Stalled mechanisms at maintaining peace in space During the last three decades, the international community on several occasions and through different fora advanced efforts at establishing and maintaining peace in space. In addition to the binding international agreements mentioned earlier, several efforts91 for maintaining peace in space include the following listed below. UNGA resolutions on the prevention of an arms race in outer space (PAROS) to avert danger for international peace and security.92 Conference on Disarmament (CD) efforts for the prevention of an arms race in outer space in all its aspects.93 Chinese and Russian proposal for a Treaty on the Prevention of Placement of Weapons in Outer Space (PPWT) to ban all space-based weapons.94 UNGA resolutions on “International cooperation in the peaceful uses of outer space” that seek to promote international cooperation and urge UN “Member States that have not yet become parties to the international treaties governing the uses of outer space”.95 2002 Hague Code of Conduct against Ballistic Missile Proliferation that attempts to limit “the proliferation of weapons of mass destruction and their means of delivery” to “contribute to the process of strengthening existing national and international security arrangements and disarmament and non-proliferation objectives and mechanisms”.96 European Union (EU) proposal for an International Code of Conduct for Outer Space Activities “to enhance the safety, security, and sustainability of all outer space activities pertaining to space objects, as well as the space environment”.97 2012 report of the Group of Governmental Experts established by the UN Secretary General focusing on transparency and confidence-building mechanisms (TCBMs) in outer space.98 UNGA resolutions on “Transparency and Confidence-building Measures in Outer Space Activities” that recognize “the need for increased transparency and confirmed the importance of confidence-building measures as a means of reinforcing the objective of preventing an arms race in outer space”.99 UNGA resolutions titled “No First Placement of Weapons in Outer Space” that underlines the “importance of the political statements made by a number of states not be the first to place weapons in outer space” and affirms “the importance and urgency of the objective to prevent an arms race in outer space and the willingness of states to contribute to reaching this common goal”.100 Joint ad hoc meetings of the Disarmament and International Security Committee (First Committee) and the Special Political and Decolonization Committee (Fourth Committee) in 2015 and 2017 with the aim of addressing “possible challenges to space security and sustainability”.101 Adoption by UNCOPUOS on guidelines for the long-term sustainability of outer space activities.102 Establishment of a Group of Government Experts in 2017 by the UNGA to “consider and make recommendations on substantial elements of an international legally binding instrument on the prevention of an arms race in outer space, including, inter alia, on the prevention of the placement of weapons in outer space”.103 Regardless, none of these diplomatic and multilateral efforts proved effective or diverted away from the trend of expanding space militarization, possible space weaponization, and potential conflicts or wars in space. Indeed, at the 2019 COPUOS meeting, the view was expressed “that the absence of conflicts in space in the past could not be regarded as a guarantee of peace, in particular in an era in which new actors were entering the space arena”.104 Space and war do not inevitably need to meet

Space is not a warfighting domain, particularly not as traditional domains of land, air, and sea, nor should space become a warfighting domain. The international legal status and physical characteristics of other terrestrial theatres of operations are different from those of outer space. Thus, war in space is not inevitable. This is also the perspective of the International Committee of the Red Cross (ICRC), which noted that “[as] with the development of any new means or methods of warfare, the weaponization of outer space”, and by extension, engaging in conflict in space, “is not inevitable but a choice”.105 The inevitability of an occurrence is determined by policy decisions based on various relevant factors and the perspectives or interests of the decision-makers. If according to the policy of a state, war in space is inevitable, that changes if the relevant factors and decision-makers change. For example, during the height of the Cold War, even under the constant spectre of nuclear weapons that brings about global destruction of the environment and vaporizes billions of people and animals, politicians and leaders acted with restraint, with calm, and with rationality. Even as generations grew up conducting drills and rushing to fallout shelters, war, devastation, and annihilation were not inevitabilities. A key argument against inevitability includes the fact that space is widely acknowledged as a global commons, which must serve the inclusive and common interests of all. In this context, space must be developed, explored, and used for the benefit and in the interests of all states, without appropriating by any means and fully respecting the corresponding interests of others.106 Moreover, state parties to the OST are obliged to explore and use outer space in accordance with international law and the UN Charter and “in the interest of maintaining international peace and security and promoting international cooperation and understanding.”107 The legality of the exploration and use of outer space is evaluated in the light of the object and purpose of the OST as expressed in its Preamble and the criteria for the standard of state behavior as stipulated under several provisions of the OST.108 The threats to the peaceful purposes of outer space utilization, which are described above, are contrary to the provisions of the existing international legal regime, particularly as they tend to support the exclusive interests of some states and negate the interests of all other states. Moreover, the development and testing of space weapons and the threat to use them, coupled with overtly space warfighting policies for securing and maintaining dominance, are considered threatening to international peace and security, and contrary to the goal of promoting international cooperation and understanding in space exploration and utilization. At the same time, in making such determination, there exists the inherent right of self-defense against an armed attack as prescribed under Article 51 of the UN Charter.109 Space assets themselves are under sovereign control of states, and threats or attacks to those assets trigger a legal right of self-defense. Preserving outer space for peaceful purposes

Since the nature, scope, and order of magnitude of devastation and death following a conflict involving space or actual war in space is unknown, there is an urgent need to preserve outer space for peaceful purposes. Indeed, even the United States, which labelled space as a warfighting domain, recognized that “no one wins if war extends into space” and clarified its position as intending to “keep conflict out of space”.110 Nonetheless, it is becoming evident that the effects and impact of such a hypothetical or even potential space war will not be limited to space and to the combatants.111 The theatre of a space war is bound to affect outer space, cyberspace, airspace, land and the oceans. It will be global in the real sense of the term. Thus, collateral damage will be worldwide affecting, directly or indirectly, combatants and non-combatants. Due to the physical characteristics of the outer space environment and creation of space debris that will linger for decades, if not millennia, the damage caused to space systems might not be temporary in nature and could be enduring, if not forever. It should be kept in mind that, future wars, particularly a war involving space or carried out in space, will not be exclusively between the armed forces of the combatants. In a space war, as in a cyber-war, it will be difficult, if not impossible, to identify the aggressors and combatants. The worldwide dependency on space is so pervasive that modern life without satellites will be highly problematic at best and totally chaotic at worst. The gains the world made during the last sixty years could possibly be washed away, and the major victims of this might be the global middle class and security establishments of more advanced countries. According to an article published in the June 2018 issue of Journal WIRED, “space war could very well end with a crippled global economy, inoperable infrastructure, and a planet shrouded by the orbiting fragments of pulverized satellites.”112 A highly knowledgeable and experienced military officer has been quoted in a 2015 article that after a war in space “You go back to World War Two […] You go back to the Industrial Age.”113 We come back to Oppenheimer’s reflection on the Bhagwat Gita. This scripture is a chapter in The Mahabharata, which is one of the two epics of ancient India. The Mahabharata is a text of 100,000 poetic verses that describe moral law and a history of what happened possibly in about 3000 years BC during the war for supremacy between two cousins, the Kauravas and the Pandavas. Disregarding strong persuasion by the wise and benign god Krishna to avoid war, both parties went to war that lasted thirteen days. The Mahabharata, vividly describes the conduct of the war, the weapons used during the war and the level of destruction that ensued the war. We quote three stanzas,114