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Geopolitics of the Moon: the dawn of a new space era

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Abstract:

Technological development and recent successes of ambitious space programs are bringing outer space and the Moon back to the geopolitical debate. The proliferation of space public and private actors, together with the raising interdependence between space security and global security, are reshaping space geopolitics. In this context, space governance seems to be on a turning point from an era characterised by cooperation under the international legal framework of the Outer Space Treaty of 1967, to another in which the main tone is competition. Under these circumstances, it is important to analyse the rules, principles, actors, strategies, threats and opportunities that shape current space and Moon geopolitics, with special attention to the ongoing process of configuration of the dynamics and norms that will characterise the new space era.

Keywords:

Space and Moon geopolitics, space governance, Outer Space Treaty, Astropolitik, space security

***NOTE:** The ideas contained in the Opinion Papers shall be responsibility of their authors, without necessarily reflecting the thinking of the IEEE or the Ministry of Defense.

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Introduction

At the end of 2020, newspapers, and television programs all around the World covered the successful landing and safe return of Chinese Chang'e 5 mission to the Moon. Far from massive enthusiasm generated by Soviet and American programs during the Cold War, the occasion went relatively unnoticed for a public debate focused on the COVID-19 pandemic, while the scientific community celebrated the important opportunities for investigation deriving from the mission. The reading of the event, however, was different at the political and military levels of other space powers, as it supposed another step into the still uncertain new space era.

Since the beginning of the space race between the USSR and the US in the 1950's, outer space became the object of a new field of geopolitics: outer space geopolitics. Apollo and Sputnik program put the Moon in the centre of the competition for space predominance between the two superpowers; a competition that ended in the 1960's, when struggle in outer space eventually yielded to a multilaterally designed system of governance based on the principles of freedom of access, non-appropriation and peaceful use of outer space, the Moon and other celestial bodies. The space system, however, was conceived for a Cold War order, and lacks the capability to adapt to an emerging new space era characterised by rapid technological change, the proliferation of public and private space actors, the securitization of the domain and the extension of terrestrial geopolitical rivalries to outer space.

In this context, it is interesting to analyse the geopolitics of outer space at the beginning of what some authors call the new space race; and more concretely the geopolitics of the Moon, that is in the centre of international legal debate and plays a crucial role in the space strategies of all the relevant actors. This article, hence, focuses on the study of the new geopolitics of the Moon in the broader context of outer space geopolitics, a vast field that remains mainly unexplored.

International legal regime of the Moon

Outer space international legal regime has its origin in Cold War era, in which space race between the US and the USSR brought outer space to the centre of geopolitics. In the context of competition between USSR's Sputnik and US' Apollo programs, which had

reaching the Moon as one of their main goals, the great powers understood that some cooperation for establishing basic legal standards was necessary to regulate the new frontier of geopolitical arena: outer space, the Moon and other celestial bodies¹. Following this conviction, and short after the successful launch of Sputnik 1 in 1957, Resolution 1348 (XIII) was adopted by the UN General Assembly on December 13, 1958, instituting the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), an ad hoc organism that, already on 1959, acquired the status of permanent subsidiary body of the General Assembly with Resolution 1472 (XIV).

With the impulse of the UNCOPUOS, five multilateral treaties were negotiated and approved in the 1960's and the 1970's: the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, approved on January 1967; the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, adopted on April 1968; the Convention on International Liability for Damage Caused by Space Objects, from March 1972; the Convention on Registration of Objects Launched into Outer Space, open for signature on January 1975; and the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, approved on December 1979².

The first one, known as the 1967 Outer Space Treaty (OST) is the main international legal instrument concerning outer space, with more than one hundred states parties. With regard to the Moon, rules and principles from the OST, expressly extended to the satellite and other celestial bodies, were complemented by the dispositions of the already mentioned 1979 Moon Agreement, whose importance is much more limited as it has only been ratified by less than 20 states, none of them being a space power³. The analysis shall focus, hence, on the dispositions of the OST treaty as the constitutive instrument of outer space international law, as well as on some declarations of principles and UNGA

¹ GABRIELE LUCERA, Gianfranco. "International Geopolitics and Space Regulation", Oxford Research Encyclopaedias, Planetary Science, May 2019. Available at: <https://oxfordre.com/planetaryscience/view/10.1093/acrefore/9780190647926.001.0001/acrefore-9780190647926-e-40#:~:text=The%20classical%20geopolitics%20deals%20with,outer%20space%20con>

² United Nations Office for Outer Space Affairs, "United Nations Treaties and Principles on Outer Space, related General Assembly resolutions and other documents", non-dated. Available at: https://www.unoosa.org/pdf/publications/ST_SPACE_061Rev01E.pdf

³ BURRIS, Matthew. "Astroimpolitic: Organizing Outer Space by the Sword", Strategic Studies Quarterly, 7, 108-129, 2013. Available at: https://www.jstor.org/stable/26270588?seq=1#metadata_info_tab_contents

resolutions on the subject.

Previously to the elaboration of the OST, two important UN General Assembly resolutions and a treaty related to outer space were adopted. On the one hand, Resolution 1721 (XVI), on International Cooperation in the Peaceful Uses of Outer Space, from 1961, and Resolution 1962 (XVIII), on the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, from 1963, were the foundation for an outer space regime based on peaceful cooperation, freedom of access and exploration, and non-appropriation. On the other hand, the writing of the Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space, and Under Water commonly known as the Nuclear Test-Ban Treaty, already prevented the nuclearization of outer space⁴.

This way, current international legal regime on the Moon is based on a series of principles expressed on 1967 Outer Space Treaty, that referred to outer space and celestial bodies as 'province of all mankind' (art. 1). Hence, the legal regime of the Moon is based on the principles of freedom of access, use, exploration, and investigation (art. 1); of non-appropriation by any mean (art. 2); and of compliance with international law, cooperation and understanding as the basic for maintaining peace and security in outer space (art. 3). Moreover, the treaty specifies that the Moon shall only be used for peaceful purposes, forbidding not only the deployment of 'nuclear weapons or any other kinds of weapons of mass destruction', but also any attempt to militarise the satellite (art. 4). The same way, the treaty contemplates states' international responsibility for governmental or non-governmental activities conducted in outer space or the celestial bodies (art. 6), as well as liability for damage caused to other actors on the Moon (art.7). Finally, cooperation and mutual assistance are highlighted as driving principles for activities in outer space and the Moon (art.9)⁵.

The rest of the multilateral treaties, and other General Assembly resolutions and declarations of principles on the subject, followed the constitutive principles of the OST, whose provisions have become customary international law due to their sustained

⁴ GABRIELE LUCERA, Gianfranco. "International Geopolitics and Space Regulation", Oxford Research Encyclopaedias, *Planetary Science*, May 2019. Available at: <https://oxfordre.com/planetaryscience/view/10.1093/acrefore/9780190647926.001.0001/acrefore-9780190647926-e-40#:~:text=The%20classical%20geopolitics%20deals%20with,outer%20space%20con>

⁵ United Nations Office for Outer Space Affairs, "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies", 1967. Available at: https://www.unoosa.org/pdf/publications/ST_SPACE_061Rev01E.pdf

practice. The cooperative and open regime was thus extended to matters such as the rescue of astronauts, artificial Earth satellites or debris mitigation⁶. The attempt of the Moon Agreement of 1979 to recognise the Moon and its natural resources as common heritage of humankind in order to share equitably the benefits deriving from them, in a regime similar to the one established in the Convention On the Law of the Sea of 1982, was rejected by all space powers⁷. Therefore, Outer Space Treaty shall be considered the main one regulating the exploration and exploitation of the Moon.

Geopolitics of the Moon

Geopolitics has traditionally been an Earth-centred discipline, but technological development and space race during Cold War were the origin of a new domain for this science: space geopolitics. The realm of outer space, the Moon and other celestial bodies is still far from the focus of geopolitics, but it is becoming, due to its constitutive features and its resources, an important base for national power⁸. In fact, global security is increasingly interconnected to space security, as it is highly dependent on space-based communications, broadcastings, and observations. In this context, the complexity of threats in outer space and the proliferation of new actors are making the study of space geopolitics a matter of great relevance⁹.

Astropolitik vs. Liberal astropolitics

There are two main approaches to space and Moon geopolitics, coming respectively from the realist and from the liberal school. The first approach is commonly known as ‘astropolitik’, as it applies the principles of realpolitik to outer space. This perspective highlights the anarchic nature of outer space scenario, in which states compete for the

⁶ United Nations Office for Outer Space Affairs, “United Nations Treaties and Principles on Outer Space, related General Assembly resolutions and other documents”, non-dated. Available at: https://www.unoosa.org/pdf/publications/ST_SPACE_061Rev01E.pdf

⁷ GABRIELE LUCERA, Gianfranco. “International Geopolitics and Space Regulation”, Oxford Research Encyclopaedias, *Planetary Science*, May 2019. Available at: <https://oxfordre.com/planetaryscience/view/10.1093/acrefore/9780190647926.001.0001/acrefore-9780190647926-e-40#:~:text=The%20classical%20geopolitics%20deals%20with,outer%20space%20con>

⁸ DOLMAN, Everett. “New Frontiers, Old Realities”, *Strategic Studies Quarterly*, 6, 78-96, 2012. Available at: https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-06_Issue-1/dolman.pdf

⁹ AL-RODHAN, Nayef. “The interplay between outer space security and terrestrial global security”, *Harvard International Review*, 39, 29-33, 2018. Available at: <https://www.jstor.org/stable/26617360?seq=1>

obtention of resources and technological outreach. The competition in outer space, following American author Everett C. Dolman, is determined by the cartography of the space, which is divided in four key regions: Terra, Earth Space, Lunar Space and Solar Space. Rephrasing the famous statement by Mackinder, whoever controls Earth Space, which goes ‘from the lowest possible orbit to geo-stationary orbit’¹⁰, dominates outer space; and whoever controls outer space dominates the World¹¹.

From this realist approach, outer space, including the Lunar Space, which extend ‘from geo-stationary orbit to the Moon’s orbit’¹², cannot remain neutral, as sooner or later a state is going to weaponize it and try to achieve space hegemony to be hegemonic on Earth. Any state aspiring outer space hegemony should not only control or have access to the domain, but also be able to contest other states’ use of space by blocking or denying their access to it. Despite nowadays space contestation is only possible with asymmetric means from Earth, the first states aiming hegemony in outer space would have an advantage over possible competitors¹³.

Liberal astropolitics, as an alternative approach to space geopolitics, focuses on the possibilities that space exploration and exploitation offer in terms of international peaceful cooperation and institution-building. According to authors such as Daniel Deudney, the complexity of space should not fuel competition and mistrust but encourage win-win relations in which states achieve common national goals without scarifying their sovereignty¹⁴. International legal instruments such as the OST or institutional initiatives as the European Space Agency (ESA) or the International Space Station (ISS) are good examples of successful multilateral understanding and cooperation.

Regarding hegemony in outer space, liberal astropolitics consider that it is an undesirable outcome that is also incompatible with freedom and non-appropriation principle that are consecrated as the basis for outer space international regime. As far as hegemony

¹⁰ DOLMAN, Everett. “Astropolitik: Classical Geopolitics in the Space Age”, 2002.

¹¹ DUVALL, Raymond & HAVERCROFT, Jonathan. “Critical astropolitics: The geopolitics of space control and the transformation of state sovereignty”, in *Securing Outer Space* (pp. 42-58), 2009. Available at: <https://www.law.upenn.edu/live/files/7892-havercroft-and-duvallcritical-astropoliticspdf>

¹² DOLMAN, Everett. “Astropolitik: Classical Geopolitics in the Space Age”, 2002.

¹³ DOLMAN, Everett. “New Frontiers, Old Realities”, *Strategic Studies Quarterly*, 6, 78-96, 2012. Available at: https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-06_Issue-1/dolman.pdf

¹⁴ DUVALL, Raymond & HAVERCROFT, Jonathan. “Critical astropolitics: The geopolitics of space control and the transformation of state sovereignty”, in *Securing Outer Space* (pp. 42-58), 2009. Available at: <https://www.law.upenn.edu/live/files/7892-havercroft-and-duvallcritical-astropoliticspdf>

implies the possibility of denying other states access to outer space, the Moon, or other celestial bodies, it is infringing legal rights of other states, and therefore contrary to international law¹⁵. The same way, the legal regime built over the past sixty years has succeeded on preventing the weaponization of outer space and the Moon, but any real or perceived hegemonic attempt from a space power, especially in a domain characterised by uncertainty, could alter the situation and trigger a security dilemma and an arm race with unpredictable consequences.

Space security: opportunities and threats

The realm of outer space plays an increasing important role in the national strategies of many states, as it is a domain of great economic and security relevance. Advances economies are highly dependent on outer space for communication, observation, geolocation, Internet, and television broadcasting, among other activities¹⁶. Even though most of these activities are limited to the area known as Earth space, the Moon offers undeniable opportunities in terms of exploration, investigation, technological development, and resource exploitation. Moreover, many space strategies regard this satellite as experimentation field and departure point for future exploration of deep space and planets such as Mars; as well as a good candidate to begin with incipient activities such as space mining and installing permanent scientific settlements. Finally, outer space programs, and particularly those involving lunar ambitions, have important nationalistic and prestigious effects, as they enjoy great support from societies and boost economic and technological development¹⁷.

Considering security issues in outer space, the attention it receives increases in parallel with space economic relevance. Space security comprises three interrelated dimensions: security in outer space, related to space governance and sustainability; outer space for security, that is the use of outer space for defensive and security purposes; and security from outer space, that focuses on the use of space capabilities for issues such as

¹⁵ BURRIS, Matthew. "Astroimpolitic: Organizing Outer Space by the Sword", Strategic Studies Quarterly, 7, 108-129, 2013. Available at: https://www.jstor.org/stable/26270588?seq=1#metadata_info_tab_contents

¹⁶ AL-RODHAN, Nayef. "The interplay between outer space security and terrestrial global security", Harvard International Review, 39, 29-33, 2018. Available at: <https://www.jstor.org/stable/26617360?seq=1>

¹⁷ AL-RODHAN, Nayef. "The interplay between outer space security and terrestrial global security", Harvard International Review, 39, 29-33, 2018. Available at: <https://www.jstor.org/stable/26617360?seq=1>

environmental protection, disaster management, weather forecasts, floods or droughts¹⁸. With regard to the first dimension, security in outer space is highly dependent on the degree of cooperation between space powers and on the accomplishment of rules and principles of international space law. Outer space is exposed to complex unintentional and intentional threats that, in most of the cases, require multilateral responses and compromises. Unintentional threats, on the one hand, include the accumulation of space junk and the increasing risk of interference and collision due to the proliferation of space actors and activities¹⁹. National and multilateral initiatives such as debris monitoring and managing systems and space artefacts registers, together with provisions regulating international responsibility and liability for activities in outer space, help to mitigate and control unintentional threats this domain. Intentional threats, on the other hand, include space weaponization and colliding interests of space actors²⁰. Multilateral understanding can again mitigate the risk of escalation in outer space, but recent advances on anti-satellite technologies and cyber-capabilities able to target space-based communication and observation systems are exacerbating security concerns in outer space²¹.

The use of outer space for security, as a second dimension, is based on the use of space capabilities as part of security strategies on Earth²². This way, space assets can be used as support for civil and military activities, with important applications in fields such as communication, geolocation, or vigilance. Developing strong space capabilities requires important resources that are not at the disposal of every nation, but their value as support and deterring tools could outreach such investment. Meanwhile, many states opt for asymmetric balancing to contest rival space capabilities, developing anti-satellite weapons or cyber techniques and strengthening their support for space disarmament

¹⁸ FRANKOWSKI, Pawel. "Outer space and private companies: consequences for global security", *Politeja*, 50, 131-148, May 2017. Available at: <https://search.proquest.com/openview/39d284c2d0c9d0c1894670d70db61ac9/1?pq-origsite=gscholar&cbl=2030181>

¹⁹ AL-RODHAN, Nayef, "The interplay between outer space security and terrestrial global security", *Harvard International Review*, 39, 29-33, 2018. Available at: <https://www.jstor.org/stable/26617360?seq=1>

²⁰ AL-RODHAN, Nayef, "The interplay between outer space security and terrestrial global security", *Harvard International Review*, 39, 29-33, 2018. Available at: <https://www.jstor.org/stable/26617360?seq=1>

²¹ DOLMAN, Everett, "New Frontiers, Old Realities", *Strategic Studies Quarterly*, 6, 78-96, 2012. Available at: https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-06_Issue-1/dolman.pdf

²² FRANKOWSKI, Pawel, "Outer space and private companies: consequences for global security", *Politeja*, 50, 131-148, May 2017. Available at: <https://search.proquest.com/openview/39d284c2d0c9d0c1894670d70db61ac9/1?pq-origsite=gscholar&cbl=2030181>

international initiatives²³. Finally, the dimension of security from outer space is the most susceptible to international cooperation, as the equilibrium between national and collective interests is easier on subjects such as climate control or disaster management²⁴.

Space security issues, hence, have the possibility to strengthen the collective security system as it offers plenty options for multilateral compromise and cooperation. Many states are beginning to consider outer space as a separate strategic domain with its threats and opportunities; and therefore, positioning to face the new space era²⁵. However, current tendency appears to be shifting towards competence and mistrust rather than compromise and cooperation, and near-Earth space is becoming a growingly contested area²⁶. The Moon is especially affected by such rivalries, and a debate around its security and legal regime is arising as it is positioning at the scope of most of the space powers.

The new context of the Moon

Since the end of the Cold War, space geopolitics has seen a revolution due to economic and technological development and to the proliferation of governmental and private space actors. National space agencies and regional organizations such as the European Space Agency (ESA) or the Asia-Pacific Regional Space Forum are putting growingly ambitious space programmes into practice, and the number of private entities conducting space activities is increasing as more national regulations allow them to access outer space²⁷. This changing context is requiring new national strategies towards outer space and the Moon, as well as putting a string on international treaties and institutions related to the

²³ DOLMAN, Everett, "New Frontiers, Old Realities", *Strategic Studies Quarterly*, 6, 78-96, 2012. Available at: https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-06_Issue-1/dolman.pdf

²⁴ GABRIELE LUCERA, Gianfranco, "International Geopolitics and Space Regulation", *Oxford Research Encyclopaedias, Planetary Science*, May 2019. Available at: <https://oxfordre.com/planetaryscience/view/10.1093/acrefore/9780190647926.001.0001/acrefore-9780190647926-e-40#:~:text=The%20classical%20geopolitics%20deals%20with,outer%20space%20con>

²⁵ DOLMAN, Everett, "New Frontiers, Old Realities", *Strategic Studies Quarterly*, 6, 78-96, 2012. Available at: https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-06_Issue-1/dolman.pdf

²⁶ RAJA MOHAN, Chilamkuri, "The new geopolitics of the Moon", *The Straits Times*, July 2019. Available at: <https://www.straitstimes.com/opinion/the-new-geopolitics-of-the-moon>

²⁷ GABRIELE LUCERA, Gianfranco, "International Geopolitics and Space Regulation", *Oxford Research Encyclopaedias, Planetary Science*, May 2019. Available at: <https://oxfordre.com/planetaryscience/view/10.1093/acrefore/9780190647926.001.0001/acrefore-9780190647926-e-40#:~:text=The%20classical%20geopolitics%20deals%20with,outer%20space%20con>

area, that struggle to adapt to new space dynamics.

New players, new strategies

Current interest on the Moon is mainly fuelled by ambitions of new space actors and the reactive effect they are causing on traditional space powers, that are the US and Russia. Among these new space powers, China is the one with the most advanced plans for the Moon, with a Chang'e program that has already successfully conducted five missions and the intention to build a permanent base on the satellite. India, Japan, and Europe are also placing the Moon on the centre of their space programs, and despite some funding issues and setbacks as the one with India's Chandrayaan-2 mission of 2019, they are positioning for space and Moon exploration and exploitation. Russia and the US, as a reaction, are reactivating their space ambitions, and space is becoming a reflection of geopolitical competence on Earth. This way, space programs, apart from the pursuit of technological and economic interests and terrestrial security and strategic considerations, are generally driven by national pride and the search of international prestige²⁸. In the specific case of the Moon, the idea is using the satellite as a base with permanent settlements, the so-called 'Moon villages', to reach Mars and explore the deep space²⁹.

Despite objectives in outer space and the Moon might be similar, strategies and means deployed by space actors differ depending on their broader context, their strategic culture, and the economic and technical capabilities they have. China, in the first place, as the main cause of the revitalization of the race for space, arrived late to outer space in comparison with other great powers, but it has enormously increased its space capabilities since the 1990's, and it is currently the second state investing the most in outer space programs, just behind the US³⁰. Closely linked to its military development program, efforts in outer space are part of the Chinese Dream strategy, that aspires to bring China to a predominant global position. Excluded from the main multilateral space initiative, the International Space Station (ISS), China is developing its own space station

²⁸ NI, Adam, "Dreams in Space", in J. Golley, L. Jaivin, B. Hilman & S. Strange, *China Dreams* (pp. 105-110), ANU Press, 2020. Available at: <https://www.jstor.org/stable/j.ctv12sdxmk>

²⁹ RAJA MOHAN, Chilamkuri, "The new geopolitics of the Moon", *The Straits Times*, July 2019. Available at: <https://www.straitstimes.com/opinion/the-new-geopolitics-of-the-moon>

³⁰ AL-RODHAN, Nayef, "China aims for the Moon and beyond", *The Diplomat*, February 2018. Available at: <https://thediplomat.com/2018/02/china-aims-for-the-moon-and-beyond/>

and it plans, in the context of the Chang'e program, to install a permanent base on the Moon as a previous point to reach Mars and start exploring the deep space³¹.

The case of the US, in the second place, is marked by the revitalization of its space program as a reaction to Chinese increasing outer space ambitions. After it decided to shut the costly Apollo Program, finalising the space race, the US have kept a lower profile in outer space, participating in multilateral initiatives such as the ISS. However, in the last years the US has renewed its space ambitions to contest Chinese program, as part of a broader strategy of political, economic, and military contention towards China³². This way, US ex-president Donald Trump recently announced his intention to return to the Moon by 2024, and the NASA reactivated its Artemis program with the sight on balancing Chinese presence in outer space³³.

Continuing with European states, they are becoming more active in outer space, with their national space agencies cooperating mainly through two organizations with competences in the area: the European Space Agency and the European Union. Even though there is not a complete overlap between both organizations in terms of membership, the EU and the ESA have a common interest on promoting scientific and civilian activities on outer space and the Moon, as well as on sponsoring international normative production on the field. This multilateral and normative approach explains the important role that Europe plays in UN initiatives on space security and sustainability through the UNCOPUOS, and the proposal made by the two European organizations in 2007 of an International Code of Conduct for Outer Space Activities. To conclude, it is important to note that, since the publication of the EU Space Strategy of 2011, the organization is working, in cooperation with the ESA, to achieve bigger autonomy in space activities in order to assure the interest of the European nations in outer space³⁴.

Finally, there are other states which have relevant presence in outer space and play an important role in this proliferation of space actors. Russia, on the one hand, has

³¹ NI, Adam, "Dreams in Space", in J. Golley, L. Jaivin, B. Hilman & S. Strange, *China Dreams* (pp. 105-110), ANU Press, 2020. Available at: <https://www.jstor.org/stable/j.ctv12sdxmk>

³² AL-RODHAN, Nayef, "China aims for the Moon and beyond", *The Diplomat*, February 2018. Available at: <https://thediplomat.com/2018/02/china-aims-for-the-moon-and-beyond/>

³³ "Welcome to an era of space geopolitics", *The Frontier Post*, 2020. Available at: <https://thefrontierpost.com/welcome-to-an-era-of-space-geopolitics/>

³⁴ European Union Institute for Security Studies (EUISS), "Space And Security In Europe", *Space security for Europe*, pp.13-20, 2016. Available at: <https://www.iss.europa.eu/content/space-security-europe> (accessed 11/01/21)

traditionally been an actor of the first magnitude in outer space and the Moon. As such, Russia, or the USSR previously, was a key participant in the definition of outer space legal regime and has been an essential part of multilateral initiatives such as the ISS. However, Russian space programs has suffered funding reductions in the last years due to negative national economic situation and was particularly affected by Western sanctions following the annexation of Crimea in 2011. This way, the country is having difficulties maintain the rhythm of other space powers but is still reinforcing a space program that is key for its national prestige and internal legitimation³⁵. On the other hand, other states such as India, Canada or Japan are also strengthening their space capabilities, taking positions for the new space era.

Privatization of the Moon

Apart from the proliferation of states acting in outer space, recent years have seen the appearance of private actors with their own interests and activities in outer space. During the Cold War, the realm of space was limited to public initiatives and a small number of subcontracted specialised private companies. However, the end of the bipolar world and the liberalizing wave of the 1990's opened the field to private initiative, particularly in the US and the EU. Private companies offer financial, technical, and material capabilities that few states can afford; and governments can also use them to avoid public and international scrutiny over their activities in outer space³⁶.

Nevertheless, this process of privatization of space is still quite limited and complex, as the line between public and private, as well as between civil and military, is often blurred in space domain. This way, most of space investment is still public, and private activities are limited to certain areas, such as communication and observation, in which they usually merge with national projects, especially because private commercial use of outer space is still marginal. Their role, even so, cannot be disregarded in issues such as space regulation, in which they exert important influence on national governments to obtain

³⁵ AL-RODHAN, Nayef, "The Future of Meta-Geopolitical Competition in Outer Space", Institute For International Political Studies – ISPI, 2019. Available at: <https://www.ispionline.it/en/pubblicazione/future-meta-geopolitical-competition-outer-space-23531>

³⁶ FRANKOWSKI, Pawel, "Outer space and private companies: consequences for global security", *Politeja*, 50, 131-148, May 2017. Available at: <https://search.proquest.com/openview/39d284c2d0c9d0c1894670d70db61ac9/1?pq-origsite=gscholar&cbl=2030181>

favourable national regulation³⁷.

It is precisely in the field of international space law where a first problem arises with regard to private companies acting in outer space and the celestial bodies. Since the approval in 2015 of the US' Commercial Space Launch Competitiveness Act (Space Act), that allows commercial exploration and recovery of space assets by the citizens of the United States, there is an international debate around the subjection of private companies to international treaties such as the OST. Some states fear that US' Space Act is a first step for allowing private companies to start with mining activities in the Moon and other celestial bodies, and that other states could follow this regulatory trend, menacing the survival of the rules and principles of international space law³⁸. This issue is specially pressing in the case of the Moon, as private companies such as Elon Musk's Space Exploration Technologies or Jeff Bezos' Blue Origins have it on their scope in the medium term³⁹.

Moreover, private activities in outer space raise other noteworthy security concerns with threats such as signal disruptions, augmentation of space debris, lack of security guarantees facing cyberattacks, or treatment of satellite images that could be accessible for rogue regimes, terrorist groups or organised crime. Finally, some other economic and legal issues ought to be considered, especially those related to international liability for damage in outer space, to the extent of national jurisdiction and to the risk of appearance of space monopolies⁴⁰. To reduce disruptions caused by private participation in space, international law should be adapted to a context that has changed since the 1960's, with the basis of UNGA Resolution 68/74, of 11 December 2013, for Recommendations on national legislation relevant to the peaceful exploration and use of outer space, that already contemplated the subjection of private companies to international space law and

³⁷ FRANKOWSKI, Pawel, "Outer space and private companies: consequences for global security", *Politeja*, 50, 131-148, May 2017. Available at: <https://search.proquest.com/openview/39d284c2d0c9d0c1894670d70db61ac9/1?pq-origsite=gscholar&cbl=2030181>

³⁸ FRANKOWSKI, Pawel, "Outer space and private companies: consequences for global security", *Politeja*, 50, 131-148, May 2017. Available at: <https://search.proquest.com/openview/39d284c2d0c9d0c1894670d70db61ac9/1?pq-origsite=gscholar&cbl=2030181>

³⁹ RAJA MOHAN, Chilamkuri, "The new geopolitics of the Moon", *The Straits Times*, July 2019. Available at: <https://www.straitstimes.com/opinion/the-new-geopolitics-of-the-moon>

⁴⁰ FRANKOWSKI, Pawel, "Outer space and private companies: consequences for global security", *Politeja*, 50, 131-148, May 2017. Available at: <https://search.proquest.com/openview/39d284c2d0c9d0c1894670d70db61ac9/1?pq-origsite=gscholar&cbl=2030181>

practices. This Resolution was a first approach to the pending labour of updating space international law and harmonising national legislations on the topic.

Cooperation vs. competition: a new race for the Moon?

Today, there are about 60 states and 20 international organizations with presence in outer space, and the possibilities of use of the extra-terrestrial domain are expanding exponentially, both in the military and in the commercial areas. In this context, states struggle to adapt to a situation characterised by uncertainty, instant connectivity and interdependence, and try to achieve their national goals through growingly ambitious space programs⁴¹. The Moon, as it did during the space race between the USSR and the US, is in the centre of these new space ambitions, but with an important difference: this time it is not the final goal, but a departure point for what some authors are calling the new race for space.

The Thucydides Trap of the Moon

After an initial stage of strong competition between the US and the USSR at the beginning of the Cold War, international relations around outer space and the Moon have been characterised by cooperation and understanding. Apart from the normative production of the UNCOPUOS, the ISS program, functioning since the late 1990's, was the prove during two decades of the prevailing international spirit of cooperation in outer space, as it has been able to combine the efforts of the biggest space agencies to the moment of its creation: NASA (United States), Roscosmos (Russia), JAXA (Japan), ESA (Europe), and CSA (Canada). The same way, the announcement of this project coming to an end this decade due to the lack of agreement to keep financing it, illustrates current turning point in space geopolitics, in which cooperation seems to be yielding to international competition.

Recent years have seen the appearance of new space actors that are challenging the regime that have governed the space for fifty years. The case of China is especially

⁴¹ European Union Institute for Security Studies (EUISS), "Space And Security In Europe", Space security for Europe, pp.13-20, 2016. Available at: <https://www.iss.europa.eu/content/space-security-europe> (accessed 11/01/21)

relevant, as there is serious international concern about its ambitions in outer space and the Moon, as it is prioritising military space capabilities to ensure its presence in a domain considered the ‘new strategic frontier’⁴². Rapidly increasing Chinese military capabilities in outer space are more worrying as the state is not transparent with its space program, and its civil and military purposes are often difficult to delineate in outer space. This way, its highly advanced cyber and space capabilities, with polemic precedents as an anti-satellite test conducted in 2007, are raising fears of hegemonic ambitions and increasing the level of uncertainty and the risk of miscalculations in outer space⁴³.

China, however, is not the only state following this unilateral and security-focused strategy in space, as there is an ongoing tendency to develop isolated national strategies and militarise the domain. The risk of weaponization of space, hence, is becoming real, as some states, such as the US, Russia, China, or France, are creating military forces specific for outer space. The outer space is, this way, a growingly contested and competitive area, and states are rapidly developing their counter-space capabilities in a context of lack of trust illustrated, for example, in the development of four different types of globalisation systems: US’s GPS, European’s GALLILEO, Russian’s GLONAS, and Chinese’s BEIDU⁴⁴.

Nevertheless, current biggest threat for space governance and stability is the extension of terrestrial competition and contention strategies of the US and China to outer space. The US is reacting to Chinese ambitions and to the successes of the Chang’e program in the Moon, and it is positioning for a long-term competition for space predominance⁴⁵. On March 2019, US Vice-President Mike Pence said: ‘Make no mistake about it: we’re in a space race today, just as we were in the 1960s, and the stakes are even higher.’⁴⁶. These declarations illustrate the new competition for outer space, specially between the US and China. The Moon is to play a privileged role in this new race for space, as Chinese

⁴² NI, Adam, “Dreams in Space”, in J. Golley, L. Jaivin, B. Hilman & S. Strange, *China Dreams* (pp. 105-110), ANU Press, 2020. Available at: <https://www.jstor.org/stable/j.ctv12sdxmk>

⁴³ AL-RODHAN, Nayef, “The interplay between outer space security and terrestrial global security”, *Harvard International Review*, 39, 29-33, 2018. Available at: <https://www.jstor.org/stable/26617360?seq=1>

⁴⁴ RODHAN, Nayef, “The Future of Meta-Geopolitical Competition in Outer Space”, *Institute For International Political Studies – ISPI*, 2019. Available at: <https://www.ispionline.it/en/pubblicazione/future-meta-geopolitical-competition-outer-space-23531>

⁴⁵ BURRIS, Matthew, “Astroimpolitic: Organizing Outer Space by the Sword”, *Strategic Studies Quarterly*, 7, 108-129, 2013. Available at: https://www.jstor.org/stable/26270588?seq=1#metadata_info_tab_contents

⁴⁶ Cited in NI, Adam, “Dreams in Space”, in J. Golley, L. Jaivin, B. Hilman & S. Strange, *China Dreams* (pp. 105-110), ANU Press, p.109, 2020. Available at: <https://www.jstor.org/stable/j.ctv12sdxmk>

Chang'e and American Artemis programs want to use the satellite as a base for the exploration and exploitation of outer space.

Is the clash inevitable?

Despite the warnings of hegemonic intentions presented by some authors and the proliferation of a rhetoric of competition in certain political and military establishments, the fact is that all states with presence in outer space still act under the legal framework based on free access, non-appropriation and peaceful use of outer space, the Moon and other celestial bodies⁴⁷. The same way, current state of technological development does not permit the beginning of a competition for the control of outer space, and none of the space powers has the will nor the capabilities to engage in a race for the hegemony of the Moon⁴⁸.

However, the context of outer space and the Moon is changing rapidly, as more actors are participating in the extra-terrestrial domain, and technological development opens new opportunities of exploration and exploitation. The era in which interests on outer space were limited to scientific investigation and performances of national power and prestige has come to an end, and economic possibilities and the relation between space and global security are becoming the centre of the new geopolitics of the outer space and the Moon⁴⁹. The Outer Space Treaty and its associated legal corpus are not able to respond to the issues appearing with the proliferation of space public and private actors, and the lack of an international body with the capacity to enforce and control the international rules in the subject and resolve disputes has never been so noticeable.

The announced shut down of the ISS is seen by some analysts as the turning point from an era of multilateral cooperation and pacific use of outer space to another of competition and militarization. The US has already announced, as part of the Artemis program, its

⁴⁷ GABRIELE LUCERA, Gianfranco, "International Geopolitics and Space Regulation", Oxford Research Encyclopaedias, *Planetary Science*, May 2019. Available at: <https://oxfordre.com/planetaryscience/view/10.1093/acrefore/9780190647926.001.0001/acrefore-9780190647926-e-40#:~:text=The%20classical%20geopolitics%20deals%20with,outer%20space%20con>

⁴⁸ BURRIS, Matthew, "Astroimpolitic: Organizing Outer Space by the Sword", *Strategic Studies Quarterly*, 7, 108-129, 2013. Available at: https://www.jstor.org/stable/26270588?seq=1#metadata_info_tab_contents

⁴⁹ KOREN, Marina, "Why the Far Side of the Moon Matters So Much", *The Atlantic*, January 2019. Available at: <https://www.theatlantic.com/science/archive/2019/01/far-side-moon-china/579349/> (accessed 12/01/21)

intention to turn the page and focus on the construction of a space station orbiting the Moon that would act as a departing point for the exploration and exploitation of the satellite. In the meanwhile, China is building its own space station orbiting the Earth and plans to install a permanent base on the surface of the Moon⁵⁰. The ESA, Japan and Canada are willing to punctually cooperate with Artemis project, as the same time as they strive to obtain a bigger autonomy in outer space. Finally, Russia and India have recently declined to involve in any of these projects and would probably move towards isolated national strategies in outer space⁵¹. Unilateralism, hence, seems to be substituting multilateralism as the main tone of extra-terrestrial relations.

Nevertheless, this does not necessarily mean that interests and goals in outer space and the Moon are bound for collision, and that basic understanding between space powers is impossible. All actors share the certainty that space governance requires at least some kind of compromise and permanent communication. Some important security issues, such as debris management, control of satellites and broadcasting interferences need a coordinated and global response. There is also common ground for an agreement to update international legislation on outer space, regulating the participation of private actors and the economic exploitation of the area⁵². The Moon is probably going to be in the centre of this new legal impulse, as more countries are calling for the regulation of activities such as mining or colonization of the satellite⁵³. States were already able to leave their differences aside during the Cold War and regulate the pacific use of outer space and the Moon, so international community has a prove that confrontation can be avoided through compromise and cooperation.

Conclusions

Outer space and the Moon are back to the centre of the geopolitical arena and the international legal debate due to rapid technological advances and to the development of

⁵⁰ KOREN, Marina, "China's Growing Ambitions in Space", *The Atlantic*, January 2017. Available at: <https://www.theatlantic.com/science/archive/2017/01/china-space/497846/> (accessed 10/01/21)

⁵¹ "Welcome to an era of space geopolitics", *The Frontier Post*, 2020. Available at: <https://thefrontierpost.com/welcome-to-an-era-of-space-geopolitics/>

⁵² RAJA MOHAN, Chilamkuri, "The new geopolitics of the Moon", *The Straits Times*, July 2019. Available at: <https://www.straitstimes.com/opinion/the-new-geopolitics-of-the-moon>

⁵³ AL-RODHAN, Nayef, "The interplay between outer space security and terrestrial global security", *Harvard International Review*, 39, 29-33, 2018. Available at: <https://www.jstor.org/stable/26617360?seq=1>

an increasing number of ambitious strategies towards this domain. Since the Cold War, the Moon has been ruled by the principles of freedom of access, non-appropriation, and peaceful use, established on the Outer Space Treaty. However, new economic opportunities and threats in outer space, together with the rebalancing of the equilibrium of power on Earth, are altering the geopolitics of outer space and the Moon. The growing interdependence between space and global security is key in every national security strategy, and the principles of liberal astropolitics that have inspired outer space system for decades seem to be yielding to the crude rules of astropolitik.

In this context, the geopolitical game is becoming more complex, with the emergence of multiple actors with new capabilities, assorted interests, and disruptive strategies. In accordance with their strategic cultures and their possibilities, each of these actors is positioning for what can be considered a new space era, characterised by the augmentation of opportunities and threats in outer space and the proliferation of space actors. Additionally, the appearance of private actors in the board puts more pressure on a system of governance that is already struggling to adapt to new space conditions.

At the beginning of what some authors define as a new space race, it is only possible to speculate how will space and Moon geopolitics evolve in the next years. Current tendency is towards realism, competition and militarisation, as terrestrial rivalries are replicating in outer space relations and international regulation is becoming more obsolete every day. The spiral logic of confrontation between the US and China, as the two main actors in the new context, is specially worrying as it could sweep the rest of the space powers along. The clash, however, is not inevitable, as none of the space actors has the will nor the capacity to engage in a long-term confrontation in outer space, and space technology is still far from permitting a real conflict in the domain. Moreover, cooperation in outer space is now more necessary than ever, as issues such as debris management, space mining or the colonization of the Moon require a coordinated global response.

The future of Moon and outer space geopolitics will probably depend on the capability of the main space powers to come to an understanding on how to adapt the international legal framework of outer space to the new technological, economic, and political situation without renouncing to the principles that have ensured peaceful space governance for the last decades. In the same line, an initiative like the International Space Station, but open to emerging space powers, could play an important role as it would promote

transparency and confidence among the participating actors. Finally, an international body with the capacity to control the application of international law and to resolve extra-terrestrial disputes is today, considering the proliferation of actors, opportunities and threats in outer space and the Moon, more necessary than ever.

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