DOI: https://doi.org/10.37075/BJIEP.2023.2.02
Bulgarian Journal of International Economics and Politics, 2023, Vol. 3, Issue 2, pp. 27-41

Geopolitics in Space and the Role of the European Union

Ivo Tsekov, Ph.D.[1]

Received: 16.10.2023
Available online: 12.01.2024

Abstract

The changing nature of traditional geopolitics has seen world powers turn to space as the ultimate frontier and potential battlefield. This paper addresses one of the key issues in the international security agenda today: the rise of space as geopolitical concept. It shows how the topic has become a topic of concern to the international community. Its main objectives are 1.) to examine the current developments in the strategic posture of the leading space powers and 2.) to elaborate a new perspective on the European Union's role in space exploration which places at the centre of a debate the need for major improvements and autonomous capacity building.

Keywords: space geopolitics, space powers, EU's space politics
JEL: F5

Introduction

The utilization of space has already become a crucial aspect of our daily lives on Earth, encompassing communication, military tactics, and international affairs. Presently, it is emerging as the newest frontier for human exploration, exploitation, and potential domination. Similar to the Cold War era, space is rapidly evolving into a platform for heightened geopolitical rivalry as competing factions strive to be the first to harness the potential riches of the Moon and secure an early advantage in what they perceive as an increasingly vital sphere. Enabled by technological advancements and augmented by a growing number of space missions, this new race – pitting the United States and its partners against China and Russia – is expected to have significant implications for future global affairs and the economy. In the quest for this new type of domination, the successful exploitation of space resources is expected to provide long-term economic and strategic advantages to those states that first manage to gain a foothold.

[1] Senior assistant professor, Faculty of Law, Sofia University, e-mail address: icekov@uni-sofia.bg

The nations that succeed in harnessing the vast resources out there will be in a unique position to not only dominate future markets but also play a crucial role in lunar governance mechanisms – an area that is sorely lacking in proper legal framework.

Despite the challenges posed by inflation and energy uncertainty in the global economy, the global space industry is experiencing rapid growth. As per the Space Foundation's report published in July 2023, the space economy expanded by 8% in the previous year, reaching $546 billion, which is a remarkable 91% increase over the past ten years (Tunik, 2023). Why is this trend manifesting itself and what has changed in the traditional geopolitical landscape and strategic thinking?

Classical geopolitics adapted for the new Space Age

Traditionally, geopolitics is the link between the state and its territory and the geographical basis for state power. Locations, terrain, commercial pathways, urbanization and critical resources can determine the wealth of a state. However, geopolitics has been changing along with the world, very recently as well as over the last few decades. The discipline was once the static study of place concerned with how states, cities and armies are arranged on Earth's surface, with the map being the key tool. However, during the past several decades studies in geopolitics have adapted to the new realities of technology, economy and security in order to include new and emerging domains like cyberspace and outer space.

In order to understand current and future developments we have to look at major changes in power balance and struggle between actors for the conquest of space. From an essentially bipolar Soviet-American dynamic in the 1950s, the space race quickly encompassed other participants, with the establishment in the 1960s of a European cooperation that evolved into the European Space Agency in 1975, as well as with the development of space programs in China, India and Japan already in the 1960s. What has changed in the last twenty years is a significant reduction in the cost of access to orbit; the use of mega constellations of cheap, interconnected, and quickly replaceable small satellites that can be updated and replaced in months rather than decades, and generational advancements in launch and delivery systems.

Traditionally, the race for the stars is driven by multiple goals. Motivated in particular by security considerations, the ambition is first and foremost to position itself as a space power capable of creating a space economy and an army that can in turn produce and finance very high-level and next-generation infrastructure technologies, satellites, vehicles, rockets or missiles – such as the development of the small satellite sector. In this perspective, recognition in the space domain contributes to the efforts of institutional actors to build a more general image of power.

Another issue of recent years is certainly the increasing normalization of privatization and/or commercialization of outer space. Not only does outer space remain a place of rivalry between institutional actors, but it also becomes a place of confrontation between

the most important private capital in the world, particularly North American and Chinese, paving the way for burgeoning space trade and resources-based economy. Some notable examples include the NASA contracts awarded to SpaceX and Blue Origin to develop a human landing system for the moon. Japan's iSpace has also been building both a landing system as well as resource detection and extraction capabilities, while India has now taken the decision to privatize its own space missions. Water ice – critical for life, oxygen and hydrogen – and helium-3 – crucial for rocket fuel and nuclear fusion – are perhaps the two most valuable commodities on the moon, which is also believed to contain elements such as titanium, platinum, iron ore and aluminium that could be used to build important structures (Dominguez, 2023). Of particular interest is a substance called helium-3, discovered in abundance on the Moon by geologist-astronaut Harrison Schmidt during the last Apollo mission in 1972. Radiated throughout our solar system on light waves from the sun, helium-3 is an extremely rare element on Earth because it cannot penetrate our planet's thick atmosphere. But the airless moon is a near perfect collector. What makes helium-3 so potentially valuable is the increasingly widespread belief among nuclear engineers that it can safely and cheaply power fusion reactors. Unlike enriched uranium, reprocessed plutonium, or thorium, helium-3 is a fuel with the potential to supply a near-infinite amount of electricity without posing any danger from radioactive waste, accidents, natural catastrophes, terrorist sabotage or wear and tear on its plant's containment walls (Andrews, 2023).

As a result, around the turn of the new millennium, Everett Carl Dolman coined the term *Astropolitik*, which envisages great power rivalry in the newly-established frontier, and space becoming an arena of combat just like land and oceans on Earth. As nations vie for influence in outer space, develop anti-satellite weapons, train specialized space forces, and space-based assets and applications power digital economies, *Astropolitik* and its implications are more relevant than ever. *Astropolitik* is defined as the relative value of specific locations and access to them that shifts against the backdrop of emerging technologies (Chaturvedi, 2023).

The essentials of geo and *Astropolitics* remain the same: gain control of the most valuable positions, pathways, chokepoints, and resource bases and, at a minimum, ensure that your opponent does not. This can be done directly through a combination of military and diplomatic means, or indirectly through institutional, cultural, or moral change. From a realistic perspective, the surest way to ensure control and effective contestation of space is to endeavour to seize and hold those critical locations with force. Control of low Earth orbit would, if achieved, allow the conquering state to dictate who could place assets in space, thus gaining value from it. It has been said that space is an advanced indicator for politics on Earth. The politics of space is not generated in a vacuum but is very much shaped by geopolitical tensions and realities here on Earth. Competition and concerns about space capabilities arise largely from how one views the owner of those capabilities: an ally or partner is generally not recognized as possible threat, but a geopolitical competitor's capabilities are viewed with concern and expectations for the worst-case scenario. As such,

heightened military tensions elsewhere contribute to increased tensions about activities in orbit (Institute Montaigne, 2021).

Today, the United States is the foremost country in space exploration and spending, with China, Japan, and France following closely behind. India, the latest addition to the nations that have successfully landed on the Moon, currently holds the seventh position but is anticipated to make noteworthy advancements in the near future.

Extensive analysis predicts that the space industry will experience ongoing expansion, and according to a cautious projection, its worth is expected to reach approximately $800 billion in the next five years. But how are all space powers currently positioned and where in this new security and economy paradigm does the European Union sit?

The U.S.: The leading space superpower to remain

After the end of the Cold War, the United States has continued to hold a prominent position in government spending on space. However, there has been a noticeable decrease in the proportion of the federal budget dedicated to space exploration in recent times. In 1966 alone, NASA's expenditures constituted approximately 4.5% of the federal budget, whereas in recent years, it has decreased to 0.5% – a trend considered logical after the end of the Cold war and the emergence of the US as a single superpower for a short time in the 1990s. By comparison, the United States' defence budget accounts for about 20% of the total budget.

Today the U.S. is leading efforts to establish a sustained human presence on the moon through Artemis, a multinational program meant to return astronauts there as early as 2025 and create a lunar outpost for Mars missions and deep-space exploration. Like any initiative of such magnitude, key to this program is Washington's push to secure partners that can share the costs and burdens of such an endeavour. So far, 29 countries have signed up to the Artemis Accords, including established and emerging space players such as Japan and India, as well as U.S. military allies like South Korea, France and Germany.

The current National Security Space Strategy projects a direction for the next decade in order to respond to the current and potential space strategic environment. Leveraging emerging opportunities will strengthen the U.S. national security space posture while maintaining and enhancing the advantages the United States gains from space (NSSS, 2011).

In addition, on December 20, 2019, the United States Space Force was established as the nation's sixth military service. Consistent with the US National Defense Strategy, the United States Space Force are expected to ensure that the US competes, deters and wins future space-related conflicts thereby ensuring its national security. The first new branch created since the U.S. Air Force in 1947, the Space Force found its way into the national security establishment and public consciousness with focus on national security while NASA focuses on space science and exploration (Garamone, 2019).

This enterprise is mostly being challenged by efforts from both China and Russia, which create a delicate interplay between the three powers.

China: The biggest emerging challenger

China successfully landed a spacecraft on the moon two decades ago, following the former Soviet Union and the United States. Subsequently, China established its own space station as it was denied access to the International Space Station, primarily due to objections from the United States regarding the strong connection between China's space program and its military.

As a result, Beijing created its own space station, named Tiangong, adding a third module to the station in November 2022. China and the United States have successfully deployed rovers on Mars. Additionally, China intends to pursue an asteroid landing mission, emulating its American counterpart.

China is itself on a quest for space allies and partners. Through Tiangong, it strives to showcase scientific and technological experiments and exchanges. As with the ISS, China parades its space station's range of partners — including the European Space Agency, France, Germany, Italy, Russia, Pakistan, Kenya and the UN Office for Outer Space Affairs. Tiangong is hailed as the "first of its kind open to all UN member states" (Pekkanen, 2022).

The ISS is currently projected to survive to 2030, while Tiangong is expected to remain operational for about 10 years. But collisions with debris and other objects are a common threat. Then there are the disturbing 'uncontrolled' threats. As the viability of China's space stations has grown, so too has the finger pointing about uncontrolled entries and failures to engage in responsible behaviour. China has drawn criticism for the uncontrolled re-entries of parts of its Long March 5B rocket that delivered modules to Tiangong. The debris has scattered all over the world – in the Ivory Coast in 2020, in the Indian Ocean in 2021, and near the Philippines' Palawan Island and in the Pacific Ocean in 2022. The uncontrolled entry of its experimental space lab in 2018 was also a cause for global suspicion (Ibid.). These threats are common to all space stations and when wrapped up in geopolitics they can be useful for bringing allies on board. While it is not clear whether allies will stay glued to one side or the other, it is evident that alliance politics is extending to space more than ever before. This is why China may well work towards cultivating a reputation for more responsible stewardship of space.

In the meantime, China has set a target of landing humans on Mars by 2033, in addition to several long-term plans, including missions planned for 2035, 2037, and 2041. These plans were detailed to the public for the first time in 2021 after China successfully landed its first Mars rover, Tianwen-1, China's first successful Mars mission following the failure of its previous mission, Yinghuo-1, in 2011 (Auslender, 2023). China has also announced plans to send additional rovers to explore potential Mars base sites and build various systems for resource extraction, including water, oxygen, and electricity production. China has been actively seeking to attract international cooperation, including offering frequent launches at attractive prices. China's government has made conquering outer space a key strategic priority, with the nation's reported $8 billion space budget second only to the U.S. (Campbell, 2019).

Russia: Not a space power in decline despite Luna-25 failure

The Soviet Union was the first nation to launch an artificial Earth satellite into orbit and the first to send a man into space. After the success of America's Apollo 11 mission in July 1969, the Soviet manned lunar programme was quietly restructured. The USSR was satisfied with the launch of automatic stations, where there were undoubted successes, primarily the work of moon rovers and the delivery of lunar soil to Earth in an unmanned mode. In the post-Soviet period, Russia's activity in the study of the Moon and interplanetary space subsided for obvious reasons with two most notable failures in the Martian projects: "Mars-96" and "Phobos-Grunt" in 2011.

In late summer 2023 Russia's Luna-25 mission was competing with India's Chandrayaan-3, which is orbiting the Moon and is also likely to attempt to touch down near the pole in late August. Whichever country lands first could receive the title for being the first to land a spacecraft intact on or near this region. The Luna-25 mission ended in failure and as a result, one could observe a discussion in the Russian media about how appropriate this flight was amid the current situation. The prevailing point of view was that the launch was needed, because, first, the Luna-25 project was old, its launch had been postponed many times, the ballistic window of opportunity for launching a rocket closes rapidly and falls infrequently and there is nowhere to move further. Second, and no less important, it was necessary to show that even during the current military conflict in Ukraine Russia not only endures, but is capable of launching other notable projects thereby project power and influence.

The past decade has witnessed a period of stabilization for Russia, contrary to prevailing opinions. In the mid-2010s, Russia's share of space power experienced a notable increase, although it was subsequently impeded by India's entry into the competition. Throughout this period, Russia has consistently augmented its portion of launched objects and sustained its share of scientific accomplishments. However, the most significant development has been the reestablishment of Russia's dominance as the foremost military space power. This resurgence can be attributed to the revitalization of its Soviet-era military space systems, spearheaded by the newly formed Russian Aerospace Forces in 2015. Russia restarted operations testing in both low Earth orbit and geosynchronous orbit, signalling a potential co-orbital ASAT program in the works. Additionally, Russia has also tested an anti-satellite weapon nearly every year from 2014 to 2021. This includes direct-ascent ASAT weapons like the notorious 2019 and 2021 debris-generating tests. Since the war in Ukraine began in 2022, Russia demonstrated cyber capabilities, hacking a Viasat ground station and jamming capabilities throughout Eastern Europe (Duchaine, 2023).

Despite the stagnation of Russia's scientific space sector, the country's share of launches has steadily increased over the past decade, along with its military capabilities. It is important to not let temporary setbacks overshadow a nation's overall potential. Underestimating Russia's capabilities would be unwise. The failure of Luna-25 should not be seen as indicative of Russia's space trajectory, as the country is actively rebuilding its military space systems,

stabilizing its space power, and remains a highly capable and potentially dangerous space force with a formidable space military.

Russian space activities took a new turn throughout the last decade, leaving its conditions from the post-Cold War era to envision a new geopolitical importance of outer space and design a new diplomatic architecture. With the war with Ukraine raging, Russia may attempt to broaden its cooperation with non-Western partners in the space field, including China, Turkey and the UAE (Vidal, 2023).

Japan: In search of its own path to the Moon

Although Japan is among the leading countries in terms of investment in space exploration and general technological advancement, it has suffered some high-profile failures along the way. In 2022 alone, these included a failed moon landing attempt, an engine explosion during a test, and a decision to destroy one of its flagship rockets due to ignition problems. Nevertheless, Japan's fortunes may be changing.

In September 2023 Japan launched a lunar mission with hopes of becoming the fifth country to join the exclusive club after India's successful mission this summer. The Japanese SLIM project is expected to land on the Moon in four to six months. This extended timeline is due to the mission's highly efficient computer systems that minimize fuel consumption. Japan also aims to collaborate with India on a lunar exploration mission set to launch after 2025 (Tunik, 2023). The LUPEX mission is designed to collect data on lunar water with the goal of determining its potential use in sustainable space exploration missions. However, Japan's most significant contribution in the field may come through its involvement in the American Artemis program, which seeks to return astronauts to the Moon. In November 2022, Tokyo signed an agreement with Washington that opens the way for Japanese astronauts to be stationed at the future research base on the Moon. The U.S.-Japanese partnership is seen as a key move within their geostrategic rivalry with China. Moreover, the government plans to establish a new $6.6 billion fund in a bid to develop the country's outer space industry. The funding, which will support JAXA and the development of Japan's space industry, was a response to increased public and private sector focus on space activities and underscores the strategic importance Tokyo places on outer space race (Beattie and Exum, 2023).

India: A hopeful newcomer

India's space program is one of the most advanced in Asia. India's proven civil and military space capabilities include space missions for earth navigation and observation and missions to Mars and Moon. Besides, it has the capabilities of ASAT weapons as well as the ability to simultaneously launch satellites into multiple orbits. India stepped onto the world stage in 1980 as a rising space power when it launched its first satellite from the Satish Dhawan Space Center (Hussain and Shahzad, 2023).

As of today, India may not be ranked among the top five nations in terms of government spending on space exploration, but the successful landing of Chandrayaan-3 near the Moon's south pole in August 2023 has elevated its status in the space race. This lunar landing, four years after the crash of Chandrayaan-2, is expected to give a significant boost to India's space industry, valued at around $8 billion (approximately 2% of the global space economy). Its recent annual growth rate of 4% outpaces that of most other nations in the field, and forecasts suggest that it could reach $40 billion by 2040 (Tunik, 2023). These estimates are likely to change following the historic mission's success.

India aspires to follow NASA's lead and make the space sector open to private investments and initiatives. It has been particularly effective at launching satellites, with 381 foreign satellites for 34 countries launched since 1999, generating $279 million in revenue. Sectors like aviation, space, and defence will now receive a boost. In India, there are about 140 startups in the space sector. These companies will attract a lot of investment after the success of this mission. Government funding in the field is also expected to increase, providing a significant boost to the Indian economy.

By showcasing its technological prowess, India's space program reminds the world not only of its innovative capabilities, but also of its capacity to help shape solutions to global challenges in other areas, from cyberspace regulation to peacekeeping. How India's global role more broadly will evolve remains to be seen. But the country's achievements in space undoubtedly strengthen its diplomatic hand, not least because of the respect they inspire in other countries (Tharoor, 2023).

The EU space agenda today

So far each country has a different approach to reaching Mars. In India, the funding is public, the project is largely civilian, transparent, and involves some commercial collaboration. The Chinese project is government-funded and military-led, resulting in a heavily funded initiative imbued in secrecy. In Europe, there is collaboration between the European Space Agency and Russian space agency Roscosmos via the ExoMars programme, which included a failed attempt to land a rover on Mars in 2018, with another rover mission expected to reach Mars in the near future.

The ESA (European Space Agency), the space Agency of the 27 member European Union, is quite complex organisation, with its own GNSS navigation system (Galileo), state-of-the-art Earth observation Copernicus program, and spaceport in the exotic French Guiana – an overseas department of France on the northern coast of South America.

ESA also has active partnerships with other space agencies such as NASA. In 1978, ESA and NASA together launched IUE (International Ultraviolet Explorer), the world's first high-orbit telescope that operated for 18 years. It is noteworthy that ESA, founded in 1975, is older than the Maastricht Treaty of 1992, the foundational agreement of modern European integration. This goes on to show that space cooperation in Europe, has not preceded abiding collaboration in a lot of areas.

During the 1960s and 1970s, there was increasing recognition within European nations that an increasing level of international cooperation would be necessary in order to embark upon larger space projects. In 1973, the European Space Research Organisation (ESRO) - a precursor to the European Space Agency - commenced development of a new civilian heavy expendable launch system, later known as the Ariane rocket. Some members of the ESA, such as the French space agency Centre National D'études Spatiales (CNES), harboured ambitions of greater capability and autonomy in space affairs to avoid an overreliance upon external partners, such as the activities and decisions of NASA, and envisaged the deployment of a European-built human-capable space vehicle that would operate in conjunction with other ESA assets, such as Ariane.

As a result, in 1975 CNES proposed spaceplane superficially similar to the American Boeing X-20 Dyna-Soar and the larger Space Shuttle. Its name was Hermes and was to have been part of a crewed spaceflight program. It would have been launched using an Ariane 5 launch vehicle. In November 1987, the project was approved; it was to commence an initial pre-development phase from 1988 to 1990, after which the authorization to proceed to full-rate development was to depend on the outcome of this phase. However, the project was subject to numerous delays and funding issues around this period. In 1992, Hermes was cancelled. This was in part due to impossible cost and performance goals, as well as the formation of a partnership with the Russian Aviation and Space Agency, which reduced the demand for an independent crewed spaceplane. As a result, no Hermes shuttles were ever built (EESA, 2011). Unfortunately, developments like this one, paved the way for further dependency on Russian and/or American space technology in the years to come.

The EU is also at the forefront of creating regulatory frameworks that strike a balance between safety, transparency, responsibility and innovation, and Brussels should keep driving change here. The increasing number of satellites and debris in the Earth's orbit necessitates a coordinated approach to safeguarding the security of EU and Member States' space assets. The current efforts to codify a comprehensive European space law and code of conduct by 2024 are long overdue and should lay the groundwork for responsible, sustainable space activities, including standards for an effective space traffic management, space debris mitigation, emission reduction and off-set, as well as tackling issues of growing light pollution (Nienass, 2023).

When discussing the release of the EU 2022 Strategic Compass for a stronger EU security and defence in the next decade, Joseph Borrel, the High Representative of the European Union for Foreign Affairs and Security Policy, emphasized that Europe can be considered a significant space power. This claim is supported by Europe's substantial market share in the global space industry and its successful space initiatives such as Galileo and Copernicus. However, it is important to note that the status of a space power should not solely be based on market share or simplified indicators like the number of equipment launched or active satellites. A true space power should possess the technological capability to independently deploy, operate, and manage space-related assets in order to effectively support national security and economic interests. Despite Europe's notable achievements and its current

position in the international space community, it does not fully meet these requirements at present.

The European continent is widely recognized as a highly skilled participant in the global stage, showcasing cutting-edge capabilities across various domains. Its diverse entities, including the EU, ESA, EUMETSAT, member states, and emerging startups, have amassed a comprehensive range of capabilities and accomplished numerous triumphs through ground-breaking missions and programs. Notable achievements include ESA's successful science missions, the operational Copernicus and Galileo programs, and pioneering commercial solutions in various sectors.

That said, Europe lags behind other leading space powers in several crucial hard capacity macro-areas such as human space exploration, space military, and space control.

Furthermore, the widening gap and potential loss of ground in comparison to former partners is a pressing concern for Europe. These partners are rapidly advancing their space programs, further exacerbating the situation. The ongoing crisis surrounding European launchers serves as a stark reminder of the inherent dangers of losing crucial capabilities.

It is crucial to emphasize that Europe's dependence on final products or systems is not the primary issue at hand. Instead, the real challenge lies in the reliance on fundamental technologies. The level of technology on which a country or region depends directly correlates with its vulnerability. The lower the level of technology, the greater the weakness of the country or region.

While Europe possesses the broad majority of processes and industrial capabilities needed to undertake space programmes, European stakeholders still need to externally source many critical components, raw and advanced materials as well as some basic and digital technologies and building blocks that are not available within Europe. This most notably includes software, advanced materials, equipment, processes, and modelling tools (Aleberti, 2023).

From a political perspective, Europe remains very vulnerable to the influences and impositions of foreign actors when it comes to both its external and internal decisions. An analysis of the broader European space relations with foreign actors clearly shows how sensitive Europeans are about preferences of its closest ally, the United Sates. This "sensitivity" ultimately points to the fundamental structural weakness in Europe's space policy and diplomacy, namely the current pan-European struggle to advance its own space agenda when it may directly affect interests and security aspects of Washington's space policy.

The limitations and dependencies arising from the current political setting prove to be a specific feature of the EU's status as a global player in the field of international relations. In addition, due to the complex web of relationships, institutions, and multi-level sharing of competences between national and EU-wide bodies, Europe as a whole lacks the fundamental features defining autonomy over space matters. Specifically, the interplay between national, intergovernmental and private sector frameworks still is a source of institutional ineffectiveness, often negatively influencing Europe's ability to develop a clear and coherent strategy for the future and to act decisively on it.

The way forward

If Europe is not a proper space power at present, it can nonetheless become one. Crucially, it must become one, because what is at stake here is much more than its relative position in the global space politics. The European Commission and the High Representative for Foreign Affairs and Security policy, Josep Borrell, launched the European Union Space Strategy for Security and Defence (EU Space Strategy) on 10 March 2023. The EU Space Strategy is the most recent in a growing sequence of policy initiatives in the security field adopted by the European Union. The EU Space Strategy represents a significant development as the EU assumes an active role in acquiring hard power capabilities in space. The significance of the EU Space Strategy resides in the fact that it reflects an unprecedented drive for a transition from a mostly civilian to a civil/military use of outer space by leveraging dual-use assets (Munos and Portela, 2023).

Some 18,500 small satellites - those weighing less than 500 kilograms - are expected to be launched in low Earth orbit between 2022 and 2031, compared to 4,600 in the previous decade. That amounts to a tonne of material sent into space each day for the next 10 years, according to specialist consultants Euroconsult. Launch services are expected to almost quadruple their sales by 2031 to $28.4 billion. Nowadays, most of Europe's spaceport projects are planned as private sector initiatives. The geographic location of a launching pad is crucial, with sparsely populated areas required in case of technical challenges with the launch. In addition, launching rockets closer to Europe's production sites avoids long and costly transportation to distant launch sites, which is bound to make it cost effective and more attractive to potential customers (PhysOrg, 2022).

The invasion of Ukraine in February 2022 has spurred an international race for satellite communication technology from Stockholm to Taiwan, as it is considered to be the first new technological struggle to demonstrate the value of high-speed internet in times of military conflict. The cost of inaction by the EU in this evolving environment – socially, military, politically and economically – is greater than the cost of being engaged.

If Europe were to develop and manage an independent commercial programme to get its own astronauts into space it would demand a big increase in public spending to jump-start and improve the necessary capabilities. To that end, in January 2023 Europe unveiled of the continent's first satellite launch complex in Arctic Sweden, bringing the European Union into a global push for a technology considered of utmost strategic importance to the future of telecommunications, navigation and warfare. With the development of its own satellite launch capacities, the EU hopes to achieve a repeat of its success in launching the Galileo navigational system in 2016, a more sophisticated EU-owned alternative to the wide-spread GPS standard, which is property of the US government and managed by its Department of Defense (O'Leary, 2023).

Europe's political sovereignty over space matters, its ability to develop and fully benefit from space exploration capacity, and its declared objective to assert itself as an independent player and global partner to willing countries are the primary concerns in this

context. The lack of autonomous capacities in Europe may limit its freedom of action and ultimately hinder its ability to determine when and under what conditions to develop and deploy its space programme. Moreover, maintaining the status quo may impede Europe's autonomy in selecting its partners, leaving it vulnerable to external forces. From a political standpoint, no actor with strategic ambitions in space can afford to bear the consequences of such a high level of dependence.

To achieve and sustain the status of a space power in Europe, two key conditions must be met. Firstly, there is a need to enhance its technological capabilities by continuously upgrading existing assets and developing new capacities. Secondly, the integration of these newly developed capacities into European and national infrastructures, policies, and strategies is crucial. Establishing and maintaining an appropriate level of autonomy enabling Europe as a whole to develop and use its space programme without the necessity of seeking any kind of external permission or support (Ibid.).

To this end, the EU should revisit its strategic cooperation with NATO. The Alliance's policy on space is outlined in several documents, such as the 2019 NATO London Summit Declaration and the 2019 Space Policy. These documents highlight how space has become a contested domain, as nations vie for access to space-based resources such as satellite communication frequencies, navigation services and remote sensing data. Determining and representing current EU space ambitions with respect to NATO should be done at the national level, through an established coordination structure, or by any other appropriate methods. In addition, the EU needs to assess how NATO has become more dynamic since the beginning of the conflict in Ukraine and make sure that its strategy and NATO's space policy are in sync.

"Aiming to also further strengthen solidarity, mutual assistance and crisis response in case of attacks originating from space or threats to space-based assets, including through exercises," the EU and its Member States write in the Strategic Compass. As a result, the Strategy ought to specify the circumstances around collective action, including when and under what circumstances it should be triggered. Stated otherwise, what is the cut-off point that designates an attack? Alternatively, given the UN Charter's description of "self-defence," what should be the threshold at which the EU and its Member States retain the right to retaliate? This needs to be defined with consideration for NATO-level discussions (ESPI, 2023).

Determining whether or not this definition should be publicly disclosed is also necessary, since doing so would bolster strategic ambiguity and give Europeans wiggle room in the event of a crisis.

Any European decision to achieve space power status and fully utilize the value of space should be driven by political motives. This entails providing political guidance to economic actors, surpassing the sole reliance on economics as the driving force behind Europe's space ambitions. Ultimately, the transformation of Europe into a fully-fledged space power hinges on the political determination of the highest level. If the European Union aims to engage in global affairs as a major power on par with the most influential nation states, then Brussels must acknowledge the urgent necessity for substantial reforms in the Union's space policy and strategy, and ensure their swift and efficient implementation.

Conclusion

Geographical factor has long played a central role in global politics, influencing strategies, and decisions made by nations. With the rise of multipolar international system and changing alliances, geopolitics has regained prominence. In addition to land-based, air-based and sea-based powers, the concept of space power has emerged as a determinant in this new geopolitical matrix (Glogulska, 2023).

Space is no longer limited to civilian applications or satellite deployment. It has become a new frontier for interplanetary exploration, resource extraction, and scientific projects. As space becomes increasingly contested and somewhat overcrowded, more countries than ever before are vying for control to secure their orbital space and maximize the potential of space-related activities.

It is evident that we are currently immersed in the second space race, which differs significantly from the first that was fuelled by the rivalry between the US and the USSR during the Cold War and culminated in Neil Armstrong's landing on the Moon in 1969. The current space race is primarily motivated by economic interests, with military objectives being a secondary factor. However, considering the significant political divisions on Earth, it is plausible to anticipate the emergence of increasingly fragmented and loosely aligned blocs of nations, with one led by the US and another by China, vying for dominance in space. To this day, only four nations have landed on the Moon. Within the next seven years, this number could rise to 15, depending on the success of missions from a host of other countries (de Urquia, 2023). With more than 80 nations having a presence in space, the days of a two-way competition are over, giving way to an open race to explore and mine space where no ally – private or public – can be overlooked and in which the Moon, once again, seems to hold the key. The potential for conflict is obvious. In conclusion, space has become a critical component of geopolitics, serving as a means for power projection, resource exploration, and scientific advancements. The control of space holds the key to influencing the destiny of humankind and determining the future of nations and global security.

References

Aliberti, M. (2023). "Europe as a Space Power". European Space Policy Institute. October 1, 2023. [Online]. Available at: https://www.espi.or.at/briefs/europe-as-a-space-power/ (last visited September, 2023).

Andrews, L. (2023). "What exactly is the new space race all about?" In: *The Spectator*. September 30, 2023. [Online]. Available at: https://thespectator.com/topic/exactly-new-space-race-all-about/ (last visited October, 2023).

Auslender, V. (2023). "The new space race: Mars, the Moon, and the new political frontier". CALCALIST/CTech, October 1, 2023, [Online]. Available at: https://www.calcalistech.com/ctechnews/article/ryjnpsiga (last visited October, 2023).

Beattie, E. and Exum, A. (2023). "Japan to create ¥1 trillion fund to develop outer space industry". In: *The Japan Times*, November 13, 2023. [Online]. Available at https://www.japantimes.co.jp/business/2023/11/13/japan-space-business-budget/ (last visited November, 2023).

Campbell, C. (2019). "From Satellites to the Moon and Mars, China Is Quickly Becoming a Space Superpower". In: *Time*, July 17, 2019. [Online]. Available at: https://time.com/5623537/china-space/ (last visited September, 2023).

Chaturvedi, A. (2023). "Classical Security Dilemma in New Space Age". In: *Geospatial World*, October 4, 2023. [Online]. Available at: https://www.geospatialworld.net/prime/security-dilemma-new-space/ (last visited October, 2023).

de Urquia, B. (2023). "The new Moon race: behind India and China's space ambitions, Engineering and Technology". Engineering and Technology, October 1, 2023. [Online]. Available at: https://eandt.theiet.org/content/articles/2023/09/the-new-moon-race-behind-india-and-chinas-space-ambitions/ (last visited September, 2023).

Dominguez, G. (2023). "Geopolitics in space: Why great powers are scrambling for the moon". In: *The Japan Times*, October 8, 2023. [Online]. Available at: https://www.japantimes.co.jp/news/2023/10/08/world/science-health/global-space-race-moon/ (last visited October, 2023).

Duchaine, D. (2023). "Despite the Luna-25 failure, Russia is not a declining space power". In: *The Space Review*, August 21, 2023. [Online]. Available at: https://www.thespacereview.com/article/4641/1 (last visited September, 2023).

EESA (2011). History: Hermes spaceplane, 1987. The European Space Agency, February 16, 2011. [Online]. Available at: https://www.esa.int/About_Us/ESA_history/History_Hermes_spaceplane_1987 (last visited September, 2023).

ESPI (2023). "High time for an EU Space Strategy for Security and Defence". In: *European Space Policy Institute*, March 10, 2023. [Online]. Available at: https://www.espi.or.at/briefs/high-time-for-an-eu-space-strategy-for-security-and-defence/ (last visited September, 2023).

Garamone, J. (2019). "Trump Signs Law Establishing U.S. Space Force". U.S. Department of Defense, December 20, 2019. [Online]. Available at: https://www.defense.gov/News/News-Stories/Article/Article/2046035/trump-signs-law-establishing-us-space-force/ (last visited September, 2023).

Glogulska, L. (2023). "The Role of Space in Geopolitics". TS2, October 3, 2023, [Online]. Available at: https://ts2.space/en/the-role-of-space-in-geopolitics/ (last visited September, 2023).

Hussain, S. and Shahzad, K. (2023). "India's quest for 'global space and influence' through the 'outer space' domain". In: *Journal of Space Safety Engineering*, Vol. 10, Issue 3, pp. 351-365. DOI: https://doi.org/10.1016/j.jsse.2023.05.004

Institute Montaigne (2021). "The Geopolitics of a New Modern Space Race. Three questions to Viktoria Samson". In: *Institut Montaigne*, December 8, 2021, [Online]. Available

at: https://www.institutmontaigne.org/en/expressions/geopolitics-new-modern-space-race (last visited September, 2023).

Muňos, R. and Portela, C. (2023). "The EU Space Strategy for Security and Defence: Towards Strategic Autonomy?". EU Non-Proliferation and Disarmament Consortium, No.83, June 2023. [Online]. Available at: https://www.sipri.org/sites/default/files/2023-06/eunpdc_space_paper_no_83_0.pdf (last visited September, 2023).

Nienass, N. (2023). "What's the EU's role in the space race?". In: *The Parliament*, October 11, 2023. [Online]. Available at https://www.theparliamentmagazine.eu/news/article/european-union-role-space-policy-nienass (last visited October, 2023).

NSSS (2011). National Security Space Strategy, Office of the Director of the National Intelligence, [Online]. Available at: https://www.dni.gov/index.php/newsroom/reports-publications/reports-publications-2011/620-national-security-space-strategy (last visited September, 2023).

O'Leary, N. (2023). "Europe enters new space race". In: *The Irish Times*, January 13, 2023, [Online]. Available at: https://www.irishtimes.com/business/2023/01/13/europe-enters-new-space-race/ (last visited September, 2023).

Pekkanen, S. (2022). "Geopolitics goes into orbit with the US and China's space ambitions". In: *EastAsiaForum*, December 7, 2022. [Online]. Available at: https://www.eastasiaforum.org/2022/12/07/geopolitics-goes-into-orbit-with-the-us-and-chinas-space-ambitions/ (last visited August, 2023).

PhysOrg (2022). "From Shetlands to Azores, Europe's space race takes off". In: PhysOrg, December 8, 2022. [Online]. Available at: https://phys.org/news/2022-12-shetlands-azores-europe-space.html (last visited September, 2023).

Tharoor, S. (2023). "India's space triumph". In: *The Strategist*. ASPI, September 6, 2023. [Online]. Available at: https://www.aspistrategist.org.au/indias-space-triumph (last visited October, 2023).

Tunik, T. (2023). "To infinity and beyond: US and China battling for space supremacy, while India and Japan eye bigger roles". In: CALCALIST/CTech, September 27, 2023. [Online]. Available at: https://www.calcalistech.com/ctechnews/article/rk1xa5zxp (last visited September, 2023).

Vidal, F. and Privalov, R. (2023). "Russia in Outer Space: A Shrinking Space Power in the Era of Global Change". In: *Space Policy*, August 3, 2023. DOI: https://doi.org/10.1016/j.spacepol.2023.101579