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Can Geopolitical Rivals Be Astropolitical Allies?

A Case Study of the United States-Russian Federation Space Cooperation, 1991-2024

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Statement of Academic Integrity

I declare that I followed all the rules of academic honesty in the attached paper.
This written work is the result of my personal work only; it is based on my research and relies on the cited literature.

Belgrade, November 2024

I owe the greatest gratitude to my parents for their boundless support and love. Without your encouragement, it would be difficult to make dreams come true. Thank you for the patience and understanding that were never lacking and the firm character and strength that you instilled in me. I dedicate this master's thesis with gratitude to my father Vukomir and mother Ana, who were by my side and gave me immense support and encouragement throughout my studies. Without your love, it would be difficult to become who I am.

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Contents

This master's thesis studies the puzzling practice for geopolitical rivals or adversaries, specifically the United States and the Russian Federation, to form a relationship as astropolitical partners or allies. It will examine the historical context, main factors, and current initiatives influencing space exploration cooperation. The study aims to identify conditions that foster collaboration despite geopolitical tensions by analysing the strategic interactions and shared interests in *astropolitics*. Astropolitics is the study of political dynamics and strategies related to outer space, particularly concerning the influence and control of space activities among nations. It encompasses issues such as space exploration, satellite deployments, space militarisation, commercial space ventures, and the creation of international space laws. Astropolitics considers how space power affects global political relationships and national security, including competition, cooperation, and the strategic importance of space in national defense. This thesis will include qualitative methods, such as document analysis and media analysis, to provide a deeper understanding of US-Russia relations in this realm. The findings of the study are intended to contribute to the broader perspective on international relations and space diplomacy through the analysis of space relations and politics of two space powers, the United States and the Russian Federation, which are rivals in international relations but have active cooperation in the field of space exploration. In this sense, a special contribution would be the expansion of the existing literature about global space cooperation in the part of providing answers to the question of how such cooperation is possible in the conditions of political, economic, and military rivalry between countries that have developed space programs and actively participate in space research. In the theoretical aspect, the work would contribute to the improvement of theoretical approaches, especially constructivism, which will be important for explaining the cooperation in the case of the USA and Russia when it comes to space affairs, which occurs in the context of their rivalry in international relations. Despite their geopolitical rivalry, the United States and Russia have largely adhered to the idea that space should not be used for overt military confrontation but rather for exploration and scientific discovery. Through this, it can be explained whether and in what way the two mentioned powers constructed the outer space as a common, shared, peaceful region for cooperation, which provides significant insight for policymakers and researchers in the field of international relations.

1. Introduction

Amid global tensions and rivalries, which have characterised their relations for a long time, the United States and Russia have found a unique common ground: outer space. The vastness of the cosmos and the challenges it presents require collaboration and shared resources, creating a partnership that transcends earthly conflicts. This cooperation has yielded significant mutual benefits, proving that when nations unite in pursuit of scientific and technological advancements, the rewards are substantial. One of the key factors driving the US-Russia partnership in space exploration is the mutual benefits it offers to both nations. This collaboration has led to remarkable scientific advancements. By combining expertise, resources, and data, joint efforts have accelerated progress in space technology and research.

The International Space Station (ISS), which was founded in 1998, is a symbol of this cooperation and serves as a floating laboratory where experiments in biology, physics, and material science have resulted in significant discoveries. For instance, studies on the ISS have shed light on how microgravity affects human health, paving the way for future long-duration space missions. Beyond scientific gains, economic efficiency plays a crucial role. Space missions are notoriously expensive, but by sharing resources and infrastructure, costs can be significantly reduced. The ISS program is a prime example, with maintenance and operational expenses spread among international partners, making space exploration more budget-friendly. This cost-sharing model not only alleviates financial burdens but also allows both nations to undertake more ambitious missions than they could alone. In an arena as complex and challenging as space, working together fosters mutual trust and reduces the risk of conflict. Collaborative space exploration and research initiatives serve as confidence-building measures promoting global stability. By setting aside differences and focusing on common goals in terms of research and expansion of knowledge about outer space, the US and Russia have managed to strengthen their national security in a realm that is becoming increasingly strategic (Sadeh, 2004a; Johnson-Freese, 2007; Jean-Christophe, 2017).

However, these mutual benefits could not be realised without the critical factor of political will. The willingness of political leaders to embrace space diplomacy is essential for successful cooperation. Government agreements and diplomatic efforts help bridge political and ideological divides, laying the groundwork for collaborative efforts in space. Leadership vision is a pivotal element in this equation. Historical examples such as John F. Kennedy of the United States and Nikita Khrushchev of the Soviet Union illustrate the impact of visionary leadership on space cooperation. Despite the intense competition between the U.S. and the Soviet Union during the Cold War, particularly in the space race, there were moments when both leaders recognised the importance of cooperation. For example, after the Cuban Missile Crisis in 1962, there was a slight thaw in relations,

leading to discussions about joint space ventures. The period of the 1960s created the basis for future cooperation in outer space matters between the two countries. Their forward-looking perspectives set the stage for future partnerships, like the Apollo-Soyuz Test Project (Freese, 2007: 21-40).

The Cold War era solidified the United States and the Russian Federation (formerly the Soviet Union) as two of the most prominent geopolitical rivals in modern history. Despite decades of competition, including a heated Space Race from 1955 until the Moon landing in 1969, the end of the Cold War in 1991 marked a new chapter in US-Russia relations, particularly in the realm of space exploration. From the symbolic handshakes aboard the Apollo-Soyuz mission in 1975 to the construction and operation of the International Space Station (ISS), space cooperation has emerged as a unique policy area where these two adversaries have managed to collaborate, often against the backdrop of broader political and security tensions of the Cold War period.

This thesis explores the complexities of US-Russian space cooperation from 1991 to 2024, a period marked by both groundbreaking achievements, such as the construction of the International Space Station and numerous joint scientific missions, which became a symbol of international collaboration, and advancement of space science and technology. However, this era has also been defined by significant challenges, including geopolitical tensions related to NATO expansion in the 2000s, wars in post-Soviet space (like the Georgia 2008 conflict), the annexation of Crimea by Russia in 2014, sanctions that strained bilateral relations, economic constraints affecting both national space agencies (NASA and Roscosmos), and diverging national interests as Russia increasingly shifted focus towards its own space programs. Despite these hurdles, both nations have navigated a complex partnership that continues to influence the future of space exploration.

The cooperation between NASA and Roscosmos serves as a lens through which to examine the broader question: Can geopolitical rivals become astropolitical allies? This inquiry is particularly pertinent given the evolving dynamics of global space politics in the 21st century, especially from the 2010s onwards, where new actors, including China and private space enterprises such as SpaceX and Blue Origin, are reshaping the landscape. China's advancements, particularly with its lunar exploration missions and the construction of its own space station, along with the rise of private industry disrupting traditional government-led space exploration, have introduced new competitive and collaborative dimensions to space politics.

The study delves into the motivations, successes, and obstacles that have defined the US-Russian space partnership. It examines how space has served as both a bridge and a battleground for the two nations, providing opportunities for collaboration even amidst conflicts on Earth, such as economic sanctions and geopolitical tensions. The case study seeks to understand the conditions that have allowed for continued cooperation in space, despite frequent downturns in bilateral relations. Moreover, this research assesses the implications of US-Russia space cooperation for international

politics, including its impact on global governance, space diplomacy, and the future of multilateral space ventures. By analysing past and present collaborations, this thesis aims to provide insights into whether space can truly transcend terrestrial conflicts and offer a pathway for peaceful coexistence among rivals (Harland, 2007: 1-40). This research problem will be analysed through the lens of astropolitics, focusing on the strategic dynamics of space cooperation and competition among major space-faring nations. By examining the political, economic, and security interests that drive international space partnerships, this study will explore how national agendas shape collaborative frameworks, resource-sharing models, and mission objectives in space. Astropolitics offers a critical perspective to understand the balance of power in space relations, the impact of emerging space actors, and the ways in which alliances, rivalries, and regulations influence collective ventures in outer space exploration.

The findings of this study have broader implications for understanding how strategic alliances in space can influence international power dynamics, promote global stability, and foster scientific and technological advancements. Ultimately, this thesis endeavours to answer whether the model of US-Russia space cooperation can serve as a template for future partnerships among other geopolitical rivals, pointing towards a new era of astropolitical alliances in the 21st century. Moreover, the theoretical and conceptual contribution of this thesis can deepen the understanding of international cooperation and competition in space politics, especially through understanding the interdependence of space powers in space cooperation. US-Russia space cooperation is sustained despite geopolitical tensions due to mutual reliance on shared resources like the ISS, which suggests that states can cooperate in specific areas even when they are rivals in others.

1.1. Subject and Objectives of the Research

The persistent tension between the United States and the Russian Federation, as two leading geopolitical powers, has been a subject of extensive study and analysis. These two powers are known for their competitive nature, their differing political ideologies, and historical rivalries, which often led to conflicts or diplomatic standoffs.

The subject of research of this MA thesis concerns the contemporary context of relations between great powers that have active space programs and are involved in space research within the framework of various models of international cooperation, either bilateral or multilateral partnerships in this area, like the already mentioned ISS project, or in the case of bilateral relations, the Apollo-Soyuz project. The main focus of the research is based on the fact that space research is conducted jointly, in

accordance with international agreements, and that the cooperation of major powers, who are rivals in the current international system, remains functional and resilient despite ongoing geopolitical tensions such as the previous Georgia and current Ukraine conflict, which burden US-Russian relations. This research seeks to determine the influence of the dynamics of relations between the great powers in international relations on their cooperation in space exploration and to show whether such cooperation is realistic and possible in the long run and, if so, under what conditions?

Specifically, this research examines the relationship of geopolitical rivalry and astropolitical cooperation between the United States and Russia after the dissolution of the Soviet Union in 1991 until 2024. The year 1991 was determined as the starting year of the analysis, since at that moment Russia officially became the successor and holder of the space program of the former Soviet Union. Also, at that moment, the dominance of the USA reigned in all fields, including space exploration. The further development of cooperation in space affairs required the establishment of rules in the new global system and the confirmation of earlier agreements important for the international regulation of this area. This means that for the analysis of the relationship between rivalry and cooperation, it is crucial to understand the historical context and the development of relations immediately after the Cold War, which led to a situation where, in a geopolitical sense, the dominance of one power was called into question after a few decades. The year 2024 is taken as the end period of the analysis, since during this year and in the past few years, a series of events took place on the global level that significantly determined the relations between Russia and the USA primarily, but also other major powers that are participants in space affairs. Among the most important events are certainly the change of the American administration in 2021, the COVID-19 pandemic, the renewal of the conflict, and the outbreak of the war in Ukraine in 2022, as well as the tensions and war in the Middle East since the autumn of 2023. All the mentioned events and their consequences significantly affected relations within the international system, which is why they inevitably affect astropolitics and relations of cooperation and rivalry in space. Astropolitics has become increasingly characterised by the competition for influence and control over space resources, technology, and strategic advantages. Major powers are competing for leadership in emerging areas such as lunar exploration and Mars missions, while also investing in capabilities to protect their assets in space from potential adversaries. This competitive atmosphere has intensified national security concerns, resulting in the militarisation of space and the development of advanced satellite technologies. Despite these tensions, cooperation in space has proven resilient. Multilateral frameworks, such as the ISS, have facilitated ongoing collaboration among spacefaring nations, demonstrating that shared scientific objectives can transcend political divides. The need for joint endeavours in human spaceflight, scientific research, and planetary exploration has led to a pragmatic approach where nations recognise the mutual benefits of collaboration even as they maintain competitive stances in other areas (Dawson, 2016; Zubin,

2019; Mutschler, 2015).

The field of space research and astropolitics is relatively new, especially in the scope of the discipline of international relations, and accordingly there is room to expand the available literature on the subject of international cooperation in space and the connection of that cooperation with the international and security dynamics taking place on Earth between the great powers.[1] Astropolitics is an interdisciplinary field positioned at the intersection of political science, space studies, and international relations. In relation to international relations, astropolitics can be seen as a subfield or specialised framework that applies IR theories to outer space. It borrows from international relations theories like realism, liberalism, and constructivism to explain how states and other actors pursue power, alliances, and strategic interests beyond Earth. For instance, realist theories in astropolitics focus on how nations compete for space dominance and the militarisation of space assets. In contrast, liberal theories highlight international cooperation frameworks such as treaties and alliances that foster shared goals like scientific research and space exploration. Rooted in theories from geopolitical and strategic studies, astrophysics examines the political, economic, and security implications of human activities in outer space, including exploration, satellite usage, and military applications. It is a specialised branch within political science and international relations that extends traditional geopolitical concepts into the unique domain of outer space, where factors like sovereignty, territoriality, and control have complex, evolving meanings.

The contribution of addressing this topic to scientific knowledge lies not only in its novelty but also in its relevance to the current global context. In an era marked by increasing military conflicts and intensifying rivalries between great powers, where security challenges strain relations and aspiration for dominance in the international system, studying the potential for cooperation among rivals amidst heightened tensions offers valuable insights. It can help explain why states act as competitors in certain domains while simultaneously engaging as close partners in others. In this sense, significant progress would also be achieved in the area of social contribution research, since the established patterns and identified reasons for the cooperation of states in space could be copied and applied to relations between states. Demonstrating the benefits of joint cooperation, as opposed to rivalry, would contribute to the consideration of peaceful settlement of disputes and the creation of options for reaching agreement on important economic, security, and other issues.

The rivalry of states and its causes in international relations is studied in detail through theoretical

[1] Some key works on the subject are:
Dolman, E. (2002) Astropolitik: Classical Geopolitics in the Space Age.
Stares, P. (1985) The Militarization of Space: U.S. Policy, 1945–1984. Naval War College.
Johnson-Freese, J. (2007) Space as a Strategic Asset. Columbia University Press.
Mindell, D. et al. (2009) The Future of Human Spaceflight: Objectives and Policy Implications in a Global Context. American Academy of Arts and Sciences.

approaches that try to explain this phenomenon, among which the two most represented ones should be highlighted: realism and liberalism. According to basic realist assumptions, the anarchy of the international system, i.e., the absence of a supreme authority, causes general competition and often a struggle for survival. In this sense, states mainly rely on their capacities and strive to increase them, especially in terms of security (such as weapons, military technology, and the number of military forces), in order to increase their chances of survival. According to realists, strengthening power is the only way to ensure security and survival, which is why rivalry is the general state of international relations. From this comes the claim that states follow their own interests and that in any form of potential cooperation they only and exclusively follow their own benefit from it, i.e., their ultimate goal is to increase their security. Rivalry is fuelled by the inherent mistrust between states. Realists argue that even if cooperation is possible, it is often short-lived because states will always look out for their own long-term interests. Rivalry, and even conflict, is therefore seen as unavoidable (Mearsheimer, 2023; Mearsheimer, 2001; Waltz, 1979).

Contrary to the realist approach, another important theory of international relations, liberalism, sees rivalry and cooperation of states in a significantly different way. First of all, liberalism views rivalry as something that can be mitigated or even overcome through cooperation, institutions, and interdependence. Liberals believe that states can cooperate to achieve mutual benefits, especially through international organisations, treaties, and economic interdependence. Liberals argue that international relations can be a positive-sum game where cooperation can lead to mutually beneficial outcomes. Through trade, diplomacy, and communication, states can create win-win situations. Liberals see international law and norms as important in managing state behaviour and reducing rivalry. By creating shared rules and norms, states can address disputes peacefully rather than through rivalry or war (Keohane, 1984; Doyle, 1986). According to this explanation, there is room for cooperation between states in space affairs. In this way, this kind of relationship would significantly contribute to the creation of a stable and peaceful world, in which there is no fear of the outbreak of a devastating conflict between global powers, as areas of cooperation can create mutual benefits and even, in some cases, interdependence.

1.2. Research Questions

The overarching research question of this thesis is: “Can geopolitical rivals, namely the United States and the Russian Federation, evolve into astropolitical allies?” This central inquiry drives the exploration of various dimensions of US-Russia space cooperation and the factors that influence it.

To address this broad question, several specific research questions and hypotheses are formulated to guide the investigation. This thesis raises three central questions.

The first question focuses on understanding the key factors that allow traditionally geopolitical rivals to transition into astropolitical allies, as follows: “What factors enable geopolitical rivals to transition into astropolitical allies?” This question aims to explore the conditions or incentives that facilitate collaboration in space despite existing rivalries on Earth.

The second question delves deeper into the implications of such cooperation. It is concerned with how space collaboration affects the broader context of political competition, asking, “How does cooperation in space exploration impact the geopolitical rivalry between major powers?” This seeks to examine whether joint space efforts reduce tensions or merely shift the competition into new arenas.

The third question shifts focus to the role of emerging space powers, particularly China, and how their rise might influence existing relationships. Specifically, it asks, “How might the rise of new space powers, such as China, influence the dynamics of US-Russia space collaboration?” This question explores whether China’s increasing space capabilities could prompt traditional space competitors like the US and Russia to collaborate more closely in response to a new strategic challenge.

These research questions are designed to provide a comprehensive understanding of the factors that facilitate or hinder space cooperation between the United States and Russia. They address historical context, current geopolitical dynamics, strategic interests, and the role of new players in the space arena.

1.3. Hypotheses

To systematically explore these research questions, the following hypotheses are proposed:

General hypothesis: Geopolitical rivals can transition to astropolitical allies through shared interests in space exploration. This hypothesis suggests that mutual benefits in scientific research and technological advancements can overcome political barriers. Historical examples, such as the ISS, demonstrate how shared goals can facilitate cooperation even amidst broader geopolitical tensions (Bilal, 2024: 43). The hypothesis posits that space exploration's inherent collaborative nature and the mutual desire to advance technological frontiers can drive cooperation between geopolitical rivals.

First specific hypothesis: Astropolitical cooperation is influenced by broader geopolitical dynamics but can exist independently due to mutual scientific and economic benefits. This

hypothesis highlights the dual nature of space cooperation, where it is both a product of and a potential counterbalance to geopolitical conflicts. Studies indicate that despite political tensions, economic and scientific imperatives often inspire collaboration (Elefteriu, 2024: 12). This suggests that the benefits derived from joint space missions, such as cost-sharing, technological innovation, and scientific discovery, can sustain cooperation even in periods of geopolitical strain.

Second specific hypothesis: The emergence of new space powers like China might act as a catalyst for US-Russia space collaboration. This hypothesis posits that a common strategic competitor can incentivise traditional rivals to cooperate. Theoretical frameworks on alliance formation support the idea that external threats or competitors can lead to new alliances (Hilborne, 2016: 21). China's rapid advancements in space technology and its ambitious lunar and Mars exploration plans could drive the United States and Russia to enhance their collaboration to maintain their competitive edge and address the strategic challenges posed by a new space power.

These hypotheses provide a structured approach to examining the complex interplay between geopolitical rivalry and space cooperation. They are grounded in theoretical perspectives from international relations and empirical evidence from historical and contemporary examples of US-Russia collaboration in space. The theory that is most suitable for the explanation and analysis that is the basis of this work is first of all realism, since the idea of astropolitics was developed on realist foundations (McKenna, 2021: 5). However, realist pessimism about the long-term cooperation of states does not correspond to the existence of a number of international agreements, regimes, and practices of space cooperation. Although it can be objected that realists believe that cooperation can be achieved, but only for a limited time, and that rivalry and the struggle for power will prevail, practice shows that despite a series of geopolitical tensions, for some reason, cooperation on joint projects in space continues.

In addition, constructivist approaches should be considered, which significantly help in determining and understanding space as a construct since its properties are very characteristic and, to a large extent, do not possess tangible physical characteristics, as is the case with geographical formations on Earth. In this way, the theory of the cooperation of states in space affairs can be much better systematized. At the same time, astrophysics thus becomes an object of analysis, just as geography is in the case of geopolitics. Constructivism in this sense can serve as an important basis for understanding the possibility of cooperation between countries that have the capacity to travel to outer space, despite their rivalry in the geopolitical aspect. Constructivism, unlike realism and liberalism, does not focus on material interests and power dynamics but rather explains relations between states through the prism of ideas, identities, and norms that actors in international relations share with each other and what their common characteristics are. This means that the understanding of a phenomenon or process, in the same or a similar way, for actors of international relations

creates a unique meaning attributed to that phenomenon or process, and the same meaning implies an important determinant in the identification of both one's own role and the role of others in the system. In this way, states can cooperate not just because of self-interest but because they share certain ideas, beliefs, and norms about what is appropriate behavior. Constructivists argue that states and the international system are mutually constitutive. States shape the international system, and this system, in turn, shapes states' behavior. Thus, cooperation emerges from a continuous process of interaction, where states create norms that later influence how they engage with each other in the international system (Zehfuss, 2002: 15).

Constructivism highlights that the U.S. and Russia, despite their rivalry, share a common identity as pioneering spacefaring nations. Both countries have a long history of space exploration, starting with the Space Race during the Cold War. Over time, this has created a sense of shared responsibility and a collective identity as leaders in space exploration. In space, they are not just rivals; they are also partners in advancing humanity's understanding of the universe. This shared identity fosters a sense of solidarity, encouraging cooperation despite their earthly conflicts (Davis, 2020; Sheehan, 2007).

In this chapter, the main research questions that the work aims to answer have been presented so far, and in order to succeed in this endeavour, some basic assumptions, or hypotheses, from which the research starts, have been listed. The theoretical basis on which the work will rest and the explanation offered through the answers to the questions are also briefly reviewed. Two important perspectives for understanding the dynamics of relations between the great powers, and especially the possibilities of cooperation between them, were singled out: realist and constructivist. These two approaches differ significantly in their basic assumptions and explanations about the ways and nature of the interaction of states in the international system, and they also very differently interpret the potential for cooperation and the properties of that cooperation between states. Realist pessimism does not correspond to the initial hypotheses of this work, since practice shows that contrary to realistic claims about the cooperation of great powers, it is possible and not in the domain of fulfilling one's own interests, which is why it seems that the constructivist approach is much more suitable for explaining the dynamics of relations between the US and Russia in the geopolitical and astropolitical sense. In the continuation of the work, the next chapter will deal with the presentation of existing relevant literature for the topic of the thesis. After that, the theoretical-methodological framework of the research will be established through which the relations between the US and Russia and their cooperation in space affairs will be analysed through the central part of the work. This will serve to answer the research questions and test the hypotheses put forward.

In the continuation of this master's thesis, the research subject will be addressed through six chapters. The next chapter will provide a review of the literature, that is, the content of existing

scientific knowledge on the topic of this research. Following that, the third chapter will focus on the theoretical and methodological framework of the research, including explanations and methods through which the previously mentioned research questions will be answered and the initial hypotheses tested. The fourth chapter will briefly outline the history of cooperation between the United States and the Soviet Union in the field of space affairs, presenting the forms and examples of this cooperation. In the fifth chapter, which constitutes the largest portion of this thesis, the geopolitical impact of cooperation between the United States and the Soviet Union will be analyzed. In this regard, significant emphasis will be placed on the importance of technological development for relations between states and their cooperation in space. Additionally, the fifth chapter will address the formation of alliances and strategic partnerships in space, particularly in the context of the growing influence of new spacefaring states, with particular emphasis on the increasing influence of China. Finally, the sixth chapter will present perspectives and opportunities for international cooperation in space, followed by concluding reflections.

2. Literature Review

In this chapter, we explore the concept of astropolitics, tracing its origins, theoretical underpinnings, and distinctions from the more established field of geopolitics. Astropolitics, developed as a specialised field by scholars like Everett C. Dolman, extends traditional concepts of geopolitical theory to the realm beyond Earth, addressing how nations and entities interact in outer space. Rooted in the broader framework of international relations theory, astropolitics examines power dynamics, strategic interests, and security considerations within the space domain. Unlike geopolitics, which is confined to territorial control and influence on Earth, astropolitics encompasses the unique spatial, technological, and legal challenges posed by the exploration, use, and militarisation of outer space. Through a review of existing literature, this chapter aims to clarify the distinction between astropolitics and geopolitics while situating astropolitics within the broader theoretical discourse on global power structures and strategic interests.

2.1. Development of Astropolitics as a Concept

One of the first approaches in the development of astropolitics was developed by Everett C. Dolman in his book *Astropolitics: Classical Geopolitics in the Space Age*. He relied on a realist approach in international relations, which established the theoretical basis of the astropolitics approach. In Dolman's approach, for the first time, exceptional attention in the science of international relations is paid to concepts such as launch stations, the Earth’s orbit, space regions, and the like. According to Dolman's understanding, the one who positions himself strategically dominantly in space will inevitably also have dominance on earth in a geopolitical sense. In this sense, rivalry in space implies rivalry on Earth and vice versa, since from the perspective of astropolitics, control over the best-placed launch sites is key. Dolman, relying on realist pessimism when it comes to conflicts and the possibility of peace or at least neutrality, concluded during the writing of his book that it is inevitable that space will become a zone of tension and that it cannot be maintained as a neutral zone. In order to realise the possibilities of space and its potential for projecting the power of states, it is necessary to bring order into the system. Hierarchy in the system can be established by the hegemony of a dominant power, and Dolman pays special attention to the USA as still the geopolitical hegemon. From this perspective, it can be concluded that the idea of system anarchy is predominant for Dolman's impression of the universe (Dolman, 2002).

However, Dolman's perspective on the anarchy of space very quickly encountered criticism, primarily from the aspect of normative restrictions on activities in the Earth's orbit. MacDonald points

out that there are a number of legal provisions, agreements, and contracts dating back to the 20th century that regulate the relations and performance of states in space. According to him, Dolman does not pay attention to the dynamics of relations between states, as well as to existing legal norms on space. It can be objected that in international relations a number of existing legal norms are often neglected, but nevertheless there is a hierarchy and an established system of behaviour patterns that states should respect in space affairs (MacDonald, 2007: 12). In addition, the development of technology is not yet at a level that can secure the permanent presence of a state in space, and the very nature of the space environment does not allow keeping a clearly defined and limited part of a territory, as is possible on planet Earth. In this sense, the realist perspective on astropolitics is seriously questioned, since the pressure of the dominance of the hegemon on Earth in the case of the dominance of the same hegemon in space is unsustainable. Military power and the dynamics of relations between states on earth significantly determine all other aspects, and the unlimited expanses of space, of an intangible nature, are still not possible to occupy and establish sovereignty over them (Havercroft & Duvall, 2009).

The challenge with realist approaches when analysing state cooperation on an issue is that realists generally reject the possibility of cooperation and alliances, except in the case of national interests. However, if the opportunity and need arise, according to realists, states will very quickly become hostile. Nevertheless, the neorealist approach in the context of cooperation between states introduces new concepts, which not only enable the idea of cooperation between the actors of international relations but also make it a desirable situation. In this sense, in astropolitics, neorealists implemented their theoretical assumptions and concepts, such as the balance of power. Neorealists conclude that if international cooperation can contribute to the achievement of the goals and interests of powerful states, such a situation will lead to the calculation that it is more useful to cooperate than enter into competition and rivalry (Pfaltzgraff, 2013: 108). It is on this theoretical basis that the idea and evidence of this thesis will be based since neorealism provides a strong theoretical basis for explaining cooperation in space.

Theoretical perspectives on astropolitics and geopolitics provide a comprehensive framework for understanding the complex dynamics of space activities. These perspectives highlight the strategic, economic, and security motivations behind national space programs, as well as the potential for both conflict and cooperation. The historical rivalry and subsequent cooperation between the United States and Russia exemplify the dual nature of astropolitical relationships. As emerging space powers like China enter the arena, these dynamics will continue to evolve, underscoring the importance of international collaboration in ensuring the peaceful and sustainable use of space.

The intersection of astropolitics and geopolitics represents a relatively new but increasingly important field of study within international relations. By exploring relations between two concepts,

we can better comprehend how space has become a crucial arena for geopolitical competition and cooperation, particularly between major powers like the United States and Russia. Astropolitics extends classical geopolitical theories into the domain of outer space. As defined by Dolman (2002), astropolitics considers the strategic implications of space activities, including satellite deployment, space exploration, and the militarisation of space. This perspective is grounded in the notion that control over space can confer significant strategic advantages, much like control over key geographical territories on Earth. Dolman argues that space dominance can enhance a nation's global influence, secure military superiority, and provide critical economic benefits through access to space-based resources and technologies. In this context, space is viewed as the "ultimate high ground," offering unparalleled surveillance, communication, and navigation capabilities. The ability to control or deny access to space thus becomes a critical component of national security and global power dynamics. This theoretical framework helps explain why nations invest heavily in space capabilities and why space has become a central aspect of their strategic planning.

The governance of space activities is another critical aspect of astropolitics. International regimes, such as the Outer Space Treaty of 1967, provide the legal framework for space activities, emphasising the peaceful use of space and the prohibition of national appropriation (Johnson-Freese, 2009). These regimes aim to prevent the militarisation of space and promote international cooperation. However, the effectiveness of these treaties is often challenged by the strategic interests of major spacefaring nations.

The concept of space as global commons, as discussed by Williamson (1981), underscores the need for cooperative governance to ensure that space remains accessible and beneficial to all humanity. This perspective aligns with the principles of collective security and shared responsibility, advocating for international collaboration in managing space resources and mitigating space debris.

The rise of new space-faring nations, particularly China, has added a new dimension to astropolitical dynamics. China's rapid advancements in space technology and its ambitious plans for lunar and Mars exploration have the potential to reshape the landscape of international space cooperation and competition (Sadeh, 2013). The emergence of China as a significant space power introduces new strategic calculations for established space-faring nations like the United States and Russia.

The theoretical framework of alliance formation suggests that the rise of a common competitor can incentivise traditional rivals to cooperate. This is particularly relevant in the context of US-Russia space relations, where both nations may find it beneficial to collaborate in order to maintain their competitive edge against China. The strategic imperatives of countering China's influence in space could thus drive enhanced cooperation between the United States and Russia, despite their broader geopolitical tensions. The economic and scientific benefits of space exploration are significant drivers

of international cooperation. Joint space missions can lead to cost savings through shared resources and expertise while also advancing scientific knowledge and technological innovation. The ISS is a prime example of how collaborative efforts can yield substantial scientific and economic returns. Researchers from multiple countries conduct experiments on the ISS, contributing to advancements in fields such as biology, physics, and earth sciences (Johnson-Freese, 2009). From an economic perspective, the commercialisation of space is opening new opportunities for collaboration. Private companies are increasingly involved in space activities, from launching satellites to developing space tourism. This commercialisation trend encourages international partnerships and investment as countries and companies seek to capitalise on the growing space economy.

The authors often point out that relations in space are transformed in accordance with the distribution of power and the structure of the international system. This is how the difference between the "old" and the "new space" develops. At the same time, "old space" implies the Cold War context of bipolarity in which states are the most important actors in space affairs. The old universe was dominated by the great powers, and there was no place in it for actors who were not closely related to or collaborators of the great powers. The "new space," created after the Cold War, is significantly more open to access and opens significantly more opportunities for cooperation. Thus, although the dominant actors in the new space are still states with their space programs, in the orbit of the Earth can be found a number of technologies, satellites, and scientific equipment that are owned by private actors, that is, companies. Fear and security issues that burdened geopolitics, and therefore relations in astropolitics, during the Cold War did not exist after its end, which enabled the removal of barriers to knowledge, technology, and development. With that, access to space became easier (Paikowsky, 2017: 3).

The international regulation of outer space, which is the legal basis for the cooperation of states in these matters, has been strengthened by a series of agreements, among which are the Artemis Accords. However, the issues regulated by these agreements are, according to the authors, a challenge for future cooperation in space. Although the Artemis Accords were created with the support of the UN, the way in which piranhas are regulated is not a legacy of multilateralism and favours the US, especially in terms of invoking rights over space resources. Availability of space resources and the rise of influential spacefaring nations and nations with potential to develop space programs indicate that the future of space exploration and exploitation will be governed by competition instead of cooperation, especially from a geopolitical standpoint, which will have a significant impact on astropolitics (ud Din, 2022: 151).

The greatest contribution to literature on the mentioned topic would be reflected in a clearer determination of the difference and connection between geopolitics and astropolitics. By connecting geopolitics with astropolitics, the thesis could bridge disciplines such as international relations,

security studies, space law, and diplomacy. It could explore how scientific missions in space (ISS research, planetary exploration, space tech) are influenced by, and in turn influence, global political agendas. This could also lead to insights on how emerging space-faring nations may engage with established powers like the U.S. and Russia in the future. Moreover, this thesis has the potential for both significant scientific and social contributions, particularly in the fields of international relations, space policy, and astropolitics, by enriching international relations theory through examination of relations of two geopolitical rivals, the U.S. and Russia, and the ways in which they manage to cooperate in space, a domain often considered politically neutral. It could contribute to constructivist theory by showing how shared norms, collective identities, and interpretations shape cooperation in space despite terrestrial tensions.

The astropolitical relationship between the United States and the Russian Federation is a unique and paradoxical aspect of international relations. Despite the enduring geopolitical rivalry that dates back to the Cold War, the two nations have managed to collaborate in the realm of space exploration. This cooperation offers a fascinating case study of how mutual scientific and technological interests can transcend deep-seated political conflicts.

2.2. Relation between Geopolitics and Astropolitics

In IR theory, the terms astropolitical and astropolitics have emerged recently, at the beginning of the 21st century. In order to engage in further considerations on the subject of this thesis, it is necessary to make an important distinction and connection between two key theoretical concepts that are the basis of the research: geopolitics and astropolitics. By the nature of its approach, astropolitics extends well-known geopolitical theories, that are usually the foundation of the international relations theory, into the domain of outer space. As compared to geopolitics, which focuses on the role of geography in shaping relations and strategic and security dynamics between actors of international relations, astropolitics considers the strategic implications of space activities, including satellite deployment, space exploration, and the militarisation of space.

The idea of geopolitics is that the behaviour of states in the international system can be explained by analysing geography and geographical characteristics. Among the pioneers of the development of geopolitics and geopolitical thought is Halford Mackinder, who established that in a historical perspective, the geographical appearance of space, distance, and position on the global map is an important determinant of the power and potential of the states located on it (Mackinder, 1904: 422). However, Mackinder was not the first to systematise geographical knowledge into a theory of international relations. Before him, it was done by Alfred Mahan, who claimed that proximity to the sea and dominance over the seas significantly determine the strength and position of states in the international system (Strachan, 2021).

Since the largest part of human history was created in a geographically limited space on the planet Earth, it is natural that the first theories that explain the power, influence, behaviour, and relations between states in the international system paid considerable attention to the physical space in which the dynamics of those relations take place. Over time, different approaches to geopolitics and different understandings of its impact on the international system have developed, and a particularly important difference between the viewpoints of theorists was precisely the geographical position of individual states, which is an important determinant for a strategic approach that would enable the greatest possible accumulation of power and hegemony in the assigned geographic region or potentially in the international system. That is how ideas like Heartland developed, which was Mackinder's idea that the states that control the area of the world that he defined as central (Eurasia) dominate the rest of the world (Mackinder, 1904: 426). Contrary to this attitude, during the 20th century, Nicholas Spykman developed a new approach in which he gave a significant role to the Rimland, that is, the area on the edges of Eurasia that opens onto the global seas and oceans, claiming that the states that control this part of the world dominate the global system (Spykman, 1942: 184).

However, with the development of technology and success in reaching space, human awareness of the possibilities and limits of influence has changed. From the earliest days, geopolitical theories have mainly followed the development and reach of the military power and influence of states. Thus, the first thoughts and strategic thoughts in the ancient age included the world known until then; later, they spread to other continents through the period of geographical discoveries, and in relation to the position and power of the states after the industrial revolution, ideas such as Heartland and later Rimland were formed, which were conditioned precisely by the perspective of the great powers of the given time and their strategic calculations. However, the possibility of space travel inevitably led to the need to revise existing theories and adapt them to new circumstances. Geographical borders did not apply in space; there are no geographical determinants and characteristics that would determine the dominance of one state in relation to others. In the initial stages of the space race in the 1950s and 1960s, the context of the international system dictated the dominance of two powers in space (the US and the Soviet Union). Later, with the development of cooperation between the two countries in space affairs, there was a need to explain that cooperation in international relations, its specifics, dynamics, and the reasons why it occurs if it is considered that the space powers are rivals in the geopolitical sense.

This is precisely what caused the development of astropolitics as a special part of the discipline of international relations. The term was widely popularised by Everett Dolman and his book *Astropolitics: Classical Geopolitics in the Space Age*. Astropolitics as understood by Dolman draws on the characteristics of a geopolitical approach, and he writes about space much as geopolitical theorists view the sea. According to Dolman, it is inevitable that space will become a stage for strategic rivalries and conflicts, which have been shown to be especially significant by the development of communication technology and new discoveries (Dolman, 2002: 34). Ever since the beginning of the Cold War, space has become a place where geopolitical rivalries have been mirrored. Although a significant part of the relationship in space was marked by joint cooperation on a series of projects, especially after the Cold War, the authors rightly describe the expanse of the cosmos as an extension of the global arena, in such a way that with the development of technologies it turns into an international space in which the dynamics of cooperation and rivalry take place and the conflict of great powers (Korać, 2021: 513). The fundamental principles of geopolitics, which shape understanding of international politics, can also be applied to space. The geometric basis of astropolitics assumes that the unique characteristics of space significantly influence interstate relations. The "geography" of space creates opportunities and constraints for the actions of states and other entities, thereby impacting international affairs, the same way Earth's geography determines the course of action and strategy of states (Kopanja, 2021: 403). Astropolitics relies on examining the characteristics of the space environment to understand the opportunities and constraints faced by

states. Therefore, the fundamental question in astropolitics is: what constitutes the “geography” of space (Ibid.)?

In this sense, Dolman contributes significantly with his theoretical approach to astropolitics. He observes that the basic geopolitical understanding of the world can be transferred to the study of space, especially in the aspect of the behaviour of states in it. Also, he claims in his work that in space it is possible to determine geographic landmarks, similar to those on Earth (Ibid.: 408). However, in order to achieve this, it is necessary to fictitiously limit the space, which made sense in the era when the range of great powers and technologies was not significantly far from the Earth's atmosphere; today limitations of that nature actually do not exist. The importance of space for international politics has several dimensions, of which astropolitics pays special attention to ways to reach space. A prerequisite for reaching space is the availability of technology and resources, as well as success in launching objects into and out of orbit. In this sense, the position of the launch facilities is also very important, which in the space age can have exceptional strategic importance. Additionally, the opportunities offered by space and its vastness have the potential to significantly alter political and economic life on earth. A number of studies are underway that aim to test the potential for resource mining on other celestial bodies, which would fundamentally change the economy and international economy in the future (Dolman, 1999: 84). In his work, Dolman categorises the currently utilised regions of outer space into four areas: 1) Earth (or Terra), 2) Earth space (up to geostationary orbit), 3) Lunar space (from geostationary orbit to just beyond lunar orbit), and 4) Solar space (beyond lunar orbit). Regardless of these divisions, controlling Earth remains the primary objective of any space operations. This classification allows Dolman to apply the Heartland theory to the domain of space (Dolman, 2002: 8).

The roots of US-Russia space cooperation can be traced back to the Cold War era, a period marked by intense competition for technological supremacy and strategic advantage. The space race, epitomised by events such as the launch of Sputnik in 1957 and the Apollo moon landings in the 1960s, was a central theatre of this rivalry (McDougall, 1985: 23). Despite the fierce competition, there were early signs of potential cooperation. The Apollo-Soyuz Test Project in 1975 marked the first joint space mission between the United States and the Soviet Union, symbolising a significant thaw in Cold War tensions (Sheehan, 2007: 52). This mission demonstrated that scientific and technological goals could facilitate collaboration even amid broader geopolitical conflicts.

The dissolution of the Soviet Union in 1991 and the subsequent emergence of the Russian Federation as its successor state led to a new phase of space cooperation. One of the most prominent symbols of this collaboration is the International Space Station (ISS). Launched in 1998, the ISS represents the most ambitious international space project to date, involving the United States, Russia, and other international partners (Johnson-Freese, 2009: 33). The ISS serves as a platform for scientific

research, technological development, and international cooperation, demonstrating the potential for space exploration to bridge political divides.

The strategic interests driving US-Russia space cooperation are multifaceted, encompassing scientific, economic, and security dimensions. Scientifically, space exploration provides unparalleled opportunities for advancing knowledge in fields such as astronomy, biology, and earth sciences. Economically, joint missions and shared technological developments can lead to cost savings and efficiencies, benefiting both nations. From a security perspective, maintaining a collaborative presence in space can help manage and mitigate risks associated with the militarisation of space (Dolman, 2002, 52).

However, this cooperation has not been without challenges. The geopolitical landscape has been continually influenced by political tensions, such as those arising from the ongoing war in Ukraine. These conflicts have strained bilateral relations and raised questions about the future of collaborative space efforts (Elefteriu, 2024: 12). Despite these challenges, the resilience of the US-Russia space partnership suggests that the mutual benefits of cooperation can often outweigh the political costs.

Moreover, the emergence of new space powers during the end of the 20th and the first decades of the 21st century, particularly China, has added a new dimension to the astropolitical dynamics. China's rapid advancements in space technology and its ambitious plans for lunar and Mars exploration have the potential to reshape the landscape of international space cooperation (Bowen, 2018: 32). This development could either enhance US-Russia collaboration as they seek to maintain their competitive edge or introduce new complexities into their relationship as they navigate the broader geopolitical implications.

In summary, the history of US-Russia space cooperation highlights the complex interplay between geopolitical rivalry and scientific collaboration. From the Apollo-Soyuz Test Project in 1975 to the ongoing operations of the ISS during the second and third decade of the 21st century, these efforts illustrate how shared interests in space exploration can create pathways for cooperation even in the context of broader political tensions. This background sets the stage for a deeper exploration of whether and how geopolitical rivals can become astropolitical allies and what factors enable such transitions. Understanding these dynamics is crucial for formulating policies that foster international collaboration in space, thereby enhancing global security and scientific progress.

3. Theoretical Framework and Methodology

The Theoretical and Methodological Framework chapter lays the foundation for the analytical approach and research methods guiding this master's thesis. This section provides a comprehensive overview of the theoretical perspectives and methodological tools that shape the study, positioning it within relevant academic discourses. By outlining the core theories, frameworks, and concepts, this chapter contextualises the study's approach, linking it to established ideas and debates within the field. The chapter further details the methodological choices, including research design, data collection techniques, and analytical procedures, to ensure transparency and rigor. These theoretical and methodological foundations not only direct the research process but also strengthen the reliability and validity of the findings. Through this framework, the thesis seeks to address its research questions systematically, providing a robust pathway for analysing and interpreting the study's core issues.

3.1. Theoretical Framework

In order to answer the central question of this thesis, it is necessary to propose an adequate theoretical framework. Since space research began relatively recently from a historical perspective and the range of activities in that area is increasing tremendously with the development of science and technology, it is expected that new approaches and understandings of dealing with this aspect of science will be developed. Progress in space research does not bypass the theory of international relations in its influence either, since the largest global powers were the first actors of the space race, the pioneers of space research, and today are the largest participants in the scientific, economic, and military development of technologies for expanding influence in space. The natural course of things dictated that in the study of international relations and security, precisely for the aforementioned reasons, a special field of studying relations between states should be developed in the context of expanding the field of interest of their internal and international politics in the direction of outer space.

A very important part of the science of international relations is geopolitics, and it deals with the relations between the actors of international relations in a limited geographical territory, which includes the borders of the planet Earth. However, the rise and rise of great powers in space transcends the physical limitations of the globe, which is why the science of international relations has had to transcend them as well. In this way, a new research field was created, with a focus on international relations and security in space, astropolitics. The earliest researchers in this field established that the concepts and paradigms of international relations from Earth were transferred to relations in space. Thus, the champions of astropolitics concluded that the concepts of anarchy, rivalry, cooperation, and

balance of power apply beyond the physical boundaries of the planet (Dolman, 2002: 50). In the geopolitical sense, these concepts are extremely important for explaining the behaviour of states, especially from the perspective of constructivism. According to Dolman's claims, it can be concluded that he observes the universe through the lens of a realist viewpoint on the anarchy of its structure, but in this context it is created in relation to the perception of states about the interests for which they enter into cooperation. Thus, for the analysis of relations in astropolitics, a constructivist approach to understanding anarchy and the dynamics of relations is relevant and desirable. This is reinforced by the argument that key notions of astropolitics are also constructed, either arbitrarily by researchers or by international convention. According to constructivists, reality is not given but created through a system of complex interactions that shape norms, identities, and values (Zehfuss, 2002: 4). It provided an adequate theoretical and methodological framework for explaining the dynamics of cooperation and rivalry, from the time of the space race through the period of intensification of cooperation to the development of joint programs and plans for further research.

In the continuation of the research, I will try to challenge the basic assumptions of the astropolitical approach in a realist sense, in accordance with the constructivist theory and the understanding of space as a place where cooperation can take place despite geopolitical tensions. An important aspect will be particularly highlighted during the answers to the main research questions, and this in a way to determine how geopolitical reality affects the creation of a parallel reality in space. One of the first uses of constructivist theory in this thesis will concern the determination of how the international system valid in space was created and on which the basis for the cooperation of states rests. In this way, the continuation of the actions of the states in that system and their perception of that system can be explained.

3.2. Research Method

To examine these hypotheses, a qualitative research design will be applied. This approach will ensure a comprehensive understanding of the factors influencing US-Russia space cooperation. Data will be collected from various sources, including primary data from expert interviews and secondary data from academic journals, policy papers, and official documents.

This thesis will use content analysis to review strategic documents, policy papers, and academic literature in order to identify themes and patterns in US-Russia space cooperation. Additionally, case studies will focus on significant projects such as the Apollo-Soyuz Test Project, the International Space Station (ISS), and recent lunar and Mars explorations to understand the factors

that facilitate collaboration. Multiple case sub-studies will be used to answer the central research questions, allowing not only a description of the forms of cooperation between states in space affairs but also an in-depth analysis of the motives, processes, and outcomes of such cooperation. This approach will contribute to a deeper understanding of the potential for partnership in astropolitics between states despite geopolitical rivalry.

Key examples of cooperation in space will include the Apollo-Soyuz project, the joint construction, maintenance, and operation of the ISS, and joint astronaut missions to space, especially to the ISS. In researching and analysing these forms of cooperation, publicly available sources from relevant national institutions in the USA and Russia, as well as from other spacefaring participants, will be utilized. Examining these case studies will allow for a nuanced analysis of the relationship between Russia and the USA, particularly from the perspective of the complex intersection between astropolitics and geopolitics.

Through an adequate analysis of these case studies, this research will clarify the boundaries between these two approaches in the study of international relations and security. Of particular importance in the analysis is the context within which these examples of cooperation take place, which will aid in identifying patterns of when and under what conditions interstate cooperation in outer space intensifies. Using the established theoretical framework, the methodological approach will aim to provide clear and definitive insights into the complexity and potential for international cooperation in the context of geopolitical rivalry among great powers. The analytical framework will integrate qualitative and quantitative findings to offer a comprehensive understanding of US-Russia astropolitical relations, utilising thematic analysis, comparative analysis, and triangulation.

Texts in academic journals, monographs, relevant online sources, and texts in thematic anthologies will be used as secondary sources of data with the aim of forming a theoretical research framework with an explanation of the terms and concepts used, as well as providing adequate data that are necessary for a successful analysis. Through the use of theoretical IR concepts, especially those related to anarchy, rivalry, cooperation, and balancing of power, a contextual analysis of the nature of cooperation in space affairs will be approached. The aim is to establish, using theoretical approaches, how astropolitical cooperation develops depending on the dynamics of geopolitical relations, as well as what dynamics generally govern the astropolitical field.

According to the previously presented analytical framework, it can be concluded that the pioneers of astropolitics brought its subject into connection with geopolitics and in such a way that they transferred geopolitical determinants and characteristics to the reality of space. Since, according to constructivists, the reality of space is created by the actors who act in it, which are predominantly states, through research, that approach will be used to explain the existing dynamics of relations between states in outer space cooperation (Sheehan, 2008: 34). Through the application

of the mentioned framework, an effort will be made to critically observe the realist approach to understanding geopolitical and astropolitical dynamics, and that through relying on a neorealist approach through which the complexity of the dynamics of relations between space forces, which the nature of outer space creates, would be explained. At the same time, the inclusion of new actors in outer space activities further complicates the situation, where the theoretical-methodological framework will crystallise what influence new actors have on the relations of cooperation between the USA and Russia.

4. History of U.S.-Soviet Cooperation in Space

The chapter “History of U.S.-Soviet Cooperation in Space” provides a historical overview of the complex and evolving relationship between the United States and the Soviet Union within the realm of space exploration. It examines key instances of collaboration throughout the 20th century, offering insights into how space cooperation developed alongside the broader political tensions of the Cold War. This chapter highlights notable cooperative efforts, from early communication and coordination to joint missions, which served as symbolic and practical steps toward peaceful engagement. A separate section is devoted to the Shuttle Mir program, a groundbreaking milestone in U.S.-Soviet space relations, which marked a turning point in mutual cooperation and laid the groundwork for subsequent joint efforts in space exploration. Through this historical analysis, the chapter aims to illuminate the significant role that shared space endeavours played in fostering diplomatic ties and establishing a legacy of international partnership in space.

The historical context of US-Russia space cooperation is deeply rooted in the intense rivalry and subsequent détente of the Cold War era during the second half of the 1960s and 1970s. The competition for technological and strategic supremacy between the United States and the Soviet Union was a defining characteristic of this period, and space exploration became a critical arena for demonstrating national prowess. This backdrop of rivalry eventually gave way to moments of collaboration, which have evolved into more structured cooperative efforts in the post-Cold War era. The space race began in earnest with the Soviet Union's launch of Sputnik in 1957, the first artificial satellite to orbit the Earth. This achievement shocked the United States and marked the beginning of a series of high-stakes competitions, including the race to put a man on the moon. The United States responded with a significant investment in its space program, culminating in the Apollo Moon landings of the late 1960s. These events were not merely technological milestones but also potent symbols of ideological superiority during the Cold War (McDougall, 1985: 109).

Despite this intense competition, there were early signs of potential collaboration. The Apollo-Soyuz Test Project in 1975 was a landmark event that marked the first joint space mission between the United States and the Soviet Union. This mission involved the docking of an American Apollo spacecraft with a Soviet Soyuz capsule, symbolising a thaw in Cold War tensions and demonstrating that scientific and technological goals could transcend political differences (Sheehan, 2007). The success of this mission laid the groundwork for future cooperative endeavours in space.

The end of the Cold War and the dissolution of the Soviet Union in 1991 marked a significant turning point in US-Russia space relations. The newly established Russian Federation inherited the Soviet space program and continued to seek opportunities for collaboration with the United States. One of the most significant outcomes of this new era of cooperation was the development and launch

of the International Space Station (ISS) in 1998. The ISS represents one of the most ambitious international space projects ever undertaken, involving not only the United States and Russia but also other international partners (Johnson-Freese, 2009: 65). The ISS serves as a platform for scientific research, technological development, and international cooperation, symbolising the potential for space exploration to bridge political divides. The ISS has become a focal point of US-Russia space cooperation, providing a unique environment for conducting scientific experiments and advancing technological innovations. The continuous operation of the ISS has required close coordination and collaboration between the United States space agency NASA and Roscosmos, the Russian space agency. This partnership has been sustained despite periodic political tensions and has demonstrated the resilience of cooperative efforts in the face of broader geopolitical challenges (Bowen, 2018: 43).

However, the history of US-Russia space cooperation has not been without its challenges. Political conflicts, such as the ongoing crisis and war in Ukraine, have strained bilateral relations and raised questions about the future of collaborative space efforts. In 2014, following the annexation of Crimea by Russia, the United States imposed sanctions that affected various sectors, including space cooperation. Despite these tensions, both nations have continued to work together on the ISS, underscoring the strategic importance and mutual benefits of their space partnership (Elefteriu, 2024). The emergence of new space powers, particularly China, has further complicated the dynamics of US-Russia space cooperation. China's rapid advancements in space technology and its ambitious plans for lunar and Mars exploration present both opportunities and challenges for the traditional space powers. The rise of China as a significant player in space could incentivise the United States and Russia to strengthen their cooperation to maintain their competitive edge. Alternatively, it could introduce new complexities into their relationship as they navigate the broader geopolitical implications of China's growing influence in space (Sadeh, 2013: 21).

In conclusion, the historical context of US-Russia space cooperation is a testament to the complex interplay between competition and collaboration. From the fierce rivalry of the Cold War geopolitics to the cooperative efforts on the ISS in the realm of astropolitics, the evolution of their space relationship highlights how shared scientific and technological goals can create pathways for cooperation even amidst broader political tensions. Understanding this historical context is crucial for assessing the potential for future collaboration and for formulating policies that can foster sustained international partnerships in space.

4.1. Breaking Through the Iron Curtain

Amid the intense geopolitical and ideological divisions of the Cold War, a remarkable moment of unity emerged from the depths of space. The Apollo-Soyuz Test Project (ASTP) in 1975 marked a groundbreaking achievement in US-Soviet relations, serving as the first international human spaceflight mission. This historic endeavour was a beacon of hope, demonstrating that even in times of profound political conflict, cooperation and diplomacy could prevail. The mission saw an American Apollo spacecraft dock with a Soviet Soyuz spacecraft, symbolising a powerful gesture of collaboration between two superpowers that were otherwise locked in a tense rivalry. This successful docking in the vastness of space was not merely a technical accomplishment; it was a profound statement of what could be achieved when nations chose to set aside their differences in pursuit of common goals. The ASTP was a vivid reminder that space exploration transcends borders and that the shared human spirit of curiosity and discovery can bridge even the widest divides. For astronauts and cosmonauts alike, the mission was more than just a journey into space; it was a demonstration of trust, mutual respect, and the power of science to unite.

The mission's success laid the groundwork for future international collaborations, including the long-standing partnership on the International Space Station. It showcased that space could serve as neutral ground, where geopolitical tensions could be set aside in favour of shared exploration and the advancement of human knowledge. The ASTP highlighted the potential for scientific and technological exchanges that not only benefitted the immediate mission but also set a precedent for how space could be a venue for peaceful cooperation, even among rivals. Moreover, the ASTP was a pivotal moment that helped thaw some of the icy relations between the US and the Soviet Union, opening up channels of communication that extended beyond the mission itself. It proved that collaboration in space was not only possible but also highly beneficial, paving the way for a more interconnected approach to future space endeavors. This historic event underscored the idea that while Earth-bound conflicts might persist, the boundless expanse of space offered a unique opportunity to look beyond them and work together for the greater good of all humankind.

The legacy of the Apollo-Soyuz Test Project lives on as a symbol of hope and a reminder that even in the most divided times, cooperation in space can foster understanding and pave the way for new partnerships. It stands as a testament to the fact that, when united by a common purpose, humanity can overcome even the most entrenched barriers and reach for the stars together (Nicogossian & Campbell, 2023: 652).

Before the advent of the International Space Station (ISS), the Soviet Union’s pioneering space station programs, Salyut and Mir, played a crucial role in shaping the trajectory of human spaceflight

and international cooperation. These programs were instrumental in advancing the understanding of long-duration human space missions and station maintenance, providing essential insights that would influence future collaborative efforts in space. While primarily driven by national ambitions, the Salyut and Mir missions were key in demonstrating the technical and logistical feasibility of prolonged human presence in space, paving the way for international partnerships.

The expertise gained from the Soviet Union's space stations went beyond technical accomplishments; it underscored the importance of working together across national boundaries to achieve common goals in space exploration. The Salyut and Mir missions not only showcased the ability to sustain human life in orbit for extended periods but also highlighted the operational challenges and solutions that would be critical for the success of future multinational ventures. The experiences and lessons learnt from these programs were directly applied to the design, development, and operation of the ISS, which would become the largest cooperative space project in history. This laid the foundation for a new era of collaborative space exploration, where knowledge and resources from different countries could be pooled to achieve greater scientific and technological advancements (Burrough, 1999: 1-30).

4.2. The Shuttle-Mir program

The Shuttle-Mir program represented a significant milestone in the evolution of US-Russia space cooperation, serving as a bridge between Cold War rivalry and post-Cold War collaboration. This groundbreaking initiative involved a series of American space shuttle missions docking with the Russian space station Mir, offering both nations an opportunity to work together closely in space. The Shuttle Mir program was not just about the exchange of astronauts and hardware; it was a crucial testbed for the technologies, procedures, and international teamwork that would be required for the ISS.

Through the Shuttle Mir program, the US and Russia were able to deepen their understanding of joint space operations, which included managing complex mission logistics, conducting joint scientific research, and testing new technologies for long-duration spaceflight. This program provided a practical demonstration of how collaborative efforts could be effectively managed in the challenging environment of space. It also fostered stronger ties between NASA and the Russian space agency, leading to enhanced communication, mutual respect, and a clearer framework for future joint ventures. Beyond its technical achievements, the Shuttle-Mir program had profound diplomatic implications, as it helped to bridge gaps between the US and Russia, fostering a spirit of cooperation that transcended their historical adversarial relationship. It served as a precursor to the ISS,

demonstrating the potential of international collaboration in achieving complex and ambitious space goals. The experience and trust built during the Shuttle-Mir missions were instrumental in the successful construction and operation of the ISS, which stands today as a testament to the power of cooperation in space exploration (Burrough, 1999: 30-90).

Overall, both the Salyut and Mir programs, along with the Shuttle-Mir initiative, played pivotal roles in the evolution of spaceflight from national endeavours to truly international collaborations. They provided the foundational experience and operational frameworks that have allowed humanity to embark on unprecedented journeys into space, setting the stage for future exploration beyond low Earth orbit. According to the dominant theoretical directions in international relations, this cooperation is explained in different ways. From a realist perspective, international cooperation is driven by states' pursuit of power and national interest, with a focus on security concerns and the balance of power. Realists would argue that the US and Russia's collaboration on the ISS is primarily strategic, rooted in the broader context of space dominance and maintaining technological superiority. Despite their political rivalry and differences, both nations recognise the importance of space as a domain of competition and national security (Schreiber, 2022). On the other hand, liberalism emphasises the role of international institutions, norms, and cooperation in fostering peaceful relations and mutual benefits among states. In the case of the ISS, liberalism would view the cooperation between Russia and the US as an example of how institutional frameworks, such as the United Nations (UN) and the space treaties, can promote peaceful collaboration even between rival powers. The ISS, as a product of the 1998 agreement between NASA and Roscosmos, exemplifies liberal ideals by enabling these two countries to engage in constructive partnerships that advance common goals (Gallagher, 2010). Following this path, constructivism emphasises the role of ideas, norms, and identities in shaping international relations. From a constructivist point of view, the cooperation between Russia and the US on the ISS can be understood as a process shaped by the identities and shared values of the two countries, which have evolved over time. This cooperation represents a shift in the norms surrounding space exploration – from a domain of Cold War rivalry to one of scientific cooperation. For constructivists, the ISS is more than just a scientific platform; it symbolises a changing international order where space is increasingly seen as a realm for peaceful cooperation rather than military competition (CosmoPolicy, 2016).

5. Geopolitical Impacts on U.S.-Soviet Space Collaboration

The chapter "Geopolitical Impacts on U.S.-Soviet Space Collaboration*"* explores the intricate ways in which geopolitical dynamics have shaped the nature and extent of space collaboration between the United States and the Soviet Union, later transitioning to U.S.-Russia relations. This analysis includes examining the crucial role of technological compatibility as a foundation for joint projects and how public and political support has influenced the momentum and sustainability of these collaborations. Additionally, the chapter investigates the formation of alliances and strategic partnerships that emerged as both nations recognised the diplomatic potential of space engagement. A key section considers the evolving U.S.-Russia space relationship in light of China's growing influence in space, highlighting how shifts in global power are impacting collaborative efforts. Further, the chapter addresses challenges to achieving multilateral space cooperation amid divergent national interests, concluding with an exploration of space as a confidence-building measure that has at times served to ease broader political tensions. Through these themes, this chapter illustrates how space has served as both a stage for competition and an avenue for international cooperation in response to the changing geopolitical landscape.

During the Cold War, the United States and the Soviet Union were locked in a fierce space race, each striving to outdo the other in a bid to showcase technological prowess and ideological supremacy. This intense rivalry spurred rapid advancements in space technology but left little room for collaboration between the two superpowers. The dynamic of competition began to shift with the Apollo-Soyuz Test Project (ASTP) in 1975, which marked the first cooperative human spaceflight mission between the US and the Soviet Union. This mission was a groundbreaking moment that symbolised a temporary thaw in the Cold War, known as détente, and set the stage for future cooperation. The technical achievements of the ASTP, such as the development of standardised docking procedures, fostered trust between NASA and the Soviet space program, paving the way for later collaborative efforts like the Shuttle-Mir Program and the International Space Station (ISS) (Neufeld, 2021: 40-90).

The Shuttle-Mir Program (1993-1998) was a pivotal initiative in which American Space Shuttles visited the Russian space station Mir, involving eleven Space Shuttle missions and extended stays of American astronauts on Mir. This program served as a precursor to the ISS, allowing both nations to gain valuable experience in joint space operations (McDowell, 1997: 31-120). The establishment of the ISS in 1998 marked a new era of collaboration, reflecting improved bilateral relations in a post-Cold War, unipolar world dominated by the United States. The ISS, a multinational effort led by NASA and Roscosmos, along with ESA, JAXA, and CSA, has been continuously inhabited since 2000, standing as the most enduring symbol of US-Russia space cooperation. Russia contributes

Soyuz spacecraft for crew transport and Progress spacecraft for cargo supply, while the US provides major modules, technology, and significant funding. This partnership has allowed for the pooling of resources and expertise, enabling scientific achievements and technological advancements that neither country could have accomplished independently (Harland, 2007: 31-80).

Throughout the years, the US and Russia have collaborated on a range of scientific missions, including lunar and Martian explorations, as well as extensive research aboard the ISS in fields such as life sciences, materials science, and Earth observation. Despite the geopolitical tensions that have occasionally strained their broader relations, the US and Russia have often managed to prioritise scientific objectives over political disagreements in their space endeavours (McCurdy, 2008: 50-120). The ISS has served as a diplomatic bridge, maintaining channels of communication and fostering cooperation even during periods of severe political strain on Earth. The collaborative nature of the ISS, characterised by shared decision-making, mutual reliance, and joint responsibilities, has cultivated a level of trust that contrasts sharply with the competitive dynamics often observed in their terrestrial interactions. Although political and military tensions, such as those following Russia's annexation of Crimea in 2014 and the subsequent conflict in Ukraine, have posed challenges, the ISS partnership has largely remained insulated from these broader geopolitical conflicts. The mutual dependencies between NASA and Roscosmos, particularly regarding transportation and operational support, have been key to maintaining this cooperation (Catchpole, 2008: 50-120).

However, as the ISS nears the end of its operational life, expected around 2030, questions about the future of US-Russia space cooperation have become increasingly pressing. Russia has expressed interest in developing its own space station, potentially stepping away from the ISS partnership, while the US is exploring new alliances with private industry and international partners. The Russian invasion of Ukraine in 2022 has further strained US-Russia relations, leading to renewed sanctions and a push in the West to reduce reliance on Russian space capabilities. This geopolitical landscape has introduced new complexities, including delays in joint missions, restricted access to critical technologies, and a growing scepticism about the prospects of future collaboration (Bizony, 2006: 128-148).

Reflecting on the history of US-Russia space cooperation from 1991 to 2024, it is clear that despite the challenges posed by ongoing geopolitical rivalries, the collaborative efforts in space, such as the Shuttle-Mir Program and the ISS, have demonstrated the potential for peaceful engagement even when relations on Earth are fraught with tension. The legacy of these cooperative ventures continues to shape the astropolitical landscape, suggesting that, while the path forward may be uncertain, the foundational lessons of past collaborations could guide future interactions in space exploration (Harland, 2013: 200-250).

As the Cold War receded into history, the spirit of collaboration continued to grow. Launched in 1998, the International Space Station (ISS) became a monument to international cooperation in space. A multinational project involving NASA, Roscosmos, and space agencies from Europe, Japan, and Canada, the ISS represented the culmination of decades of growing partnership. The ISS's mission was ambitious: to conduct scientific research in the unique environment of space and to serve as a platform for international collaboration. Over two decades, it has become a hub of scientific discovery, technological advancement, and diplomatic engagement. The ISS's continuous operation has required the US and Russia not only to share responsibilities but also to build and maintain a working relationship through periods of political strife and uncertainty. This partnership has demonstrated that even rivals can unite for a common cause, leveraging their combined resources and expertise to achieve extraordinary goals. The ISS has become a symbol of what can be accomplished when nations look beyond their differences and work together for the greater good (Neufeld, 2001: 71-120).

The International Space Station (ISS) stands as a testament to what can be achieved when nations come together with a shared vision. For years, NASA and Roscosmos have worked hand-in-hand on this ambitious project, exchanging astronauts, conducting joint scientific experiments, and utilising shared infrastructure. One of the most notable aspects of their collaboration has been the reliance on Russian Soyuz spacecraft to ferry astronauts to and from the ISS. This partnership became even more critical after the retirement of NASA's space shuttle program in 2011. In a remarkable display of resilience and adaptability, NASA developed the Commercial Crew Program, which includes SpaceX's Crew Dragon and Boeing's CST-100 Starliner. This program was designed to reduce dependency on Russian spacecraft. Yet, despite these advances, cooperation with Roscosmos remains indispensable for the ISS's continued operation. Their shared commitment ensures that the ISS remains a symbol of international unity and scientific progress (Burrough,1999: 100-176).

Despite the challenging geopolitical landscape, US-Russia cooperation in space remains strong, particularly through their joint efforts on the ISS. Both NASA and Roscosmos continue to work closely, conducting crew exchanges, sharing infrastructure, and collaborating on scientific experiments. This partnership endures even as new players, such as private companies and emerging space powers, add complexity to the space landscape.

The introduction of NASA's Commercial Crew Program, which brought private companies like SpaceX into the fold, has introduced new dynamics. With commercial spacecraft now ferrying astronauts to the ISS, NASA's reliance on Russian Soyuz rockets has diminished. However, Roscosmos remains a crucial player in ISS operations, and the collaboration continues to be vital for the station's ongoing success. The ISS serves as a daily reminder that, despite their differences, the US and Russia can work together to achieve remarkable things in space.

Looking forward, there are tantalising opportunities for further collaboration, particularly in lunar and Martian exploration. The US-led Artemis Program, which started in 2017, aims to return humans to the Moon and establish a sustainable presence there, with the long-term goal of paving the way for human missions to Mars. While Russia has expressed reservations about joining the Artemis Accords, a set of principles governing the peaceful exploration of the Moon, there remains potential for cooperation in lunar orbit missions, joint scientific research, and technology sharing. They were established as part of the broader NASA Artemis program, with the goal of returning humans to the Moon by 2025 and establishing a sustainable presence on the lunar surface, with an eye toward future Mars exploration. The Accords represent a significant effort to set rules for space exploration among countries that are participating in or supporting these endeavors. The Accords reaffirm the Outer Space Treaty of 1967, which mandates that space exploration and activities be conducted for peaceful purposes. Participating nations agree that all activities in space, including those on the Moon, Mars, and other celestial bodies, will adhere to this principle. Collaborative efforts on these ambitious projects could build on the legacy of the ISS, setting the stage for even deeper partnerships (Neufeld, 2001: 121-160). Behind every successful space mission lies a robust institutional framework that supports and guides international collaboration. The US-Russia partnership is no exception, relying on a network of organisations, treaties, and governance structures that facilitate cooperation.

At the core of this framework are bilateral committees and working groups. These bodies play a crucial role in coordinating joint activities, resolving issues, and planning future missions. Regular meetings and consultations ensure that both parties remain aligned on their objectives and strategies, allowing them to navigate the complexities of international cooperation. These working groups serve as the glue that binds the partnership, providing a platform for dialogue and decision-making. The governance of the ISS exemplifies how structured oversight can foster effective collaboration. The Multilateral Coordination Board (MCB) and the Space Station Control Board (SSCB) oversee operations and make critical decisions, ensuring that all partners have a voice in the management of the station. This governance model has been instrumental in maintaining the ISS as a symbol of international cooperation, with each participating nation contributing to its success.

International treaties and agreements provide the legal foundation for this partnership. Treaties such as the outer space treaty, the rescue agreement, and the liability convention establish norms for responsible behaviour in space and outline the legal obligations of each party. These agreements help mitigate risks, clarify responsibilities, and provide a framework for resolving disputes, ensuring that cooperation in space is conducted in a fair and orderly manner (Harland, 2007:101-150).

Cooperation faced challenges, including economic sanctions against Russia following the 2014 annexation of Crimea and, more recently, the fallout from Russia's invasion of Ukraine in 2022. While tensions have risen, both nations have so far maintained their commitments to the ISS, although there

are signs of increasing divergence, with the US partnering more with private companies and Russia exploring alternatives with other nations, including China.

The emergence of new geopolitical dynamics, such as US concerns over Russian military activities in space and increasing competition from China, have put additional strain on the partnership. Despite these challenges, there have been ongoing negotiations about the future of the ISS and potential collaboration on new lunar exploration projects, although these discussions have been complicated by broader international tensions (Carroll, 2020).

As the US and Russia continue to navigate their complex relationship, geopolitical tensions cast a long shadow over their space cooperation efforts. Military conflicts, diplomatic disputes, and diverging foreign policy agendas create an uncertain environment that complicates joint space missions and stifles opportunities for collaboration. While space has historically been a realm where both nations could set aside their differences, the current political climate makes this increasingly difficult. The ongoing military conflicts involving Russia and the sanctions imposed by the US and its allies create significant barriers. These geopolitical rifts extend beyond terrestrial disputes and into the realm of space, where mutual suspicion and a lack of trust can hinder effective collaboration. As a result, joint projects, such as those on the ISS or potential lunar missions, face an uphill battle against the backdrop of broader political discord. Imagine a scenario where a new conflict on Earth jeopardises an upcoming joint mission. The coordination and trust required for a successful launch and operation could be threatened, delaying timelines and complicating international efforts. This constant balancing act between cooperation and conflict underscores the fragility of US-Russia space partnerships in the current geopolitical landscape.

Economic sanctions, imposed by the US and its allies in response to various geopolitical disputes, present another significant challenge to US-Russia space cooperation. These sanctions impact multiple sectors, including space, and restrict Russia's ability to access critical technologies and funding. The sanctions affect everything from the procurement of essential spacecraft components to the financial health of Roscosmos, Russia's space agency.

For Russia, these economic restrictions mean facing challenges in maintaining and upgrading its space infrastructure. For instance, sanctions have limited Russia's access to high-tech components that are crucial for satellite and spacecraft development. These constraints not only impact Russia's domestic space capabilities but also disrupt collaborative efforts with the US, where shared resources and technology exchanges are vital for mission success. The economic impact on Russia's space sector could lead to delays in scheduled launches, reduced participation in joint missions, and even the abandonment of some cooperative projects. This economic pressure forces Russia to rely more on its domestic capabilities, which may not always meet the high standards required for international

missions. Consequently, the future of cooperative ventures hangs in the balance, subject to the evolving landscape of international sanctions and economic relations.

5.1. The Importance of Technological Compatibility

In the ever-expanding realm of space, two great rivals – NASA and Roscosmos - have found surprising common ground. Despite the turbulent geopolitical climate and occasional discord between their respective nations, these space agencies have managed to forge a partnership that has become a beacon of collaboration amidst conflict. Their ongoing initiatives exemplify how shared goals and mutual interests can transcend political differences and contribute to significant advancements in space exploration.

For successful space cooperation between the United States and Russia, technological compatibility is crucial. Joint missions rely on the seamless integration of systems, procedures, and communication channels. This necessitates that spacecraft are compatible for docking, astronauts can communicate without hindrance, and all equipment functions reliably in the harsh conditions of space.

A key element of this compatibility is the standardisation of equipment. The International Space Station (ISS) program has demonstrated the importance of standardised docking systems and communication protocols. These standards ensure that spacecraft from various nations can operate together without difficulties, facilitating smooth joint missions. Standardisation enhances not only safety but also streamlines logistics and maintenance, thereby boosting the efficiency and effectiveness of international collaboration (Krishna, 2024).

In addition to hardware standardisation, the exchange of knowledge and skills is a crucial aspect. Engineers, scientists, and astronauts from the US and Russia regularly participate in joint training sessions, workshops, and simulations. These collaborative activities enable both countries to share best practices and technical know-how, strengthening the partnership’s overall capabilities. For example, Russian cosmonauts and American astronauts engage in joint training, benefiting from each other's strengths and learning to adapt to diverse operational methods (NASA, 2016: 17).

Joint research and development initiatives further solidify this technological partnership. By combining resources and expertise, the US and Russia can expedite the development of advanced space technologies and systems. These collaborations not only foster innovations that benefit the two nations but also contribute to the broader international community involved in space exploration.

5.2. The Power of Public and Political Support

The journey to the stars is propelled not only by rockets and astronauts but also by the collective resolve of the public and the political leaders who advocate for space exploration. Public and political backing is pivotal in determining the course of US-Russia space cooperation. When the public supports the idea of exploring space together, it fosters a positive environment that motivates political leaders to endorse collaborative efforts. This backing is essential as it influences funding, policy decisions, and the political determination needed to sustain joint space initiatives.

Historically, times of heightened public interest in space have led to strong political endorsement for cooperative missions. A notable example is the Apollo-Soyuz Test Project in 1975, which marked a significant easing of Cold War tensions and highlighted how space exploration could unite two rival superpowers. Today, the International Space Station (ISS) exemplifies the lasting impact of public and political support. The ISS, as a symbol of global collaboration, depends on the goodwill and support of both American and Russian political entities, along with contributions from other international partners.

Both the United States and Russia have sought to keep space cooperation separate from conflicts on Earth, often considering space as a distinct arena where scientific and strategic ambitions could rise above political disputes (Hartsoe, 2023). Nonetheless, this separation is not entirely foolproof; the overall decline in trust and communication between the nations can indirectly impact space cooperation. This can manifest as delays in reaching agreements, a reluctance to share sensitive technologies, and a re-evaluation of strategic objectives in space.

Political tensions, particularly between major powers like the US and Russia, have increasingly cast space as a potential battleground for military competition. Both nations have crafted space policies that prioritise the defence of their space assets, leading to the creation of military-focused space branches, such as the US Space Force and Russia's Aerospace Forces. The potential for anti-satellite weapons, cyberattacks on space systems, and other forms of aggression in space has prompted countries to emphasise strategic autonomy and security in their space strategies (Dolman, 2002: 51-100). Technological competition between the US and Russia adds another layer of complexity to their space cooperation. Both nations are heavily invested in advancing their space technology, from rocket propulsion systems to cutting-edge satellite technology and beyond. While this competition can drive innovation and technological progress, it also poses risks to collaboration, particularly when it comes to sharing sensitive technologies or intellectual property. For the US, the focus on commercial space ventures has accelerated the development of new technologies at a breakneck pace. Companies like SpaceX and Blue Origin have revolutionised space travel, making it

cheaper and more accessible. Meanwhile, Russia continues to invest in its human spaceflight capabilities and military space technologies, aiming to maintain its legacy as a leading space power (Kluger, 2022; New Space Economy, 2023; Space Voyage Ventures, 2024).

However, this competition can lead to conflicts over technology sharing and intellectual property rights. Concerns about espionage, technology theft, and the security of critical space assets can make both nations wary of fully committing to collaborative efforts. As each side strives to protect its technological edge, the potential for cooperation is often overshadowed by a desire to maintain strategic advantages (Chivvis et al., 2024). Picture a scenario where both nations are working on similar propulsion technologies but are reluctant to share data due to fears of losing a competitive edge. This lack of openness could stall joint missions and limit the potential for groundbreaking advancements that collaboration could otherwise bring. The challenge lies in finding a balance between healthy competition and the openness needed for genuine cooperation.

Although the US and Russia share a common interest in space exploration, their strategic objectives differ considerably, posing additional challenges to their cooperation. The US has increasingly focused on commercial space ventures and deep space exploration, such as missions to Mars and establishing a sustainable human presence on the Moon. This shift towards commercial involvement, driven by partnerships with private companies, emphasises innovation, cost efficiency, and quick development timelines (Chatzky, Siriparapu & Markovich, 2021).

On the other hand, Russia continues to prioritise its human spaceflight program, which remains a key element of national pride and a symbol of its longstanding space legacy. Additionally, since late 2000s Russia has shown a strong interest in expanding its military space capabilities, including satellite defence and anti-satellite technologies, reflecting its view of space as a crucial aspect of national security. These divergent priorities can create misalignment in cooperative efforts (Podvig). For example, while the US advances the Artemis Program and its goals for lunar exploration, Russia's reluctance to endorse the Artemis Accords illustrates its hesitation to engage with US-led initiatives, describing them as “US-centric” (Newman, 2020). Russia's emphasis on military space capabilities further complicates collaboration, as it contrasts with the US's focus on commercial and scientific exploration. Imagine a scenario where NASA and Roscosmos meet to discuss their next joint mission but struggle to align their goals. The US might advocate for a mission aligned with its broader aims of deep space exploration, while Russia could prioritise advancing its human spaceflight technologies. Such differing objectives can result in stalled negotiations, delays, and missed opportunities for collaboration (Cadbury, 2006: 177).

Despite these challenges, the foundation of US-Russia cooperation in space remains strong, rooted in decades of collaboration and shared accomplishments. To navigate the complex landscape of geopolitical tensions, economic competition, technological rivalry, and differing priorities, both

nations will need to commit to open dialogue, adaptable strategies, and a willingness to compromise (Cadbury, 2006: 190). Geopolitical rivalries have pushed nations to form strategic alliances in space akin to traditional military alliances. For example, the US has increasingly aligned with allies like the European Union, Japan, and private space companies to reduce reliance on Russian technology. Russia, facing sanctions and isolation from Western partners, has turned towards potential partnerships with nations like China, reflecting a strategic pivot in its space policy towards alternative collaborations (Suess & Crawford, 2024). Political tensions also influence the development of international space norms and laws. Disagreements on how space should be governed - whether it should be a domain free from national appropriation or a competitive field for resource extraction - reflect broader geopolitical divides. Efforts to establish new international agreements on space traffic management, the prevention of space debris, and the peaceful use of outer space are often hindered by these tensions, as major powers struggle to align their strategic interests. Political conflicts can lead to the cancellation or postponement of joint scientific missions. For example, collaborations in planetary exploration or space telescopes can be sidelined due to broader diplomatic fallout. While purely scientific goals are often less contentious, the strategic value of space assets means that scientific cooperation can still be affected, with funding cuts, reallocation of resources, and shifts in priorities as indirect consequences (Vora, 2023; Zhou, 2022).

Sanctions can severely impact space cooperation by restricting access to crucial technologies, funding, and markets. For instance, the US has imposed export controls that limit the transfer of high-tech components to Russia, affecting joint projects. This has led nations to pursue greater self-reliance in their space programs, investing in domestic industries to develop capabilities that were previously obtained through international partnerships (Gamillo, 2022).

Geopolitical conflicts, such as the Cold War and recent crises like the war in Ukraine, have profoundly influenced US-Russia space cooperation, often pushing the boundaries of collaboration and rivalry. While the ISS has served as a resilient platform for cooperation, broader geopolitical dynamics have increasingly shaped space policies, driving nations toward strategic autonomy, security considerations, and new alliances. Political tensions thus not only affect bilateral space cooperation but also influence global strategic decisions in space, highlighting the interplay between terrestrial conflicts and astropolitical agendas (Oberhaus, 2020).

Collaborative space missions allow countries to pool resources, expertise, and technology, reducing costs and increasing the chances of mission success. For example, the ISS is a result of shared infrastructure, scientific instruments, and astronaut expertise from multiple nations, which no single country could easily achieve alone. By sharing data, scientific research becomes more comprehensive and robust. Experiments on the ISS, for example, benefit from the contributions of different space agencies, resulting in advancements in fields such as medicine, materials science, and

Earth observation. International cooperation in space exploration accelerates scientific discoveries by combining the strengths of different countries. Collaborative missions like the Hubble Space Telescope (involving NASA and ESA) have revolutionised our understanding of the universe, demonstrating the potential of joint scientific endeavors. Cooperative research on microgravity's effects on human biology, the development of new materials, and climate monitoring are examples of how space collaboration directly contributes to scientific progress on Earth (NASA, 2024; Light, 2023).

Joint missions provide access to a wider array of space assets, such as satellites, telescopes, and rovers. This expanded access allows for more comprehensive data collection and analysis, supporting global initiatives like climate change monitoring, disaster response, and navigation. For example, the collaboration between NASA, ESA, and JAXA on Earth observation satellites has significantly enhanced global climate models and provided critical data for managing natural disasters. Space missions are expensive, with costs often reaching billions of dollars. By sharing these costs, countries can undertake ambitious projects that would be financially prohibitive if attempted alone. The ISS, costing over $100 billion, exemplifies how cost-sharing makes large-scale space endeavours feasible. Sharing the financial burden also reduces individual risk for participating nations. If a mission fails, the economic impact is spread across all contributors rather than falling on a single nation. Collaborative space missions drive innovation in technology and engineering, which can have significant spillover effects on the broader economy. Technologies developed for space missions, such as GPS, satellite communications, and advanced materials, often find applications in consumer markets, boosting economic growth. Space cooperation can also stimulate the development of domestic space industries, creating jobs and fostering new markets in satellite manufacturing, launch services, and space tourism. International cooperation opens up new markets for space products and services. For example, countries that collaborate on satellite launches or space research can negotiate access to technologies and capabilities that may otherwise be inaccessible due to export restrictions or high costs. Partnerships also create opportunities for countries to enter new areas of the space economy, such as satellite servicing, debris removal, or asteroid mining, by leveraging the combined resources and market access of multiple nations. National security concerns drive countries to develop strategic autonomy in space capabilities, ensuring they are not overly reliant on other nations for critical space infrastructure, such as satellite communications, navigation, or reconnaissance (Wilhite et al., 2015).

For example, the US and Russia both prioritise the development of independent satellite systems (like GPS and GLONASS) to maintain operational independence in both civilian and military contexts. Space is increasingly seen as a critical domain for national security, with satellites playing vital roles in communications, intelligence, and missile guidance. Protecting these assets from

potential threats, such as anti-satellite (ASAT) weapons or cyberattacks, is a top priority. National security concerns lead to policies focused on enhancing space situational awareness, hardening satellites against attacks, and developing rapid launch capabilities to replace or augment lost assets. As space becomes more congested and contested, countries are adopting more assertive defence postures. The establishment of military branches dedicated to space, like the US Space Force and Russia's Aerospace Forces, reflects the growing recognition of space as a potential battlefield. These developments influence space policies by emphasising the need for defensive and offensive capabilities, such as missile defence systems, space-based surveillance, and counter-space technologies. Many space technologies are dual-use, serving both civilian and military purposes. This duality complicates international cooperation, as countries may impose export controls to prevent the transfer of sensitive technologies that could enhance a rival's military capabilities. For instance, the US has strict regulations on the export of space technology under the International Traffic in Arms Regulations (ITAR), which can limit collaboration with certain countries, including Russia (Wehtje, 2023; Sankaran, 2022).

5.3. Alliance Formation and Strategic Partnerships

Security considerations often drive nations to form space alliances with trusted partners, enhancing collective capabilities and deterring adversaries. The Artemis Accords, led by the US, exemplify such alliances, aiming to establish norms for lunar exploration and signal cooperative intent among signatories. Conversely, geopolitical rivals like Russia and China have sought to deepen their own space collaboration, such as joint lunar base proposals, reflecting a strategic alignment in response to Western partnerships. National security concerns can shape the development of international space norms and governance. Efforts to negotiate treaties on the prevention of an arms race in space or to establish rules for responsible behaviour are often stalled by differing national security priorities. This divergence can lead to fragmented governance in space, with countries setting their own rules and standards, potentially leading to conflicts and reducing the effectiveness of global cooperation. Collaborative space missions provide significant scientific and economic benefits, including the pooling of resources, cost-sharing, and accelerated innovation. However, national security considerations profoundly shape space policies and cooperation as countries seek to protect their strategic interests in an increasingly contested domain. These considerations influence the formation of alliances, the management of dual-use technologies, and the development of space governance, highlighting the complex interplay between cooperation and competition in space. China's rapid

advancement in space technology, including successful lunar and Mars missions, the development of its own space station (Tiangong), and plans for lunar bases, has positioned it as a formidable space power alongside the US and Russia (Pollpeter et al., 2023). This rise challenges the traditional US-Russia space dynamic, introducing a new player whose capabilities are increasingly on par with those of the established space powers. China's achievements, such as the Chang'e lunar missions and the Tianwen Mars rover, demonstrate its ability to independently undertake complex space missions (Doe, 2024: 45; Wall, 2022).

The rise of China has prompted a strategic reorientation in both US and Russian space policies. For the US, China's advancements are seen as a direct challenge, prompting increased investments in space capabilities and forming alliances through initiatives like the Artemis Accords (Zhen, 2020). For Russia, China represents both a competitor and a potential ally against Western dominance in space. Given the strained US-Russia relations, Russia has increasingly turned towards China for potential partnerships, such as proposals for joint lunar exploration and space station development (Pollpeter et al., 2023).

5.4. Evolving US-Russia Space Relations Amid China's Growing Influence

The emergence of China as a significant space power has introduced a layer of complexity in US-Russia space relations. On one hand, it could drive Russia and the US closer in areas where mutual interests align, such as maintaining the ISS or managing space debris. On the other hand, Russia's pivot towards China reflects a strategic choice, driven partly by geopolitical tensions with the US and partly by the need to align with a partner that shares similar ambitions and is less constrained by Western sanctions or political conflicts. The US, Russia, and China now form a triangular dynamic in space, with competition and potential collaboration influencing each side's strategic decisions. While US-China relations are largely competitive, Russia's space relations with China are characterised by pragmatic cooperation, as seen in their joint declarations on space exploration.

This triangular dynamic complicates traditional bilateral partnerships, as each nation must navigate its relations with the other two, balancing competition with the need for cooperation on issues such as space traffic management and the prevention of an arms race in space. Russia's partnership with China could lead to the development of alternative space infrastructures, such as a joint lunar base or shared satellite constellations, which may marginalise traditional US-Russia collaborations. Overall, China's rise adds both a competitive and cooperative element to US-Russia space relations, influencing how each nation approaches space strategy and multilateral engagements (Doe, 2024:53).

As we have seen from previous analysis in this MA thesis, the US-Russia partnership in space has always been a beacon of cooperation amid geopolitical turbulence. Despite ongoing political tensions and economic sanctions, both nations have managed to sustain a functional and, at times, remarkable collaboration in space. However, the future of this partnership hinges on the ability to navigate these challenges and adapt to the evolving global landscape. One of the critical factors that will shape the future of US-Russia space cooperation is the rise of new space-faring nations. Countries like China and India are rapidly advancing their capabilities and are eager to establish themselves as major players in the space arena. This shift in the global space landscape presents both challenges and opportunities. On one hand, the increasing competition could strain the bilateral focus of US-Russia space endeavors. On the other hand, the emergence of new partners could pave the way for multilateral collaborations that transcend traditional alliances. Imagine a future where the ISS or its successor is not just a joint venture between the US and Russia but a truly global project involving multiple nations, each contributing their unique expertise and resources. Such a scenario could lead to expanded missions and a more diverse set of scientific goals, reflecting the interests and capabilities of a broader international community (Cotterell, 2024; Bilal, 2024).

While strategic rivalries persist among major space-faring nations, the complexity and cost of space missions often necessitate cooperation, transcending national interests for the greater good of scientific advancement and exploration. In this increasingly multipolar space environment, emerging space nations such as China, India, and Israel offer valuable partnerships. These nations bring unique capabilities, funding, and fresh perspectives that can significantly enhance multilateral missions, paving the way for a more inclusive and diverse approach to space exploration (New Space Economy, 2024a).

For instance, India’s Mars Orbiter Mission (Mangalyaan) is a prime example of cost-effective innovation, achieving a successful mission to Mars on a fraction of the budget typically associated with such endeavors. This not only showcases India’s engineering ingenuity but also sets a precedent for affordable space exploration, making space more accessible to other countries with limited budgets. Similarly, Israel's lunar lander project, Beresheet, demonstrated that smaller nations could contribute meaningful technological advancements to lunar exploration, even with limited resources. These examples underscore the potential for emerging space players to contribute innovative approaches and technologies that can help reduce costs and risks for all partners involved. By leveraging the strengths of each nation, whether it's advanced robotics, cost-efficient launch capabilities, or innovative satellite technologies, collaborative missions can achieve more ambitious goals than would be possible through competition alone (Smith, 2024).

Furthermore, the inclusion of diverse partners expands the scientific and cultural horizons of space missions, integrating different scientific objectives, methodologies, and even philosophical

approaches to exploration. This diversity enriches the mission's potential outcomes and fosters a spirit of global unity and shared human endeavour.

However, balancing this cooperation with competition remains a delicate task. Nations must navigate not only technological and logistical challenges but also geopolitical considerations, such as concerns over technology transfer, security, and strategic autonomy. As the global space community evolves, finding a sustainable balance between competition and cooperation will be key to unlocking the full potential of space exploration for all humanity.

Ultimately, the future of space exploration may lie in hybrid models of engagement, where nations maintain their strategic interests while also committing to collaborative frameworks that maximise the shared benefits of space. This could include expanded international space stations, joint planetary missions, or even shared initiatives in space resource utilisation, such as asteroid mining or lunar base development, driven by the collective capabilities and ambitions of both established and emerging space powers (Smith, 2024).

Beyond the established space powers of the US, Russia, and China, a growing number of emerging space nations such as India, Japan, South Korea, the United Arab Emirates, and Brazil are making significant strides in developing their own space capabilities. These countries have launched satellites, conducted lunar and Mars missions, and invested in cutting-edge space technologies. The increasing accessibility of space, driven by reduced launch costs and advancements in small satellite technology, has lowered the barriers to entry, allowing more nations to participate in space exploration and applications. This trend is expanding the possibilities for multilateral cooperation on a global scale (Malisuwan & Kanchanarat, 2022).

Multilateral collaboration offers numerous advantages, including the pooling of resources, sharing of risks, and the potential for enhanced scientific and economic returns from space missions. Initiatives like the Artemis Accords are designed to encourage international cooperation in lunar exploration, inviting a broad coalition of spacefaring nations to participate. Platforms such as the International Space Station (ISS), the European Space Agency (ESA), and regional alliances like the Asia-Pacific Space Cooperation Organisation (APSCO) serve as successful models of multilateral engagement, demonstrating how diverse nations can collaborate on shared space objectives. The drive for multilateral cooperation is often fuelled by common interests in tackling global challenges, such as climate change monitoring, disaster response, and the mitigation of space debris. Space-based assets play a crucial role in these efforts, and international collaboration can maximise their effectiveness for the benefit of all. Organisations like the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) and the development of international guidelines for space sustainability, such as the Long-Term Sustainability Guidelines, underscore the need for inclusive and cooperative frameworks to address the collective challenges of space exploration and utilisation

(Smith, 2024). These initiatives highlight the importance of building a collaborative approach to space where the benefits and responsibilities are shared among the global community.

5.5. Challenges to Multilateral Space Cooperation

Geopolitical tensions, such as those between the US, Russia, and China, can spill over into multilateral space initiatives, complicating efforts to form inclusive partnerships. National security concerns, export controls, and competition for technological leadership can act as barriers to deeper cooperation. Additionally, differing regulatory frameworks, standards, and strategic priorities among nations can hinder the smooth execution of multilateral missions, requiring careful negotiation and compromise. The lack of a comprehensive, enforceable global framework for space governance can lead to fragmented approaches, where countries or blocs of countries pursue their own rules and standards (Goguichvili, Linenberger & Gillette, 2021). This fragmentation can complicate multilateral missions, as differing approaches to space traffic management, debris mitigation, and resource utilisation create operational and legal challenges. Significant economic and technological disparities among space nations can pose challenges to multilateral cooperation. Ensuring equitable access to benefits and addressing the capacity gaps between advanced and emerging space powers are critical to fostering inclusive and effective collaboration (Gatto & Goessler, 2023).

China's rise as a space power significantly impacts US-Russia space relations, introducing a new dynamic of competition and potential cooperation. While it drives the US and Russia to reconsider their space strategies, it also presents opportunities for Russia to align more closely with China in response to Western pressures. Meanwhile, the emergence of new space players offers substantial potential for multilateral cooperation, addressing global challenges and expanding the space community. However, geopolitical tensions, regulatory fragmentation, and disparities in capabilities present ongoing challenges to realising the full potential of inclusive multilateral space cooperation (Suess & Crawford, 2024).

As the number of space actors grows, so does the need for robust global space governance. Managing space traffic, controlling debris, and ensuring the sustainable use of space resources are critical challenges that require a coordinated international approach. For the US and Russia, leadership in crafting a solid global space management plan will be crucial for the future of their cooperation and the broader international space community. International treaties and agreements will play a pivotal role in establishing norms and rules that govern the behaviour of nations and private entities in space. The creation of new standards for space traffic management, debris mitigation, and the equitable use of extraterrestrial resources will help maintain a stable environment for peaceful

cooperation. The US and Russia, with their extensive experience and established presence in space, are well-positioned to lead these efforts (O'Keefe & Young, 2024).

The future of US-Russia space cooperation is a canvas of immense possibilities. While geopolitical challenges may pose obstacles, the shared pursuit of knowledge, technological advancement, and exploration can continue to unite these two space giants. By embracing the rise of new space powers, integrating commercial ventures, leveraging technological advances, and contributing to global space governance, the US and Russia can redefine their partnership for the 21st century. As humanity stands on the cusp of a new era in space exploration, the legacy of US-Russia cooperation serves as a powerful reminder of what can be achieved when nations work together. Whether it is establishing a permanent presence on the Moon, sending humans to Mars, or exploring the outer reaches of our solar system, the collaborative spirit that has driven this partnership forward will continue to light the way (Wemer, 2018).

The stars beckon, and the journey is far from over. The next chapter of US-Russia space cooperation promises to be one of innovation, expansion, and enduring collaboration a story that will inspire future generations to reach beyond borders and into the infinite possibilities of the cosmos. As humanity continues to push the boundaries of exploration, space is not only the next great frontier but also an emerging platform for diplomacy and global governance. Space has evolved into a unique arena where nations can choose to engage in cooperation or competition, influencing broader international relations and power dynamics on Earth. The partnership between the United States and Russia in space endeavours, particularly through projects like the International Space Station (ISS), serves as a profound example of how shared scientific, technological, and economic interests can bridge even the deepest geopolitical divides.

The ISS stands as a remarkable achievement in space diplomacy, symbolising one of the most intricate and enduring multinational partnerships in history. Despite periods of severe political strain, including economic sanctions, strategic rivalries, and diverging national interests, the US and Russia have consistently managed to maintain a cooperative and often exemplary relationship in space. This collaboration not only drives significant scientific research but also acts as a stabilising factor in their broader bilateral relations, highlighting how space initiatives can mitigate tensions and foster dialogue where traditional diplomacy may falter (Roulette, 2021). Beyond the scope of bilateral engagements, space diplomacy also encompasses multilateral agreements and treaties that set the rules for activities in space. Landmark treaties, such as the Outer Space Treaty of 1967, the Moon Agreement, and ongoing discussions about the norms and guidelines for responsible space behaviour, underscore the importance of international law and diplomatic negotiations in managing the shared use of space. These frameworks are essential to ensure that space remains a domain for peaceful exploration and

scientific advancement rather than becoming a new battleground for nationalistic rivalries or militarisation (Rajagopalan, 2021).

This study emphasises the critical role of space diplomacy in building trust, reducing the risk of conflict, and promoting international cooperation. By participating in joint missions, countries can create mutual dependencies that encourage stability and ongoing dialogue. Space endeavours often necessitate the sharing of technology, data, and resources, along with coordinated efforts in logistics and mission planning, which naturally foster communication and collaboration. These joint activities can open new diplomatic channels, facilitating engagement that might not be possible through conventional political avenues.

Furthermore, space diplomacy is not exclusive to the major powers; it also provides an avenue for smaller and emerging space nations to assert their presence on the global stage. Nations such as Japan, Canada, and members of the European Space Agency (ESA) have used their participation in international space missions to boost their diplomatic influence, secure critical technology transfers, and access scientific data that might otherwise be inaccessible. In this way, space serves as a platform that democratises participation, enabling countries of all sizes to contribute to global scientific achievements and strengthen international partnerships. The rise of private companies in space exploration introduces an additional layer to space diplomacy, as governments must now navigate complex partnerships that blend both state and commercial interests. The involvement of private entities like SpaceX, Blue Origin, and others in space missions introduces new challenges and opportunities for international cooperation, requiring careful management of public-private interactions within the evolving geopolitical landscape (Vijayakumar, 2020; ESPI, 2021: 32).

Looking to the future, space diplomacy could see the expansion of collaborative projects, including joint lunar bases, Mars exploration missions, and coordinated efforts to tackle issues such as space debris management and space traffic control. These initiatives have the potential not only to advance human knowledge and capabilities but also to reinforce the principles of international cooperation and collective stewardship of space as a global common (Doe, 2024: 134).

Ultimately, space diplomacy holds the promise of becoming a powerful tool for fostering global peace and cooperation. By turning space into a realm where nations unite in the pursuit of common goals, it has the potential to transcend earthly conflicts, enabling humanity to collectively explore the vast unknowns of the universe. This shared vision of space as a place of collaboration rather than contention offers a pathway for overcoming differences and working together towards a brighter future for all.

5.6. Space as a Confidence-Building Measure

The history of US-Russia cooperation in space serves as a powerful example of how joint endeavours in the cosmos can act as confidence-building measures. When two rival nations, often at odds on Earth, come together to explore the heavens, it sends a message of hope and cooperation that resonates across the globe. Collaborative projects like those on the ISS have proven that space can be a unique arena for fostering mutual respect and understanding, ultimately contributing to global security. Joint space missions, such as those conducted on the ISS, provide continuous opportunities for dialogue, not just between astronauts but also between space agencies, scientists, and political leaders. These interactions help keep diplomatic channels open, even when terrestrial relations are strained. By working together to solve complex challenges in space, both nations can maintain a cooperative relationship that might otherwise be eroded by political and military tensions on Earth. Imagine a scenario where a heated geopolitical conflict threatens to derail a significant space mission.

However, the established trust and respect built through years of space collaboration allowed for a breakthrough in negotiations, ultimately preserving the mission and preventing a broader escalation. This scenario highlights the unique power of space cooperation to act as a stabilising force in international relations. As more nations and private companies venture into space, the need for effective global governance becomes increasingly critical. Space is no longer the exclusive domain of a few superpowers; it is a shared resource that requires careful management and cooperation to ensure its sustainable and peaceful use (Johns Hopkins University, 2024; Wemer, 2018).

The findings of this study emphasise the importance of inclusive governance structures that involve all major space-faring nations to address pressing issues such as space debris, resource utilisation, and space traffic management. The expansion of space activities demands a detailed and collaborative approach to governance. Existing treaties, like the Outer Space Treaty, provide a foundational framework, but new challenges necessitate updated agreements and policies. Effective space governance must involve all stakeholders, including emerging space powers like China and India, to create norms and standards that enhance cooperation and reduce conflicts (Heinrich-Böll-Stiftung, 2024; Pekkanen, 2020: 41).

By prioritising international collaboration on space governance, nations can develop comprehensive policies that address the myriad issues posed by increased space activity. This includes managing space debris, a growing threat to both manned and unmanned missions, as well as regulating commercial activities and ensuring the protection of planetary environments. A strong, cooperative governance framework will not only mitigate the risks associated with space activities but also promote a stable and peaceful space environment (Schaffer, 2024).

6. Perspectives and Potential for Multilateral Cooperation

US-Russia space cooperation extends beyond bilateral relations; it has broader implications for international relations and global stability. Collaborative space efforts serve as confidence-building measures, fostering dialogue and reducing the risk of conflict. In a world where geopolitical tensions often run high, space cooperation offers a unique and valuable channel for diplomacy.

Moreover, US-Russia collaboration sets a precedent for how space-faring nations can work together, even in the face of significant challenges. As new powers like China and India continue to expand their space capabilities, the established partnership between the US and Russia can serve as a model for multilateral cooperation. By demonstrating that cooperation is not only possible but also beneficial, the US and Russia can help shape a more inclusive and collaborative global space community (Logsdon & Millar, 2001: 15).

The commercial space sector is booming, and its influence on international space cooperation is growing. Companies like SpaceX and Blue Origin in the US, alongside Roscosmos-affiliated enterprises in Russia, are revolutionising space exploration through innovation, efficiency, and reduced costs. The involvement of these private companies presents a unique opportunity for the US and Russia to leverage public-private partnerships to enhance their space missions. For instance, commercial entities can support the development of space infrastructure, such as advanced propulsion systems, lunar bases, and deep-space habitats. Public-private partnerships could drive technological innovation at a pace and scale that government programs alone might struggle to match. By incorporating commercial ventures into their collaborative efforts, the US and Russia could reduce financial burdens, share risks, and accelerate the timeline for ambitious missions, such as returning humans to the Moon or exploring Mars (Rausser, Choi & Bayern, 2023: 18).

In this new era, imagine a future where international missions are no longer solely state-led initiatives but dynamic collaborations between governments and private companies. A US-Russia mission to Mars could see astronauts launched on a SpaceX rocket, using a Russian-developed propulsion system, and relying on a multinational crew trained under a unified protocol. This blend of public and private efforts could redefine the boundaries of space exploration.

Technological advancements will undoubtedly shape the future of US-Russia space cooperation. Progress in artificial intelligence, robotics, and propulsion systems will enable more ambitious missions and make international teamwork more effective and efficient. AI-powered systems could manage complex mission logistics, while advanced robotics could perform intricate tasks in space, reducing the reliance on human astronauts for high-risk operations (We are Tech Woman, 2024). One

potential area of collaboration is the development of next-generation propulsion technologies. Both the US and Russia have a long history of innovation in rocket technology, and combining their expertise could lead to breakthroughs that significantly reduce travel time to distant destinations like Mars or even beyond. Collaborative research and development in propulsion, such as nuclear thermal or electric propulsion systems, could open new frontiers for exploration. Furthermore, the integration of AI into mission planning and operations could streamline joint endeavors. AI could be used to analyse vast amounts of data from space missions, optimise resource allocation, and even predict and mitigate potential conflicts or technical issues. By pooling their technological resources and expertise, the US and Russia could lead the way in pioneering the next era of space exploration.

Emerging space powers such as India, China, and the United Arab Emirates are rapidly advancing their space capabilities and ambitions. Understanding how these nations can be integrated into existing cooperation frameworks or how new multilateral initiatives can be developed will be critical for future space governance. Research should explore the motivations, capabilities, and strategic interests of these nations, as well as the potential benefits and challenges of including them in collaborative projects. For example, a comparative analysis of space policies across different emerging powers could reveal common goals and areas of alignment, such as planetary exploration, satellite communication, or environmental monitoring. This knowledge could inform the development of inclusive international agreements that reflect a diverse range of interests and priorities.

The rise of commercial space activities is reshaping the space landscape in profound ways. Companies like SpaceX, Blue Origin, and others are pushing the boundaries of what is possible, introducing new technologies, and dramatically reducing the costs of access to space. However, the growing influence of private entities also raises questions about regulation, equity, and the public interest in space activities (New Space Economy, 2024). Future research should investigate the impact of commercial space ventures on traditional government-led programs and explore how public-private partnerships can be structured to maximise benefits while safeguarding the common good. Key areas of focus could include the regulation of commercial spaceflight, the management of space resources, and the role of private companies in space governance frameworks.

Technological advancements in fields like AI, robotics, and new propulsion systems are driving a new era of space exploration. However, these innovations also pose challenges for existing governance structures, which may not be equipped to handle the complexities introduced by advanced technologies. For instance, the advent of autonomous spacecraft or the commercial mining of asteroids will require new regulations and international agreements to ensure responsible and equitable use (Sagar Reddy Avuthu, 2017: 7). Research in this area should aim to develop forward-looking governance models that account for emerging technologies and address issues such as space

traffic management, debris mitigation, and the ethical implications of space exploration. Collaborative efforts among space-faring nations, commercial entities, and international organisations will be essential to creating a robust and adaptable governance framework.

The future of space exploration is bright, but it will require unprecedented levels of cooperation, transparency, and innovation. By embracing multilateral partnerships, enhancing transparency, and committing to future-focused research, the international community can build a cooperative framework that not only advances our understanding of the cosmos but also strengthens peace and stability on Earth. As humanity looks to the stars, the lessons learnt from US-Russia cooperation will continue to serve as a guide. Space is more than just a realm of exploration; it is a stage for international collaboration, a platform for diplomacy, and a beacon of hope for a more unified world. By working together, nations can ensure that the final frontier remains a place of peace, discovery, and shared progress for generations to come.

In the vast expanse of space, where nations have traditionally vied for supremacy, a new paradigm is emerging – one of collaboration, transparency, and shared ambition. As the landscape of space exploration evolves, it becomes clear that multilateral cooperation is not only beneficial but essential for the sustainability and success of future space activities. By inviting emerging space powers like India and China, as well as established entities like the European Union, to join collaborative efforts, the US and Russia can help drive innovation, reduce costs, and broaden the scope of missions. The need for multilateral cooperation in space is underscored by the growing complexity and cost of space missions (Ehrenfreund & Christensen, 2024). As more nations and private companies enter the space race, the benefits of sharing the financial burden, technological expertise, and scientific knowledge become increasingly apparent. Forming partnerships with rising space powers can help distribute the costs of exploration, allowing for more ambitious projects that might be unfeasible for any single nation to undertake alone. Consider the potential of a collaborative mission to Mars, involving not just the US and Russia but also India, China, the European Union, and private companies like SpaceX. Such a partnership could leverage the unique strengths of each participant, whether it's advanced robotics from Japan, propulsion technology from the US, or satellite communication systems from Europe. By pooling resources and expertise, these international teams could achieve far more than any single entity could on its own.

Moreover, multilateral cooperation can serve as a powerful tool for peace and stability. As nations work together in space, they build a foundation of trust that can extend to other areas of international relations. The spirit of teamwork fostered by shared space missions can help bridge political divides, reduce tensions, and promote a more cooperative global community.

Space, once considered the final frontier of human exploration and cooperation, is increasingly becoming a contested domain where the potential for conflict looms large. The rapid expansion of

space activities has led to a crowded and congested environment, with thousands of satellites, growing amounts of space debris, and the militarisation of space assets all contributing to the heightened risk of conflict. As more nations and private entities enter the space race, the chances of collisions, interference, or hostile actions in orbit are rising (Zurick, 2022). These risks are not merely technical challenges; they represent strategic threats that could easily escalate into broader geopolitical confrontations.

The militarisation of space, including the development of anti-satellite weapons, cyber capabilities targeting space infrastructure, and the establishment of military branches dedicated to space operations, underscores the growing potential for space to become a new theatre of conflict. This trend is compounded by the lack of comprehensive international agreements that address the unique challenges of space security and governance. While treaties like the Outer Space Treaty of 1967 lay the groundwork for the peaceful use of space, they do not fully address the complexities of modern space activities, such as the weaponization of space or the management of space traffic. To mitigate these escalating risks, enhancing transparency and confidence-building measures among spacefaring nations is crucial. Establishing clear mechanisms for information sharing about satellite operations, debris management, and potential military activities in space can significantly reduce the chances of misunderstandings or miscalculations. For instance, transparency measures could include the open publication of satellite orbits and the sharing of plans for major space activities, such as launches or maneuvers. Additionally, creating international forums for dialogue and negotiation on space security issues would provide a platform for nations to address concerns and agree on norms that promote stability.

Confidence-building measures, such as joint space missions, collaborative research initiatives, and cooperative agreements on space traffic management, can also foster a spirit of mutual respect and trust. By engaging in shared projects, countries can demonstrate their commitment to peaceful space exploration and establish routines of cooperation that help to depoliticise space activities. For example, international collaboration on tracking space debris and coordinating collision avoidance manoeuvres would not only protect valuable space assets but also build confidence among nations that they can work together in this complex environment (Zurich, 2022). Moreover, advancing international legal frameworks to govern space activities can play a pivotal role in mitigating conflicts. Developing and adhering to new agreements that specifically address the militarisation of space, the prevention of space debris, and the peaceful use of outer space resources could provide a stronger foundation for cooperation. Such agreements would ideally include mechanisms for verification and enforcement, ensuring that all parties adhere to their commitments. Ultimately, the key to reducing the risks of conflict in space lies in a collective commitment to transparency, dialogue, and cooperation. As space continues to evolve as a critical domain for national security, economic

development, and scientific discovery, it is imperative that nations work together to establish a sustainable and peaceful space environment. By prioritising confidence-building measures and enhancing communication, the international community can navigate the challenges of this new frontier while minimising the potential for conflict and ensuring that space remains a domain of shared opportunity.

Despite the successes, US-Russia space cooperation is not without challenges. Political tensions, economic sanctions, and shifting national priorities can all pose threats to this fragile partnership. Yet, the resilience of the ISS program and other joint initiatives demonstrates the power of collaboration to overcome obstacles. Looking to the future, the potential for continued and expanded cooperation is vast. As new players enter the space arena, the US and Russia's experience in collaborative ventures can serve as a model for other nations. By building on their shared successes and addressing emerging challenges with the same spirit of cooperation, these two spacefaring nations can continue to push the boundaries of what is possible in space exploration. The story of US-Russia space cooperation is one of overcoming differences for the greater good. It is a testament to the power of shared vision and political will in achieving goals that transcend national borders. As humanity continues its quest to explore the stars, the partnership between the United States and Russia stands as a shining example of what can be accomplished when nations choose cooperation over conflict. Together, they have not only advanced human knowledge but have also built a legacy of collaboration that inspires future generations to reach for the stars together.

As humanity sets its sights beyond the International Space Station (ISS) and looks toward the Moon, the Artemis program stands as a landmark initiative in the next era of space exploration. Spearheaded by NASA, the Artemis program aims to return humans to the lunar surface for the first time since the Apollo missions, with ambitious goals of establishing a sustainable human presence on the Moon by the end of the decade. This program not only represents a significant leap forward in human spaceflight but also a shift towards deeper, more permanent exploration of our solar system, laying the foundation for future missions to Mars and beyond.

Despite the ambitious vision of the Artemis program, geopolitical dynamics add layers of complexity to international collaboration. Russia, a long-time partner in space through the ISS, has expressed reservations about the Artemis Accords, a set of principles proposed by the United States to guide responsible lunar exploration and resource utilization. Russia's concerns stem from the perception that the Accords favour US-led initiatives and may not fully align with the interests of all spacefaring nations. However, these differences do not preclude the possibility of meaningful cooperation in lunar exploration.

The European Space Agency (ESA) has already emerged as a key collaborator in the Artemis program, contributing critical technology and expertise, including the European Service Module for

NASA's Orion spacecraft. This partnership demonstrates the potential for a diverse, multinational approach to exploring the Moon. By engaging Russia, there is an opportunity to expand this collaboration and leverage decades of Russian expertise in space exploration, particularly in human spaceflight and robotics. Potential areas for US-Russia cooperation under the Artemis framework could include joint lunar orbit missions, collaborative scientific research, and technology exchange. For instance, Russia's extensive experience with long-duration space missions and autonomous lunar landers could complement NASA's strengths in deep space navigation and surface operations. Joint missions to the lunar surface focusing on scientific research such as geology, resource mapping, or the study of lunar ice could yield valuable data that benefits all participants. Furthermore, collaborating on technological advancements, such as life support systems, habitat modules, and power generation, could accelerate the development of sustainable lunar infrastructure.

Another promising area of cooperation could involve the Lunar Gateway, a planned space station that will orbit the Moon and serve as a staging point for surface missions. Russia has previously shown interest in participating in Gateway-related activities, and renewed dialogue could pave the way for Russian contributions to this critical element of the Artemis architecture. By sharing responsibilities and pooling resources, the US, Russia, and other international partners could create a more resilient and capable lunar exploration program. Collaboration between the US and Russia on the Artemis program could also serve as a powerful symbol of peaceful cooperation, demonstrating that even in times of terrestrial tension, space can remain a domain where common goals transcend political divides (Smith, 2024). By working together, these two spacefaring nations have the potential to unlock new possibilities for lunar exploration, inspire a new generation of scientists and engineers, and lay the groundwork for future lunar settlements. Ultimately, the success of lunar exploration will hinge on international cooperation, with each partner bringing unique strengths and capabilities to the table. The Artemis program offers a valuable platform for such collaboration, providing an opportunity not only to achieve shared scientific and exploration goals but also to foster a spirit of unity in the pursuit of a common human endeavor. By embracing a collaborative approach, the US and Russia can play pivotal roles in the next great leap for humanity, establishing a sustainable presence on the Moon and paving the way for future missions to Mars and beyond.

Mars, often referred to as the next great frontier of human exploration, presents a compelling opportunity for renewed US-Russia cooperation. Both nations have long harboured ambitions of sending humans to the Red Planet, driven by the immense scientific potential and the allure of pushing the boundaries of human capability. As space agencies around the world set their sights on Mars, a joint US-Russia effort could symbolise a powerful commitment to international partnership, transcending geopolitical tensions in favour of shared exploration goals.

A collaborative Mars mission between the United States and Russia could take many forms, from joint mission planning and technology development to the coordination of scientific experiments and the sharing of data. Both countries bring a wealth of experience to the table: the US, with its advanced rover missions and plans for human exploration under NASA's Mars program, and Russia, with its historic achievements in spaceflight and robust expertise in life support systems and long-duration space missions. By combining their strengths, these spacefaring nations could tackle the formidable challenges of deep space travel, such as radiation protection, life support sustainability, and the safe landing and return of astronauts. Imagine a scenario where American and Russian scientists, engineers, and astronauts work side-by-side on a mission to Mars, each contributing their unique skills and perspectives. The mission could involve shared spacecraft development, with components and modules designed and tested by teams from both nations, leveraging their collective knowledge in propulsion, habitats, and surface operations. By pooling resources, they could develop more reliable and efficient technologies, from advanced propulsion systems that shorten the travel time to Mars to innovative habitat modules that support astronauts for extended stays on the Martian surface (Marschall, 2020: 90). Coordination of scientific experiments could further enhance the mission's impact, with joint research teams conducting parallel studies on Martian geology, atmosphere, and potential signs of past life. This cooperation could lead to groundbreaking discoveries, driven by the diverse expertise of international teams. For instance, Russian expertise in planetary landers could complement American advancements in rover technology, creating a seamless operation that maximises the scientific return from every mission phase.

A US-Russia partnership on Mars could also bring significant cost savings. Space missions to Mars are inherently expensive, with estimates running into the tens of billions of dollars. By sharing the financial burden, both nations could undertake more ambitious missions than they could independently afford. Cost-sharing would not only reduce individual expenses but also spread the risks associated with such complex endeavors. If one aspect of the mission encounters difficulties, the collective resources and expertise of both nations could provide a stronger, more flexible response. Moreover, a joint Mars mission would serve as a beacon of international cooperation, showcasing the power of collaboration in tackling the most ambitious goals of human exploration. It would send a clear message that despite political differences on Earth, space remains a domain where common interests can prevail. This cooperative spirit could inspire other nations to join the endeavour, creating a truly global effort to explore Mars.

The shared journey to Mars would also provide invaluable opportunities for cultural exchange and mutual learning between American and Russian scientists, fostering a deeper understanding and respect for each nation's approach to space exploration. This cultural exchange could enhance teamwork, innovation, and problem-solving, further strengthening the mission's chances of success.

Ultimately, a US-Russia partnership on Mars would not only enhance the technical and scientific success of the mission but also stand as a testament to the potential of international collaboration in space. By working together, the US and Russia could overcome the immense challenges of Mars exploration, laying the groundwork for a new era of human spaceflight that pushes the boundaries of what is possible. This shared endeavour would underscore the profound benefits of global cooperation in achieving one of humanity's most ambitious goals: setting foot on the Red Planet and unlocking its mysteries for the benefit of all (Zubrin, 2019: 115).

As the number of space missions and satellites increases, space debris has become a pressing issue that threatens both manned and unmanned spacecraft. The leading spacefaring nations, including the US and Russia, share a vested interest in addressing this challenge. Collaborative efforts to mitigate space debris could involve joint research on tracking technologies, the development of removal technologies, and the creation of international guidelines and standards. Envision a global coalition of space agencies and private companies working together to tackle the space debris problem. By pooling their resources and expertise, they could develop innovative solutions and coordinate mitigation activities that enhance the safety and sustainability of space operations. This collaborative approach could pave the way for a safer space environment for future generations (Hoots et al., 1984: 103).

While the US-Russia space partnership has achieved remarkable successes, it is not without challenges. Political tensions, economic sanctions, and shifting geopolitical landscapes can all strain this delicate alliance. However, the resilience of the institutional framework, along with the continued commitment to shared goals, has allowed the partnership to endure and adapt.

As space becomes increasingly accessible to new players, the US-Russia partnership faces both competition and new opportunities. The emergence of private companies and other nations in space exploration presents a chance to expand the circle of cooperation. By embracing these new dynamics, the US and Russia can continue to lead the way in fostering international collaboration in space (Harford, 1999: 104).

The story of US-Russia space cooperation is more than a tale of shared scientific pursuits; it is a beacon of hope and unity in a world often divided by politics and conflict. It demonstrates that when nations set aside their differences and work towards common goals, they can achieve remarkable feats. As humanity continues to push the boundaries of exploration, the legacy of US-Russia collaboration in space serves as an inspiring reminder of what is possible when we reach for the stars together. This enduring partnership not only propels us further into the cosmos but also teaches us valuable lessons about the power of cooperation, the importance of technological compatibility, and the strength of institutional frameworks. As we look to the future, the story of US-Russia space

cooperation will continue to inspire new generations to explore, innovate, and collaborate for the betterment of all mankind (Harford, 1999: 110).

As the story of US-Russia space cooperation unfolds, it is clear that the legacy of these initiatives has shaped the present and will continue to influence the future. From the pioneering Apollo-Soyuz Test Project to the ongoing success of the ISS, the Shuttle-Mir program, and the foundational work of the Solute and Mir programs, each chapter has contributed to a narrative of collaboration and progress. These historical milestones have demonstrated that even amidst political rivalries, space can serve as a unifying force. They have paved the way for future collaborations, showing that shared goals and mutual respect can overcome even the most formidable obstacles. As humanity looks to the stars and beyond, the legacy of US-Russia space cooperation serves as a beacon of what is possible when nations come together for a common purpose. The story of these partnerships is not just about technological achievements but also about the enduring power of collaboration, diplomacy, and the pursuit of knowledge. In the cosmos, where boundaries blur and horizons expand, the journey of cooperation continues. The past serves as a guide, the present as a testament, and the future as an opportunity to reach new heights together.

7. Conclusion

This conclusion summarises the research's important findings, highlighting the potential for astropolitical cooperation between the US and Russia despite existing geopolitical tensions. The research shows that while geopolitical rivalries and strategic concerns often threaten to undermine cooperation, room for joint efforts still exists thanks to mutual benefit and political will. This study contributes to the field of international relations by providing insight into the complex nature of relations in space cooperation and highlights the importance of astropolitics as a platform for easing tensions and building trust.

The findings of this research underscore the complex yet promising potential of astropolitics to facilitate cooperation between the United States and Russia, even amid ongoing geopolitical challenges. While rivalries and strategic interests often threaten to obstruct collaboration, this study shows that the unique conditions of space exploration enable a complementary alignment of interests, supported by both scientific aspirations and political will. By examining historical, geopolitical, and future-orientated dimensions, the research contributes to the field of international relations by demonstrating that space can serve as a neutral platform where trust and cooperation can be cultivated, even between competitive powers. This thesis has systematically explored U.S.-Soviet/Russian cooperation in space from a historical, theoretical, and prospective perspective.

Chapter 4 offers a thorough examination of the historical trajectory of cooperation, tracing key milestones such as the Apollo-Soyuz mission, the Shuttle-Mir program, and the ISS, which provide concrete examples of successful collaboration in an otherwise adversarial Cold War context. These historical instances reveal that both the United States and the Soviet Union, and later Russia, were willing to set aside political conflicts to pursue joint scientific and technological objectives, which yielded mutual benefits like cost reduction, technology transfer, and shared research outcomes. The Apollo-Soyuz project and the ISS serve as enduring examples of how shared goals can bridge even the deepest political divides.

Chapter 5 delves into the influence of geopolitics on the nature of U.S.-Soviet/Russian space cooperation. Geopolitical shifts, public and political support, and technological compatibility have all had significant impacts on the sustainability of collaboration. The chapter also considers the rise of China as a formidable space power, which has introduced both complications and new avenues for multilateral engagement. Although geopolitical tensions and sanctions occasionally impose limitations, the findings suggest that space retains its capacity as a domain for diplomacy and trust-building, even between rivals. Moreover, the growing presence of China brings both challenges and prospects, prompting the U.S. and Russia to consider strategic partnerships and coalition-building to balance influence in space.

In Chapter 6, the thesis expands the analysis to encompass the increasing necessity of multilateral cooperation in addressing emerging challenges like space debris, space traffic management, and the entry of new private and state actors into the space domain. With issues such as resource management and conflict prevention taking centre stage, multilateralism in space governance becomes essential to safeguarding space as a shared resource. The chapter emphasises that future collaboration must involve a diverse array of stakeholders, including emerging space nations and private companies, to establish a stable and cooperative space environment.

The findings support the research hypotheses and provide insights into the role of astropolitics in managing interstate relations. The first hypothesis, suggesting that astropolitics can be instrumental in reducing tensions, is validated by historical examples and contemporary developments, showing that space can foster cooperation even during times of political strife. The second hypothesis, that geopolitical tensions pose barriers to cooperation, is also substantiated, as sanctions and rivalry with China often limit collaborative efforts. The third hypothesis, which addresses the impact of new space powers on U.S.-Russia relations, is confirmed by the analysis of China's growing influence, which has led to both competitive and cooperative dynamics. These findings underscore the importance of astropolitics as a framework for understanding and navigating power relations, technological exchange, and diplomatic strategies in space.

Theoretically, this study contributes to the disciplines of astropolitics and international relations, affirming that space can act as a bridge between competing powers and foster cooperation. Astropolitics offers a valuable lens through which to view the diplomatic and strategic value of space, enhancing both realist perspectives on competition and liberalist views on interdependence and cooperation. Practically, the findings underscore the need for transparent and stable frameworks for international space activities, as well as confidence-building measures like joint missions and shared research projects. These mechanisms are vital to ensuring that space remains an arena for scientific and diplomatic progress rather than conflict. To further understand the role of space cooperation, future research should examine the potential roles of international organisations and legislative frameworks in space governance, particularly as they relate to newly emerging space actors. Joint missions to the Moon or Mars, for example, offer promising avenues for further cooperation and trust-building. These initiatives could serve as models for other forms of international collaboration, demonstrating the feasibility and benefits of shared scientific goals. Furthermore, as the space domain becomes increasingly crowded, studies on conflict prevention, resource sharing, and environmental protection in space will be essential to manage and preserve the shared space environment.

In conclusion, this thesis demonstrates that astropolitics holds considerable promise as a tool for advancing international cooperation, even amidst geopolitical competition. The findings suggest that while political challenges persist, opportunities for space collaboration enable nations to transcend

terrestrial conflicts to achieve valuable scientific and technological advancements. By fostering a commitment to joint initiatives, the United States, Russia, and other stakeholders can contribute to sustainable space exploration and human development. The lessons gleaned from these experiences provide valuable models for overcoming obstacles in other spheres of international relations. The enduring nature of U.S.-Russia cooperation in space is a testament to the potential for diplomacy and shared vision, even under challenging political circumstances. As the global community looks toward ambitious future goals, like exploring the Moon and Mars, the experiences of international space collaboration provide an encouraging framework for a more cooperative and peaceful future. Through a commitment to shared objectives and collaborative strategies, nations can ensure that space remains a domain of unity and mutual advancement, benefiting not only individual countries but humanity as a whole.

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9. Biography of the Candidate

Milica Šljivančanin was born on May 17, 2000, in Cetinje. She completed primary and secondary school as a “vukovac” in both in Budva. In 2019, she enrolled in basic academic studies at the Faculty of Political Sciences of the University of Belgrade, majoring in international studies. During the second year of studies, she completed the exchange program at the Faculty of Sciences Politique in Paris (Institut d'etudes politiques de Paris) in parallel. In August 2023, she graduated from the Faculty of Political Sciences of the University of Belgrade with a degree in Political Science for International Affairs. In October of the same year, she enrolled in the Master of Academic Studies at the Faculty of Political Sciences, the international studies module - international politics program as well as the Peace, Security, and Development module. OSCE scholarship holder of the master's study in the field of security. The permanent mission of the Organisation for European Security and Cooperation in Belgrade together with the Swedish Agency for Aid and Cooperation in Development (SIDA) presented her with a scholarship equal to the full tuition fee. The average grade achieved in master's studies is 9.5.

During her undergraduate studies, she interned in the Office for European Integration and Projects (Ministry of Environmental Protection) as well as in the National Assembly of the Republic of Serbia - Committee for Legislation. She took part in the Global Diplomacy course held in Belgrade as well as in BIMUN (Belgrade International Model United Nations). In 2022, she received the role of chairperson in the negotiation and decision-making process of the EU Council based on the Belgrade model of the European Union. Since January 2022, she has been a collaborator on the MIND project (monitoring and indexing of peace and security in the Western Balkans, supported by the Science Fund of the Republic of Serbia). The MIND project deals with regional security initiatives, the Balkan peace index, and the status of Kosovo. She volunteered at CEDEM as well as on United Nations projects in collaboration with the Faculty of Social Sciences in Ljubljana. She is currently engaged in the study of great powers and international order, the organisation of economic and political cooperation (BRICS), and the OSCE as a mediator in frozen and ongoing conflicts. She speaks English (C1 level), French (B2 level), Russian (B2 level), and Latin.