

RESEARCH ARTICLE

Space Warfare between Russia and the United States: Implications for European Union Security in 2023-2024

Razeen Tanveer ^a

Abstract: Space warfare has become a key domain in contemporary geopolitics and its relevance for global security, especially to the European Union (EU) is obvious. In this paper, we discuss Russian-U.S. space warfare in 2023-2024 and its possible threat implications for EU security. In a world where major powers are hardening space based, satellite and anti-satellite (ASAT) technologies are progressively "outfitting" the stratosphere to manipulate space and its strategic value; communication, navigation, surveillance capabilities that national security cannot live without. Growing tensions between Russia and U.S., fueled in part by the Russia-Ukraine conflict, threaten the space-based assets upon which EU relies. This paper discusses the relevance of space capabilities for strategic purposes; the consequences of militarization on Strategic autonomy in EU and thus why robust responses for counterspace threats are required. Drawing from historical examples, latest developments and theoretical frameworks the research explains what the implications of space warfare will be for EU security in the future.

Keywords: Space Warfare, Russia, United States, European Union Security, Global Security

Introduction

Emergence of space warfare as a forefront domain in the contemporary geopolitics and its impact to world security. Dominance by an increasing number of major powers of space resources means that this has become a key strategic area, particularly as they relate to communication navigation and surveillance. Growing Russian-US tensions in the domain have potential adverse implications for European Union (EU) security This paper analyses the Russian-US space warfare in 2023-2024 to EU security.

Advancements in satellite technology, and anti-satellite (ASAT) weapons technology have made space its own strategic battlefield. Space is also strategic, for major powers such as Russia and the United States Space assets are an indispensable component in modern national security. Space has recently come to center-stage in the increasingly tense and competitive set of global geopolitical circumstances that surround a future theater of conflict.

The EU — which does not have any form of a standing army but has its military capabilities largely via space systems of National Operator (communication), navigation and environmental monitoring etc. Apotential impact on these systems by space warfare therefore directly affects the European security infrastructure. Furthermore, the wider effects of these conflicts (e.g. economic implications and diplomatic repercussions) should be also examined by way of a comprehensive assessment of the EU response to this emerging threats.

This article will explore the current landscape of space warfare between Russia and United States, relevance of Space assets in strategic calculus as well as the potential fallout for EU security. This study aims at providing some clues in the future of space warfare and its consequences to the EU security following recent events along with EU Games.

^a Student of BS International Relations, Department of Political Science and International Relations, University of Management and Technology Lahore, Punjab, Pakistan. Email: s2023188024@umt.edu.pk

Historical background

Since the mid-20th century, the idea of space warfare has dramatically developed especially during the Cold War when an intense competition and rivalry over Space ensued from US vs Soviet Union. The era is referred to as Space Race where both the countries were competing each other for getting the supremacy in spaceflight capabilities due to the national security and technological advantage of it.

The Space Race started when the first artificial satellite (Sputnik 1) was put into orbit by the Soviet Union on October 4, 1957. This was, of course, an event not only of the start in space exploration but also the proof potentialities of space technology for military purposes. In response, the U.S. pushed ahead rapidly in creating its own space capacity and it reached the moon in 1969 with Apollo 11.

Over the course of the Cold War, both superpowers conceived and fielded space-based weapon systems ranging from anti-satellite (ASAT) weapons to reconnaissance satellites. The ICBM fundamentally elevated the strategic relevance of space to military operations in post-World War II history. The U.S. and Soviet Union also cooperated during peacetime, for example the Apollo-Soyuz Test Project in 1975— a sign of limited thaw in their cold war hostilities.

There has been a growing focus on space warfare in recent years as both Russia and the USA have been working on high-tech space developments. The creation of the United States Space Force in 2019 and the reformation of Russia's space forces underline that space is still considered an organic component of state defense plans. The space warfare dynamics of recent times, such as the successful interception of a ballistic missile by the Arrow 2 system of Israel in October 2023, attest to the evolving character of space operations.

Historical context of space warfare reflects the importance of space consideration in contemporary world politics and the continued space hegemony by states around the globe.

Recent Developments

Over the last few years, there have been big changes in space warfare especially as the contest between Russia and America continue. This growth has been due to expanded technology, geo-political instability and strategic rivalry.

In the recent past have been for example October 2023 in which the Arrow 2 system of Israel successfully intercepted a ballistic missile, showing that space warfare is really evolving and missiles defense are critically important. This event foreshadowed that space assets could, in fact, matter to national defense strategies.

In parallel, the Russia-Ukraine War of today has also marked space warfare dynamics in a profound way. Space assets have been heavily employed in the conflict for military functions (example: communication, reconnaissance and targeting). Relations between Russia and the U.S. have been further deteriorated by the Russian invasion of Ukraine, thus increasing rivalry and chaos over outer space; it

Civilian satellites and space cyber-attacks is another serious worry, besides that. Ukraine's Vice Prime Minister Mykhailo Federov asked Elon Musk for Starlink stations to keep internet in the state during warfare stage. But this came under harsh criticism from Russia's space agency, Roscosmos, creating questions of civilian space as being arm of warfare.

Also, space program of Russia was sanctioned by some measures which made it impossible to develop and operate space assets. The absence of dialogue between Russia and US has only contributed to the wider space strategic stability becoming more and more tenuous as tensions rise.

These new trends highlight the central role space plays in contemporary geopolitics, and why we need robust strategies to manage the new cyber, space, cyberphysical threats while upholding security.

Methodology

This research will prescriptively examine space warfare literature; using a literature review and analysis of both primary and secondary sources from understandings about geopolitics; EU security policy with space. The paper contrasts space militarization in historical terms, touching on the post-Cold War period and more recent changes to U.S. & Russia's space capabilities. It also studies the representative strategy documents — EU Strategic Compass and the EU Space Programme that provide an insight into strategic response of the EU to new security threats. The latter is also supported by empirical case studies of extremes that have been highlighted such as Arrow 2 missile interception or civilian satellites in Russia- Ukraine conflict to put theoretical insights into the practical aspect of space warfare for EU security.

Realist theorization is employed to elucidate motivations and actions of the most important actors in the domain of space.

Research Questions

This article will address two primary research questions:

1. How do U.S. and Russian advances in the militarization of space affect EU strategic autonomy and its security policies?
2. How can the European Union balance mitigation of risks associated with counterspace threats against potential retaliatory capabilities while still enabling cooperation with allies and partners around the world?

Theoretical Framework

In terms most influential theory of international relations, realism gives us the normative broad-brush to deconstruct what the results in terms of Russia/U.S. Space warfare means for EU security (in other words; the EU). Realism argues that internationally the international system is anarchic and above states nothing exists. In a system like this, states are generally focused on their own survival and security so they engage in power-seeking and will hold other states accountable. As it is based on competitive and conflictual assumptions of international relationship, where states are regarded as rational entities desiring the max of their security/ power.

Key Concepts of Realism

Anarchy: As there is no centralized control of the international system, states need to help themselves in securing their livelihood. Space warfare will be where states develop and deploy their military space- based capabilities to further their interests and compel adversaries.

Power and Security: Power and the Maintenance of Security asserts that power is a key presupposition in relation among states. States accumulate power in order to increase their own security, and to deter from threats. Armed competition in space is nothing new; the militarization of space by Russia and America is simply their drive to maintain strategic position & power projection in one of the most important spheres.

Security Dilemma: quintessential premise in realist theory, the security dilemma takes place when actions a state manifest in support of its security e.g., deploying ASAT weapons leads to more insecurity for other states. This is going to kick off an arms-race where other states like the EU start creating their own defense mechanisms in order to protect the space assets.

Realist Fallacy: if countries perceive a threat somewhere, realists claim state will work to balance it through alliances and military build-up. The EU could also look to cooperate more closely with NATO and its other allies as part of an effort to deal with the militarization of space by Russia as well as the US.

Analyzing Space Warfare Through Realism

Realism can provide a useful perspective on the relevant motivations and actions of Russia and the United States for space warfare with respects to EU security.

Militarization of Space

Militarization of space by Russia and U.S. is an expression of national security/the future strategic advantage pursuit. Space-based assets (think satellites), are indispensable for current military operations in both nations. As satellites support communication, navigation reconnaissance and missile guidance — clearly satellites with any value are a potential prize in the event of war.

Russia is a space power itself, and has been working to develop its ASAT weapons capabilities. Those weapons are specifically meant as offensive weaponry against satellites and thus put a real hammer to nation's combat capabilities. In parallel, the U.S. has poured billions into space-based defenses (space and missile defense) and technologies to protect satellites. The American Space Force (which was established in 2019) is just another move that underpins the strategic centrality of space in U.S. national security policy.

Security Dilemma and Arms Race

Deployment of ASAT weapons and other space-based military capabilities by the US or Russia as an example. The militarization of space is seen as necessary for both nations' security, however these moves decrease the security of other states including the EU, both NATO members. The EU is highly dependent on space-based resources in key areas like communication, navigation and environmental monitoring.

The threats targeting these assets are a huge risk for the EU security. The perceived threat by Russia and the U.S... space powers, the EU might want to develop its own space capabilities as well.

For instance, the development of homegrown ASAT weapons could be included with increases in investment to fortify satellites and develop a tough space situational awareness (SSA) to watch whatever is within the Kármán line. This arms-length may incentivize states to engage in an arms race in space, where states in turn advance and deploy ever-more sophisticated military capabilities to offset perceived threats.

Balance of Power and Alliances

In order to redress the threats from Russia and from the U.S., balancing is probably the way the EU is going to try and pursue in space militarization. It will mean more deterrence through bolstering intramural and inter-intramural security, This Of course central to the former is NATO, which is an important security alliance of the sort in question.

The EU could work with NATO to build common space defense policy that incorporates intelligence-sharing, common response in space and joint collaborative research and development of future space technologies. Working with allies, and their capabilities and experience -- the EU can strengthen its own security and become less exposed to space warfare without being involved.

In addition, the EU should engage in diplomatic means to create new international norms and commitments that would prescribe appropriate behavior in space. Although Realism stresses on the competitive aspect of international relations, it does discuss other solutions i.e struggling and cooperating with each other in order to manage all or at least most conflicts thus ensuring a reduction of security threats. The EU can work to advance arms control, confidence-building measures and transparency initiatives to deescalate conflicts in space.

Strategic Autonomy and Security Policies

Realism advocates for strategic autonomy as a way states can secure their persist in the international

anarchy. Strategic autonomy in space is, for the EU a means of lessening dependence on non-EU actors and establishing its own independence on capabilities. To make this work big budgets are needed in the field of space tech, from new satellites to launch assets and space-based defense.

The security policies of the EU must comply with current security threats. This means translating space security into the wider European security strategy, designing space effects contingency plans, and improving cyber capabilities to defend European space assets from cyber-attack.

The EU in a proactive and holistic way can strengthen its strategic autonomy and resilience against future space threats by adopting some space security.

Why Not Liberalism?

In contrast to its focus on international cooperation, economic interdependence, and institutions in many Earthly contexts, those tenets of liberalism take a backseat during space warfare. U.S.- Russian competition highlights shortcomings of cooperative structures such as the Outer Space Treaty, and suggests a zero-sum contest for supremacy—a key tenet of realism.

Entities

let us delve into the roles of three major actors in the background of space warfare between Russia and United States and EU security as a consequence. These are: 1- The European Union, 2-The United States Space Force, & 3-Russia Space Forces.

The European Union

The European Union (EU) is an international organization of 27 member states, mostly located in Europe. It is pivotal in tackling the ramifications of space warfare on regional security. The importance of space to EU is of late becoming better realized, with efforts to improve European space capabilities and security policies in the works. If we look over the strategic importance of EU then; The EU depends on space- based assets for many essential functions, communication, navigation, environmental monitoring and defense. For instance, the Galileo system is the civil and military positioning service. The Copernicus programme provides some of the latest data on Earth observation help us to fight environmental destructions, manage disasters and security. Such dependence on these space-based systems does highlights the importance of robust measures dedicated at keeping the threat of space conflict minimized.

The space policy and security policy of the EU has been brought into line with new threat development. Introducing the EU Space Programme, finally established in 2021 with the aim to harmonize and enhance the space capabilities within the Union. Key programs in the programme include Galileo, Copernicus and the European Geostationary Navigation Overlay Service (EGNOS). Furthermore, the EU has been preparing for the creation of a European Space Situational Awareness (SSA) constellation to read and track space objects and potential threats.

Strategic Compass

In 2022, the EU Strategic Compass is the multilayered blueprint for further consolidating security and defense capabilities within the bloc. Space security is central to the document, stressing the need for new investments in space capabilities to be coordinated more with NATO and form a comprehensive EU space defense outlook. In addition to this, the Strategic Compass also reiterates the key role of international cooperation to foster norms in space behavior and further support responsible space behaviors.

Challenges and Opportunities

There are budget limitations that limits EU ability to provide necessarily space security but also it is

technological dependencies and geopolitical challenges will stand in way from well address the issue. Nevertheless, it is opportunities where EU can improve its strategic autonomy and resilience. The EU can bolster its status as a dominant player in the global space arena and mitigate the impact of risks related to space warfare through the development of indigenous space capabilities, international cooperation and normative space frameworks.

The United States Space Force

United States Space Force (USSF) The U.S. Armed Forces are an independent branch of Armed forces of the United States of America, at December 2019 inaugurated to organize train and equip space forces for defense United States interests in space. The establishment of the USSF speaks to the increasing importance and necessity of space as a domain for national security as well it reiterates the United States will continue to rule in this space.

USSFs mission is to maintain freedom of space for the United States and its Allies. These include space capabilities — both how they are lab-tested, which needs to be developed and deployed to dissuade/counter potential adversaries as well as defend U.S. space assets, operate joint military operations. The mission of USSF is to increase Space Situational Awareness (SSA), increase satellites survivability as well as develop new space-based defense capabilities.

Space Capabilities and Technology Progress

USSF has been focusing on developing enhanced space capabilities at an aggressive pace through capabilities, innovation. This includes working on new satellite tech, spaceborne sensors and missile defenses The USSF takes a similar approach to address the objective of enhancing space domain awareness (SDA), in order to observe, detect and know other states/space actor's objects in space. The infusion of artificial intelligence (AI) and machine learning solutions are key to enabling USSF to do the complex analysis necessary with vast space data.

International Cooperation

The USSF understands that international cooperation is required for dealing with challenges in space security. The U.S. partners with allies and partners (like NATO) to advance joint space defense capabilities and shared interoperability. The USSF takes part in a range of diplomatic activities to encourage norms and understandings on behavior in space so as to avoid conflict and preserve the future sustainability of activities in space universally.

Strategic Implications for the EU

The creation and activities of USSF have far reaching security implications at European Union level. Although capabilities of the USSF add to the security of our transatlantic alliance, it also increases the imperative for the EU to both invest in its space capabilities and put together a space defense strategy. Through collaboration with the USSF and other international partners, the EU can work on shared security issues to maintain safety in the space domain.

The Russian Space Force

Branch of the Russian Armed Forces known as Russian Space Forces (or Aerospace Forces) — that is in charge of space activities and the defense of Russia's in space. Important to the military strategy of Russia, the Russian Space Forces show that Russia is serious about keeping itself a major space power.

Mission and Activities

The main mission of Russian Space Forces is to protect space assets as well as match national defense objectives.

This includes the creation and operation of space-based capabilities — satellites, missile defense systems, as well as anti-satellite ASATs. Demonstrating a capability to force or destroy the space assets of potential adversaries is central to achieving strategic space superiority according to Russian Space Forces.

Advanced Space Technologies & Capabilities:

Russia has been engaged in advancing the area of new space capabilities on an active basis. This ranges from deploying ASAT weapons to destroy or damage satellites to the improvement of space situational awareness (SSA) to tracking and locating space objects. Russia has also made advancements in the creation of satellite immune technologies to harden its space assets against possible jamming.

Geopolitical Background

As part of the overall geopolitical context and strategic directions of Russia the Space Forces conducts its activities. Russia considers militarization of space to be one and only way preserving the country security, dealing with menace of United States and its allies. The Russia-Ukraine war has also highlighted more than ever the imperative need for space capabilities in contemporary military operations — both sides rely on space-based assets for communication, intelligence and targeting.

EU Implications

Russia is militarizing space and that means big problems for the security of EU. Russia's ASAT weapons capable of destroying or disrupting the EU's space assets is a direct danger to European communication, navigation and defense capabilities. To deal with said emerging threats, the EU must increase its space defense policy, advance with the development of innovative space capabilities and improve cyber cooperation with foreign allies.

Q1: How do U.S. and Russian advances in the militarization of space affect EU strategic autonomy and its security policies?

United States & Russia, European Union (EU): Militarizing space on massive scale has colossal consequences for strategic autonomy and security policy in the EU. With both states still under the process of creating their next generation of space capabilities i.e., ASAT weapons, space-based surveillance and missile defense technologies the EU consequently also has new security challenges to meet and preserve its strategic autonomy.

Strategic autonomy means that the EU is capable of determining and implementing its security through the instrument of external actors without overdependence. The militarization of space by both the U.S. and Russia in recent years has gotten even the EU to realize how dependent it is on space-based assets ranging from communication to navigation and massive intelligence gathering assets, " says Hagen-Wißmann.

The developing of ASAT weapons capacities by such major powers represents a threat to EU directly to its space infrastructure (we are talking about civilian and military satellites in range that can be destroyed which could interfere or worse fully disabling those vital for both halves!

The EU needs to invest in building its own space capabilities to meet and deal with these. This means bolstering the resiliency of its satellite capabilities, improving space situational awareness (SSA), and their technological capabilities required for protection against threats in space. The recently adopted EU Strategic Compass (2022) prioritizes space security as a key element to achieve a more resilient and stronger bloc in terms of security and defense. The EU will, through these investments reduce its dependence on external actors and improve strategic autonomy in space.

In addition to the militarization of space by U.S. NATO states and Russia itself the EU has

examined/renewed its security strategies due to emerging threats with the addition of space as an operational domain. The development and deployment of ASAT weapons, space based defense systems by the major powers reinforces the reason for an EU space defense strategy as a whole planning. It means

space security into the wide European security context and creating space security cross-border plans for potential disruptions in the 3rd domain (space).

The EU has been developing its space power with EU Space Programme that seeks to strengthen and extend the assets of the bloc. The initiative comprises the essential components of Galileo, Copernicus and the European Geostationary Navigation Overlay Service (EGNOS) critical services for civil navigation, Earth observation and environmental monitoring.

In Europe, the EU is currently building the European Space Situational Awareness (SSA) to improve surveillance on space objects for forecasting potential threats.

In order to reduce the risk to space warfare, the EU must act on further building up its international partnerships including with NATO and United States on common space defense activities interoperability as a priority. International norms and agreements on responsible behavior in space is a necessary precondition for preventing conflict, making diplomacy to develop universally accepted norms inimical to long-term sustainability of space activities. A proactive and integrated approach to space security would make the EU multiplier of strategic autonomy resilience against future real threats.

How can the European Union balance mitigation of risks associated with counterspace threats against potential retaliatory capabilities while still enabling cooperation with allies and partners around the world?

It poses a notably difficult issue for the European Union to balance risks mitigation of counterspace threats and potential retaliation capabilities. Space assets without increasing tensions and a risk of a space arms race — that is what the EU needs to establish strategies for. On the other hand, the EU must not neglect established norms and institutions for international cooperation and with allies/partners on shared security challenges.

The space-based communication, navigation and intelligence critical assets that are largely relied upon by the EU leave them exposed to counterspace threats, ASAT weapons and cyber strikes against space infrastructure. Risks to this effect should be minimized by the EU investing in making its space systems more resilient. From satellites hardening and redundancy/encryption for technological defenses to satellites physical protection technologies.

Space Situational Awareness (SSA) is an important element of European policy for reducing the risk of counterspace attacks. The EU will need a resilient system that has capacity and resources to track and analyze space objects, to recognize warnings and provide appropriate countermeasures. International Cooperation, working with our allies such as the US and NATO, as well spacefaring nations

internationally to improve SSA capabilities and deny information related to space activities from adversarial user.

The EU has to take retaliatory actions into account while it builds defensive capabilities. ASAT weapons are an example of deploying offensive space capabilities and they can place tension on the one hand, increase possibility of conflict in space on other. Thus, the EU should take a middle road prioritizing defensiveness, but not to the point of choosing actions that are seen as adventitious or escalatory.

The EU policy on security should embody deterrence by denial, not deterrence-through-sanctions. Deterrence by denial enforces the difficulty of adversaries towards their objectives by improving the resiliency and protection of space-based assets. And that aligns a range of factors which could otherwise discourage adversaries from engaging in counterspace efforts since our efforts are less likely to achieve impact.

EU must cooperate with allies and partners in addressing common security challenges and space domain stability. NATO, as one of the central security alliances, also matters significantly to building the EU space defense. For example, the EU and NATO could work together to create common goals for space situational awareness and protection of satellites, as well make joint response to threats from space-based entities.

As a diplomatic step to mitigate counterspace threats, international norms and frameworks for the responsible behavior space are critical. The EU can use its leadership role in shaping arms control agreements, confidence building measures and transparency initiative for stabilization and security within space. The EU can build a fair and predictable space domain by developing international cooperation and clear rules.

To offset the mitigation of counterspace threats with some capability for reprisal, while also fostering cooperation amongst friends and allies the EU must pursue a combined/multilayered strategy. It entails making space technologies that are resilient, improving space situational awareness and reduce defense measures to defend assets in space. At the same time EU should act in such a way which deescalates the situation and the priority is to be in diplomatic ways for restraint in space.

The EU also has the potential to increase its own security while contributing to the security and stability of the global space domain, through partnership and cooperation with international partners. Of course, this is a collaborative model that enables the EU to tackle emerging threats head on, advance its own strategic interests and uphold a rules-based international order in space.

Conclusion

Space warfare between the Russian and US (study of that for the European Union (EU) security) robust and developing between 2023-2024 battlefield has far-reaching consequences which deserve immediate policymaker and stakeholder attention. Challenges around strategic autonomy and security policies for the EU arise from the launch of the major powers into a militarization of space, with enhancements such as ASAT developments and advanced space-based defenses. As the EU relies, more and more on space-based assets for essential functions including communication, navigation and intelligence this underlines that it needs to improve in space in what pertains capabilities and resilience vis a vis the possible threats.

Realism offers a useful theoretical lens to elucidate the interests and conduct of states about space warfare. The concepts of anarchy, power, security dilemma and balance of power reveal a natural competition among states in international relations as well the importance of space as a strategic domain for national security. The empirical example could be that space militarization proposals in both the US, and Russia —result in security dilemma leading to an arms race, insecurity increasing and a strategic response from EU.

In order to meet these challenges, the EU needs to build up in space competences from scratch (resilient satellite technologies and space situational awareness systems — SSA) domestically. Focusing on alliances and partnerships, especially with NATO and the United States is important for augmenting collective security as well interoperability.

Agreeing — and in some cases, enshrining — international norms and agreements for behavior in space is a diplomatic corner stone to lower the risks of conflict and to the sustainability of space activities in the long-term. It's necessary to strike a balance between mitigating counterspace threats and any possible retaliation with is often possible at the minimum level. Therefore, the EU should stick with defensive methods to increase space systems resiliency and avoid actions that may escalate tensions. International multilateral arrangements, collaborations with allies and partners are essential to overcoming common security challenges and maintaining stability in space.

This speaks to the universality and urgency that space security must address as highlighted by the study— especially for the EU. Strategic autonomy, investing in sophisticated space capabilities and partnering internationally are how Europe can secure its interests and its voice in international security operations, while participating in the emerging domain of space warfare. The study offers policy makers and stakeholders much needed vision to develop strategies in support of the EU security towards a more contested space operational.

References

- Baklitskiy, A. (2023). *Strategic Stability in Space and the Russia-Ukraine War*. CNA
- European Space Agency (ESA). (2021). *ESA Space Situational Awareness (SSA) Programme*. United Nations. (2021). *Outer Space Treaty*
- Goines, T., Biller, J., & Grunert, J. (2022). *The Russia-Ukraine War and the Space Domain*. Lieber Institute West Point
- Gurantz, R. (2024). *Satellites in the Russia-Ukraine War*. U.S. Department of Defense
- Harrison, T., Johnson, K., & Roberts, T. (2020). *Space Threat Assessment 2020*. Center for Strategic and International Studies (CSIS). Wikipedia. *Space Warfare*. https://en.wikipedia.org/wiki/Space_warfare
- Jüris, F. (2023). *Security Implications of China-owned Critical Infrastructure in the European Union*. European Parliament.
- National Air and Space Museum. (2023). *What Was the Space Race?*. <https://airandspace.si.edu/stories/editorial/what-was-space-race>
- Weeden, B., & Samson, V. (2021). *Global Counterspace Capabilities: An Open Source Assessment*. Secure World Foundation.