First General Assembly

Militarisation and weaponization of outer space

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Philip Anghel

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Issue: Militarisation and weaponization of outer space

Student Officer: Philip Anghel

Position: President of the General Assembly

Introduction

For the previous 80 years, as well as in the present, the world community has found that militarization and weaponization of space remain urgent issues. As technology advances and geopolitical tensions persist, the likelihood of space warfare is increasing. The task of guaranteeing that space is a domain for exploration and use falls to the First General Assembly, which is in charge of disarmament and world security. Space has always been viewed as a common resource that should be devoid of conflicts and military operations. The use of guns or other weapons of mass destruction in orbit or on celestial bodies is expressly forbidden under the 1967 Outer Space Treaty, which was ratified by several powerful governments. However, there is still ambiguity around weapons and military actions in space. Recent events have highlighted the significance of addressing this issue. In November 2021, Russia launched a satellite (ASAT) test that produced a considerable amount of space debris, jeopardizing other satellites and space missions. This incident highlighted how ASAT technologies could be utilized aggressively, disrupting stability and increasing the potential of conflict spilling into space. Furthermore, advances in technology and artificial intelligence (AI) are altering the field of space security. AI has the ability to improve the functionality of satellites and other space resources by providing monitoring, navigation, and networking. However, these technologies can be weaponized, resulting in the development of autonomous weapons systems capable of operating in space.

Many space technologies are dual-use, complicating efforts to build comprehensive regulatory frameworks (Weeden & Samson). The formation of the United States Space Force in 2019 highlights the escalating militarization of space. This new branch of the US military is committed to preserving American interests in space, mirroring a larger tendency among states to

exert military presence in this area (Hitchens). As governments develop and deploy space-based military weapons, the possibility of a space arms race becomes more apparent. The international community confronts tremendous hurdles in preventing the weaponization of space. Existing treaties and accords, although necessary, are insufficient to accommodate the fast changing nature of space technology and the growing number of spacefaring states. International legal frameworks that are up to current and comprehensive are desperately needed in order to properly control space use and keep it from becoming militarized. In conclusion, in order to stop the militarization and weaponization of space, the First Committee of the General Assembly needs to give top priority to creating strong, internationally enforceable legislation. In addition to reiterating the fundamentals of the Outer Space Treaty, this entails tackling the novel obstacles brought about by developing technology and shifting geopolitical landscapes. By doing this, the world community may endeavor to guarantee that space is used for cooperative exploration and peaceful endeavors.

Definition of Key Terms

Militarization of Space:

The militarization of space involves the use of space and space-based assets for military purposes. This includes the deployment of military satellites for communication, navigation, reconnaissance, and early warning systems. The militarization of space has been a reality since the launch of the first military satellites in the 1960s (United Nations Office for Outer Space Affairs).

Anti-Satellite (ASAT) Weapons:

Anti Satellite weapons or ASAT weapons are designed to disable or destroy satellites for strategic military purposes. These can be launched from the ground, air, or sea, and use various methods such as kinetic kill vehicles, directed energy weapons, and electronic jamming. The testing and use of ASAT weapons pose significant risks to space security and generate space debris (Union of Concerned Scientists, 2021).

Kessler Syndrome:

The Kessler Syndrome is a scenario proposed by NASA scientist Donald Kessler in which the density of objects in low Earth orbit is high enough that collisions between objects could cause a cascade effect, leading to an exponential increase in space debris. This would render certain orbits unusable due to the risk of collision with debris (Kessler, 1978).

Dual-Use Technology:

Dual-use technology refers to equipment and technologies that can be used for both civilian and military applications. In the context of space, many technologies such as satellites, launch vehicles, and sensors have dual-use capabilities, which complicates the regulation and control of space activities (Space Foundation, 2021).

Geosynchronous Orbit (GSO):

A geosynchronous orbit is a circular orbit around the Earth having a period of 24 hours. This allows a satellite to match the Earth's rotation, appearing stationary relative to a specific point on the ground. Satellites in GSO are crucial for telecommunications, weather forecasting, and surveillance (NOAA).

Low Earth Orbit (LEO):

Low Earth Orbit refers to an orbit around Earth with an altitude between 160 to 2,000 kilometers (99 to 1,242 miles). LEO is commonly used for satellites that provide various services, including Earth observation, communication, and research. The proximity to Earth allows for lower latency in communications and higher-resolution imaging (NASA).

CubeSats:

CubeSats are a class of nanosatellites with a standardized size and form factor, often measuring 10x10x10 cm per unit (U). They are used for a variety of scientific, educational, and commercial purposes. Due to their small size and lower cost, CubeSats have democratized access to space (European Space Agency).

Space Domain Awareness (SDA):

Space Domain Awareness refers to the capability to detect, track, and identify objects in space, understand the operational environment, and predict and respond to potential threats. SDA is critical for maintaining space situational awareness and ensuring the safety and security of space operations (U.S. Space Force).

Kinetic Energy Weapons:

Kinetic energy weapons are designed to destroy targets through high-velocity impact. In the context of space, these could include projectiles that do not rely on explosives but instead use their speed and mass to inflict damage. KEWs are a type of ASAT weapon that can contribute significantly to space debris (Union of Concerned Scientists, 2021).

General Overview

To engage in fruitful conversation an understanding of the general historical events, and the reasons behind them, is crucial.

The Start of the Space Race

Though many mark the start of the space race with the beginning of the Cold War, an additional historical event must be looked at to properly understand what catalyzed said race. The development of the V-2 rocket by Nazi Germany marked the first long-range guided ballistic missile. Though rudimentary compared to modern technology, it could have made a difference in how well the Nazi would have fought in the Second World War. Fortunately, during Operation Paperclip, run by the United States of America, and Operation Osoaviakhim, overseen by the Soviet Union, Nazi technology and German scientists were acquired and taken back to the two countries.

Consequently, this launched both of these superpowers into a spiral of technological advancements for the sake of beating one another. The rival started in the 1940s fostering an arms race that extended all the way into space. This was marked by the launch of Sputnik 1 on October 4, 1957 which became the first artificial satellite to orbit Earth. This event demonstrated the Soviet's capabilities to launch objects in space, which inevitably had substantial military implications. In response the U.S. intensified its own efforts in space technology and

established the National Aeronautics and Space Administration (NASA) on July 29, 1958. NASA spearheaded the development of satellites, intercontinental ballistic missiles and reconnaissance satellites.

This quickly resulted in the U.S. launching its first successful satellite, Explorer 1, on January 31, 1958 which was a part of the vanguard program. Said program aimed at demonstrating satellite launch capabilities, though it faced initial failures. However, successes were also common. Besides the U.S. being the first country to send a man to the moon, its military programs produced ICBMs capable of delivering nuclear warheads with the Atlas. Additionally, the U.S. also launched the first reconnaissance satellite, named Corona or Discoverer, in 1960 providing critical intelligence on Soviet activities. The Soviet's equally succeeded producing similar ICBMs as the United States called the R-7 Semyorka. This marked the start of Mutually Assured Destruction (MAD) where both countries had the ability to destroy each other if war were to start. It balanced the locus of power, and shifted the way in which the two countries had to prove they were better than each other from just direct conflict to broader factors, such as space exploration and militarization.

Nevertheless, the intensity of the Space Race naturally fluctuated with the socio-political state of both the United States and the Soviet Union. The Partial Test Ban Treaty of 1963 and Outer Space Treaty of 1967 marked points of detente in the Space Race highlighting that international cooperation could be achieved to prevent cataclysmic disasters such as nuclear power being detonated from space to be used in warfare. Even though the Space Race cooled down for a while, Anti-Satellite Weapons (ASAT) and the Strategic Defense Initiative launched by the President Ronald Reagan of the United States were aimed to maintain U.S. global hegemony. The U.S. conducted tests with Program 437 Thor missiles, while the Soviet Union tested co-orbital ASAT systems. Inevitably such testing is a huge economic burden for a country, and the Soviet economy could not withstand the pressure such testing was placing on it. The communist economic ideals were simply not growing the economy at the same rate as capitalism was. The Space Race thus became a war between economies rather than missiles.

Modern Space Militarization

After the collapse of the Soviet Union in 1991 there was a shift in the geopolitical landscape, leading to a reevaluation of space strategies. The U.S. sealed its spot as the dominant space power, while Russia, inheriting Soviet Space assets, faced economic and political challenges. Seeing as there were no direct space related conflicts the industry changed targeted space exploration for the sake of scientific discovery and private use. Emergence of commercial satellite services for communication, navigation, and Earth observation.

However, rising competition and new players were bound to emerge. China has clear ambitions to send their own citizens to space. China launched its firm manned mission, Shenzhou 5, in 2003 marking its entry into human spaceflight. Moreover, the country developed anti-satellite (ASAT) capabilities demonstrated in 2007, when

China destroyed one of its own defunct weather satellites. In the 2010s further advancements in satellite technology were made such as small satellites called CubeSats and mega-constellations for various purposes including military surveillance and communication. Increased use of geospatial intelligence (GEOINT) and signals intelligence (SIGINT) satellites for military applications meant that countries could survey almost all parts of the world, detecting possible hostile actions the moment they occur.

In 2019 the U.S. formed the Space force, a separate branch of the military dedicated to space operations, underscoring the new found importance in space dominance. Moreover, India's ASAT testing began the same year. ASAT technology was not the only focus technology, with hypersonic weapons entering the military horizon. Both the U.S. and China made significant progress in developing hypersonic glide vehicles (HGV) that can travel at speeds exceeding Mach 5, posing new challenges for space-based and ground based missile defense systems.

Major Parties Involved

European Space Agency (ESA):

European nations work together through ESA to progress space exploration and technology. ESA supports Europe's participation in international space endeavors, such as satellite development and Earth observation, while largely concentrating on civilian applications.

North Atlantic Treaty Organization (NATO):

NATO is becoming more and more aware of how crucial space is to security and defense. It organizes member states' efforts to safeguard assets located in space, improve situational awareness in space, and create capacity to fend off possible threats in space.

Commercial Space Companies (e.g., SpaceX, Boeing, Lockheed Martin):

Space is becoming more and more militarized as a result of the development and deployment of satellites, the provision of launch services, and collaborations between private industry and

government organizations on space issues pertaining to the military. For military use, businesses like SpaceX and Lockheed Martin are creating cutting-edge satellite systems and launch vehicles.

The United States of America:

The United States continues to be a major force in the militarization of space, because of its cutting-edge infrastructure and technology. It has created communication systems, missile defense satellites, and reconnaissance satellites since the end of the Cold War. The U.S. Space Force was established in 2019 as a demonstration of the country's dedication to space security, assembling and preparing soldiers to safeguard interests and fend off new threats. Leading the way in both satellite technology and space policy, the United States advances both civilian and defense-related space activities while maintaining resilience against anti-satellite missiles and debris.

The Russian Federation:

Russia continues to play a major role in the militarization of space thanks to its heritage from the Soviet space program. Since the end of the Cold War, it has created and launched early-warning satellites, communication systems, and reconnaissance satellites. Russia is making steady progress in improving its space-based military capabilities, as evidenced by a number of anti-satellite experiments. These initiatives demonstrate its dedication to upholding strategic superiority and safeguarding national interests in space. Furthermore, Russia is a major player in international debates on arms control and space security, influencing international strategies for space exploration and defense.

The People's Republic of China:

China has grown into a major force in the militarization of space, establishing its space capabilities at a rapid pace in tandem with its own civilian space program. China has been developing and deploying communication satellites, navigation systems like BeiDou, and reconnaissance satellites for both military and non-military uses since the early 2000s. In 2007, the nation carried out a noteworthy anti-satellite test, showcasing its capacity to interfere with satellite operations and produce debris in orbit. China aims to protect its space assets and improve its strategic capabilities through a space strategy that combines defense and national security goals. China is reaffirming its status as a major spacefaring nation and influencing global debates on space security and governance

as it expands its space program..

The United Nations Committee on the Peaceful Usage of Outer Space (UNCOPUOS):

The United Nations Committee for the Peaceful Uses of Outer Space (UNCOPUOS), founded in 1959, encourages international collaboration and creates rules for space exploration and satellite communications. It plays an important role in developing frameworks such as the 1967 Outer Space Treaty, which attempts to avoid space militarization and ensure that space operations benefit all states. UNCOPUOS tackles topics such as space debris and sustainable exploration, encouraging international cooperation in peaceful space initiatives.

Timeline of Key Events

The following section will provide an overview of the key events that took place in both the 20th and 21st century relating to matters of the militarization of space:

Date	Description
October 4th, 1957	The space race is set off when Russian satellite Sputnik 1 is launched into space, beating the United States to be the first country to get to space.
July 29th, 1958	Formation of NASA (The National Aeronautics and Space Administration) is established in the United States to coordinate civilian space exploration efforts and advance particular scientific fields.
February 7th, 1958	Formation of DARPA (Defense Advanced Research Projects Agency) in the United States to develop emerging technologies for military use, including satellite technology.
1960s	Amidst the Cold War both the United States and Soviet Union began deploying reconnaissance satellites for intelligence gathering purposes.
October 10th, 1967	The Outer Space Treaty is signed by the United States and Soviet Union in addition to several other nations, prohibiting the placement of nuclear weapons in space.

July 15-24th, 1975	The Apollo-Soyuz Test Project, where the US and Soviet spacecraft dock in orbit, demonstrating international cooperation in space in a moment of detente.
March 23rd, 1983	President Ronald Reagan announces the Strategic Defense Initiative (SDI), a missile defense system utilizing space-based platforms.
1990s	The Gulf Wars prompted the United States to use GPS satellites for precision-guided munitions, showcasing the military advantage gained from utilizing space.
September 11th, 2001	Terrorist attacks in the United States prompt increased interest in space-based defense systems and satellite surveillance capabilities.
January 11th, 2007	China conducts an anti-satellite missile test, destroying one of its own defunct weather satellites (FY-1C) and creating a significant debris field in low Earth orbit.
August 31st, 2008	The United States issues a revised National Space Policy emphasizing the importance of space for national security and defense.
December 20th, 2019	The United States establishes the Space Force as a separate branch of the military to organize, train, and equip space forces.
2020s	Continued advancements in satellite technology, including miniaturizing, increased commercial space activity, and ongoing discussions on space arms governance. Additionally, advancements in novel weaponry continue to alarm policy makers that often lag behind technological development.

UN involvement, Relevant Resolutions, Treaties and Events

- Principles Relevant to the Use of Nuclear Power Sources in Outer Space (NPS Principles), resolution adopted by the General Assembly in 1992, (RES/47/68)
- Further practical measures for the prevention of an arms race in outer space, resolution adopted by the General Assembly in 2017, (A/RES/72/250)

- Reducing space threats through norms, rules and principles of responsible behaviors, resolution adopted by the General Assembly in 2020, (A/RES/75/36)
- Prevention of an arms race in outer space, resolution passed in the General Assembly in 2009, (A/C.1/64/L.25)
- Transparency and confidence-building measures in outer space activities, resolution adopted by the General Assembly in 2011, (A/RES/65/68)
- Declaration on the fiftieth anniversary of the Treaty of Principles Governing the Activities of States in the Exploration of Outer Space, adopted by the General Assembly in 2017, (A/RES/72/78)
- Recommendations on national legislation relevant to the peaceful exploration and use of outer space, adopted by the General Assembly in 2013, (A/RES/68/74)
- Recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects, adopted by the General Assembly in 2007, (A/RES/62/101)
- International Cooperation in the Peaceful Uses of Outer Space, adopted by the General Assembly in 2000, (A/RES/55/122)
- Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space, published in 2010, (ST/SPACE/49)

Previous Attempts to solve the Issue

Previous attempts to de-escalate space militarization efforts have been quite successful. Nevertheless, the technological advancements of the 21st century such as AI and hypersonic missiles have opened up a broader avenue of possibilities for countries to assert space dominance. The previous section gives a plethora of previous UN resolutions, mainly adopted by the General Assembly, that can be used to obtain a general overview of what the UN has attempted in the past. A prime example of this in the aforementioned documents is resolution A/RES/75/36 which aims to

reduce space threats by underlining what constitutes responsible behavior in space. It is by providing specificity to novel scenarios that the resolution aims to eliminate confusion and mistaken aggression by member states. By implementing a code of conduct for space travel, exploration and any activity member states aim to further etch out the lines of the law in outer space, so that international cooperation can flourish. Moreover resolutions such as ST/SPACE/49 further reinforce that idea that member states must follow a code of conduct, in this case specifically when it comes to activity that results in the production of debris. The UN document details how member states are required to record all activity in space, ensuring that all states are held responsible for their actions.

Keep in mind that previous attempts are invaluable to solving new issues, but ultimately it will be the novel suggestions that have the most impact on the committee floor.

Possible Solutions

Efforts to achieve demilitarization and ensure peaceful uses of outer space require a multifaceted approach that addresses both legal frameworks and practical measures to foster international cooperation and trust. The international community seeks enduring solutions universally adopted by all space-contributing nations, necessitating the strengthening of existing treaties and the establishment of robust legal foundations for future frameworks. Notably, several UN-related treaties, such as the five UN space treaties and PAROS, while pivotal, currently face challenges due to incomplete updates and limited international support.

The complexity of formulating a binding legal framework for outer space underscores the need for clear definitions of key concepts like "space territories" and "self-defense." These definitions are essential for distinguishing genuine justifications from deceptive claims, thereby ensuring the credibility and effectiveness of any regulatory framework. Furthermore, ensuring compliance with proposed solutions requires enhancing transparency and cooperation among nations. For instance, the creation of an impartial monitoring group or protocol could facilitate global information sharing on activities such as advancements in Anti-Satellite (ASAT) technology, thereby fostering international collaboration in research and education. In addition to legal frameworks, promoting international norms and confidence-building measures (CBMs) tailored for space activities is crucial. These measures aim to enhance transparency, reduce misunderstandings,

and build trust among space-faring nations.

Establishing comprehensive CBMs could involve regular exchanges of information on space policies, doctrines, and military activities. This transparency would help clarify intentions and reduce suspicions regarding space capabilities and intentions. Moreover, promoting joint space activities and cooperative projects could further enhance collaboration and trust-building. Initiatives such as shared satellite missions or joint research efforts not only advance scientific knowledge but also foster mutual understanding and trust among participating countries. Integrating space situational awareness (SSA) mechanisms into international cooperation efforts can also enhance space traffic management and collision avoidance capabilities. By sharing data on satellite orbits and potential hazards, nations can collectively safeguard their space assets from accidental or deliberate collisions.

In conclusion, while the challenges of demilitarizing outer space are complex, a multifaceted approach that includes transparency-building measures, cooperative projects, SSA enhancements, norm development, and diplomatic engagement offers a promising pathway towards fostering peace and stability in space. By promoting shared interests and collaboration, nations can work towards ensuring outer space remains a safe, secure, and sustainable environment for all.

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Appendix or Appendices

To develop a broader understanding of the militarization of space ensure to read the following articles:

I. United Nations, 6 May 2024, https://press.un.org/en/2024/ga12597.doc.htm
II. Beyond The Horizon, 6 June 2023, https://behorizon.org/increased-militarisation-of-space-a-new-realm-of-security/
III. Airforce Technology, 17 August 2023, https://www.airforce-technology.com/analyst-comment/the-future-of-space-militarisation/
IV. Ploughshares, 26 March 2024, https://www.ploughshares.ca/publications/we-cant-ignore-the-militarization-of-space
V. ETH International Relations and Security Network, August 2008, https://www.files.ethz.ch/isn/130808/ISN_Special_Issues_Aug.2008.pdf