Forum: Disarmament Council

Issue: Preventing the militarization of outer space

Student Officer: Sean Choi

Position: Chair of Disarmament Council

Introduction

Over the past few centuries there were rapid diversification of types of warfare. Among these types of warfare, space warfare is one of the most recent additions to this list. Development was first initiated in 1927 through an investigation of liquid fuel rockets by members of Verein für Raumschiffahrt (VfR), a spaceflight society in Germany. This developed into solid fuel rockets that were used during the World War I, but later banned after by Treaty of Versailles, the peace treaty that ended World War I.

Nevertheless, the innovation of artillery weapons, a class of heavy military weapons that was designed to fire far beyond the range and power of infantry weapons, was a continual progress. A new substitute model for liquid-fuel rockets was designed by a German aerospace engineer called Wernher von Braun, and by 1942, German came up with Vergeltungswaffe 2, or V-2, which was the first ballistic missile ever made

The launch of V-2 Rocket

After the World War II, during the Cold War, this was the time when rapid progress was made on developing new objects regarding to space. By the end of the 1960s, both the USSR and the US developed directed-energy weapons (DEW), weapons that damage targets with highly concentrated energy such as laser and particle beams. Additionally, both the USSR and US had creates networks of reconnaissance satellites using them to take pictures of each other's military installations. As reconnaissance satellites developed, both member states also came up with anti-satellite weapons.

After the Cold War, member states such as China, Japan, India, and member states in the European Union (EU) began to create their own aerospace researches. Despite these developments and increasing tension, due to measures such as the Outer Space Treaty, there have not been any significant crisis regarding space. It this thus imperative to implement measures to reduce tension and end the possibility of danger before a crisis even occurs.

Definition of Key Terms

Anti-Satellite Weapons (ASAT)

These are the development of weapons that is used to damage or destroy the satellites.

Weapon of Mass Destruction

A weapon that is capable of a high order of destruction and of being used in such a manner as to destroy people, infrastructure or other resources on large scale. The weapons of mass destruction are highly prohibited to be transmitted to outer space as mentioned in the Outer Space Treaty as it may cause a significant damage once the weapons are utilized.

Space Debris

It was initially referred to natural debris in the solar system such as asteroids, comets, and meteoroids. However, beginning from 1979 NASA Orbital Debris Program, old satellites and spent rocket stages along with fragments created due to collisions were also referred to space debris, or space waste. There are already a lot of space debris in outer space and it may damage currently activated satellites through collisions.

Ballistic Missiles

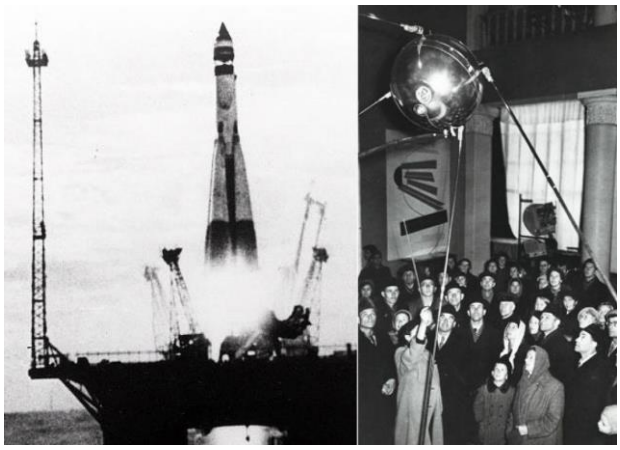
Ballistic missiles are missiles that follow a projectile trajectory and deliver one or more warheads, a type of bomb, on a predetermined target.

General Overview

The Space Race

During the cold war, the US and USSR, the superpower member states, started space exploration which led them to develop space military weapons. The main reason behind this outer space investigation was to explore the its military value as launch points for missile-based nuclear weapons. For one to take dominance over the other, technological superiority was necessary in order promote national security along with symbolic ideological superiority. However, the rivalries between the superpowers also resulted in the development of advanced technologies, which later helped aided create communication and weather satellites along with International Space Station (ISS).

Space Race was a conflict between the US and USSR on their spaceflight capacity during the cold war. It was initiated by the US announcement in 1955 that they will be launching their first artificial satellite in near future. As a respond, in 1957, the Soviet Union launched *Sputnik 1*, the first Earth artificial satellite. After the successful travel of *Sputnik 1* to space, the US was motivated to accelerate their development of artificial satellites. Although US failed their launch for first artificial satellite, project Vanguard, due to an impractical modification in their launching date, they later developed a stable satellite called *Explorer 1* which enabled the US to collect data from outer space such as cosmic ray and radiation levels.



<Launch of Sputnik 1>

Development and potential threat of outer space militarization

Militarization in outer space

<An example of a use of GPS for military purposes>

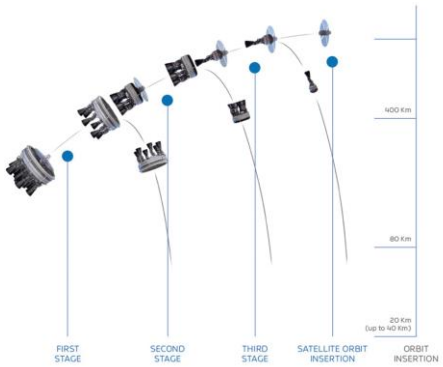
After the occurrence of Space Race, other member states, especially China who succeeded in creating an ASAT in 2007, rapidly innovated their outer space technologies. In fact, up to this point, there are more than 66 member states who possess satellites that orbits around the Earth. As a result, those member states were available with innovated technologies which led them to come up with rapid communication and data transmissions. Developments in this area not only helped commercially, but also in militarily. For example, Global Positioning System (GPS), which is a satellite-based navigation system, is known for its usage on social networking and air navigation. Conversely, it was also used for military purposes as the satellites could set the destination for where missiles would land, so that they can show the threats of missile while not causing any civilian causalities or accidental damage.

Consequences of outer space militarization

Explorations in outer space do not have explicit results where can be clearly seen, but there certainly are drawbacks of doing these. To begin with, there is a crucial need for significant amount of financial support in order to develop outer space militarization. According to the Center for Strategic and Budgetary Assessment, the cost of building and maintaining a functioning space weapon in space would equal the cost of the entire space-related systems that the US is currently developing and operating. (Hitchens, 2018) In addition, if a member state utilizes its financial advantages to expand their outer space researches,

discrepancies among member states on their space technology, or technology utilized in aerospace industry for use in special development such as space stations and satellites, would occur, causing future arms race.

Finally, not only they may cause consequences within the Earth, but outer space objects may also cause issues in outer space. When rockets or satellites are constructed, to make those more efficient, they are designed to discard the used-up fuel engines to outer space, creating artificial space debris. At this point of time, it does not seem to be a significant problem as there were not any critical crisis caused by artificial space debris. However, it would be crucial to create international treaties before this issue brings a bigger catastrophe such as collision between debris and satellites, which can later cause additional chain reaction of collisions, causing more space debris to be present.



<An example of a satellite's trajectory>

Potential threats

For all satellites, there are mainly four categories of their functions: commercial, governmental, civil, and military uses. However, from those four, there are only nearly 15% of current satellites have the capability to serve for multiple functions. Having seen that there were not any major world wars after the occurrence of the Cold War, there will always be a potential threat from satellites that will be developed later specifically for military uses.

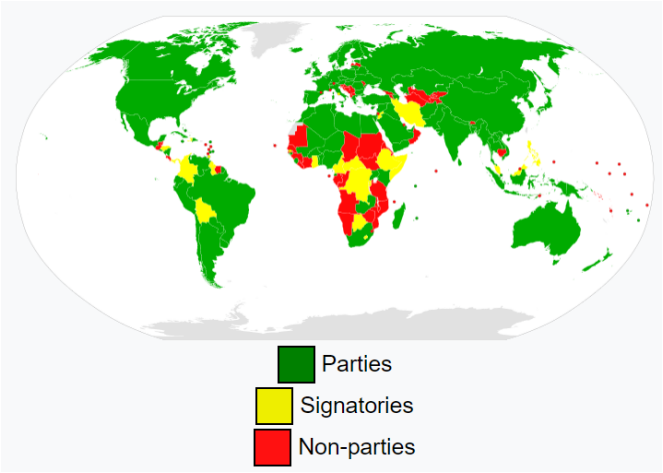
In addition, as development of space technology proceeded, key countries in this field such as the US started to focus more on developing ASATs. The main reason behind this is that there are not any treaties that specifically restrict ASATs. Yet, using and testing ASATs does violate some general international laws such as the United Nations Charter and customary international law on self-defense. Nevertheless, a 2015 report prepared by the US Department of Defense suggests that China has invested a large portion of money on their advancement of space capability, including DEWs and satellite jammers.

However, more importantly, rapid development of key countries, such as the US and China, would not only disrupt the balances of power between member states, but also poses great threats to international security. This developmental gap may potentially invoke the occurrence of future arms race as other member states would also develop their space technology to decrease the gap, which will cause a heavy economic burden on investing. Also, as mentioned above, in order to restore international security, organizations such as the United Nations (UN) should impose new agreements that will take away more of their freedom of research outer space.

UN Involvement, Relevant Resolutions, Treaties and Events

Outer Space Treaty

The Outer Space Treaty was opened on 27 January 1967 and entered into force on 10 October on that year by the US, UK, and Soviet Union. Currently, there are 107-member states who signed the treaty with 23-member states not completed ratification yet. This treaty was mainly to outlaw usages of outer space, including the Earth, its Moon, and other celestial bodies, whether to test weapons or to create military bases. In addition, it prohibits member states to transfer weapons of mass destruction to outer space. These kinds of treaties were aiming for member states to have a peaceful usage of outer space such as speculating and travelling over space. To strengthen this purpose, the Rescue Agreement came into force on 3 December 1968. The information for this agreement was a revised version of Article V in the Outer Space Treaty requesting for better protection for astronauts from all member states in need. In other words, whenever an astronaut accidentally falls into a wrong destination, that member state has a responsibility to protect him or her. In addition, if the space technology lands in another member states, they are supposed to return it. As a result, until now, there were not any significant crisis on the outer space. However, in the treaty itself have not explicitly mentioned the prohibition of conventional weapons in outer space. This means that there is a possibility of others trying to create destructive attacking strategies such as kinetic orbital strike, which is a hypothetical attacking on a planet's surface with a projectile, where the destructive force comes from high speed in its kinetic energy in the projectile.



<Map showing the member state signatories for the Outer Space Treaty>

Later, there were several times when the UN has published resolutions pertaining to the use of outer space. Over 2013 to 2016, there was a total number of 8 resolutions mainly to strengthen the transparency among member states about their progress of development of building measures in outer space and keep the peaceful uses of outer space technology.

Space Liability Convention

The Space Liability Convention, or the Convention on International Liability for Damage Caused by Space Objects, is treaty expanding from the Outer Space Treaty that was published in 1972. The main aim for this convention was to allocate the responsibility to the right party. In other words, regardless of who

launches the space object, if the space object is from an area occupied by a party, then the party is fully liable for the damage resulted due to the space object. After publishing this convention, there were only one example where this treaty was applied: Kosmos 954 from Soviet Union. In 1977, the nuclear-powered satellite called Kosmos 954 was launched. Unfortunately, when the satellite was reentering the Earth in the following year, it scattered radioactive debris over northern Canada, which caused Soviet Union to pay a total of 3 million Canadian Dollars to recover the damages.

Timeline of Events

The initiation of militarization in outer space was the World War II. After the occurrence of the World War and the Cold War, member states, mainly the Soviet Union and US, was motivated to innovate new space technologies as fast as possible. However, this rapid development has led to higher possibility of threats, causing more treaties to intervene the progress of development.

Date	Description of event
1957	Launch of Sputnik 1, the first artificial satellite
1967	Publish of Outer Space Treaty
1968	Publish of the Rescue Agreement
1972	Publish of Space Liability Convention
1978	Collapse of Kosmos 954
1957-1975	Space Race mainly between the US and Soviet Union

Possible Solutions

Strengthening the treaties to prevent weapon transmissions

Currently, it is known from the Outer Space Treaty that it is preventing member states to send weapons of mass destruction to outer space. This treaty has gone well pertaining to the restrictions made. However, there are not any other restrictions for other types of weapons such as conventional weapons and ASATs. By revising the treaty and reinforcing the law, there would be lower possibility of occurrences of threatening crisis as there are not any weapons that can create damages in outer space. These preventions will not only benefit the relatively weaker member states such as Vietnam and Taiwan, but also benefit the stronger member states such as the US and Russia (Soviet Union) by not permitting them to spend mass amount of money in development in space technology. In case of unexpected malfunctions in space objects, it may also decrease the possibility of them spending money according to the Liability Convention. However, this solution may have some limitations as there are already member states who have been developing weapons to send off to outer space, and those member states may still execute their plan to transmit their weapons to outer space.

Increasing the price for outer space exploration

Usually, when member states are considering developments in space technology, monetary issues are the biggest issue they consider. Even when developing new artificial satellites would need a high level of investigation from the states. If the price for outer space exploration is made through measures to increase the price of ingredients or fines to the international bank for shooting space objects off to outer space, member states would be much more demotivated to develop new space technologies. This intervention can decelerate the speed of innovation and decrease the possibility of threats caused by outer space. However, in the reality, these policies may have shortcomings as more economically developed countries (MEDCs) are able to ignore these policies and still develop space technologies. This may create technological gaps between MEDCs and less economically developed countries (LEDCs).

Increasing transparency of the progress between member states

When each member state sends off their artificial satellites to outer space, they receive data from the satellites of observation in outer space. However, there are also member states who illegally studies the capability of outer space for military uses. By organizations such as the UN requesting all member states to annually submit all the data received from outer space, there would be a higher transparency in their progress of development in space technology and would be easier to perceive whether one is considering the outer space for military uses or not. When any member state's usage of outer space is considered unacceptable by the organization, then the organization may impose punishments on the member state to prevent their further development of militarization in outer space. In reality, there might be some limitations to this solution as the criteria for considering whether they are using inappropriately or not might stay unclear and hard to give out punishments.

Bibliography

Heaps, Leo (1978). Operation Morning Light : Terror in our Skies : The True Story of Cosmos 954. New York: Paddington Press Ltd. ISBN 0-7092-0323-3.

Treaties.un.org. (n.d.). [online] Available at: https://treaties.un.org/doc/Publication/UNTS/Volume%20961/volume-961-I-13810-English.pdf [Accessed 12 Dec. 2018].

Harland, David M; Lorenz, Ralph D. (2005). Space Systems Failures – Disasters and rescues of satellites, rockets, and space probes. Berlin, Heidelberg, New York: Praxis Publishing (Springer).

William J. Broad (28 October 1986). "Star Wars Traced to Eisenhower Era". New York Times. Retrieved 2014-02-06.

Sak, Anatoly (November 20, 2008). "Buran - the Soviet 'space shuttle'". BBC News. Retrieved 2008-12-07.

“A Brief History of Space Exploration.” Aerospace. URL: *http://www.aerospace.org/education/stem-outreach/spaceprimer/a-brief-history-of-space-exploration/*

Barthelemy, Laurent. “In space, the looming threat of a new arm race”. Phys.org. October 2016. *https://phys.org/news/2016-10-space-looming-threat-arms.html*

Chatterjee, Promit. “Legality of Anti-Satellites Under the Space Law Regime.” Astropolitics 12, no. 1 (2014): 27-45. doi:10.1080/14777622.2014.891558.

Ministry of Foreign Affairs of the People’s Republic of China. “Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force against Outer Space Objects(Draft).” Promote Friendship Between Our People and Work Together to Build a Bright Future. Accessed June 01, 2018.http://www.fmprc.gov.cn/mfa_eng/wjb_663304/zzjg_663340/jks_665232/kjfywj_665252/t1165762.shtml.

Schmitz, David F. (1999). "Cold War (1945–91): Causes". In Whiteclay Chambers, John. The Oxford Companion to American Military History. Oxford University Press.

Harsh Vasani, T. (2017). How China Is Weaponizing Outer Space. [online] The Diplomat. Available at: https://thediplomat.com/2017/01/how-china-is-weaponizing-outer-space/ [Accessed 14 Jan. 2019].