

## UNOOSA

### United Nations Office for Outer Space Affairs Space Militarization and Weaponization

#### Overview

The militarization and weaponization of space can trace its history back to the Cold War. It began as the two greatest world powers at the time, the Soviet Union and the United States of America, sought different methods to prove their military superiority over one another.<sup>1</sup> They invested in the development of long-range missiles that could be launched from space, providing virtually infinite range for potential strikes. Today, many countries are pouring a great deal of their wealth and resources into the militarization of space, exploring various ways in which space can serve defensive and offensive needs. Consequently, the missiles that launched the Space Race made these two global superpowers realize that humans could not only fire rockets but board and navigate them as well.<sup>2</sup> Today, many countries are pouring a great deal of their wealth and resources into the exploration and militarization of space. In response, international treaties such as the Outer Space Treaty and the Prevention of an Arms Race in Space (PAROS) Treaty have been signed to keep space safe in light of new developments in the militarization of space.<sup>3</sup>

#### The United Nations Office for Outer Space Affairs

The United Nations Office on Outer Space Affairs (UNOOSA), established in 1958, was created to ensure the benefits of space were used for the betterment of humankind. To this day, the committee strives to aid all countries in accessing the advantages of space and works to promote international cooperation by helping countries understand the fundamentals of space law. Most importantly, the committee serves to promote the sustainable and peaceful development of outer space. As the militarization of space continues, UNOOSA urges countries

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<sup>1</sup> Nagashima, Jun. "The Militarization of Space and its Transformation into a Warfighting Domain." SPF, July 17 2020, [https://www.spf.org/jina/en/articles/nagashima\\_02.html](https://www.spf.org/jina/en/articles/nagashima_02.html)

<sup>2</sup> "The Military Rockets that Launched the Space Age." 2023. National Air and Space Museum, <https://airandspace.si.edu/stories/editorial/military-rockets-launched-space-age>

<sup>3</sup> "PAROS Treaty." The Nuclear Threat Initiative. NTI, <https://www.nti.org/education-center/treaties-and-regimes/proposed-prevention-arms-race-space-paros-treaty/>

to stay transparent about their activities in space and hopes to preserve international security on Earth as these activities continue.<sup>4</sup>

### **Space Militarization: A Growing Threat**

As an increasing number of countries begin pouring resources into their space economies, space militarization is becoming an even more pressing issue. According to a research report conducted in 2009 by the Hague Centre for Strategic Studies, the militarization of space refers to the use of space base devices to support earth-based weapons systems, while space weaponization refers to the use of weaponry based on earth or in space that is physically dependent on space.<sup>5</sup> In its early years, space weaponization began as a military operation involving countries placing possibly destructive devices into orbit.<sup>6</sup> Nowadays, new developments in space technology have forced the international community to expand the definition of space weaponization to include ground-based systems that can harm space-based devices.<sup>7</sup>

With the global space economy on the rise, more countries have ever-increasing budgets devoted to their space militarization programs. This rising interest in outer space affairs has been demonstrated through an increase in space launches, space-based weapons testing, and public and private investment in the industry. The first half of 2023 saw a dramatic rise in global space launches from 75 launches in the first half of 2022 to 97 launches in the following year<sup>8</sup>. Although not all of these launches can be linked to military activity, it is impossible to predict each country's full intent in placing these devices in outer space and the exact purpose the device will serve as it orbits our planet.

Additionally, there has been a growth in weapons testing in many countries with space capabilities including those heavily involved in the push for militarizing space such as the United States, China and Russia. Several types of weapons have been tested and employed by countries

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<sup>4</sup> "COPUOS: Committee and Subcommittees." UNOOSA, <https://www.unoosa.org/oosa/en/ourwork/copuos/comm-subcomms.html>

<sup>5</sup> "Space-Based Warfare." Hague Centre for Strategic Studies, 2009, <https://www.jstor.org/stable/resrep12606>

<sup>6</sup> "United Nations Treaties Outer Space." UNOOSA, <https://www.unoosa.org/pdf/publications/STSPACE11E.pdf>

<sup>7</sup> Singh, Balraj. "Weaponization & Militarization of Space." Geospatial World, 2021, <https://www.geospatialworld.net/prime/prime-opinion/weaponization-militarization-of-space/>

<sup>8</sup> Mackey, Alan. "Recap of Global Launches for the First Half of 2023." SpaceWorks Enterprises, 2023, <https://www.spaceworks.aero/recap-of-global-launches-for-the-first-half-of-2023/>

in recent years including Directed Energy Weapons (DEW)<sup>9</sup>, Mass-to-Target Weapons<sup>10</sup>, Anti-Satellite weapons (ASAT), a wide array of space-based missiles, as well as ground attack weapons<sup>11</sup>. Many of these weapons involve the use of large amounts of concentrated energy to launch precise attacks on targets on Earth and in space. These devices pose a massive threat to civilian lives, specifically to those living in countries without much involvement in outer space affairs. Unlike countries like the United States, China and Russia, many countries have not devoted their resources to the exploration or militarization of space and thus have not developed the capabilities to defend themselves in this domain.

However, governments are not the only entities pouring money into space development and research. Since Russia's invasion of Ukraine, global military spending has reached \$2.2 trillion in 2022 and private corporations have taken notice<sup>12</sup>. Private companies like SpaceX, Axiom space, Garuda Aerospace, Skycraft and many others have flocked to the space sector and involved themselves in the development of space technology, both scientific and military.<sup>13</sup> This increase in government and non-government spending is both the cause and the consequence of the modern-day space race.

### **Who Is Involved?**

Many countries, as well as private corporations, have joined the exploration and weaponization of the 'final frontier' since the end of the Cold War. In the last decade, several countries have begun taking bigger roles in the space industry and have modernized their existing space programs. One major development in recent years was the creation of the Space Force branch of the US armed forces in 2019<sup>14</sup>. Its mission is to "secure [the United States']

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<sup>9</sup> Singh

<sup>10</sup> "Space Weapons Earth Wars." RAND Corporation, [https://www.rand.org/content/dam/rand/pubs/monograph\\_reports/2011/RAND\\_MR1209.sum.pdf](https://www.rand.org/content/dam/rand/pubs/monograph_reports/2011/RAND_MR1209.sum.pdf)

<sup>11</sup> "An Introduction to Space Weapons." Union of Concerned Scientists, <https://www.ucsusa.org/sites/default/files/2019-09/intro-to-space-weapons.pdf>

<sup>12</sup> Flynn, Christopher, Ferdinand Mason and Shiva Sandill. "Investors flock to lucrative aerospace and defense industry." M&A Explorer, 2023, <https://mergers.whitecase.com/highlights/investors-flock-to-lucrative-aerospace-and-defense-industry#!>

<sup>13</sup> Moltz, James Clay. "The Changing Dynamics of Twenty-First-Century Space Power." *Journal of Strategic Security* 12, <https://www.jstor.org/stable/26623076>

<sup>14</sup> V, Anand. "Evolving Shifts in Outer Space Geopolitics: Locating India's Space Programme." *Indian Foreign Affairs Journal*, Indian Foreign Affairs Journal, <https://www.jstor.org/stable/48714207>

interests in, from, and to space”.<sup>15</sup> The addition of this sixth branch of the US armed forces in 2019 as well as increasing its funding to over 30 billion dollars in 2023 has incited more countries to increase spending. Chief of Space Operations Gen. B. Chance Saltzman declared before the Senate Armed Services Committee in 2023 that enemies of the USA “...seek to surpass the United States and challenge our advantage. [The USA] cannot and will not allow this to happen”.<sup>16</sup> In response to the United States’s Space Force, countries like France, Japan, India, China, Israel, North Korea, South Korea, Iran and Russia have taken additional actions to reinforce their militarizing efforts. For example, Japan established a Space Operations Squadron as part of the Japan self-defense forces in 2020. Additionally, India created its own Defense Space Agency (DSA) and Defense Space Research Organization (DSRO) in 2019<sup>17</sup>.

Throughout the last decade, the international community has recognized China and Russia’s attempts to increase their military strength through the weaponization of space. China and Russia have increased their in-orbit assets by 70% in the last two years<sup>18</sup>. Both countries have long been seen as formidable adversaries to US space dominance. In 2018, China surpassed the US in annual launches with 55 launches occurring in 2021 alone. Based on China’s recent actions, experts have predicted that China will become the world's largest space military force by 2045. The country has come a long way since it began its space research in the late 1950s. In 2007, China had its first ASAT missile test and 2015 marked the launch of the Dong Neng-3 missile defence system with the ability to destroy US satellites. The country aims to have fully reusable launch vessels by 2035 and a manned space-based solar power station by 2050<sup>19</sup>. All of these endeavours highlight the country's intentions to control space and exploit its resources through weaponization.

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<sup>15</sup> “About Space Force.” Space Force, <https://www.spaceforce.mil/About-Us/About-Space-Force/#:~:text=The%20Space%20Force%20organizes%2C%20trains.capabilities%20to%20the%20joint%20forces>

<sup>16</sup> Lopez, Todd. “Space Force Focuses on Partnerships, Spirit, Combat Readiness.” Department of Defense, 2023, <https://www.defense.gov/News/News-Stories/Article/Article/3330161/space-force-focuses-on-partnerships-spirit-combat-readiness/#:~:text=The%20U.S.%20Space%20Force's%20%2430.%2C%20development%2C%20testing%20and%20evaluation.>

<sup>17</sup> Anand V

<sup>18</sup> Nanda, Prakash. “China Deploys Weapons Capable Of 'Wiping' US Space Capabilities; PLA's Phenomenal Rise Alarms Pentagon.” Eurasian Times, 2023, <https://www.eurasiantimes.com/china-deploys-weapons-capable-of-wiping-us-space/>

<sup>19</sup> Goswami, Namrata. “China in Space: Ambitions and Possible Conflict.” *Strategic Studies Quarterly*, Strategic Studies Quarterly, <https://www.jstor.org/stable/26333878>

Russia has also spent significant resources on its space branch of the armed forces known as the Russian Aerospace Forces. Russia's efforts have been focused on expanding its arsenal of counter-space weaponry, both kinetic and non-kinetic. Kinetic attacks damage or destroy space-based assets while non-kinetic attacks harm the device without any physical contact. In 2017, a Russian Aerospace Forces squadron commander confirmed that it had designed an ASAT missile compatible with the MiG-31 BM aircraft. Moreover, in 2007, a group of Russian hackers developed a malware known as Turla with the ability to steal satellite data used by government intelligence agencies.<sup>20</sup> Despite Russia and China submitting the "Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects" during the Conference on Disarmament in 2008, both countries serve as examples of the international community's intentions to continue militarizing and weaponizing space.<sup>21</sup>

### **Benefits and Disadvantages of Space Militarization**

The United Nations Disarmament Committee gathered in late 2022 to discuss the consequences of militarizing space. Beyond the obvious threat of a possible space war, many other implications of the pursuit of space dominance were discussed. Representatives spoke about the blurred line between civilian and military technologies, the congested space environment, and the danger to civilian lives. Italy brought to light the development of dual-use technologies that make it difficult to identify military devices. This is because countries may disguise a device as being purely for scientific or civilian use, when in reality it may serve as a weapon or reconnaissance device. Argentina highlighted that these technologies put at risk the cybersecurity of civilians worldwide and allow for quick escalation into armed conflict.<sup>22</sup>

Another major issue mentioned was that of overcrowding and debris in space, particularly in orbit close to Earth. With more launches going up each year and with increased testing of space based weapons, Earth's space environment has become dangerous in and of itself. This could lead to a phenomenon known as the "Kessler effect" which warns of an increase

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<sup>20</sup> Harrison, Todd, Kaitlyn Johnson, Thomas G. Roberts, and C. Robert Kehler. "Russia." *Space Threat Assessment 2018*, Center for Strategic and International Studies, 2018, <https://www.jstor.org/stable/resrep22469.7>

<sup>21</sup> Harrison, Todd, Kaitlyn Johnson, Thomas G. Roberts, Madison Bergethon, Alexandra Coultrup, and Jim Cooper. "Russia." *Space Threat Assessment 2019*, Center for Strategic and International Studies, 2019, <https://www.jstor.org/stable/resrep22551.7>

<sup>22</sup> "We Have Not Passed the Point of No Return', Disarmament Committee Told, Weighing Chance Outer Space Could Become Next Battlefield." UN Press, 2022, <https://press.un.org/en/2022/gadis3698.doc.htm>

in collisions as more satellites are placed in orbit<sup>23</sup>. This then begins a cycle as more collisions lead to more debris which in turn cause more collisions. As the complexity of the crisis in space continues to grow, so does the danger it poses to human life on Earth.

However, despite the many terrible consequences of space militarization and weaponization, some believe there may have been some positive outcomes. It has been observed that growing interest in this issue has led to the innovation of new technology, a larger space economy, and military intelligence that may, when used correctly, lessen civilian casualties in times of war. As mentioned earlier, space militarization caused the development of dual-use technology that benefits both military and civilian activities. Some of these technologies include earth observation and remote sensing which make it easier for people to drive to work or find their lost phone.<sup>24</sup> Consequently, the development of these devices spurred investment in the space sector as a whole and thus increased funding for scientific endeavours in space. Additionally, the progress made in the construction of space weapons and devices has given countries the ability to carry out precision military strikes on select targets. This could very well limit the loss of civilian life during conflict. Moreover, ‘early warning systems’ inform countries of possible threats and give them time to defend themselves in case of attack, which may appeal to nations who seek to use these technologies for conflict prevention.<sup>25</sup>

## **The Global Response**

For many years, the international community has been aware of the rising probability of a space territory-related conflict, as more and more countries venture into space to take advantage of its military potential. Countless resolutions have been proposed to address this issue and treaties have been signed to maintain peace while tensions rise. One of the most prominent propositions, the “Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies”, also known as the “Outer Space Treaty” was introduced as early as 1967<sup>26</sup>. Since then, several other solutions have been

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<sup>23</sup> “Space congestion: An increasingly contested and crowded frontier.” Zurich Insurance Group, 2022, <https://www.zurich.com/en/media/magazine/2022/from-moonshot-to-musk-how-the-rules-of-the-game-are-changing-in-space>

<sup>24</sup> “Space Militarization and its Impact on the Space Economy.” New Space Economy, 2023, <https://newspaceeconomy.ca/2023/03/31/space-militarization-and-its-impact-on-the-space-economy/#:~:text=Space%20militarization%20has%20also%20resulted,peaceful%20use%20of%20outer%20space>

<sup>25</sup> Bhatt, Ishan. “Militarizing the Final Frontier: Arms Control in Space.” Harvard International Review, 2020, <https://hir.harvard.edu/militarizing-the-final-frontier-nor/>

<sup>26</sup> “Outer Space – UNODA.” UNODA, <https://disarmament.unoda.org/topics/outerspace/>

introduced including the “International Code of Conduct for Outer Space Activities” proposed by the European Union in 2008. While presented as a potential international agreement, opposition from the BRICS (Brazil, Russia, India, China, South Africa) nations with the intent to delay the proposal’s ratification resulted in the initiative never being signed.<sup>27</sup> Many other efforts have occurred since the start of the space race, but none have managed to resolve the issue. In the past, the international community has been focused on the development of transparency and confidence-building measures (TCBMs) surrounding outer space technologies and activities. These measures have had little to no impact on such activities, because of the expansion of space militarization and weaponization efforts previously described.

This committee must collaborate to solve these pressing issues. Each sovereign nation must ask themselves: what should the future of outer space look like? Should countries be allowed to have a military presence in space? Is it safer to have countries know when an attack is imminent, so they can better defend against it? Do the pros relating to the development of new technologies outweigh the cons of increased tensions between countries? Should countries with space weaponry be allowed to share their knowledge with countries that do not yet possess those capabilities? Only through enacting measures to answer the endless questions surrounding space militarization and weaponization will the crisis be resolved.

### **Questions to Consider**

1. Does your country have military space capabilities, including satellites or weapons? Are they known to be used for either offensive or defensive purposes?
2. Does your country acknowledge space militarization as a form of defence?
3. Are there any measures within your country that already address space militarization or weaponization?
4. How do the advancements in new space technologies affect your country's economy?
5. Is your country involved in any international agreements surrounding space militarization or weaponization?

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<sup>27</sup> Meyer, Paul. “Arms Control in Outer Space: Mission Impossible or Unrealized Potential?” CGAI, [https://www.cgai.ca/arms\\_control\\_in\\_outer\\_space\\_mission\\_impossible\\_or\\_unrealized\\_potential](https://www.cgai.ca/arms_control_in_outer_space_mission_impossible_or_unrealized_potential)

**Useful Delegate Resources**

[UNOOSA](#)

[Is the Weaponization of Space Inevitable?](#)

[Outer Space Becoming Contested Domain for Supremacy with Space-Based Communications,](#)

[Intelligence Assets, Anti-Satellite Weapons, First Committee Hears | UN Press](#)

[Space Militarization | How does law protect in war? - Online casebook](#)

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