Space Militarization

***INTRODUCTORY TEXT**: The recent creation of a "United States Space Force" (USSF) as part of the US Armed Forces, as well as NATO's declaration of space as the fifth operational domain (alongside land, water, air and cyberspace), has once again sparked debate regarding the militarisation of outer space. This case looks into the question of the IHL issues arising from space militarisation and the implications of an armed conflict and hostilities in space.*

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A. SPACE AS A CIVILIAN SPACE AND AS A WAR ZONE

[**Source:** NASIC, 'Competing in space', December 2018, available at: https://media.defense.gov/2019/Jan/16/2002080386/-1/-1/1/190115-F-NV711-0002.PDF]

[…]

Space-Based Capabilities are Vulnerable

[1] The global economy and civilian population are dependent on space systems. U.S. and allied militaries use space systems to connect, warn, guide, and inform decisions across the entire spectrum of conflict. Adversaries are aware of the advantages space services provide and actively seek capabilities to deny them.

Space is Increasingly Militarized

[2] Both China and Russia are developing new space capabilities to achieve military goals and reduce their reliance on U.S. space systems. Through military reforms, China and Russia have organized new military forces devoted to the employment of space and counterspace capabilities and regularly integrate them into military exercises. Meanwhile, these countries continue to develop, test, and proliferate sophisticated anti-satellite weapons to hold U.S. and allied space assets at risk.

[…]

[3] Today, over 50 countries and multinational organizations own or operate space assets […].

[…]

Reconnaissance and Remote Sensing

[4] Reconnaissance and remote sensing satellites collect images, electronic emissions, and other data across the globe to meet a variety of customer needs. There are a number of civil and commercial applications for remote sensing data, such as environmental monitoring, urban planning, and disaster response. […]

[5] In addition to civil and commercial uses, these satellites provide military and intelligence collection capabilities. They have reduced the ability of all countries to perform sensitive military activities undetected. […]

[…]

Satellite Communications

[6] Global communications networks rely on satellite communications systems for worldwide voice communications, television broadcast, broadband internet, mobile services, and data transfer. […]

[7] […] Better technology promises greater affordability, efficiency, and flexibility for civil, government, and military users worldwide.

[…]

Satellite Navigation

[8] The 1991 Gulf War and subsequent U.S. military operations illustrated the value of the U.S. GPS satellite navigation system for troop movement, force tracking, and precision munition delivery. […] Today, satellite navigation services are critical to military and civilian users worldwide, with applications in navigation,

munitions guidance, communications, agriculture, banking, and power supply. […]

[…]

Denying Space

[9] Society increasingly depends on the services provided by satellites. What if GPS and other services were unreliable or unavailable? Police, firefighters, and paramedics, who rely on satellite navigation, would be slow or unable to respond in an emergency. Live news from across the country or the other side of the planet would no longer be available. Long-distance telephone, satellite television, and internet would be unavailable. Retail stores and gas stations could not communicate with banks to complete transactions. Many critical services and daily conveniences we rely on could be affected by weapons targeting our space services.

[…]

Anti-Satellite Missiles and Directed-Energy Weapons

[10] Anti-satellite missiles destroy targeted satellites. Using a ground-launched anti-satellite missile in 2007, China destroyed one of its defunct weather satellites more than 500 miles above the Earth. […] [T]he impact of this collision generated over 3,000 pieces of space debris that will continue orbiting the Earth for decades.

[…]

[11] Counterspace directed-energy weapons are designed to produce reversible or non-reversible effects against space systems by emitting highly focused radiofrequency or laser energy. Reversible effects include temporarily blinding optical sensors. Non-reversible effects include permanently damaging or destroying sensors or other satellite components.

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B. HUMANITARIAN CONSEQUENCES UNDER IHL OF WEAPONS IN OUTER SPACE

[**Source:** Group of Governmental Experts on Further Practical Measures for the Prevention of an Arms Race in Outer Space, 'Humanitarian Consequences and Constraints Under International Humanitarian Law (IHL) related to the Potential Use of Weapons in Outer Space: Working paper submitted by the International Committee of the Red Cross (ICRC)', 18 March 2019, UN Doc. GE-PAROS/2019/WP.1, available at: https://undocs.org/GE-PAROS/2019/WP.1]

I. Introduction

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II. Potential humanitarian consequences of the use of weapons in outer space

3. The use of weapons in outer space that would disrupt, damage, destroy or disable civilian or dual-use (i.e. carrying out both military and civilian functions) space objects could entail a range of humanitarian consequences. For example:

- Physically damaging or destroying space objects could generate a huge amount of space debris which could in turn damage or destroy in an unpredictable manner other space objects such as communication and weather satellites, among others, that support safety-critical civilian activities and essential civilian services on earth.
- Disaster prevention and mitigation (for example evacuation or other measures in anticipation of a hurricane) may also be seriously affected if weather satellites are disabled or damaged. In addition, satellite phones are used by humanitarian organizations and medical personnel to communicate in times of emergency, e.g. during natural disasters or armed conflicts, when mobile phone service is not available. In this respect, disruption of telecommunication services provided by communication satellites would hinder the delivery of humanitarian assistance and emergency relief that rely on satellite phones.
- Civilian vehicles, shipping, and air traffic controls increasingly rely on global navigation satellite systems […], which may also be used by the military, potentially making these systems “dual use”. Disabling or damaging such navigation satellites, through kinetic or non-kinetic means, could have wide-reaching consequences for civilians on earth.

[…]

III. Existing limits to military activities in outer space, in particular under IHL

5. Military uses of space objects have for several decades been an integral part of contemporary warfare. For example, armed forces rely on: satellite navigation systems to enable precision navigation and targeting; satellites to enable global communications, including for command and control; and space-based monitoring systems that allow advance warnings of missile attacks, surveillance and reconnaissance.

6. As the role of space systems in military operations increases, the likelihood that these systems will be targeted, whether it be their ground or space components or the link between them, also increases, with potentially significant consequences for civilians as outlined above. As was pointed out by the Chair of the GGE in his 31 January report, possible threats to space systems can be classified in order of growing intensity, ranging from electronic warfare, cyber-attacks, directed energy attacks, to orbital-based anti-satellite systems, and ground-based anti-satellite weapons.

7. Whatever military activities occur in outer space, such activities are constrained by existing international law, notably:

- The Outer Space Treaty, which recognizes the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes. Its Article IV prohibits the placement in orbit of objects carrying nuclear weapons or other weapons of mass destruction, instalment of such weapons on celestial bodies, and stationing of such weapons in outer space in any manner. The Outer Space Treaty also forbids the establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies, and requires that they be used exclusively for peaceful purposes.
- The UN Charter, […]
- IHL, […] The applicability of IHL in outer space is confirmed by Article III of the Outer Space Treaty, which states that international law applies to the use of outer space; international law includes IHL. It is important to emphasise that IHL applies to any military operations conducted in the context of an armed conflict, including those occurring in outer space, regardless of whether or not the resort to force that triggered the armed conflict is lawful under the UN Charter (*jus ad bellum*). IHL does not legitimize the use of force in outer space nor its militarization or weaponization. Indeed, the sole aim of IHL is to preserve a measure of humanity in the midst of armed conflict, notably to protect civilians.

[…]

10. A kinetic operation against a space object constitutes an attack under IHL governed by these rules. However, a space object could also be disabled (rendered dysfunctional) without being physically damaged, for example by directed energy/laser weapons or a cyber-attack. In the ICRC's view, such non-kinetic operations constitute attacks under IHL, and therefore are also governed by the above-mentioned rules, among others. Furthermore, attacking, destroying, removing or rendering useless objects indispensable to the survival of the civilian population is prohibited.

11. IHL forbids targeting civilian objects in outer space. However, civilian satellites, or some of their payloads (for example a specific transponder on a satellite bus), may also service armed forces, and are hence of a 'dual-use' nature. They may become military objectives, provided that their use for military purpose is such that they fulfil the definition under Article 52(2) of the First Additional Protocol. But, as mentioned above, disabling the civilian functions of such satellites could disrupt large segments of modern-day societies, especially if they also support safety-critical civilian activities and essential civilian services on earth. The foreseeable direct and knock-on (reverberating) incidental civilian harm and damage to civilian objects expected from an attack against a dual-use satellite must be considered when assessing the lawfulness of such attack under the IHL prohibitions of indiscriminate and disproportionate attacks and when taking all feasible precautions in the choice of means and methods of warfare to avoid incidental civilian harm and damage to civilian objects.

12. Another issue of concerns is the risk posed by space debris. Debris can be created by a host of space activities. This could be the case of a kinetic attack on a satellite, which risks causing far more debris than other space activities. Debris may continue to travel in the orbits in which they are produced for decades or more. Given the speed at which they travel, debris risk damaging other satellites supporting civilian activities

and services. This would have to be considered when assessing, and may limit, the choice of means and methods of warfare in outer space.

[…]

DISCUSSION

1. Outer space is increasingly being discussed as a combat environment and spacecraft such as satellites are already seeing use in situations of armed conflict.

a. Does IHL apply in outer space (and, potentially, on celestial bodies other than Earth)? If so, how does the territorial applicability of IHL extend into space? (See ICTY, The Prosecutor v. Tadić, Appeals Chamber, Jurisdiction, para. 70)

b. Does space law prohibit military activities in outer space? Is space reserved exclusively for peaceful purposes? If so, would this have any consequences for the applicability of IHL? (See Outer Space Treaty, Arts I, III and IV; Moon Agreement, Arts II and III)

c. Would the applicability of IHL in outer space depend on whether an ongoing armed conflict is international or non-international?

d. (*Document B, paras 3-5)* Provided that IHL is applicable to activities undertaken in outer space, and considering the current levels of human presence and activities in that domain, does its application even have any practical relevance for the belligerent parties? For the civilian population?

e. What fundamental principles of IHL are impacted by technologies in space?

f. (*Document B, para. 3)* How is space technology able to improve or endanger respect for IHL? Can the use of space-based platforms actually provide an advantage, from an IHL perspective, for ensuring respect for the law of armed conflict?

g. Can space technology intervene in the field of humanitarian assistance or relief actions? Can it improve or endanger the activities of humanitarian assistance or relief actions?

2. (*Document A, para. [2]*) According to space law, astronauts shall be regarded as ‘envoys of all mankind’ and provided all possible assistance in case of distress (Outer Space Treaty, Art. V; Rescue of Astronauts Agreement, Arts I-IV).

a. In case of an armed conflict, would astronauts / the crew of spacecraft be considered civilians or

combatants? Could they be regarded by analogy with members of crews of the merchant marine/civil aircraft? Would this depend on whether they are deployed to a military or civilian spacecraft? What if they are members of the armed forces? (GC III, Art. 4; GC IV, Art. 4)

b. Can astronauts be lawfully targeted? If so, is IHL the *lex specialis* to space law in this regard? Could it be other way around, namely that space law is the *lex specialis* to IHL? (Outer Space Treaty, Art. V; Rescue of Astronauts Agreement, Arts I-IV).

c. If captured, would astronauts be entitled to POW status or treatment as POWs? Would the detaining power be entitled to retain them in its power until the end of active hostilities? Or would it need to comply with the requirements of space law to safely and promptly return them to representatives of the launching authority? (GC III, Arts 4 and 118; Rescue of Astronauts Agreement, Art. 4)

3. (*Document A, paras [4]-[7]*; *Document B, paras* 5-6) Can enemy satellites or other enemy infrastructure in space be attacked by either belligerent party? If so, can all satellites be targeted, or would this depend on their use? What is the status of so-called “dual-use” satellites or objects? Can they be targeted? Under what circumstances?

4. What is the consequence of space debris of one satellite that has been destroyed, floating in space and destroying or damaging another satellite?

a. Does the potential creation of space debris need to be considered in light of the IHL principles of precautions and proportionality when planning an attack?

b. Would IHL be a relevant factor when considering space debris falling onto the Earth and destroying civilian infrastructure or even injuring or killing civilians? If so, how?

5. According to the Convention on International Liability for Damage Caused by Space Objects, States must cover damages made by their spacecraft to other States’ spacecraft or territory. What is the interplay of these rules with IHL? Assuming the applicability of IHL, would States be obliged to cover damages ensuing from a lawful attack? If so, would this reparation be owed to the hostile belligerent party / parties? To neutral States?