

Does Dual Use of Satellites Challenge the Future Space Governance?

Anna Hurova

Ph.D. in Law, Institute of State and Law of National Academy of Science of Ukraine
(Kyiv, Ukraine)

E-mail: a.m.hurova@gmail.com
<https://orcid.org/0000-0003-4134-761X>

Anna Hurova (2023) Does Dual Use of Satellites Challenge the Future Space Governance?
Advanced Space Law, Volume 12, 20-29. <https://doi.org/10.29202/asl/12/2>

The dual use of satellite services raises the question about the legitimacy of the counter actions against their functionality during the armed conflict. This article focused on the examination of the content of the key principles of international humanitarian law, i.e. distinction and proportionality, concerning their application to the space activity. In this context, the criterions of pre and post evaluation of input of space services to the military operation were analysed. The risk of creation of a cloud of space debris because of a breach of humanitarian law was also observed. As a result, the suggestion to develop and ratify Additional Protocol IV that would distinguish what constitutes a civilian object from a military objective and determine the scope and extent of damage proportional to the attack, is argued as a means that able to save outer space resource and space services during the space and cyber wars.

Keywords: security, distinction, proportionality, outer space, armed conflict

Received: 12 November 2023 / Accepted: 28 November 2023 / Published: 30 December 2023

Introduction

“As the role of space systems in military operations during armed conflicts increases, the likelihood of these systems being targeted also increases, with potentially significant impacts for civilians on Earth.” These words of the legal adviser of the International Committee of the Red Cross at the session of the Open-ended working group on reducing space threats through norms, rules, and principles of responsible behaviour (Open-ended working group, May 2022) represents the common conviction that the expression “peaceful exploration and use of outer space” allows for military conflicts from, though, and in outer space. This idea bases on the factual, political, and juridical challenges faced by commercial operators as the result of invasion of russia into Ukraine. As a result, some start-ups lose their motivation to provide data by stating that it’s not clear that even well-funded and smart commercial entities could stand

up to the might of a nation-state advanced persistent threat because they are inviting a level of cyber attacker that their information-security apparatus are not prepared for (Werner, 2022).

During the war in Ukraine, for the first time in history, space-based capabilities significantly changed the balance of the conflict, because a lot of private companies deliver reports from their radar imagery to better orientation what's going on the ground, or on the sea of Ukraine. This leads to a wave of political critics with the juridical explanation that indirect involvement of civilian, including commercial, infrastructure in outer space for military purposes makes it a so called quasi-civilian infrastructure that may become a legitimate target for retaliation (Open-Ended Working Group, September 2022).

This conclusion comes from art. 3 of OST that extends all international law, including humanitarian law, into space activity as well as a Martens Clause that prescribes, until a more complete code of the laws of war will be issued, the populations and belligerents remain under the protection and empire of the principles of international Protocol (I AP) to the Geneva Convention revealed the characteristics of military objective and rule 14 of international customer law (ICL) (proportionality) as well as art. 51 of I AP (indiscrimination) and art. 54 of I AP and Rule 45 ICL (widespread, long-term, and severe damage), etc (International Red Cross). In this regard, the cornerstone question of equilibrium between principles of distinction and proportionality as a representative of the more general principles, namely the military necessity and humanity arises.

The means of European space defence policy

There are at least two areas in which Europe can play a leading role: monitoring and mitigating climate change and reducing space debris (Space 2040: The Future of the Global Space Economy, 2023). The Action Plan on synergies between the civil, space and defence industries prescribes that the European defence industry should be able to draw on the research results of the EU's civil industry to avoid costly duplication of research. The strategic compass sets two objectives for the space sector: firstly, to strengthen dual-use innovation (military mobility); secondly, to invest in space situational awareness to better understand and reduce space-related risks, threats, and vulnerabilities (A Strategic Compass for Security and Defense, 2022). European space policy is therefore focused on space situational awareness to prevent threats, including offences, to satellites and dual-use systems.

The same trends are reflected at national level, where France's Space Strategy of Defence (SSD) focuses on two main elements: an improved space surveillance capability to detect and attribute unfriendly acts; and a capability to defend critical space interests. The French doctrine, like the European one, compared with the American one, does not develop a complete control of space but rather guarantees its freedom to use this environment in all circumstances, according to the satellites in all fields of use. The central approach here is a frequently evoked strategy of autonomy in circles, following three distinct circles for space surveillance, i.e. a controlled patrimonial circle that carries the core of the mission, an enlarged circle which includes trusted players to reinforce operational capabilities in a strictly organised manner according to the type of missions targeted, and a last, even wider circle opening up possible commercial relationships capable of meeting needs whose volume and nature exceed the capabilities offered by dedicated resources (Pasko & Wohrer, 2023). In this context, while respecting the civilian nature of EU space programmes, specific and adapted rules for the provision of security-sensitive services, applications and data are established to ensure the

appropriate level of confidence for users in the security and defence sectors (Joint, 2023). Thus, even despite non-aggressive policies, due to the strategy of involving private satellites in defensive operations, they risk being affected in the event of an attack or irresponsible behaviour.

Current defence mechanisms

According to section 3 of the European Union Space Strategy for Security and Defence, the response to threats consists of:

- ✓ Detection: Space Domain Awareness (SDA) to describe and understand behaviours in real time.
- ✓ Attributing and reacting to hostile behaviour: The European External Action Service (EEAS) manages the Space Threat Response Architecture which supports the implementation of the Council Decision on the security of systems and services deployed, operated, and used under the Space Programme. They identify threats to the baseline references contained in the system-specific security requirement statements and the respective system security plans, which include the security risk registers established in the security accreditation processes for each component. It is therefore an internal regulation that cannot respond to the understanding of threats by someone who does not belong to that system. In addition to the technical response, relevant EU tools could also include:
 - at the diplomatic level – discussions in multilateral fora, awareness-raising through the appropriate channels and declarations by the EU and the Member States aimed at preventing and responding to irresponsible behaviour in the space field
 - at the economic level – tools such as sanctions.

The principle of distinction

The problem of distinction grounded on the phenomenon that from 4,800 operational satellites approximately two-thirds are commercially owned and the services of them could be used both for the military and civil purposes (International Red Cross) (so called problem dual-used services). The situation aggravated by the well-known problem of non-transparent and unclear registration of space object. As an example, P. J. Blount mentioned that SA-193, a National Reconnaissance Office remote sensing satellite, as well as civil remote sensing satellite Landsat 5, were listed at UN registry as spacecrafts engaged in practical applications and used of space technology such as weather or communications (Blount, 2012). So, if in the time of the conflict someone wants to misfunctioned such satellites, it is not obviously that it will be legally, because the destruction of both could violate the principle of proportionality and they could not realize mentioned civile services.

As a criterion to legalize the targeting belligerent satellites art. 52 of I AP are used, namely “the military objectives are limited to those objects which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage.” On this base some scientists stated that: 1) military rockets, military satellites, military spacecraft, military spaceships or military space stations meet the “nature” standard under normal circumstances; 2) in the case of civilian satellite is used to provide energy

supplies for enemy military satellites, or is used as a bodyguard satellite to protect important enemy military satellites, it can be considered a military target because of its location and, vice versa, certain military target may no longer be considered a military target due to a change in location; 3) under the “current use” criterion, a civilian object becomes a military object when it is used for military purposes. “Purpose” refers to the intended future use of an item. For example, a civilian transponder on a communications satellite becomes a military target if there is credible information that an adversary intends to use it for military purposes. Wenjun Yan and Haoyu Cui from China Foreign Affairs University explains that such contributions must be made on a “real-time” basis and not based on hindsight (Yan & Cui, 2023). Changes in the location, right to use, and ownership of a space object may cause that the last one to no longer provide military benefits “under the circumstances” and thus no longer constitute a legitimate target of attack. Thus, for effective distinguishing military and civilian functions of dual-use space objects, the Chinese colleagues suggests providing detailed information to the enemy. Such suggestions cannot be effectively used according to the two reasons: 1) terms “nature, location, purpose or use, effective contribution” concerning their application to space activity leave a lot of subjective estimations of each belligerent party and bring the risk of irreversible malfunctioning a huge amount of civil satellites; 2) real-time estimation of status of satellite on the base of active exchange of information between belligerent states looks like utopian situation and open up opportunities to abuse this option.

P. J. Blount suggest more scrutiny approach of evaluation of real input into the military operation, as the result he estimates that intelligence-gathering centres related to the war effort, like Geo-Eye satellites, that helped the military strategists of US to provide invasion in the Afghanistan in planning and execution of the ground operations, are considered to be targets, as well as the commercial telecommunications satellites which assisted the military with command and control type functions also make themselves up as potential targets (Blount, 2012). The weakness of this approach in the post-estimation of such activity, but in comparison with the previous one, it gives more evidence and can prevent the escalation of the conflict in space.

As an another case of estimation of the status of such services, the remote sensing imagery is difficult to consider as a “war material,” if it was provided by a commercial vendor, especially in the case of procurement of the raw data that can be processed under different aims as well as satellite images for the humanitarian purposes, like it was at the first months of the russian invasion in Ukraine, when Maxar and other operators provided satellite images to prove the war crimes of the russian army and to help the government of Ukraine to provide safely evacuation of civilians. It’s indispensable do not forget that humanitarian law based on the principles of humanism and stay aside of atrocities due to the threat of force of aggression is to be part of the crime against humanity.

The art. 52 I AP correspond the principle of continued protection, according to which, in case of doubt whether an object which is normally dedicated to civilian purposes is being used to make an effective contribution to military action, it shall be presumed not to be so used. In this light the collision between diplomatic status of astronauts as envoys of humanity and the representatives of the national military division is solved, with some exceptions (Jie, 2019), from the perspective of the behaviour as a hostile or non-hostile (Yan & Cui, 2023) or “fundamental change in circumstance” (Blount, 2012). This conclusion is validated by the art. 13 of the Second Protocol to the Geneva Convention, civilians shall enjoy the protection afforded by this Part, unless and for such time as they take a direct part in hostilities and in the more recently act.

In conclusion of this part, it should be noticed that art. 52 of the I AP permit to make an attack concerning above mentioned objects and subjects. Thus, according to the article 49 of I AP, attack is an act of violence against the adversary, so it should be proportional.

The principle of proportionality

When we think about proportional attack in space, it is about the risks of space debris (so called “secondary impact” or even “tertiary impact”) and about the harmful consequences for the humanitarian needs on the Earth. Both is interdependent and provide a serious argument for non-use of force. For example, Cassandra Steer is convinced that even military technology as the Global Positioning System would likely always be prohibited because of the enormous civilian dependency that have free access in many countries (Steer, 2023).

Here are some manifestations of this principle:

- ✓ Rule 14 prescribes that launching an attack that may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated, is prohibited.
- ✓ Article 51 of the I AP reveals the criterion attacks indiscriminate: (a) those which are not directed at a specific military objective; (b) those which employ a method or means of combat which cannot be directed at a specific military objective; or (c) those which employ a method or means of combat the effects of which cannot be limited as required by international humanitarian law.
- ✓ Art. 55 of the I AP stated that care shall be taken in warfare to protect the natural environment against widespread, long-term, and severe damage. Nevertheless, that the art. 56 gives the exhaustive list of the works or installations containing dangerous forces, that is not contain satellites, which should be covered by this article in the sense of the creation of space debris and risk of harm to other satellites.
- ✓ According to the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, each State Party undertakes not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting, or severe effects as the means of destruction, damage, or injury to any other State Party. Debris significantly harms economic interests in space by placing multimillion-dollar assets at risk and poses a threat to the natural resource of orbits, so such norm recognized like applicable to the situation of the use of force in space.
- ✓ According to the principle of military necessity that permits only that degree and kind of force required to achieve the legitimate purpose of a conflict, i.e. the complete or partial submission of the enemy at the earliest possible moment with the minimum expenditure of life and resources, it is difficult to imagine that the belligerent State with a lot of satellites in their jurisdiction on the same to near orbits ma let possible the creation of huge debris.

So, it became clear that using of kinetic means to out of work the hostile satellite is became unlikely. At the same time, it is worrying that attacks that use technologies that provide jamming or spoofing attacks on telecommunications or navigation satellite as well as dazzle or blind a remote sensing satellite and at least cyber-attacks recognized as permissible. They don't violate the requirement of the indiscriminate attack because they serve to disrupt the satellites usefulness to the adversary and not to destroy the satellite itself (Blount, 2012).

Nevertheless, Liang Jie also highlight that each attack on the satellites may break the proportionality principle because military facilities depend heavily upon satellite positioning systems. Once the satellite positioning systems are interfered with, the weapons will not be able to target accurately, they may attack non-military objectives and violate the principle of proportionality (Jie, 2019).

Conclusions

For the conclusion, it should be noted that space and cyber technologies require the more precisely interpretation of the key principles of international humanitarian law like distinction and proportionality for achieving their equilibrium according to the specific characteristics of these domains. As Jack M. Beard conjectured, the application of new space technologies will make combat more automated, and armed conflicts in outer space will rely more on the evaluation of combat methods by legal advisers that rise appreciation by commanders of the utility of legal support in their multidimensional missions, and the growing use of law as a strategic asset (Beard, 2009).

At the same time, even the most intelligent lawyer cannot take responsibility for the space and cyber war according to the restrictions of subjective comprehension or belonging to certain jurisdiction, etc. So, as it was admitted by P. Pascucci concerning cyber war, the application of the principles of distinction and proportionality fail to adequately provide protection of the civilian population because the definitions and current application are based upon the historical application to kinetic warfare. In this regards the suggestion to develop and ratify Additional Protocol IV that would distinguish what constitutes a civilian object from military objective and determine the scope and extent of damage proportional to the attack, could be seen as a means that able to save outer space resource and space services during the space and cyber wars (Pascucci, 2017).

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