Chapter 11

Legal Aspects of Military and Defence Use of Outer Space

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Abstract

This chapter examines the evolving landscape of military activities in outer space, considering the challenges it poses to existing space law. With an increasing number of nations utilising space for military and defence purposes, questions arise regarding the application of space law principles to these activities. This chapter delves into the notions of militarisation and weaponisation in outer space, exploring the role of space law in governing military applications and interpretation of the Space Treaties. The analysis extends to the evolution of international law, considering both binding and non-binding norms. Further, this chapter investigates the legal frameworks governing military use at the national and international levels, emphasising the need for regulations to address risks, including regarding space debris and sustainability concerns, as well as the prospective development of the European Union Space Law. Ultimately, the chapter aims to conceptualise the current and future integration of military aspects into the space regulatory framework and their interactions with contemporary challenges.

Keywords: space militarisation, weaponisation, space law, space wars, sustainability, EU Space Law, space defence strategy.

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1. Introduction

Outer space has been the subject of interest for countries, especially their military sectors, since its dawn. This is because of its unique potential and capabilities related to the orbital and observation mechanisms.[1] Military use of space intensified during the Cold War, when the ASM-135 anti-satellite (ASAT) missile was developed and tested by the United States (US) Air Force in 1985. In 1980, other countries also started thinking about military use of space.[2] Moreover, space techniques showed their military potential for the first time in the First Gulf War during 1990–1991, when military forces relied heavily on remote sensing.[3] Moreover, although commercial use of outer space developed during the years and changed the optics from defence to civilian application of outer space, the military aspect has always remained, even if only behind the scenes. This aspect has recently returned to the main stage along with the increase in geopolitical tensions. The explicit symptoms of this shift can be seen in the ASAT tests conducted in recent years by China, Russia, the US, and India.[4] Nowadays, space applications have multiplied and are increasingly being used for military operations to serve reconnaissance, meteorology, communication, and navigation purposes, and they include space assets such as ballistic missile defence and ASAT weapons.[5]

The capabilities offered by the satellites have two aspects in relation to defence. First, they can help with Earth military operations, and second, they have increased in-space military capabilities, which some countries have recently shown in the form of ASAT tests. Experts have christened this trend as "space for defence" being transformed into "defence of space."[6] Regarding the first aspect – application of space techniques to military operations on Earth –remote sensing seems to be the most pertinent issue as it enables 'intelligence, surveillance and reconnaissance'.[7] This can also be called "space support for earth defence". Second, as regards military operations in space, this includes kinetic contacts between the space objects and proximity operations. Thus, it deals with defence and military actions in space. Both these aspects have a common denominator – protection of space-based assets.[8]

1 For example, the US Corona satellites and Soviet Russian Zenit satellites, launched in the 1950s, served military purposes. See also Polkowska, 2022.
2 Examples include Israel and South Africa. Ferreira-Snyman, 2015; Polkowska, 2022.
3 European Space Policy Institute (ESPI), 2020.
4 China in 2007, Russia in 2021, India in 2019, and the US in 2008.
5 According to data, as of 2018, the US military has over 170 satellites, Russia operates 97 military satellites, and China's military controls 100 satellites. Union of Concerned Scientists, 2019. See also Kehrer, 2019.
6 ESPI, 2020.
7 'A capability for gathering data and information on an object or in an area of interest (AOI) on a persistent, event-driven, or scheduled basis using imagery, signals and other collection methods'; ESPI, 2020.
8 ESPI, 2020.

Considering the above, several legal issues appear. Since the beginning of outer space exploration, two basic notions – militarisation and weaponisation – have been present, causing great concerns for both competing governments and lawyers. Thus, the question about the role of law, specifically space law, in governing the military application of outer space and its weaponisation seems to be one of the most pertinent in the era of space defence actions' intensification. The specific questions concern the application of space law to space military activities and meaning of the provisions included in the Space Treaties. This also concerns the application of the general principles of space exploration to defence and military actions in space, which are included in not only the Space Treaties but also various provisions of international law. In this context, the evolution of international law and its understanding must be investigated. When analysing the legal provisions, various types of rules should be considered with respect to their binding force and socio-political impact (hard law and soft law).

Thus, one most important research goal of this chapter involves checking what laws govern the military use of outer space and what principles guide their conduct. Related to the above, it is equally important to determine the borders of permitted actions in relation to the military use of outer space. The other aspect that must be considered is the institutional one, and it should be approached in two contexts: First, who is the law maker with respect to the military aspect of outer space, and which is the governing institution (i.e. what type of governance of the military aspect exists or should exist, at least on an international level)? The second legal issue concerns the national level, and the research objective within the above is how existing national laws should respond to the militarisation or weaponisation of space. Are the military (or defence-related) activities regulated by national space laws or should be (or are) exempted, and to what extent such exemption should work? Both contexts require ensuring safe and uninterrupted operations, so addressing the legal risks is necessary and involves analysing issues that belong solely to the space law and related domains (e.g. telecommunications law, export control measures, and cybersecurity regulations). Thus, the issues of space debris, the risk of losing control over the satellites, and the issue of sustainability in general must not be ignored. Nowadays, as the issue of sustainability of space activities has become pertinent, we cannot avoid analysing the military aspects of space activities in the context of sustainability. The ultimate objective of this chapter is to provide a concept of the current and prospective place of the military aspects of space activities within the space regulatory framework as well as their interaction with the currently significant issues (e.g. Zero-Debris Charter announced by the European Space Agency [ESA] in November 2023):[9]

9 ESA, 2023.

> The issue is of great importance and should also be addressed legally, for the reason that space war would have an immanent supranational character. The law may not be enough because of very many political aspects. Wars are always political in nature, so in a way they are always above the law, i.e. the law cannot completely prevent them, but it may be able to strengthen international control, which will have a preventive effect. And this is due to the fact that in the case of space, and its supranationality, the entire world community will always be interested, so the emphasis may be more on preventing excessive militarization and avoiding armed conflict in space.

To achieve the research goals specified above, first, the dogmatic method will be applied in the context of existing legal provisions, and a historic analysis will be conducted on the evolution of law and approach to the legal obligations related to space defence and military issues. An important and necessary method will be the comparative method, which will be applied for several purposes: comparison of different jurisdictions within space law and comparison between different branches of law. In addition, an empirical method will be used (to a limited extent) in the form of interviews with space sector experts.

2. Overview of the Existing International Space Regulatory Framework in the Context of Defence and Militarisation

This section will consider defence, militarisation, and weaponisation of outer space in view of the existing space regulatory framework, as well as other, related branches of law. Thus, the analysis will be conducted by reviewing the existing international laws, both space treaties, and space soft law. This will be followed by a discussion of the landscape of space-related international regulations. The second level of the regulatory framework that must be reviewed is the regional level, for which we chose the law of the European Union (EU), and the third one is the national level of space regulations. The analysis will be conducted based on the assumptions established in section 1. As a result, efficiency of the legal response to the needs of the defence policy in the field of outer space will be assessed.

First, it should be stressed that space law has always been related to the military aspects of outer space exploration[10] (as explained in section 1), and defence issues were the first impulses of states' interest in outer space endeavours. It was already so at the stage of the first satellites, such as Sputnik 1, which was launched in 1957 by the Soviet Union. Some authors indicated that 'it caused a crisis in

10 Kopal et al., 2011.

western military thinking and in consequence, a space race between USA and Soviet Union'.[11] The issue of a peaceful or military application of outer space endeavours was raised from the very beginning by not only lawyers but also policymakers,[12] and President Eisenhower suggested to extend the agreed rules with reference to Antarctica. Considering the period of the Space Treaties' negotiation, we can conclude that the military use of outer space was never questioned and has been subject to the observance of basic rules of international law.[13] Nevertheless, all state parties to the Space Treaties put on the table the founding principle of the peaceful use of outer space, which was repeated several times in not only the treaties but also resolutions of the United Nations General Assembly (UNGA) related to space exploration.[14] Thus, the clash between military needs and the emphasis on peace as the guiding principle of space exploration is one of the main paradoxes of international space legislation.

The result of the above paradox is the repeated question about the interpretation of "peaceful exploration" and "military purposes." In addition, academics around the world procured the whole list of pertinent legal aspects related to the military use of outer space. These include questions such as the following: What makes a space activity a military activity – the purpose of the mission or employment of military personnel and equipment? What is the frontier of passive (non-aggressive) use of outer space and its relation to peaceful outer space exploration? What are the legal consequences of using civilian systems for military purposes? What is a space weapon? What are the legal aspects of interference from Earth (unlawful interreference)?[15] The specific illustrative inquiries culminate in a broader interrogation concerning the role of law with respect to the military and defence issues in space. Linked to this overarching query is the inquiry into the most effective approach to regulate these facets while considering the prevailing geopolitical landscape. This examination encompasses diverse approaches to space law at the international, regional, and national levels of not only individual states but also the collective international community.

2.1. Assessment of the Current State of the International Space Regulatory Framework

To answer the questions to address the research objectives of this chapter, the main Space Treaties are analysed with the view of regulating the military issues in outer space. This refers to the following five main five treaties – (1) the Outer Space

11 Lyall and Larsen, 2018.
12 Ferreira-Snyman, 2015.
13 Cheng, 1997.
14 Ibid.
15 Lyall and Larsen, 2018.

Treaty,[16] (2) Liability Convention,[17] (3) Moon Agreement,[18] (4) Registration Convention,[19] and (5) Rescue Agreement[20] – which are jointly called the "Space Treaties".

First, the analysis requires identification of the military – oriented provisions of the Outer Space Treaty and recognition of their meaning. The Outer Space Treaty's preamble already emphasises the fundamental principle of space exploration – its peaceful use – which has implications for the interpretation of all its provisions, as well as the provisions of the other Space Treaties. On the other hand, a detailed analysis leads us primarily to Article IV, which is the main article directly regulating the military aspects of space exploration. Article IV sets the ban on weaponisation of space exploration.

According to Article IV Outer Space Treaty,

> States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.
>
> The Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the Moon and other celestial bodies shall also not be prohibited.

Article IV Outer Space Treaty is often compared with the provisions of the Antarctic Treaty of 1959, which served as a politically agreed pattern for outer space, especially its Article 1, according to which,

> 1. Antarctica shall be used for peaceful purposes only. There shall be prohibited, inter alia, any measures of a military nature, such as the establishment of military bases and fortifications, the carrying out of military manoeuvres, and the testing of any type of weapons.
>
> 2. The present Treaty shall not prevent the use of military personnel or equipment for scientific research or for any other peaceful purpose.

16 *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies,* 1967.

17 *Convention on International Liability for Damage Caused by Space Objects*, 1972.

18 *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, 1979.

19 *Convention on Registration of Objects Launched into Outer Space*, 1975.

20 *Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space*, 1968.

The content of Article IV is rooted in the provisions of the Partial Test Ban Treaty of 1963[21] and UNGA resolution 1884 (XVIII).[22] It also extends its scope to encompass orbits around the Earth, outer space, and celestial bodies, notably the Moon. Additionally, it mandates a selective demilitarisation of outer space. It draws inspiration from Article I of the Antarctic Treaty and is applicable to celestial bodies and the Moon. This segment advocates for comprehensive prohibition on the testing of all categories of weapons and a wide spectrum of military activities. Notably, it explicitly permits only the military activities that are delineated in its last sentence (use of the military personal and equipment), underscoring that any use must be 'exclusively for peaceful purposes'.

In the above context, it is most important to establish the meaning of "peaceful purposes." This point has been discussed by many scholars and in the forum of the United Nations; it has also been proposed by some space-faring countries.[23] The main controversy is whether the peaceful purpose equates to a non-military purpose. If so, the Outer Space Treaty would require the complete de-militarisation of outer space, which did not happen in practice even with several ratifications of the Outer Space Treaty. In fact, it seems that no country that is party to the Outer Space Treaty even seriously considered imposing such a restrictive interpretation and understanding of "peaceful purposes" while considering their strategic goals and intentions in using outer space. Thus, such an approach mirrored the proposed definition of militarisation, which assumes activities that do not engage satellites directly in the battlefield and are limited to reconnaissance and system supervision (see also the definition of militarisation proposed by Tronchetti as 'the use of space capabilities to support military operations occurring on earth').[24]

The above approach corresponds with the meaning of "peaceful purposes" as proposed by some states such as the US. It indicates that the notion of "peaceful" should be understood as non-aggressive rather than non-military or purely civilian. This interpretation has not been widely and explicitly accepted by both states and scholars;[25] nevertheless, nowadays, it seems to work as assumed based on the accepted state practice that military activities are permitted in space as long as they are non-aggressive (i.e. passive or defensive). To this day, interpretation of the term "peaceful" remains a source of contention, and such debates are poised to intensify

21 *Treaty Banning Nuclear Weapon Tests in The Atmosphere, in Outer Space and Under Water*, 1963. This treaty is sometimes also referred to as *the Limited Test Ban Treaty*.

22 UNGA, Question of general and complete disarmament, A/RES/1884 (XVIII) of 17 October 1963.

23 In 1958, UNGA formally endorsed Resolution 1348 (XIII), addressing the matter of peaceful utilisation of outer space. In response to this resolution, an ad hoc committee was convened to address the legal intricacies surrounding activities in outer space, as outlined in the paragraph. The committee's efforts culminated in a comprehensive report, which, among various recommendations, proposed the establishment of a permanent committee dedicated to overseeing legal aspects related to outer space activities; UNGA, Question of the peaceful use of outer space A/RES/13/1348 (XIII) of 13 December 1958.

24 Tronchetti, 2015.

25 Cheng, 1997.

the ongoing advancements in space techniques, technology, and their applications. Notably, application of the Outer Space Treaty to suborbital activities has become a focal point, influencing the permissible purposes of such endeavours. Specifically, the question arises about whether suborbital activities can align with international law while serving purposes other than those explicitly characterised as peaceful.

The other issue is the use of the military personnel and equipment, which is explicitly allowed by the Antarctic Treaty and Article IV Outer Space Treaty. Specifically, employment of military personnel or equipment for scientific research or any other peaceful purpose is expressly permitted. The main issue to be resolved in that respect is the legal consequence thereof for qualifying the activities undertaken as conducted for peaceful purposes. This signifies that the utilisation of military personnel does not inherently contradict peaceful objectives. This unmistakably allows for the establishment of military installations in space. In principle, if a state were to construct military bases, installations, or fortifications in outer space, such an undertaking would seemingly be deemed permissible under the Outer Space Treaty.[26]

Besides Article IV Outer Space Treaty, others articles may also help interpret the meaning thereof. In particular, Article III Outer Space Treaty should be considered, which seems to be a general guiding principle. According to Article III,

> States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the Moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding.

This article clearly indicates that not only the Outer Space Treaty and other Space Treaties but also the general international law, such as the United Nations Charter[27] and others, will be applicable when analysing the militarisation and weaponisation of outer space. In that sense, these laws and treaties form the *Corpus Iuris Spatialis*. It should be remembered that the way the principles of the Outer Space Treaty are interpreted is related to the more general question about the position of space law within the realm of international law. The relationship between space law and the broader legal framework is subject to two prevailing perspectives. One viewpoint posits that space law operates as an autonomous and self-contained regime, distinct from the overarching international legal system. An alternative argument asserts that space law functions as a specialised branch, recognised as *lex specialis* within the realm of international law. The absence of a universally accepted definition of a self-contained regime complicates this discourse. However, one could conceptualise it as a framework of regulations with distinctive mechanisms for enforcement, specialised methods of interpretation and administration, and a standalone existence

26 Esparza, 2018.
27 *The Charter of the United Nations*, 1945.

that is not contingent on international law. In conclusion, the impact of Article III Outer Space Treaty designates space law as *lex specialis* when juxtaposed with the international law at large. However, it is imperative to recognise that such categorisation necessitates a case-specific evaluation. Furthermore, given the explicit reference to the United Nations Charter in Article III Outer Space Treaty, the subsequent subsection (sec. 2.2. of this chapter) delves into the intricacies of the relationship between the United Nations Charter and the field of space.[28]

The above touches on another significant matter – relevance of the Outer Space Treaty and other Space Treaties to other acts of international law. Especially important in this context is the United Nations Charter. According to Article 103 United Nations Charter, it shall prevail over the provisions of the Outer Space Treaty.[29] Such a statement has significant implications. Article 2 section 4 United Nations Charter is also critical in this respect. It forbids the use of threats or force against the territorial integrity or political independence of any state or in any other manner inconsistent with the purpose of the United Nations.[30] On the other hand, the United Nations Charter itself allows for self-defence actions. Namely, Article 51 of the charter provides for the right of self-defence of the countries:

> Nothing in the present Charter shall impair the inherent right of individual or collective self-defence if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security. Measures taken by Members in the exercise of this right of self-defence shall be immediately reported to the Security Council and shall not in any way affect the authority and responsibility of the Security Council under the present Charter to take at any time such action as it deems necessary in order to maintain or restore international peace and security.

Thus, acting in self-defence shall be possible in outer space, but only within the limitations mentioned in Article 51 United Nations Charter. This means that self-defence should be exercised only to defend the personnel and space technologies. Moreover, self-defence must be proportionate and only in response to an attack and not be pre-emptive or anticipatory.[31] However, it is not fully clear how Article 51 United Nations Charter should be applied in relation to outer space, as it has not been designed for that purpose (and should only be applied to Earth); thus, there

28 See, for example, Hobe, 2019; ILC, A/CN.4/L.682.

29 Article 103 United Nations Charter: 'In the event of a conflict between the obligations of the Members of the United Nations under the present Charter and their obligations under any other international agreement, their obligations under the present Charter shall prevail'. See also Maogoto and Freeland, 2007.

30 Article 2(4) United Nations Charter: 'All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations'. See also Tronchetti, 2014.

31 Lyall and Larsen, 2018.

are doubts about whether it is applicable at all. Therefore, we must not ignore that the relation between Article IV Outer Space Treaty and Article 51 United Nations Charter is not completely clear and seems to be of competing character. On the other hand, the 2008 draft Treaty on the Prevention of the Placement of Weapons in Outer Space[32] sustained the right of self-defence (which also appears in the 2014 draft as the individual and collective right of self-defence).[33]

One main issue (apart from the problematics of the peaceful purpose of space exploration) is the weaponisation of outer space. This issue raises concerns mainly with respect to the character of the assets placed in outer space, which are of a dual-use nature and can potentially be used for military purposes. This concerns all types of space applications – navigation, remote sensing, and telecommunications – which are not prohibited under space law. The distinction between military and non-military use of outer space is then quite blurred as regards the assets and not just their use purpose. This makes the interpretation of "peaceful purposes" even harder and in fact illusionary.

What is then the main difference between the militarisation and weaponisation of outer space? While militarisation has always been present, weaponisation – an advanced form of militarisation (defined as direct involvement of the satellites in war activities; Tronchetti[34] defined it as the deployment of weapons of offensive nature in space or on the ground with their intended target located in space) – has been recognised as unlawful and expressed as such in Article IV Outer Space Treaty.[35] The differences between militarisation and weaponisation concern both the type of spacecraft used and the purpose of using it. Thus, militarisation means the use of outer space by military spacecraft. In turn, weaponisation, although always perceived as a form of militarisation, goes a step forward and means placing in outer space devices designed to attack man-made targets in outer space. As regards the type of the spacecraft used, the dual-use nature of satellites must be mentioned. Note that all satellites are of such nature, even commercial ones, as they possess capabilities to provide services to the military, such as surveillance and guidance for munitions. Thus, the military character of outer space activities does not depend on the ownership of satellites but the type of services they render.

Given the abovementioned dual-purpose nature of many space objects, which blend military and civilian functionalities, coupled with the non-transparent disclosure practices of states concerning their space activities, evaluating the current level of weaponisation in space proves challenging. Nevertheless, comprehensive studies mapping the proliferation of various types of ASAT weapons have been published,[36] which affirmed that numerous states possess kinetic ASAT weapons de-

32 Mutschler, 2010, pp. 11–18.
33 For more details, see: Zahoor, 2017.
34 Tronchetti, 2015.
35 Polkowska, 2022.
36 Harrison et al., 2020; Peperkamp, 2020; Weeden and Samson, 2020.

signed for physically impacting a target. Notably, the US, Russia, China, and India have conducted tests involving such weapons on their own satellites, resulting in the generation of significant space debris that now orbits the Earth. Furthermore, a rise in non-kinetic "soft kill weapons" is evident, marked by cyberattacks targeting satellites, ground systems, and the communication links connecting them. Cost-effective disruptive techniques, including global positioning system jamming and data spoofing, pose an escalating military threat. While the trajectory toward progressive weaponisation of space appears discernible, determining whether this evolution can be characterised accurately as an actual arms race remains a complex task.[37]

To realise the practical consequences of this statement, first, the meaning of a space weapon should be tackled.[38] It is important to note that a space weapon has not been defined in international or local law. In consequence the meaning of "space weapon" is not coherently agreed upon, especially with respect to the question of whether ground-based weapons directed at objects in outer space (e.g. ASATs) also constitute space weapons or whether only devices located in outer space may be perceived as such. For example, the proposals of Tronchetti,[39] Duberti,[40] and Ferreira-Snyman[41] should be mentioned, which consider the broad and narrow meaning of a space weapon. According to the broad meaning, a space weapon is defined as a spacecraft and terrestrial-based system capable of destroying, damaging, or interfering with space assets. In turn, the narrow meaning points out that a space weapon should be limited to space assets whose specific goal is to destroy or damage an object in outer space; thus, the mere capability is not sufficient. If we focus on "capability," the broad meaning indicates that the space weapon is already there. Most space objects have such a potential (dual-use nature). Studies, such as by Mosteshar,[42] Tronchetti,[43] Khan,[44] and Blount,[45] propose a mixed definition.

In turn, the 2008 draft to ban weapons in space submitted by Russia and China proposed a definition of space weapons. According to this definition, a space weapon is any device placed in outer space, based on any physical principle, that has been produced specially or converted to destroy, damage, or disrupt the normal functioning of objects in outer space, on Earth, or in the Earth's atmosphere, or to eliminate a

37 Ibid.; Jakhu Jasani and McDowell, 2018.

38 On a practical basis, the new types of space weapons are of three types: Earth-to-space, space-to-space, and space-to-Earth. Moreover, systems can have both kinetic and non-kinetic effects that are either permanent or reversible. Earth-to-space weapons pose the greatest current danger and include direct-ascent ASAT weapons, which the US, China, India, and Russia have all tested, as well as directed-energy lasers and jammers. Center for Arms Control and Non-Proliferation, 2023; see also Preston et al., 2002, pp. 23–50; Zahoor, 2017.

39 Tronchetti, 2012.

40 Duberti, 2011.

41 Ferreira-Snyman, 2015.

42 Mosteshar, 2019.

43 Tronchetti, 2015.

44 Khan, 2017.

45 Blount, 2018.

population or components of the biosphere that are important to human existence or inflict damage on them.[46] Finally, the United Nations Institute for Disarmament Research proposed a definition wherein

> A space weapon is a device stationed in outer space (including the Moon and other celestial bodies) or in the earth environment designed to destroy, damage, or otherwise interfere with the normal functioning of an object or being in outer space, or a device stationed in outer space designed to destroy, damage, or otherwise interfere with the normal functioning of an object or being in the earth environment. Any other device with the inherent capacity to be used as defined earlier will be considered a space weapon.[47]

However, this definition was criticised as being too broad, as it includes all space objects.[48] Moreover, a weapon of mass destruction (WMD) refers to a nuclear, chemical, biological, radiological, or any other energy weapon (e.g. laser), and the Space Treaties include no ban on placing conventional weapons. In addition, there is no prohibition on testing, developing, or deploying (nuclear) Earth weapons systems for use in outer space or against space objects. Thus, ASAT tests are not explicitly forbidden by law.

The approach taken by the Outer Space Treaty with respect to the type of the weapon addressed in Article IV seems to reflect the technological landscape prevalent during the drafting and adoption of this treaty. Considering the technological advancements and emergence of conventional weapons' capabilities that were not envisaged during the negotiation of the Outer Space Treaty, there arises a pertinent question regarding the necessity of revisiting and amending the treaty. Notably, proposals for draft treaties aimed at prohibiting weapons in space, primarily championed by Russia and China in 2008 and 2014, were met with rejection, along with challenges in formulating a consensus on the definition of space weapons. Consequently, the current landscape relies on soft law instruments as the primary sources for guidance in the absence of a comprehensive legal framework.[49]

When considering the Outer Space Treaty provisions, Article IV is not the only one applicable. Not less important, although more indirectly, is Article IX, whose original purpose was related to avoiding potential harmful changes to the natural environment caused by space activities. Article IX visibly complements Article IV by establishing indirect limitations on military activities in outer space. It starts by stating that the exploration and use of outer space should be guided by the 'principle of cooperation and mutual assistance' and with 'due regard for the corresponding interests of all other States Parties'. The significance of Article IX in the context of

46 Ferreira-Snyman, 2015. Note that the 2014 draft included almost the same definition.
47 Cronin, 2009.
48 Cronin, 2009; Khan, 2017.
49 Tronchetti, 2012.

weaponry and military actions stems from its stipulation that if a state's activities, experiments, or nationals have the potential to cause harmful interference with another state's peaceful exploration and use of space, the initiating state is obligated to engage in consultations with the affected state before proceeding. Conversely, if a state anticipates that the activities or experiments of another state could lead to potentially harmful interference with its own peaceful exploration and use of space, it reserves the right to request a consultation with the concerned state.[50]

Another Space Treaty that should considered when discussing the regulation of military issues in outer space is the Liability Convention. Thus, the question of the applicability of the liability regime to military actions should be raised. The prevailing view is that the Liability Convention should not apply to actions regarding military outer space activities (or purposes), but it remains applicable if civil activities are involved. Other views also aim to exclude liability when self-defence actions are conducted. Such exclusions would only concern absolute liability. Moreover, no liability can be attributed to lawful attacks or military objectives, or to self-defence, necessity, or duress. However, absolute liability should be triggered if humanitarian laws are violated. Thus, it seems that liability in fault cannot be avoided.[51]

The Rescue Agreement seems neutral from the point of view of military actions in outer space. Such neutral wording was a result of intensive negotiations between the Soviet Union and US. While the Russian delegation sought to condition the duty to return astronauts on the launching state's compliance with the Declaration of Legal Principles, the US insisted on making it unconditional due to humanitarian reasons. According to the Soviet proposal, if the cognisant authorities of the state on whose territory an emergency landing is made were to believe that the astronaut is engaging in aggressive military activities or espionage, they would not be obliged to return the astronaut. Article 4 of the Declaration imposes an unconditional obligation to return the personnel of a spacecraft whose landing on the territory of a contracting party or outside the jurisdiction of any state is unintended or due to an accident, distress, or emergency.[52]

The final Space Treaty to be considered with respect to its application to military space activities is the Registration Convention. The subject matter of this convention relates strictly to the scope of application of the Outer Space Treaty and Liability Convention. Its purpose is to ensure the legal effect of their provisions in terms of the safety of outer space exploration and enforcing of the liability and responsibility regimes. Thus, it does not enlarge or clarify the scope of application but refers to the above treaties. The importance of the Registration Convention for the practical aspects of space activity is in introducing certain rules concerning the control, jurisdiction, and related registration requirements to be implemented by the launching

50 Esparza, 2018.
51 Kehrer, 2019.
52 Dembling and Arons, 1968.

states in their domestic laws.[53] Application of the Registration Convention is very general and includes all types of space objects, governmental and non-governmental. Although no exclusions have been provided with respect to the military or dual-use space objects, in practice, the states parties are reluctant to register and specify the military application of space objects. According to the clear provisions of the Registration Convention, all space objects, including their component parts as well as their launch vehicles and their parts, must be registered irrespective of their ownership, application, or purpose, whether it is scientific, technical, commercial, military, or humanitarian. Experts have pointed out that

> None of the Parties have described the objects as having military functions despite the fact that a large number of such objects do perform military functions as well. In some cases, the best they have done is to indicate that the space objects are for their defense establishments.[54]

An interesting evolution with respect to the scope of acceptable military activities can be observed from the time of negotiating the Outer Space Treaty in 1967 and the Moon Agreement in 1979. The main provision relevant to the issue in question is in Article 3 Moon Agreement, which says that the Moon shall be used by all states parties exclusively for peaceful purposes. Besides that,

> Any threat or use of force or any other hostile act or threat of hostile act on the Moon is prohibited. It is likewise prohibited to use the Moon in order to commit any such act or to engage in any such threat in relation to the Earth, the Moon, spacecraft, the personnel of spacecraft or manmade space objects.

In addition, Article 3 Moon Agreement repeats the provision of the Outer Space Treaty, saying that

> States Parties shall not place in orbit around or other trajectory to or around the Moon objects carrying nuclear weapons or any other kinds of weapons of mass destruction or place or use such weapons on or in the Moon.

and that

> The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on the Moon shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration and use of the Moon shall also not be prohibited.

53 Malinowska, 2017.
54 Jakhu, Jasani and McDowell, 2018.

It is important to note that the Moon Agreement concerns not only the Moon itself but also other bodies in the solar system (besides the Earth), including the orbits around and trajectories to or around it (Article 1 para. 2 Moon Agreement). Although the interpretation accepted by the United Nations Committee on the Peaceful Uses of Outer Space excludes from the above the Earth's orbit, it seems that the Moon Agreement also includes the void space. It is necessary to note that the Moon Agreement, adopted as the last of the five main Space Treaties, has been controversial since the beginning – not because of the military constraints but due to its restrictive approach to the extraction and utilisation of space resources. Finally, the Moon Agreement has been ratified only by 17 States and is not considered a binding treaty.

There are numerous other treaties besides the "big five" Space Treaties, among which three can be mentioned as applicable to space defence issues. Particularly, the 1963 Limited Test Ban Treaty prohibited the testing of nuclear weapons 'in the atmosphere; beyond its limits, including outer space; or under water, including territorial waters or high seas'. Furthermore, on 22 January 2021, the Treaty on the Prohibition of Nuclear Weapons[55] entered into force. Article 1 thereof stipulates that states shall under no circumstance '[d]evelop, test, produce, manufacture, otherwise acquire, possess or stockpile nuclear weapons or other nuclear explosive devices' or '[u]se or threaten to use' them. States that are party to the Treaty on the Prohibition of Nuclear Weapons are also prohibited from encouraging others to engage in any activity prohibited to a state party under the treaty. This prohibition of encouragement provides an additional layer that limits the use of nuclear weapons in space. Finally, the Convention on the Prohibition of Military or Any Hostile Use of Environmental Modification Techniques does not allow state parties 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'. This prohibition extends to outer space.

2.2. Space-Related Legal Regulations Applicable to Defence and Military Issues in Space

Considering that the general rules of international laws are to be applicable to the militarisation and weaponisation of outer space, as well as the general international laws, *ius in bello and ius ad bellum*[56] shall be applicable to outer space.[57] It is worth noting that general international law does not include any specific rules as regards war and military issues in outer space. On the other hand, as stated in the above section (2.1.), space law should not be treated as an isolated island but must be interpreted as an inherent part of the whole system of international law.

55 For the text of the treaty, see: United Nations Office for Disarmament Affairs, no date.
56 law of recourse to force (*jus ad bellum*) and law governing the conduct of hostilities (*ius in bello*).
57 Freeland and Gruttner, 2020.

2.2.1. Law of Armed Conflict and Space

The Law of Armed Conflict[58] and the Outer Space Treaty contain uniform concepts. Due to the nature of their use, it may appear that the Law of Armed Conflict dictates actions on land, and the Outer Space Treaty dictates actions in space. However, this could not be further from the truth. The proper way to examine an issue related to military action is by first examining the legal authority governing armed conflicts. The Law of Armed Conflict will always be the base point for an examination of whether a weapon or military action is permissible, because this law is designed to minimise suffering and prevent unnecessary destruction. The Outer Space Treaty is the law governing outer space, so it will be the first source of international law to consult in an analysis of permissible actions and objects in space. When these actions and objects are military in nature, the next source of international law necessary for such an analysis is the Law of Armed Conflict. This is because it builds upon the Outer Space Treaty articles. Before we can detail how the Law of Armed Conflict and the Outer Space Treaty work together, it is necessary to examine the key concepts of both.[59] Special attention should be given to the Geneva Conventions, which unequivocally mandate states to adhere to and ensure compliance with the conventions under all circumstances. Furthermore, the International Court of Justice, in an advisory opinion, authoritatively affirmed that the Law of Armed Conflict is applicable to 'all forms of warfare and to all kinds of weapons – those of the past, those of the present, and those of the future'. This determination suggests that the venue or nature of combat is immaterial, as the Law of Armed Conflict extends its application to any form of warfare and any weapon employed. Consequently, there appears to be no inherent limitation on the applicability of the Law of Armed Conflict to the domain of space.[60]

In instances where there is a significant threat to human life through an attack, applicability of the Law of Armed Conflict is indisputable. Nevertheless, ambiguity persists concerning whether the law is pertinent to situations in outer space involving technology, particularly satellites. The Law of Armed Conflict may eventually help fill some of the void left by the Outer Space Treaty, as explained in section 2 of this chapter. If conflict were to break out in space, the International Law of Armed Conflict or International Humanitarian Law would apply in so much as it places limitations on a state's activities in armed conflict wherever those hostilities take place.

58 The Law of Armed Conflict has not been a subject of detailed consideration under this chapter. However, it generally includes international regulations such as *the Geneva Convention for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea*, 1949) *Geneva Convention Relative to the Treatment of Prisoners of War*, 1949; *Geneva Convention Relative to the Protection of Civilian Persons in Time of War*, 1949; *Protocol Additional to the Geneva Conventions*, 1949; and *Protocol Relating to the Protection of Victims of International Armed Conflicts* (Protocol I), 1977.

59 von der Dunk, 2021.

60 Esparza, 2018.

Any application of humanitarian law would require a state to consider the specific physical characteristics of outer space to fully understand how a specific rule functions in the space domain.[61]

2.2.2. Export Control Regulations

The second area that is of a broader nature but has an enormous impact on space activities and its military character is the export control instruments. Export control forms a separate set of regulations concerning space activities, related to the fact that satellites and related equipment are always perceived as being of potential dual use. The best known regulation is the US International Traffic in Arms Regulations (ITAR),[62] which concerns launch vehicles and satellites. Although the rules have been relaxed in previous years, export controls remain fairly restrictive for free trade in the space industry,[63] as it involves not only manufacturing and exporting space projects but also launching and operating services and insurance,[64] as well as the export of goods, technology, data, and information. Other countries, especially those not within the EU, have adopted their own export control regulations; for example, Russia adopted measures similar to the US's ITAR. Russia's measures include a list of controlled items and technologies, along with the requirements to obtain approval. France,[65] Germany, and the United Kingdom (UK; Control Act 2002)[66] have also adopted independent measures.

Here, the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies (Wassenaar Arrangement), founded in 1996, should also be mentioned.[67] This scheme does not regulate any particular regime of export control but is only a tool for international exchange of information on export controls by states that are parties to the Wassenaar Arrangement. It works

61 Blount, 2018.

62 It entered into force in 1999 as a result of enacting the Strom Thurmond National Defence Authorization Act for Fiscal Year 1999, the cause of which was the alleged commercial espionage by the Chinese. For more on the subject, see van Fenema, 2002. However, it should be noted that the ITAR it is not the only export control regulation in the US; the others are the Export Administration Regulations (concerning goods for dual use) and Office of Foreign Assets Control Regulations, focussing on countries and receivers; for more details, see: Creydt and Horl, 2011; Gerhard and Creydt, 2011; Zelnio, 2007.

63 The changes were introduced in 2001 by enacting the Satellite Trade and Security Act; changes were also introduced in 2013 by the National Defense Authorization Act, which allowed satellite technologies to be moved from the ITAR list to the Commerce Control List, which provides for less strict rules of export and allows the space operator to decide whether they are submitted to the regime or not and whether the Department of Commerce licence is required; see: Bank, 2011.

64 Creydt and Horl, 2011.

65 System of approvals issued by the Minister of Defence; see: Gerhard and Creydt, 2011.

66 In Germany, upon implementation of *the Foreign Trade and Payments Act*, a specialised central authority was established that was responsible for export. A similar concept has been adopted in the UK; Creydt and Horl, 2011.

67 Trautinger, 2016.

by establishing a list of controlled weapons and dual-use goods, and it imposes the obligation to report to the secretariat of the Wassenaar Arrangement (in Vienna) regarding export licences granted in a given state. The Wassenaar Arrangement is a multilateral arrangement on export controls for conventional weapons and sensitive dual-use goods and technologies. It serves as a non-binding framework through which the 42 member states agree on which items should be controlled. The arrangement calls on states to disclose information regarding their export activities related to weapons and items appearing on the arrangement's two control lists – the List of Dual-Use Goods and Technologies and the Munitions List. Space technology is included in the agreed-upon control list, with an emphasis on launch vehicles, which can be repurposed as intercontinental ballistic missiles (ICBMs).[68]

Another international scheme is the Missile Technology Control Regime (MTCR), which was established in 1987. Its aim was to limit the spread of ballistic missiles and other unmanned delivery systems for biological, chemical, and nuclear attacks. It also utilises a list of controlled items and voluntary declaration of the states to limit the proliferation of such weapons. The MTCR is a set of international guidelines that seek to control the export of missile and rocket technology. It is a non-binding, informal political understanding among participating states that aims to limit the proliferation of such technology by controlling the export of goods and technologies that could contribute to delivery systems (other than crewed aircraft) for WMDs. The MTCR's technical annex on technology that should be controlled also includes space launch technology.

2.2.3. Spectrum Regulations

One of the most important areas of law related to space exploration and that undoubtedly affects military use is the international telecommunications law, which includes the Constitution and Convention of the International Telecommunication Union (ITU) and related regulations. Beginning with the preamble, peaceful use of telecommunications is emphasised, which corresponds with the fundamental principles expressed in the Space Treaties:

> While fully recognizing the sovereign right of each State to regulate its telecommunication and having regard to the growing importance of telecommunication for the preservation of peace and the economic and social development of all States, the States Parties to this Constitution, as the basic instrument of the International Telecommunication Union, and to the Convention of the International Telecommunication Union …, with the object of facilitating peaceful relations, international cooperation among peoples and economic and social development by means of efficient telecommunication services….

68 Gerhard and Creydt, 2011.

Chapter VII of the ITU Constitution, titled 'Use of the Radio-Frequency Spectrum and of the Geostationary-Satellite and Other Satellite Orbits', discusses the meticulous regulation of outer space spectrum usage. Member states are mandated to minimise the frequencies and spectra employed to the extent required for satisfactory service provision. Recognising radio frequencies and associated orbits as limited natural resources, their utilisation must align with rational, efficient, and economical principles outlined in the Radio Regulations. This approach aims to ensure equitable access to orbits and frequencies for countries or groups, considering the unique requirements of developing nations and the geographic circumstances of specific countries.

What is essential for the peaceful use of spectrum is the prohibition of harmful interference to the radio services or communications of other member states, recognised operating agencies, or other duly authorised operating agencies that carry on a radio service, operate in accordance with the provisions of the Radio Regulations, and are obliged to take all practicable steps to prevent the operation of all types of electrical apparatus and installations from causing harmful interference to radio services or communications.

As regards military use of spectra, Article 48 ITU Constitution directly regulates the principles thereof:

> Member States retain their entire freedom with regard to military radio installations. Nevertheless, these installations must, so far as possible, observe statutory provisions relative to giving assistance in case of distress and to the measures to be taken to prevent harmful interference, and the provisions of the Administrative Regulations concerning the types of emission and the frequencies to be used, according to the nature of the service performed by such installations.

2.2.4. Bilateral and Multilateral Agreements

The inability to agree on a treaty basis has prompted the development of bilateral agreements, as exemplified by the US Space Command's data-exchange agreements with countries and organisations (including the ESA).[69] Thus, numerous bilateral agreements have been concluded, such as the New START Treaty between the US and Russian Federation, which entered into force on 5 February 2011, to establish limits on intercontinental-range nuclear weapons. In February 2021, both parties agreed to extend the treaty until 4 February 2026. This limits the location of non-deployed launchers for both mobile and non-deployed mobile ICBMs at certain facilities, including space launch facilities. Moreover, New START prohibits interference with the "national technical means," of which reconnaissance satellites are

69 National Aeronautics and Space Administration (NASA), 2023; Polkowska, 2022; SpaceWatch.Global, 2019.

an important component.[70] Such bilateral and even multilateral agreements, despite contributing to the peaceful exploration of outer space, do not have a positive impact on the international body of law, the rule of law in general, or the establishing principles or their interpretation.

2.3. Character of Legal Norms Regulating the Military Aspects of Outer Space Exploration

The analysis in the previous sections indicated that the provisions included in the Space Treaties do not always bring satisfactory results, especially in the context of imposing strict rules to sustain the peaceful use of the outer space and prohibit the weaponisation thereof. Therefore, a set of "soft law" measures have been adopted both at the United Nations' level and by other decision-makers or non-governmental authorities. The reasons for this are two-fold: (1) non-feasibility of adopting subsequent treaties and (2) necessity of interpreting the provisions for which a resolution seems an appropriate form.

Among the numerous instruments of non-binding nature, those adopted in the United Nations forum must be mentioned. The UNGA, through a series of resolutions, has endorsed five declarations and legal principles, along with the Space Debris Mitigation Guidelines. Of particular significance are the Guidelines for the Long-term Sustainability of Outer Space Activities, which, while not directly regulating defence or military matters, may exert considerable influence in these domains. It is imperative to ascertain their applicability to military activities and explore whether any reasons exist that exempt such activities from these regulations, should they acquire the force of customary law.

The other initiative that must not be ignored is Prevention of an Arms Race in Outer Space (PAROS), which dates back to the 1970s. A critical development emerging during the Tenth Special Session of the UNGA on Disarmament in 1978 resulted in the states acknowledging the necessity of adopting further measures and engaging in international negotiations to prevent an arms race in outer space. This aligned with the principles of the Outer Space Treaty. This also marked the formal inception of efforts related to PAROS.[71] In 1981, UNGA adopted its first two resolutions pertaining to PAROS, reflecting varied approaches to address space security concerns.

70 United Nations Institute for Disarmament Research, 2022.

71 According to Liu and Tronchetti, 2016,

> On 2 December 2014 the United Nations General Assembly (UNGA) adopted Resolution 69/32 entitled 'No first placement of weapons in space'. The adoption of Resolution 69/32, which has received little attention in academic circles, represents, instead, a development worth of consideration for at least three reasons: 1) It is the first time that the General Assembly passes a resolution addressing a specific Prevention of an Arms Race in Outer Space (PAROS) issue, namely the (prohibition of) placement of weapons in space; 2) it indicates that PAROS remains a central topic in the agenda of States; 3) its controversial adoption demonstrates that States maintain substantial differences on the approach to be followed to enhance the security of space objects.

UNGA Resolution 36/97 C on PAROS tasked the Committee on Disarmament with contemplating effective and verifiable agreements to prevent such a race and explore an agreement prohibiting ASAT systems. Notably, PAROS remained a draft, and the resolutions mentioned above constitute soft law measures. UNGA Resolution 36/99, dated 9 December 1981, focussed on the conclusion of a treaty on the prohibition of the stationing of weapons in outer space. This resolution urged the Committee on Disarmament to initiate negotiations for an international treaty aimed at preventing the arms race from extending into outer space.

The other soft law measure is the Hague Code of Conduct against Ballistic Missile Proliferation (HCoC).[72] This is a non-legally binding set of guidelines that regulate the area of ballistic missiles capable of carrying WMDs. As regards space technology, the HCoC seeks to prevent the use of space launch vehicle programmes to conceal the acquisition of ballistic missiles capable of delivering WMDs. To achieve this objective, the HCoC encourages member states to sign and ratify existing Space Treaties, particularly the Outer Space Treaty, Liability Convention, and Registration Convention. It also urges states to 'curb and prevent the proliferation' and to 'exercise maximum possible restraint in the development, testing and deployment' of ballistic missiles. The code further establishes a set of transparency and confidence-building mechanisms that would allow states to exchange information on ballistic missiles and space launch vehicle programmes, as well as the number of annual launches of such systems. It additionally proposes the exchange of pre-launch notifications that 'should include such information as the generic class of the Ballistic Missile or Space Launch Vehicle, the planned launch notification window, the launch area and the planned direction'.

The other type of soft law measures are formed as industrial or even particular countries' initiatives. The most recent example of such a bottom-up initiative is the Space Industry Statement in Support of International Commitments Not To Conduct Destructive Anti-Satellite Testing.[73] In that respect, the words of Kamala Harris regarding the ASAT ban seem symptomatic:

> Without clear norms we face unnecessary risk in space, … The United States will work with commercial industry and allies to lead in the development of new measures that contribute to the safety, stability, security, and long-term sustainability of space activities. Through this new commitment and other actions, the United States will demonstrate how space activities can be conducted in a responsible, peaceful, and sustainable manner. It's an attempt to lead by example, and demonstrate we're willing to make this commitment ourselves and then encourage others to follow.[74]

72 See more at: https://www.hcoc.at/.
73 See: World Secure Foundation, 2023.
74 Erwin, 2022.

Among such initiatives, the International Code of Conduct for Outer Space Activities (or the Code) proposed by the EU can be mentioned. It represents a first update in the approach to the regulation of conventional military activities in outer space, as well as in the interpretation of the PAROS issue. Although it is based on the Space Treaties, its rules seem more technical and practical. The Code stresses multiple times the importance of a peaceful and sustainable use of outer space as well as notes the importance of preventing an arms race in outer space. The entire Chapter II of the Code has been devoted to the safety, security, and sustainability of outer space activities. In particular, attention must be brought to the obligation/postulate to refrain from any action that brings about, directly or indirectly, damage or destruction of space objects unless such action is justified by (1) imperative safety considerations, particularly if human life or health is at risk; (2) the need to reduce the creation of space debris; or (3) the United Nations Charter, including to ensure the inherent right of individual or collective self-defence, which may also be applicable to military operations as a general principle. Moreover, the Code stresses the aspect of cooperation. The Code proposes a soft law instrument negotiated bilaterally to implement norms focussed on preventing behaviour that causes space debris. However, the Code failed because it depends too much on soft law to avoid providing key definitions and on the common interests of states in preventing the "tragedy of the commons".[75] Therefore, there was a call for a more a clear distinction between commercial and military activities and more balanced measures on the restriction of military activities in outer space.[76]

For the time being, ESA has initiated an ambitious concept called the Zero Debris Charter (or Charter hereafter),[77] which is to be acceded on a voluntary basis by organisations and institutions. As written in paragraph 3.2 of the Charter, 'any entity demonstrating a strong commitment to advancing space safety and sustainability' can sign the Charter and join the Zero Debris Community, 'without requiring the agreement of existing partners'. The Charter's guiding principles include the prohibition on internationally releasing space debris during space activities and the obligation to minimise unintentional generation of space debris.[78] Although the Charter's character is civilian, it may potentially impact military activities (e.g. ASAT tests).

The above analysis indicates that the dominant part of the most recent attempts to regulate space activities – which will also inevitably impact the military aspects of space activities – have a soft law character. However, the rapidly increasing number of such attempts has created a chance for establishing an international custom, which, according to Article 38 Statute of the International Court of Justice, can become a binding source of law. Thus, the bottom-up approach seems to have gained

75 European External Action Service, 2014.

76 Su and Lixin, 2014.

77 This was facilitated by ESA's Protection of Space Assets Accelerator and created and written by 40 space actors. The charter contains both high-level guiding principles and specific, jointly defined targets to get to Zero Debris by 2030.

78 Zero Debris Charter; see: ESA, no date.

popularity considering the pertinency of the legal issues and impossibility of the international community achieving a formal consensus. Therefore, this approach is proposed only by some states, international organisations, and influential non-governmental organisations.

In sum, it seems that hard law, particularly Space Treaties, do not work well as a means of regulating space security issues.[79] Therefore, the main burden falls on soft regulations. However, can we consider these regulations as law in the classical sense? Although the name contains an internal contradiction, "soft law" measures are in fact seeds of future law. They will take on such a dimension once the content of soft law instruments is placed in treaties or bilateral agreements or, with the passage of time, acquires the value of international custom and thus becomes a source of binding (hard) law.

3. EU Space Regulatory Defence Framework: Strategy and Law

This section is devoted to the EU's role in creating a common regulatory framework for defence and security in outer space.

3.1. EU's Space and Defence Strategy and Legal Instruments Applicable at the European Level

For the past few years, Europe has experienced a transformation in its approach to defence, specifically space defence. This involves a fundamental change within the EU, which, in addition to the member states, is itself becoming an independent stakeholder in this arena. Considering global trends, including primarily US actions, the EU in late 2008 began building its own space situational awareness (SSA) system, consisting of three separate segments: (1) space surveillance and tracking, (2) space weather, and (3) monitoring of near-Earth objects. The SSA system has dual purposes, with military components constructed based on military requirements set by the European Defence Agency (EDA). Moreover, rapid developments were observed in EU space programmes such as Galileo and Copernicus, which, while serving civilian purposes, also have obvious defence and security potential.[80] In the past two

79 Polkowska, 2022.

80 Kozioł, 2022. See: European GNSS Agency, 2020, para. 1, for the statement of Internal Market Commissioner Thierry Breton at the 12th Space Policy Conference in Brussels on 22 January:
Although it has been a taboo at the European level up to now, the time has come to break this taboo and to recognise that space is an enabler of security and defence, with a defence dimension for Galileo and a security element for Copernicus.
See also Messina, 2021.

years, this is further evident through adoption of the Common Security and Defence Policy, Permanent Structured Cooperation, European Defence Fund, etc., as well as creation of the Directorate-General for Defence Industry and Space.[81] Despite the integrated strategic action at the European level, the legal aspects of SSA remain ill-defined due to the EU's concerns regarding competence in this area.[82]

The Space and Defence Strategy (or Strategy hereafter) was announced in 2022 as part of the Strategic Compass, which called for a dedicated strategy to address the threats faced by European space assets. In parallel, the EU's security and defence activities, such as the European Defence Fund and Permanent Structured Cooperation, have increasingly integrated space in recent years. It should be stressed that evolution of the EU approach to space security and defence is in line with not only the EU's increased transversal relevance in the field of security and defence but also developments in the international environment (see section 4 for more details).

The EU Strategy is a steppingstone towards an action-oriented roadmap along three dimensions: (1) fostering the use of space systems and services for terrestrial security and defence activities; (2) addressing the security of European assets in space; and (3) aligning Europe's political, operational, diplomatic, and governance dimensions. Besides, the Strategy points to a difference between the "safety and sustainability" and "security and defence" aspects of space activities. When dealing with activities in space, the Strategy focusses on "security and defence", which addresses the protection of space assets against threats. Similarly, the Strategy considers the expansion of the security interest of the EU and its member states beyond the low Earth orbit, medium Earth orbit, and geostationary equatorial orbit (current location of the EU and national public and commercial assets) to reach cislunar space and the lunar surface.

The Strategy proposes actions to strengthen the resilience and protection of space systems and services in the EU. Several actions are proposed to achieve this objective, such as (1) proposing an EU Space Law to provide a common framework for security, safety, and sustainability in space that would ensure a consistent and EU-wide approach; (2) setting up an information sharing and analysis centre to raise awareness and facilitate exchange of best practices among commercial and relevant public entities on resilience measures for space capabilities; (3) launching preparatory work to ensure long-term EU autonomous access to space, particularly addressing the security and defence needs; and (4) enhancing the EU's technological sovereignty by reducing strategic dependencies and ensuring security of supply for space and defence, in close coordination with the EDA and ESA.[83]

81 ESPI, 2020.

82 Polkowska, 2022; Robinson, 2010. None of the EU member states enacted adequate legal provisions regulating this area, but at the same time, they are reluctant to adopt measures at the European level.

83 Directorate-General for Defence Industry and Space, 2023.

3.2. EU Space Law as a Denominator of the European Space Defence Strategy

As noted above, one action to implement the EU Space and Defence Strategy is promoting the idea of an EU Space Law. The concept of the EU space regulatory framework was first announced in late 2022 through a communication of the European Economic and Social Committee.[84] Soon after, it was presented as an inherent part of the Strategy (in March 2023), and the reasons were explained as follows:

> To enhance the level of security and resilience of space operations and services in the EU, as well as their safety and sustainability, the Commission will consider proposing an EU Space Law. It will encourage the development of resilience measures in the EU, foster information-exchange on incidents as well as cross-border coordination and cooperation.[85]

Thus, the main objective of the law is to complement the security information collected through monitoring of the EU space programme, Accordingly, an information exchange network could be established based on the EU Space Law and provide through the EU Agency for the Space Programme. Moreover, it was noted that EU Space Law would ensure a consistent EU-wide approach as well as joint communication for the EU Approach for Space Traffic Management. Moreover, the Strategy proposed that the EU Space Law would complement the implementation of the NIS 2 Directive[86] and the upcoming Cyber Resilience Act,[87] as well as other existing cybersecurity frameworks. Further, it will incentivise the uptake of cybersecurity requirements for critical digital products used in space. Thus, EU Space Law would set specific cybersecurity standards and procedures in the space domain.

All these goals seem indispensable for proper functioning of the space sector and ensuring a coherent approach in the EU territory; however, it cannot be ignored that the EU acts within the powers vested to it by member states of the Treaty on the Functioning of the EU**.** Thus, not only the content of the EU Space Law but also the competency to adopt such law should be considered. Therefore, the starting point is the EU's competence within the scope of space activities. The current framework

84 *Opinion of the European Economic and Social Committee on the Proposal for a Regulation of the European Parliament and of the Council establishing the Union Secure Connectivity Programme for the period 2023–2027 (COM(2022) 57 final – 2022/0039 (COD)) and Joint Communication to the European Parliament and the Council: An EU Approach for Space Traffic Management – An EU contribution addressing a global challenge*; (JOIN(2022) 4 final), OJ C 486, 21.12.2022, p. 172–184.

85 Directorate-General for Defence Industry and Space (2023).

86 *Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148 (NIS 2 Directive) (Text with EEA relevance)*. PE/32/2022/REV/2, OJ L 333, 27.12.2022.

87 *Proposal for a Regulation of the European Parliament and of the Council on horizontal cybersecurity requirements for products with digital elements and amending Regulation (EU) 2019/1020*, COM (2022) 454 final.

is derived from the Treaty on the Functioning of the EU,[88] Article 189 of which empowers the EU

> … to promote scientific and technical progress, industrial competitiveness and the implementation of its policies". To this end the Union shall draw up a European space policy and promote joint initiatives, support research and technological development, coordinate the efforts needed for the exploration and exploitation of space" as well as to "establish the necessary measures, which may take the form of a European space programme, excluding any harmonisation of the laws and regulations of the Member States.

The EU is also authorised by the Treaty on the Functioning of the EU to establish any appropriate relations with ESA. As a result, the EU authority to act in relation to the national competences operates in parallel with that of the member states, meaning that member states retain their national authority to act within the space sector even if the EU undertakes actions in the same area (Article 4.3 Treaty on the Functioning of the EU). Given the current circumstances, the absence of harmonisation in European space laws is emerging as a hindrance to addressing the interests of European societies. With space recognised as a strategic domain, additional measures are imperative to fortify the EU's strategic posture and autonomy in space through regulatory interventions.[89] Consequently, ongoing analysis and consultations aim to delineate the necessary scope of European space law. Preliminary considerations underscore a pivotal focus on safety, security, and sustainability. Striking a balance between the civilian and commercial dimensions of space, while accommodating the defence aspects of space activities, is crucial without encroaching upon the internal laws of member states. It appears that the prospective EU Space Law will primarily concentrate on security aspects, diverging from commercial considerations already addressed by various member states in their laws on space activities. This shift is likely to influence the choice of legal instrument, with expectations leaning towards a regulation rather than a directive for the forthcoming EU Space Law.

4. National Level of Space Defence and Military Legal Issues

This section is devoted to the analysis of the chosen legal regimes of the most important space-faring countries with respect to space defence and military issues. In recent years, the space strategies embraced by major space powers, such as the US,

88 *The Treaty on the Functioning of the European Union* signed on 13 December 2007, 2012/C 326/01, OJ C 326, 26/10/2012 P. 0001–0390.

89 See: General Secretariat of the Council of the EU, 2024.

Russia, China, Japan, and India, share common objectives. These include the reorganisation of military space establishments; advancement of new capabilities for security and defence applications; and formulation of novel strategic postures, encompassing the extension of the operational domain to cislunar space. As this chapter focusses on regulatory issues, space and defence strategies of the given countries are explained solely as a background for the adoption of appropriate legal measures enabling the implementation of national strategies. The author chose to analyse the leading space-faring countries as well as countries that have engaged in activities in this field in recent years, such as the US, UK, China, and Russia. In addition, the Central and Eastern Europe (CEE) region is analysed together.

4.1. The US

The US pioneered the development of the doctrine on space control, officially acknowledging space as a "contested" domain in the late 1970s, particularly during the Strategic Defense Initiative of the 1980s. The US Air Force introduced the concept of "space control" in 1995. By 2001, the Rumsfeld Commission highlighted concerns about the potential for a "space Pearl Harbor", which could significantly compromise the effectiveness of the US Army. These perspectives quickly led to the consideration of ASAT weapons in space. The objective was to safeguard the advantages of space and prevent adversaries from accessing those same resources.[90]

The US announced its recent space defence strategy in June 2020. The announcement stated that 'the Defense Space Strategy is the next step to ensure space superiority and to secure the Nation's vital interests in space now and in the future'.[91] The Defense Space Strategy provides guidance to institutions, mainly the Department of Defense, to achieve the desired conditions in space over the next 10 years. The strategy's main objective is ensuring that 'the space domain is secure, stable, and accessible'.[92] The strategy includes a phased approach for the defence to move with purpose and speed across four lines of effort: (1) build a comprehensive military advantage in space; (2) integrate space into the national, joint, and combined operations; (3) shape the strategic environment; and (4) cooperate with allies, partners, industry, and other US Government departments and agencies.[93]

90 Pasco and Wohrer, 2023.

91 Department of Defense, 2020a.

92 Department of Defense, 2020b.

93 According to the Joint Chiefs of Staff, 2018, cited in Pasco and Wohrer, 2023, p. 6, the US doctrine provides for the possibility of deploying Offensive Space Control (OSC):
OSC operations consist of offensive operations conducted for space negation, where negation involves measures to deceive, disrupt, deny, degrade, or destroy space systems or services. Adversaries, both state and non-state actors, will exploit the availability of space-based capabilities to support their operations. In keeping with the principles of joint operations, this makes it incumbent on the United States to deny adversaries the ability to utilise space capabilities and services. OSC actions targeting an enemy's space-related capabilities and forces could employ reversible and/or non-reversible means.

Several US national regulations exist on the use of outer space, including the National Aeronautics and Space Administration (NASA) Act of 1958, Commercial Space Launch Act of 1984, and the most recent US Commercial Space Launch Competitiveness Act of 2015; these are supplemented by other regulations, including the Land Remote Sensing Act. The recent National Defense Authorization Act of 2020 implements the Defense Space Strategy and establishes the US Space Force within the US Air Force. This act identifies the new military service's mission set, composition, general duties, and chain of command. Moreover, in November 2023, the US revisited its laws on licensing space activities in the form of the Commercial Space Act.[94]

Analysis of these acts indicates that military aspects are regulated mainly from an institutional point of view. The National Defence Authorization Act provides for the establishment of the US Space Force as an armed force within the US Air Force and regulates its status, composition, and competencies. According to the respective rules, the Space Force shall be organised, trained, and equipped to provide for freedom of operations in, from, and to the space domain for the US; provide independent military options for joint and national leadership; and enable the lethality and effectiveness of the joint force.[95] Furthermore, the military/defence aspects are visible in commercial space law, where the powers of the Department of Defense prevail over the authority of the civilian administration if the security or defence aspects are involved in the mission.[96] This act expressly provides that the Department of Defense plays a vital and unique role in protecting national security assets in space, and the authority of the Secretary of Defense, as it relates to safeguarding the national security, cannot be overruled. In some matters, the competencies are shared with the Department of Transportation as regards SSA data, and information is shared with any entity consistent with the national security interests and public safety obligations of the US.

According to the newest Commercial Space Act adopted in November 2023, a part of the licensing process is the attestation regarding weaponisation of the mission, which consists of attestation by the applicant that the space object is not a nuclear weapon or WMD, will not carry a nuclear weapon or WMD, and will not be operated as a weapon or used for testing any weapon on a celestial body. However, these attestations concern only civil, non-governmental missions, as the essence of the act is to regulate non-governmental space activities. Thus, it seems that military activities are not subject to transparent regulations, such as preserving the sustainability of space. The act designates the Department of Commerce Office of Space Commerce as the sole authority responsible for the authorisation and supervision certification

94 House of Representatives, 2023.

95 The Space Force has both combat and combat-support functions to enable prompt and sustained offensive and defensive space operations and joint operations in all domains.

96 The Space Competitiveness Act also provides for some prevailing authorities for the Department of Defence.

process. It also grants the Office of Space Commerce the sole authority and responsibility for making determinations and placing conditions on certifications to ensure compliance with US's international obligations. The regulatory streamlining does not impact the existing Federal Communications Commission's authority in regulating spectrum and telecommunications satellites or the Federal Aviation Administration's authority in regulating launch and re-entry operations. For all forms of space activities, the military component excludes the application of regulatory measures, resulting in the presented acts.

4.2. France

France is among the most advanced and experienced countries in using space technology for military operations (e.g. the SPOT [short for Satellite pour Observation de la Terre] system). France has developed advanced satellites such as Helios and the Pleiades constellation, which conduct reconnaissance activities on behalf of the French military.[97] The French Space Defence Strategy was published in 2019 and is perceived as a key step in the evolution of France's military posture and, more broadly, of the current debate over collective security in space.[98] The French Space Defence Strategy serves primarily as a policy document articulating France's vision for the future of space defence. While conventionally addressing potential new threats and risks that could disrupt freedom of access and action in space, it goes beyond by outlining ambitions for capabilities to adapt to changes in the space environment and secure space support for the armed forces. Notably, the Space Defence Strategy introduces the possibility of actual military action in space and establishes a new doctrine, emphasising the need to define rules for engagement in space. Given its origin as a document commissioned by the French President, its purpose extends beyond presenting a purely military perspective; it aims to be a reference for expressing France's stance on space security within the international community.[99] The Space Defence Strategy only defines defensive operations in space, known in the US as "defensive space control." In this context, it mentions 'actions taken in space to protect our assets and discourage any aggression'.[100] While the US doctrine entertains the possibility of employing ASAT even in the absence of a specific threat in space, the French doctrine takes a more measured approach, emphasising the desire to ensure freedom in utilising the space environment under all circumstances rather than seeking complete control of space. The French Space Defence Strategy revolves around two primary operational objectives, the first of which involves the development of space surveillance for detecting and attributing responsibility for any hostile actions in various orbits using sovereign resources. This may be done in

97 Polkowska, 2022.
98 Pasco and Wohrer, 2023.
99 Ibid.
100 French Ministry for the Armed Forces, 2019.

collaboration with other countries, or it may be operated by allies or contracted to trusted operators. The Space Defence Strategy acknowledges the potential reliance on commercial resources in specific cases, contingent upon the nature of requirements; these cases relate to French military satellites, French commercial satellites, allied satellites, and EU satellites. The Space Defence Strategy implicitly aims to position France as a leading force in European space affairs and foster the creation of an allied military space community. The second objective is the defence of French interests in space.

The above strategy is developed based on the competency of the respective authorities licensing civilian space missions and is naturally not reflected in the French Space Law, which, though well-established, focusses on commercial application and does not set any requirements on governmental military space activities. Thus, according to Article 26 French Space Law,[101] the law does not apply to the launching and control of space objects, the needs of national defence, or the needs of vehicles whose trajectory passes through outer space, particularly ballistic missiles. Activities of the Ministry of Defence acting as the primary space-based data operator are not subject to the provisions of Title VII (which means that they are released from the obligations to report it to the public administration).

4.3. China

Since observing the space race between Moscow and Washington in the 1950s, China has actively pursued space capabilities as a symbol of national strength. By 1964, China had advanced its space programme significantly by sending an experimental biological rocket into space.[102] In 1970, the country achieved another milestone by launching its first satellite. Aligned with the emphasis on science and technological development integral to China's post-1978 economic reforms, the country accelerated the development of its independent space capabilities. During much of the initial decade of reform, the Chinese government prioritised the development or acquisition of satellites for practical applications, aiming to stimulate national economic development. As part of this strategy, numerous military aerospace projects were redirected towards commercial production.

The goals and principles of China's space activities were first laid out in a white paper titled 'China's National Defense in 2002'.[103] According to this document, China's intention was to implement a military strategy of active defence, and use of the space sector for this purpose was to involve various types of activities, including civilian, commercial, military, and security. According to the declarations, the Chinese

101 *Law* No. 2008-518 of 3 June 2008, regarding *Space* Operations (as amended by *Law* No. 2013-431 of 28 May 2013).

102 Goswami, 2018.

103 White Paper on China's National Defense, available at: https://china.usc.edu/white-paper-chinas-national-defense-2002.

government is opposed to arming space due to its existing nuclear purposes (as a nuclear deterrent) and the cost of such an arms race. However, in 2015, China recognised space as a military domain, and the defence white paper linked international security developments to the defence of China's interests in space. These assumptions were given final shape in 2016 in the National Security Law.[104]

China aspires to not only leadership but also dominance in the space domain. In October 2016, leadership of the State Administration of Science, Technology, and Industry for National Defense, under the Chinese Communist Party, suggested that China could achieve the status of a "space power" by 2030. Furthermore, it boldly asserted that by 2050, China would 'surpass and lead' in various aspects of space-related activities. This 2050 goal was reiterated by a spokesperson from the China National Space Administration in 2018.[105] In turn, as outlined in a State Council white paper released in January 2022, titled 'China's Space Program: A 2021 Perspective,' China's objectives for outer space are multifaceted. The white paper articulates that China aims to enhance its capabilities to better comprehend, freely access, efficiently utilise, and effectively manage space. Additionally, the goals include safeguarding national security, leading efforts in self-reliance and technological advancement, and fostering high-quality economic and social development. China also aspires to advocate for sound and efficient governance of outer space, contribute to human progress, positively impact China's socialist modernisation, and promote peace and progress for all of humanity.[106]

As regards Chinese space law, it should be noted that China currently remains the only space-faring country lacking a structured national space legislation by having enacted only two regulations dealing, respectively, with the launch and registration of space objects. This means that other important areas, such as remote sensing and telecommunications, remain outside the scope of dedicated legislation. The two adopted administrative measures concern the registration and licensing of civilian space missions.[107] These measures are expressly limited to civilian space endeavours. As stipulated in Article 1 of these measures, their formulation is driven by the objective of regulating the administration of civil space launch projects. This regulatory framework aims to foster wholesome development of the civil space industry, safeguard state security and public interests, and fulfil China's obligations as a state party to the Outer Space Treaty. Civilian space missions, as defined within the context of these measures, encompass the launch of spacecraft such as satellites

104 China is among a small group of countries developing counterspace technologies such as direct-ascent-ASATs, as well as non-destructive physical, electronic, and cyber technologies. For essential functions, key military space missions are increasingly relying on not a single satellite but multiple satellites to become more resilient to adversary attacks. Doucet, 2021; Polkowska, 2022.

105 Fravel, 2015.

106 China National Space Administration, 2022.

107 The 2001 Measures for the Administration of Registration of Objects Launched into Outer Space and the 2002 Interim Measures on the Administration of Licensing the Project of Launching Civil Space; see: Tronchetti and Liu, 2021.

within China's territory into outer space for non-military purposes. Additionally, the definition includes the launch of spacecraft, including satellites, by natural persons, legal entities, or other organisations of the People's Republic of China, with ownership either established or acquired through on-orbit delivery, into outer space from locations beyond the borders of China.

4.4. The UK

Since the inauguration of its first satellite, Ariel 1, in 1962, the UK has steadfastly pursued advancements in space exploration and aspires to secure a 10% share of the global space market by 2030.[108] In pursuit of this objective, the UK is resolute in upholding a regulatory framework that is not only competitive but also forward looking on an international level. Nevertheless, recent years have witnessed a heightened focus on space defence capabilities, as evidenced by the articulation of its defence space strategy.[109]

The UK issued its Defence Space Strategy in February 2022.[110] This strategy serves as a direct reinforcement of the integrated National Space Strategy. It outlines the vision for defence of the UK administration as a global participant in the space domain and elucidates how the Ministry of Defence intends to achieve its protect-and-defend goal through space-related capabilities, operations, and partnerships. The strategy aims to realise the ambition of becoming a significant actor in space. Its themes and principles are in harmony with and endorse the broader goals and key interventions of the national strategy, including the imperative to cultivate and expand talent. Furthermore, it aligns with all four objectives of the Integrated Review: strengthen security and defence domestically and internationally, build resilience, sustain strategic advantage through science and technology, and shape the future international order.[111] The most important thesis included in the UK's Defence Space Strategy is based on the defence investment through a blend of assured commercial and military grade solutions that will continue to increase flexibility, adaptability, tempo, resilience, and overall agility of the UK Armed Forces. Therefore, the intention is to maintain the UK's position as a leading military power and support UK's prosperity by enabling a safer, more secure, and sustainable operating environment, thus helping the UK space industry to continue flourishing. The principles underpinning the strategy include broadening and deepening multinational cooperation and improving cross-government collaboration.

At the regulatory level, the UK has made enormous progress by drafting and adopting modern space legislation. This started with the UK adopting the Outer Space Act 1986, which was subsequently amended by the Space Industry Act 2018 and

108 Rough et al., 2021.
109 Proelium Law, 2023.
110 UK Ministry of Defence, 2022.
111 Ibid.

supplemented by the Space Industry Regulations of 2021.[112] The legal framework apparently concerns civilian/industrial missions, and all military space matters belong to the competencies of the Ministry of Defence, whose Space Directorate cooperates closely with the UK Space Agency and is responsible for the Ministry of Defence's space policy and international coordination. The UK's military space programme is commanded and controlled by the UK Space Command, established in April 2021.

4.5. Russia

Russia considers outer space as a strategic region to enhance its military capabilities on Earth, provide intelligence and communication functions, and achieve international status and prestige as a space power. The dual utilisation of outer space aligns seamlessly with Russia's broader foreign and security strategy, characterised by a reactive stance towards US policy, while concurrently supporting the United Nations and favouring consensus-based multilateral negotiations.[113] The Russian military forces were reorganised in 2015 to create a separate space force. Russia increasingly integrates space services into its military, although it wants to avoid becoming overly dependent on space for its national defence missions because it views that as a potential vulnerability.[114] The nature of the Russian space ecosystem is rapidly evolving towards more profound and tightly integrated inclusion of the military programme. In this context, the Russian doctrine appears intricately woven to address the multifaceted challenges posed by modern warfare. The overarching conceptual framework involves the development of an integrated defence, with specific emphasis on aerospace defence forces. By integrating the Russian military infrastructure, the approach facilitates the treatment of an adversary threat as a comprehensive system. For the space military doctrine's implementation, Russia has cultivated an array of counter-technologies, thereby establishing the capacity to sustain a strategic position. The primary objective is to uphold the equilibrium of power within this domain. The Ministry of Defence is directing its attention towards three pivotal domains: deployment of direct ascent ASAT weapons, utilisation of disruptive systems targeting both space and ground infrastructures, and advancement of electronic and cyber-counter-space technologies.[115]

112 The Spaceflight Activities (Investigation of Spaceflight Accidents) Regulations 2021 establish a spaceflight accident investigation body and provide for the conduct of accident investigations; see The National Archives, 2021a. Moreover, the Space Industry (Appeals) Regulations 2021 outline the decisions made by the Civil Aviation Authority that may be appealed and set the procedures and timescales for making and deciding appeals; see: The National Archives, 2021b.

113 Eriksson and Privalov, 2021; Jackson, 2019.

114 Department of Defense, 2023.

115 Vidal and Privalov, 2023.

Russia adopted its space law in 1993 and took a specific approach as regards regulating the military issues.[116] The space law sets out the goals and principles of space activities, defines the licensing procedure, space activity financing, certification of conformity of space equipment, and touches on security and international cooperation in space. According to the law, the Federal Assembly has the power to determine the space policy of Russian Federation, the President has the power to implement space policy of Russian Federation and the Council of Ministers has the power to supervise space policy on space activities.

In 2020, the Russian Federation adopted a new set of licensing regulations through a federal decree. This was seen as a first step in preliminary work to improve legislation and remove administrative barriers in the development of the private sector. The role and functions of the space agency – Roscosmos – are defined in more detail in Federal Law No. 215-FZ 'On "Roscosmos" State Corporation for Space Activities', dated 13 July 2015.[117]

The specificity of the Russian space law concerns the explicit regulation of space activities conducted for the purpose of defence and security within the Russian Federation (Article 7). The tasks of overseeing these endeavours, collaborating with other ministries and departments, and together implementing long-term programmes and annual plans for the creation and utilisation of military and civilian space technologies have been entrusted to the Ministry of Defence. Specifically, the Ministry of Defence is authorised to develop draft programmes and plans, form and place state orders, use space technologies for defence and security purposes, engage in the exploitation of space technologies for scientific and economic purposes through contracts, and contribute to the maintenance and development of space infrastructure in coordination with the Russian space agency and other relevant entities. Additionally, the Ministry of Defence is responsible for providing normative technical documentation, participating in the certification of space technologies through contracts, ensuring the safety of space activities in collaboration with other state services, and undertaking other functions as determined by the Council of Ministers of the Government of the Russian Federation. Furthermore, the Ministry of Defence has the authority to mobilise any object of space infrastructure, including space technologies, as explicitly stipulated by the legislation of the Russian Federation. It also possesses the right to temporarily transfer idle objects under its jurisdiction to the Russian space agency through contractual agreements for utilisation in scientific and economic space activities.

116 Law of the Russian Federation on Space Activities, § 4, Art. 17 [Decree No. 5663-1 of the Russian House of Soviets].

117 Lukowski, 2023.

4.6. The CEE Region[118]

While all of the above space powers (except China) have developed both strategies and space laws, CEE countries still have a long way to go in this respect. They are in a specific situation: On the one hand, they have a space heritage gained from being behind the Iron Curtain; on the other hand, they still experience difficulties in catching up with Western Europe's value chains. This can also be seen with respect to the defence issues in space. These countries face many challenges: their geographical location is unfavourable to perform spaceflights, they face difficulties in gaining capital necessary to grow, and public clients have limited awareness of the space sector's benefits. Nevertheless, their location seems strategic from the defence point of view (as was proven since the beginning of the Russian aggression in Ukraine in 2022).

Differences between the regions of Europe are still apparent. Most Eastern European countries, due to their common history, have gained knowledge and experience from space activities during the existence of the Soviet Union and participation in Soviet space programmes.[119] However, over the years, each of these countries has developed different specifications in terms of management of space activities, expertise, funding mechanisms, priorities, and policy. As regards governance of the space sector in various CEE countries, the matter becomes even more complex. Organisation of the space sector differs significantly among CEE countries. In most cases, responsibility for the space policy remains distributed among many administrative bodies without clear indication of who is ultimately responsible for a certain area. This leads to inefficiency in the administration of the space sectors of most CEE countries. For example, in terms of cooperation with NASA, Poland was the only signatory of the Artemis Accords in the region for a long time. This changed after the Czech Republic (2023) and Romania (2022) signed the accords. Some countries in the region still do not have a specific institutional framework in the form of national space agencies, and space policy activities are the responsibility of certain offices within their ministries.[120] For example, in Slovakia, the responsibility for space is divided among the Ministry of Education, Science, Research and Sport; Ministry of Transport and Construction; Ministry of Environment; Ministry of Interior; Ministry of Economy; and Ministry of Foreign and European Affairs. In the Czech Republic, the Ministry of Transport is the coordinator of all space activities (through the Coordination Council for Space Activities). In Hungary, these duties fall under the Department for Space Policy and Space Activities of the Ministry of Foreign Affairs and Trade. Nevertheless, the recently adopted space strategies prioritise the

118 For the purpose of this Chapter, the CEE region is defined as including the following countries: Austria, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia, which are also recognised as signatories of the Three Seas Initiative.

119 For more details, see: Sagath, Adriaensenb and Giannopapa, 2018.

120 Klock and Aliberti, 2014.

establishment of a competent, central coordinating authority and creation of organisational and structural frameworks. As in the case of the Czech Republic National Space Plan 2020–2025, one goal is to improve the national institutional capabilities by establishing the national space agency as a single-access source for 'implementing a comprehensive package of measures to foster the entire domestic space sector.

Although majority of the CEE countries have adopted space strategies,[121] which also include the security and defence aspects, only Slovenia has adopted a national space law.[122] This state of affairs certainly delays the development of the space sector in these countries. Nevertheless, it provides an opportunity to address the challenges of the space sector, including the security aspects in the proposed legislation, such as the precise separation of competencies for civilian and military space missions, use of civilian missions for defence needs, and consistent regulation of sustainability requirements for each type of mission.

5. Governance of Outer Space in the Context of the Defence Policy and Law

The current legal framework at the international level, actions taken at the regional (EU) level, and the approach presented by individual states (defence strategy and space law) raise numerous doubts and concerns. Alarming events consisting of repeated ASAT tests are prompting the international community, especially legal scholars, to propose urgent measures to prevent the use of weapons in space. One example is the open letter issued on 2 September 2021 by the Outer Space Institute addressed to the United Nations; herein, the authors urged the UNGA to consider a treaty to ban kinetic ASAT tests.[123]

In sum, numerous weaknesses are revealed in the international space regulations that affect the security and stability of international behaviour in outer space due to the explicit gaps and vague meanings of the existing provisions. These weaknesses concern not only the regulatory framework in the strict sense but also the governance model. As mentioned several times in the chapter, at the global level, we can observe a matrix of various authorities vested in competencies in the field of space defence. These competencies seem to undergo serious transformations to comply with the changing paradigm of the space domain, as a part of the space force.

At the global level, the United Nations' role is constrained, leading to limited preservation of the foundational principles governing outer space exploration,

121 Poland adopted its space strategy in 2017, Hungary adopted its National Space Strategy in August 2021, and the Czech Republic approved its New National Space Plan in 2019 for years 2020–2025.
122 On 16 March 2022, the National Space Legislation was adopted by the National Assembly.
123 Byers et al., 2021.

particularly considering the diminishing connotation of the peaceful purposes of space endeavours. Given the prevailing geopolitical tensions, there is pervasive scepticism regarding the United Nations' efficacy as a policymaker and rule-setter. Consequently, coordination of defence and military matters on the international stage is more appropriately conducted through military and political alliances, such as the North Atlantic Treaty Organization.

Conversely, at the regional level within the EU, implementation of a space defence strategy entails a requisite reconfiguration of space governance. While the EU Agency for the Space Programme assumes responsibility for civilian programmes, recognising their dual-use capacity is imperative. Simultaneously, the EDA assumes a pivotal role in this context. The EDA's engagement spans a broader spectrum within the space domain, encompassing prioritisation and planning to support space capability development, engagement in research and technology activities related to space, and identification of common military requirements and defence user needs for space-based systems. This includes collaborative capability development and alignment with broader EU space policy objectives. The new Defence in Space Forum instituted under the auspices of the EDA plays a critical role in identifying military requirements, defining capability priorities, and fostering cooperation in space among EU member states.

As regards the responsibilities of national agencies, this sphere of the responsibilities of space agencies in defence domainis typically beyond their purview. In instances where defence and security issues arise in the context of civilian space missions, the authority of the military administration tends to prevail. Furthermore, military space operations typically fall under the exclusive control of the armed forces, often involving the establishment of specialised divisions for space command, as exemplified in the cases of the US and UK. However, it is crucial to emphasise that most of the investigated national space laws lack clarity regarding the delineation of administrative tasks and powers within this domain.

In France, implementation of the Space Defence Strategy initiated the first organisational changes, resulting in the establishment of the Space Command and the newly named Air and Space Force. Fuelled by the anticipation of potential military operations in space, this development signifies a significant stride towards a revised doctrine by 2030. The AsterX military exercises conducted in 2021, 2022, and particularly the latest one in 2023, which were held in conjunction with the large-scale ORION exercise in the south of France in spring 2023, underscore the Space Command's commitment to rapidly enhancing its operational capabilities. While the operations' message is primarily national, it also has European and international implications, aiming to cultivate national military space expertise through collaboration with foreign partners such as Germany, Italy, Belgium, and the US.

As mentioned above, institutional support is essential in the process of thinking holistically about military aspects in space. This mainly includes military issues, as well as those related to these issues, such as crisis management, which focusses on defence-of-space aspects (in connection with threats from ASAT tests, jamming,

cyberattacks, etc.). In this regard, experts call for the establishment of a management centre at least for the EU territory, which could lead to the coordination and sharing of space capabilities and intelligence information.[124] Europe, and the EU in particular, can model such coordination at the global level. Even if such an effect could not be achieved at the United Nations, an independent coordination centre could prove just as effective if may countries join it on a voluntary basis.

6. Summary and Conclusions

More and more countries are using or planning to use space for military and defence purposes, and the number of satellites used for military purposes is also clearly increasing. This means that maintaining the principle of peaceful use of space is becoming increasingly difficult. This also poses increased challenges to regulation and raises questions about the incorporation of military aspects into space law and the possibility of subjecting them to the principles of space law.

As seen from the analysis of individual states' strategies and space legislation, strategic documents are being developed specifically regarding the space defence domain at the international, regional, and national levels. This entails the institutionalisation of activities and separation of competencies between bodies responsible for space military issues and commercial space activities. While legal regulations are also being developed for the use of space, this is essentially taking place at the national level and only for civilian applications. Space law regulations that could apply to military matters remain in the regulatory grey area. They are not subject to licensing and are, consequently, also questionably subject to technical standards, if only for the prevention of space debris to ensure the sustainability of space exploration. Legal acts that are binding on states regardless of the purpose of the mission – that is, acts of international law – either contain very general regulations subject to inconsistent interpretations (e.g. Articles IV and IX Outer Space Treaty) or are non-binding (e.g. UNGA resolutions). As a result, the increasing scope of military applications is not matched by the development of a regulatory framework in this area, which undoubtedly poses a threat to the future of human activities in space, in terms of both security of space assets and security on the ground as an *ultima ratio*. In the face of this status quo, the solution may be bottom-up initiatives wherein states or regions (such as the EU) self-regulate and undertake initiatives that more states can join, such as the Zero Debris Charter. Conversely, for states still in the process of developing national regulations, their government military activities in space, while not inherently subject to licensing, should be subject to technical requirements, including space debris prevention and sustainability, on par with civilian missions.

124 Al-Akabi, 2015; Polkowska, 2022.

Among many regulatory grey zones, one most important on the international level involves determining what is allowed and prohibited under the Outer Space Treaty. Article IV is the main provision on which all scholars and diplomats focus while disregarding the whole body of the Outer Space Treaty and actions that may indirectly affect the fundamental principles of space exploration, even if not directly breaching Article IV. It is becoming increasingly clear that international space law (whether framed narrowly considering the treaties or more broadly) contains many gaps and instances of silence in its treatment of space military activities. These gaps may be filled with recourse to general principles until it becomes necessary and feasible to develop more explicit and concise international norms for emerging and novel space activities.[125] Besides the above, other fundamental legal issues appear in relation to the wording of Article IV. First, if the Outer Space Treaty regulates the purposes of exploring outer space, a question arises about whether we need the delimitation of outer space. Moreover, what approach should be taken for suborbital activities? Are they included in the assumptions of the Outer Space Treaty, or should they be subject to the air law? In addition, the issue of passage through airspace belonging to a state should not be ignored. According to Lachs, the above passage has become an international custom, but should it also be so when it is about a military action?[126] The conduct of reconnaissance from space aligns with the stipulations outlined in the Outer Space Treaty, but no discernible restrictions are evident.[127] International Space Treaties do not regulate SSA, and there is no obligation to disclose and share SSA data and information. Moreover, numerous national regulations in this area seem to establish restrictions in this regard. As a result, the only way forward is to regulate legal access to SSA data based on bilateral or multilateral agreements, and these, as is well known, depend on the political alliances of states.[128]

The current legal framework necessitates enhancement and continued development through the clarification of abstract principles, formulation of new legal norms, elimination of inconsistencies, and incorporation of the unique attributes of the space domain. Special attention must be paid to addressing cybersecurity in space and advancements in military technology. While the ideal scenario would involve the formulation of a new binding treaty, practical challenges, such as the states' difficulty in reaching a consensus, have impeded progress. Nevertheless, despite unsuccessful multilateral initiatives, an alternative avenue for development remains viable.

In a departure from the traditional treaty approach, it is not uncommon for independent expert groups to elucidate the application of existing international law,

125 Johnson, 2018.

126 Dissenting Opinions of Judge Lachs in *North Sea Continental Shelf Cases (Federal Republic of Germany v. Denmark; Federal Republic of Germany v. Netherlands)* Judgment, I.C.J. Reports 1969, p. 3; Ferreira-Snyman, 2015. Limitations arise when reconnaissance necessitates traversing a state's sovereign airspace; however, space-based reconnaissance appears to be permissible.

127 Willson, 2001.

128 Polkowska, 2022.

particularly humanitarian law, within a specific context. Noteworthy examples include the *Tallinn Manual on the International Law Applicable to Cyber Warfare* (2012). At present, two expert groups are actively working on manuals pertaining to warfare in the space domain – the *Woomera Manual on the International Law of Military Space Operations* led by the University of Adelaide and Exeter University and the *Manual on International Law Applicable to Military Activities in Space* by McGill University in Canada. While these manuals lack strict enforceability, their influence is acknowledged and relied upon by governments and armed forces; thus, they potentially guide space policy and military doctrines to prevent the hostile use of space weapons.

Despite uncertainties about the prospect of an arms race in outer space, the increasing risk of progressive weaponisation and space warfare demands attention. The rapid development of space technology has outpaced the evolution of existing space law, which is rooted in an idealised vision of space as a common heritage for peaceful purposes. This disparity between rules and practical realities introduces uncertainties about permissible conduct. Critical issues such as close-proximity operations, cyberattacks on space infrastructure, and ASAT tests lack adequate regulation within the existing framework. Moreover, the current legal framework is ill-equipped to provide definitive answers in the event of states engaging in space warfare. Strengthening the legal framework is pivotal to promote responsible use of outer space. Therefore, as argued, it is paramount to further develop and fortify the existing legal framework to ensure its adaptability to future challenges.

What is the roadmap for the regulation of military aspects in space? Who should take the initiative in this respect? While there is likely no one absolute answer to all these questions, considering the current framework and dynamics, it seems that the US and EU could eventually play a leading role as promoters of legal arrangements governing security issues, if only by promoting binding documents based on country adherence. Legal frameworks could be established in this realm through decisive, coordinated, and harmonised technical standards, as well as requirements for both governmental and private entities. Certification of activities, regardless of their military or civilian nature, appears to be a necessary course of action at all levels: international, regional, and national. They could eventually start as codes of good ethical practice for space operations and associated ground-based developments (e.g. initiatives of the Zero Debris Charter by ESA and the ASAT ban initiative by the US). There should be wide consultation with the public and interested stakeholders, including the civil society, in developing these codes. Addressing the issue of institutionalising such actions is also essential for this purpose.

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