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**The Legal Framework for Conventional Military Activities in  
Outer Space: Past, Present and Future**

Dissertation to obtain a Master's Degree in  
European and International Law

Supervisor:

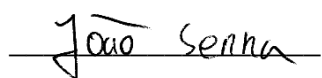
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A handwritten signature in black ink that reads "João Senna". The signature is written in a cursive style and is positioned above a horizontal line.

Almada, 25 de novembro 2020

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## **Abstract**

Space is increasingly a potential stage for conflict, and at the same time humanity grows more dependent from space assets. Moreover, the current legal framework does not place any constraint on the use or testing of conventional weaponry in outer space.

The question of the regulation of conventional military activities in space was discussed mainly under the concept of Prevention of an Arms Race in Outer Space (PAROS) since the 1980s. The two main proposals for a legal framework for this issue are the draft Treaty on the Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force against Outer Space Objects (PPWT) and the draft International Code of Conduct for Outer Space Activities (Code), which demonstrate fundamental differences with regard to key definitions, the interpretation of PAROS and the general approach to the regulation of conventional military activities in space.

The PPWT (proposed by Russia and China) represents the classic version of PAROS, that is, a hard law approach to implement an arms control regime negotiated in a multilateral forum. It failed because multilateral forums are blocked in the post-Cold War world, as well as due to its highly criticized definition of space weapon and the absence of verification mechanisms which deprived it of the potential benefits of the hard law approach.

The Code (proposed by the EU) 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. It proposes a soft law instrument negotiated bilaterally to implement norms focused on preventing behaviour that causes space debris. The Code failed because it hinged too much on soft law to avoid providing key definitions, and on the common interests of States in preventing the “tragedy of the commons”.

Deterrence is considered by the US to be the best way to guarantee its national security, therefore it is reluctant to change the *status quo*. However, this strategy

is not without its flaws and since both the PPWT and the Code have stagnated, a political vacuum has emerged that can be filled by the US as the lead norm builder for security in space. In this sense, although the Artemis Accords are not intended to be a response to PAROS, they can still be a glimpse of an alternative approach to formulating norms for conventional military activities in space.

**Keywords:** Space law; PAROS; PPWT; Code of Conduct; Deterrence; Artemis Accords.

## Resumo

A humanidade depende cada vez mais do espaço e ao mesmo tempo a possibilidade de conflito no mesmo também aumenta; além disso, o atual quadro jurídico não impõe restrições ao uso ou teste de armamento convencional no espaço.

A questão da regulamentação das atividades militares convencionais no espaço foi discutida principalmente sob o conceito da Prevenção da Corrida ao Armamento no Espaço (PAROS) desde a década de 1980. As duas principais propostas de regulamentação são o Tratado para a Prevenção da Colocação de Armas no Espaço e da Ameaça ou Uso da Força contra Objetos Espaciais (PPWT) e o Código Internacional de Conduta para Atividades no Espaço (Código de Conduta), que demonstram diferenças fundamentais no que diz respeito a definições-chave, à interpretação da PAROS e abordagem geral à regulação das atividades militares convencionais no espaço.

O PPWT (proposto pela Rússia e China) representa a versão clássica da PAROS, ou seja, uma abordagem de *hard law* para implementar um regime de controlo de armas negociado em fóruns multilaterais. O PPWT falhou porque os fóruns multilaterais estão bloqueados no mundo pós-Guerra Fria, bem como devido à sua definição de arma espacial que foi altamente criticada e a ausência de mecanismos de verificação que o privaram dos benefícios de ser uma proposta *hard law*.

O Código de Conduta (proposto pela UE) representa uma primeira atualização na abordagem da regulamentação das atividades militares convencionais no espaço, bem como na interpretação da questão PAROS. Propõe um instrumento *soft law* negociado bilateralmente com vista à implementação de normas que previnam a criação de detritos espaciais. O Código fracassou por depender excessivamente da *soft law* de maneira a evitar o fornecimento de definições-chave e nos interesses comuns dos Estados em prevenir a “tragédia dos comuns”.

A estratégia de dissuasão é considerada pelos EUA a melhor maneira de garantir a sua segurança nacional, pelo que estão relutantes em alterar o *status quo*. No entanto, não é isenta de falhas e visto que tanto o PPWT como o Código

estagnaram, surgiu um vácuo político que pode ser preenchido pelos EUA como o principal criador de normas para a segurança no espaço. Nesse sentido, embora os Acordos Artemis não tenham como objetivo ser uma resposta à PAROS, podem ainda assim ser um vislumbre de uma abordagem alternativa à formulação de normas para atividades militares convencionais no espaço.

**Palavras-chave:** Direito do espaço; PAROS; PPWT; Código de Conduta; Dissuasão; Acordos Artemis.

<b>List of Abbreviations</b>	
<b>ASAT</b>	Anti-Satellite
<b>BRICS</b>	Brazil, Russia, India, China, South Africa
<b>COPUOS</b>	Committee on the Peaceful Uses of Outer Space
<b>ESA</b>	European Space Agency
<b>EU</b>	European Union
<b>ICJ</b>	International Court of Justice
<b>ICoC or Code</b>	Draft International Code of Conduct for Outer Space Activities
<b>NAM</b>	Non-Aligned Movement
<b>NASA</b>	National Aeronautics and Space Administration
<b>PAROS</b>	Prevention of an Arms Race in Outer Space
<b>PPWT</b>	Draft Treaty on the Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force against Outer Space Objects
<b>SDI</b>	Strategic Defence Initiative
<b>TCBM</b>	Transparency and Confidence-Building Measure
<b>UNCLOS</b>	United Nations Convention on the Law of the Sea
<b>UNGA</b>	United Nations General Assembly
<b>UN</b>	United Nations
<b>USSR</b>	Union of Soviet Socialist Republics



<b>USA</b>	United States of America
<b>OST</b>	Outer Space Treaty
<b>WMD</b>	Weapon of Mass Destruction

## Introduction

### I. HISTORICAL AND LEGAL BACKGROUND

#### 1. Historical background

##### 1.1 Paving the way to the OST

In September 1957 the USSR launched Sputnik 1. This event alone made both superpowers at the time (USSR and USA) realise two things: firstly a space race had just begun, and secondly both intended to use outer space for military purposes, *ergo* – "minimal normative regulation of the use of outer space" 'for peaceful purposes' was necessary"<sup>7</sup>.

The following year, the United Nations General Assembly (UNGA) adopted Resolution 1348 (XIII) creating an *ad hoc* Committee comprised of 18 members to study the legal and technical consequences of the first artificial satellites and report its conclusions to the UNGA. To that end, a Legal and a Technical Sub-Committees were also established. In 12 December 1959 Resolution 1472 (XIV) was adopted *i*) establishing a permanent Committee on the Peaceful Uses of Outer Space (COPUOS), *ii*) composed by 24 members, *iii*) with the mandate to "review the scope of 'international co-operation' in space activities and to study practical and feasible means that could be undertaken under the United Nations auspices to give effect to programmes in the peaceful uses of outer space"<sup>8</sup>, *iv*) while holding the two abovementioned Sub-Committees under its purview, and *v*) tasked with drafting a yearly report compiling recommendations to the UNGA, going first through the Political Committee of the UNGA<sup>9</sup>.

As expected, this Committee was heavily influenced by Cold War politics; for instance, it was boycotted by the Soviet Union which argued that it was not sufficiently representative, consequently demanding that its decisions needed to be taken by consensus rather than a majority proposed by the West. It was agreed that the Committee would comprise 24 members, as a subsidiary body of the General

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<sup>7</sup> Cit. HOBE, Stephan, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.), "Historical Background", *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 105-151, 112.

<sup>8</sup> Ibid, p. 116.

<sup>9</sup> Ibid, p. 118.

Assembly, to which it would report (underlining its very political nature) and the system of decision by consensus was adopted in 1962, making it the first Committee in the UN to do it. The procedure of consensus building delayed the negotiations but created broad international support for its decisions, especially from the countries that saw their concerns accounted for. This is why most international space treaties of the coming “golden era” were ratified by a large number of States<sup>10</sup>.

The COPUOS was instrumental for the establishment of certain preliminary principles of space law. Before the drafting of the first major treaty concerning outer space activities, Resolution 1721 (XVI) was adopted unanimously on the 20th December 1961, as the result of the first negotiations within the organism. Some fundamental principles were laid down such as the governance of international law on outer space activities, and the freedom of exploration and use of outer space and celestial bodies.

The most important precursor to the Outer Space Treaty (OST) was Resolution 1962 (XVIII), adopted by the UNGA after recommendation from the Legal Subcommittee on the 13th December 1963, titled “Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space” which not only called for its elaboration, but also established the bedrock from which the OST would be built upon. Some of the most relevant principles enshrined in the Assembly’s document were the free exploration and use of outer space by all States; that space exploration should be done in accordance with international law and; the agreement that private entities should conduct their activities in space subject to governmental authorisation and supervision<sup>11</sup>.

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<sup>10</sup> JANKOWITSCH, Peter, in Frans von der Dunk and Fabio Tronchetti (eds.), “The Background and History of Space Law”, *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 1-29, 11-12. With the exception of the Moon Agreement, with only 15 States Parties and four signatories.

<sup>11</sup> HOBE, Stephan, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.), “Historical Background”, *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 105-151, 135-136

## 1.2 Adoption of the OST and the golden age of hard space law

It was the signing of the Outer Space Treaty in 1967 that established space law as a new branch of international law<sup>12</sup> and that started the heyday of the hard law approach. The treaties signed in this period were widely accepted, since even the Registration Convention with 60 ratifications, four signatures and two intergovernmental organizations, qualifies as an almost global acceptance<sup>13</sup>.

However, this golden age of treaty ratification came to an end with the Moon Treaty in 1979, the last to be drafted within COPUOS. It aimed to elaborate many of the concepts of the OST, in particular with regard to the celestial bodies, but was stuck on the question of considering the Moon as a common heritage of humanity and the consequences of that principle for potential resource mining endeavours. Thus, so far, only 15 States ratified the treaty, none of which represents a major space power<sup>14</sup>.

Still, the Moon Treaty was but a symptom of the greater change in the international political climate that enabled the golden age of treaty making. One big reason for its end was the growing presence of more States in space and in the COPUOS with different interests. Therefore, consensus became something progressively more difficult to reach, and with the end of the bipolar world this state of affairs, developed with Cold War politics in mind, became an anachronism that lives in the post-Cold War world.

This gave origin to the soft law era, during which COPUOS began to develop international space law through non-binding UN Resolutions, in the hope that they will become customary law<sup>15</sup>.

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<sup>12</sup> JANKOWITSCH, Peter, in Frans von der Dunk and Fabio Tronchetti (eds.), “The Background and History of Space Law”, *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 1-29, 5.

<sup>13</sup> This widely accepted treaties were the OST, the Rescue Agreement (entered into force in 1968), the Liability Convention (entered into force in 1972) and the Registration Convention (entered into force in 1976).

<sup>14</sup> VON DER DUNK, Frans, in Frans von der Dunk and Fabio Tronchetti (eds.), “International Space Law”, *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 29-125, 40-41.

<sup>15</sup> *Ibid*, p. 103.

### 1.3 “State-centricity” and military activities in space law

Since the beginning of its human physical exploration, space is a stage for military and scientific activities (in addition to the element of political prestige), but the military nature in space activities prevails above all else. Just to give an illustrative example, of the 12 astronauts that went to the Moon, only one was a scientist<sup>16</sup>.

Furthermore, space activities were intrinsically linked to the State. Only large States were able to surmount the associated costs and risks, in addition to the lack of prospects for economic returns at the time. Hence, most States have either joined one of the great powers or joined other States to engage in space activities (examples: INTELSAT, INMARSAT and ESA)<sup>17</sup>.

These two elements were reflected in the Treaties, namely in the OST, especially the centrality of States. The type of responsibility established therein is proof of this: States, even if they are not directly involved in a given space activity, are responsible for “*national activities in outer space*”, even encompassing activities undertaken by non-governmental entities<sup>18</sup>. Likewise, States hold responsibility as “launching States” of space objects<sup>19</sup>, even if “built, launched, and operated exclusively by private entities”. Thus, the great Treaties refer essentially to States and not to private actors and to military and scientific activities<sup>20</sup>.

Another relevant aspect is the effort to maintain space as a peaceful environment. To that end, the OST elaborates extensive limitations to the use of space as a stage to wage nuclear war and to a lesser extent regarding conventional warfare<sup>21</sup>. It also establishes some “confidence and transparency-building measures *avant la lettre*”<sup>22</sup>. Additionally, Article III of the OST states that States Parties shall carry activities in accordance with the Charter of the UN, applying constraints namely

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<sup>16</sup> Ibid, p. 44.

<sup>17</sup> Ibid, p. 45.

<sup>18</sup> See Article VI of the OST.

<sup>19</sup> See Article VII of the OST and II-V of the Liability Convention.

<sup>20</sup> VON DER DUNK, Frans, in Frans von der Dunk and Fabio Tronchetti (eds.), “International Space Law”, *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 29-125, 46.

<sup>21</sup> See Article IV of the OST.

<sup>22</sup> Cit. VON DER DUNK, Frans, in Frans von der Dunk and Fabio Tronchetti (eds.), “International Space Law”, *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 29-125, 47. Also see Article IX of the OST.

in relation to the use of force to Outer Space. Such matters will be further developed later in this dissertation.

#### **1.4 Conclusions**

*“In the medium to long-term, there is no doubt that space law drafting is currently in severe crisis.”<sup>23</sup>*

The Cold War left its mark in International Space Law. It established the legal basis for this branch of Public International Law, built on binding legal instruments of almost universal acceptance, something that might not have happened in a scenario as peculiar as the Cold War: on the one hand, we have two great powers to establish *diktats* in international politics, on the other hand due to technical / scientific issues, it were the States themselves who were in a position to decide all the rules in Outer Space. From the moment that the USSR and the USA managed to reach an agreement on a certain matter, it was almost certain that this would be accepted by the States under their leadership.

The OST was agreed as a *Magna Carta* of outer space activities. It established the main principles from which future lawmakers would build upon, but the mechanism for building such principles ceased to work in the post-Cold War world. Since the golden age of space law making between the 1950s and 1979, when five binding international multilateral agreements were adopted, Space Law as shifted to a non-legally binding arena and sometimes even abandoning multilateralism altogether. As of lately (since 1995) the UNGA seems to use its Resolutions to re-interpret the established Treaties, which Hobe argues poses the danger of further weakening international space legislation<sup>24</sup>.

With the end of the bipolar world, the circumstances for the drafting of Space Law changed. However, the mechanisms for formulating new international rules did not, leaving further constraints on the drafting of space law.

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<sup>23</sup> Cit. HOBE, Stephan, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.), “Historical Background”, *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 105-151, 142-143.

<sup>24</sup> *Ibid*, p. 148.

## **2. Legal Context of Conventional Military Activities in Outer Space**

The Second Gulf War (1990-1991) was particularly characterized by being the first military campaign in which space capabilities were extensively used for the enhancement of military capabilities on the ground. This affected military doctrines all around the world. Therefore States are increasingly more dependent on space assets, especially considering its continuing technological improvements and affordability<sup>25</sup>.

In the coming chapters I will take a look at the current legal framework governing the usage of conventional weaponry in outer space, beginning by analysing the relevant provisions of the OST and then complementing it with other international treaties.

### **2.1 The OST**

The OST while laying the groundwork for Space Law, leaves many issues unsolved. As stated above, one of the major reasons for the creation of rules for space activities was precisely of a military nature, and although humanity inherited a comprehensive legal framework for nuclear weapons and mass destruction from the golden age of hard law, the same is not true for conventional weaponry, which, nevertheless, can have effects comparable to weapons of mass destruction in outer space. As an example, the destruction of a satellite by a missile can generate debris at very high speeds which, by colliding with other satellites, may generate a domino effect that would then deprive humanity of accessing space again. This effect is called the Kessler Syndrome<sup>26</sup>.

#### ***2.1.1 Applicability of international law***

Article III states that space activities must be carried out "in accordance with international law, including the UN Charter, in the interest of maintaining international peace and security and promoting international cooperation and

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<sup>25</sup> SCHROGL, Kai-Uwe and NEUMANN, Julia, "Article IV", *Cologne Commentary on Space Law Vol.1* (2017), edited by T. Hobe, B. Schmidt-Tedd and K. Schrogl, Volume 1, Berlin, Berliner Wissenschafts-Verlag, pp. 285-351, 290.

<sup>26</sup> See generally, DRMOLA, Jakub and HUBIK, Tomas, "Kessler Syndrome: System Dynamics Model", *Space Policy*, Volumes 44-45, Elsevier, 2018, pp. 29-39.

understanding". Thus, the mechanisms of the UN Charter apply in case of any conflict with the OST. This means that disputes that jeopardize international peace and security are solved in accordance with Articles 2 (3) and 33 of the UN Charter, which themselves have debates at their heart far from being settled<sup>27</sup>.

Furthermore, it must be read with Article I paragraph 2<sup>28</sup>, which also mentions international law in relation to the peaceful exploration of outer space<sup>29</sup>, moreover due to its reference to international cooperation, one must take into account Article IX<sup>30</sup>. Article III is also linked to article IV due to its emphasis on international peace and security<sup>31</sup>. Additionally, "activities" does not merely regard those undertaken in outer space but also activities involved in the launching, operation and return of space objects<sup>32</sup>.

Article III states that States actions should abide by international law, including the UN Charter, but what are the consequences of this? Firstly, it means that general principles of international law such as *pacta sunt servanda* and good faith apply. Secondly, it also includes the principles dictated by the UN Charter, for example sovereign equality of States, non-intervention, non-aggression, general prohibition of the use of force, the right to self-defence, and the peaceful settlement of international disputes<sup>33</sup>.

### **2.1.1.1 The prohibition of the use of force**

Article 2 (4), of the UN Charter states that "All members should 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

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<sup>27</sup> TRONCHETTI, Fabio, in Frans von der Dunk and Fabio Tronchetti (eds.), "Legal aspects of the military uses of outer space", *Handbook of Space Law*. Edward Elgar Publishing, 2015, pp. 331-382, 350-351.

<sup>28</sup> OST, Article I (2), "Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies."

<sup>29</sup> TRONCHETTI, Fabio, in Frans von der Dunk and Fabio Tronchetti (eds.), "Legal aspects of the military uses of outer space", *Handbook of Space Law*. Edward Elgar Publishing, 2015, pp. 331-382, p. 272.

<sup>30</sup> Article IX will be analysed below.

<sup>31</sup> TRONCHETTI, Fabio, in Frans von der Dunk and Fabio Tronchetti (eds.), "Legal aspects of the military uses of outer space", *Handbook of Space Law*. Edward Elgar Publishing, 2015, pp. 331-382, pp. 283-284. Article IV will be analysed below.

<sup>32</sup> RIBBELINK, Olivier, "Article III", in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.), *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 271-285, 277.

<sup>33</sup> *Ibid*, p. 279.



purposes of the United Nations." There is an extensive prohibition here that seeks to generally outlaw the use of force but limited exclusively to the use of armed or military force<sup>34</sup>. States should therefore use forms of negotiation whenever possible, as a solution to disputes associated with the threat of international peace and security, as established in Article 33 of the Charter.

There are two exceptions to the prohibition of the use of force: anyone authorized by the UN Security Council as outlined in Chapter VII of the UN Charter and the right of self-defence set out in Article 51.

Chapter VII gives the UN Security Council the power to decide whether there is a threat to peace, breach of the peace or act of aggression and choose the measures to restore it, namely, albeit in *ultima ratio*, by authorizing the use of force by following Articles 41 and 42<sup>35</sup>.

Regarding Article 51, the conditions to invoke the right of self-defence are still subject to debate, though the ICJ has established the following in its jurisprudence: *i*) The occurrence of an armed attack<sup>36</sup>, *ii*) The exercise of the right must target the State responsible for the attack or that is legally imputable to it<sup>37</sup>, and *iii*) Must meet the criteria of necessity and proportionality<sup>38</sup>. However, there are other interpretations, such as a broader one arguing that the pre-emptive right of self-defence, that is, the right to act proportionately in self-defence before an attack has occurred, can be found in customary law<sup>39</sup>.

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<sup>34</sup> COUTINHO, Francisco Pereira, "A proibição do uso da força no século XXI", in Roberto Caldas et al. (coord.), *Guerra e Paz no Século XXI: políticas e direito internacional*, Almedina, 2018, pp. 83-100, 87.

<sup>35</sup> TRONCHETTI, Fabio, in Frans von der Dunk and Fabio Tronchetti (eds.), "Legal aspects of the military uses of outer space", *Handbook of Space Law*. Edward Elgar Publishing, 2015, pp. 331-382, 352.

<sup>36</sup> *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*. Merits, Judgment. I.C.J. Reports 1986, p. 14, para. 195 and 211. *Oil Platforms (Islamic Republic of Iran v. United States of America)*, Judgment, I. C. J. Reports 2003, p. 16, para. 51.

<sup>37</sup> *Oil Platforms (Islamic Republic of Iran v. United States of America)*, Judgment, I. C. J. Reports 2003, p. 16, para. 51. *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, Judgment, I.C.J. Reports 2005, p.168, para. 146.

<sup>38</sup> *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*. Merits, Judgment. I.C.J. Reports 1986, p. 14, para. 194 and 237. *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, I. C.J. Reports 1996, p. 226, para. 41.

<sup>39</sup> DÖRR, Oliver, "Use of Force, Prohibition of", in Rüdiger Wolfrum (ed.), *Max Planck Encyclopaedia of Public International Law*, Oxford University Press, 2015, para. 38.

In any case, the criteria to conduct the use of force based on necessity and proportionality applies<sup>40</sup>. The first meaning the assessment of intentions and conditions in anticipation of the attack (in the case of a broad interpretation) or after the attack has been carried out, in order to know if the use of peaceful means will not be sufficient to restore peace or repel the attackers. And the second meaning that the nature of the use of force should not be punitive or reprisal, and should be carried out to the extent that is necessary to respond or prevent an armed attack<sup>41</sup>. One should always remember that the main objective of self-defence is not to provoke more conflict, but to restore peace.

### **2.1.1.2 *Jus ad bellum* in outer space**

In a world where States are increasingly dependent on space assets and activities, the scenario of the UN Security Council authorising States to use force in outer space is not only theoretically possible but arguably more probable now – in a multipolar world – than ever.

Apart from the inherent problems of the UN Security Council (such as the veto power) and the debates surrounding the interpretation of self-defence, applying the normative framework provided by the *jus ad bellum* to space activities would present a myriad of problems by itself, some of which I will shortly address here.

Tronchetti asserts that the two most debated points “concern the nature of the events which might trigger the right of self-defence”, i.e. necessity and “the nature of the self-defence actions which States might undertake”, that is, proportionality.

Regarding necessity, argues that the intentional destruction of a satellite by means of a kinetic physical weapon<sup>42</sup> would amount to an “armed attack” and thus

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<sup>40</sup> COUTINHO, Francisco Pereira, “A proibição do uso da força no século XXI”, in Roberto Caldas et al. (coord.), *Guerra e Paz no Século XXI: políticas e direito internacional*, Almedina, 2018, pp. 83-100, 93.

<sup>41</sup> TRONCHETTI, Fabio, in Frans von der Dunk and Fabio Tronchetti (eds.), “Legal aspects of the military uses of outer space”, *Handbook of Space Law*. Edward Elgar Publishing, 2015, pp. 331-382, 353-354.

<sup>42</sup> The *kinetic physical* weapon definition: Technology intended to create permanent and irreversible destruction of a satellite or to ground support infrastructure through force of impact with an object or a warhead. Such technology includes direct-ascent anti-satellite missiles and co-orbital systems. The co-orbital systems are satellites placed on similar orbits and can be directed to intercept or interfere by means of a close orbital rendezvous. See: United Nations Institute for Disarmament Research, “Counterspace Capabilities”, Prepared for the United Nations Group of Governmental Experts on Further Practical Measures for the Prevention of an Arms Race in Outer Space, Geneva, 6–17 August 2018.

authorise States to act in self-defence. He also theorises that according with international law principles (such as State flag in Law of the Sea) and even to some extent Article VIII of the OST<sup>43</sup>, a satellite could be considered equivalent to an attack to the State territory, qualifying the hypothetical attack further for the use of self-defence.

Something even more difficult to ascertain, however, would be non-destructive attacks, typically by means of a non-kinetic weapon<sup>44</sup>, such as a cyber-attack<sup>45</sup>. Indeed, what a state would consider an “attack” could also be considered a “measure not involving the use of armed force”, that is, the “interruption of means of communication” which applied to outer space activities would probably amount to a cyber-attack to shut down a satellite<sup>46</sup>.

According to Tronchetti, one would then need to evaluate its purpose, repetitiveness and connection with other military activities on the ground to conclude if such an attack would be eligible to trigger a self-defence response<sup>47</sup>.

The space environment is much more volatile than Earth’s, and this is important when considering proportionality in outer space. Any activity, even an armed attack or an act of self-defence, can easily lead to unpredictable, devastating and long-term side effects. For now there are no specific legal limits on proportionality of self-defence in outer space. In principle this would be established under Article IX of the OST; however, this provision does not cover times of war.

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<sup>43</sup> OST, Article VIII, “A State Party to the Treaty on whose registry an object launched into outer space is carried *shall retain jurisdiction and control over such object*, and over any personnel thereof, while in outer space or on a celestial body.”

<sup>44</sup> There are three types of non-kinetic weapons. *Non-Kinetic Physical*: Technology meant to create interference or temporary damage and physical impact on space systems without physical contact. This category includes electromagnetic pulses or directed energy (laser beams or microwave bombardments) technologies. *Electronic*: Technology that uses radiofrequency energy to interfere with or jam the communications to or from satellites but not cause permanent physical damage. *Cyber*: Technology that uses software and network techniques to compromise, control, interfere or destroy computer systems that are linked to satellite operations. See: United Nations Institute for Disarmament Research, “Counterspace Capabilities”, Prepared for the United Nations Group of Governmental Experts on Further Practical Measures for the Prevention of an Arms Race in Outer Space, Geneva, 6–17 August 2018.

<sup>45</sup> TRONCHETTI, Fabio, in Frans von der Dunk and Fabio Tronchetti (eds.), “Legal aspects of the military uses of outer space”, *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 331-382, 355.

<sup>46</sup> Article 41 of the UN Charter

<sup>47</sup> TRONCHETTI, Fabio, in Frans von der Dunk and Fabio Tronchetti (eds.), “Legal aspects of the military uses of outer space”, *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 331-382, 354.

If a restrictive view of self-defence is adopted, consequently assuming an inflexible interpretation of the principle of proportionality, in the event of an attack on terrestrial soil the State cannot retaliate in outer space due to possible effects for third States. Additionally, if there is an attack on a space object, the State should attack ground positions, although an attack on enemy satellites is not legally prohibited.

The principle of proportionality under the broader view of self-defence would be an even greater conundrum because a pre-emptory attack on a satellite would likely be disproportionate due to possible damage to third States and damage of the space environment with space debris, for instance<sup>48</sup>.

### ***2.1.2 Limits on military activities***

Article IV limits the freedom of exploration presented in Article I (2) concerning military activities. Nevertheless, it is a general constraint considering that the OST's purpose is to establish general principles and therefore it should be complemented by other treaties and rules of international law, such as the ones discussed above found in the UN Charter.

This article can be divided into two parts. The first one concerns a prohibitive regime to the weapons of mass destruction (WMDs), and the second has to do with the use of the Moon and other celestial bodies. However, it says nothing to clarify the meaning of “military uses”, “space weapons” nor “peaceful uses”<sup>49</sup>.

The provisions of Article IV only prohibit the placement of weapons of mass destruction, leaving out conventional weapons. This rule has never been broken; however, there are major debates regarding conventional armaments in outer space, and several tests were already carried out such as the infamous Chinese ASAT (anti-satellite) weapon test in 2007<sup>50</sup>.

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<sup>48</sup> Ibid, pp. 355-356.

<sup>49</sup> SCHROGL, Kai-Uwe and NEUMANN, Julia, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.), “Article IV”, *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 285-351, 288.

<sup>50</sup> Ibid, p. 289.

Going quickly through Article IV (1), ASAT weapons are not included in the prohibitions outlined in it: by referring specifically to nuclear weapons and WMDs, conventional weapons and military satellites are left out. But even the regime outlined for nuclear weapons and WMDs is not exempt of “flaws”. In theory, Article IV is permissive for the transit of such weapons to be used on Earth and also for their use in outer space, because it only explicitly prohibits their placement in Earth’s orbit, installation in celestial bodies, or stationing in outer space. This is largely remedied by the Partial Test Ban Treaty.

Article IV (2) omits the term outer space and mentions specifically the Moon and other celestial bodies, purposefully leaving the space between the celestial bodies out of the provision. The *travaux préparatoires* reveal that this is intentional to maintain the freedom to carry out military activities, such as the use of reconnaissance satellites<sup>51</sup>. The reference to testing “any type of weapons” prohibits not only weapons of mass destruction, but also conventional weapons on celestial bodies<sup>52</sup>. Conducting military manoeuvres on celestial bodies is also prohibited by the article.

Moreover, it allows the use of military personnel for scientific research or “any other peaceful purposes”; therefore, the specific activities that military personnel can carry out depend on the interpretation of peaceful purposes. Traditionally most astronauts were fighter pilots. Out of all Apollo missions only one geologist participated in the Apollo 17. However, especially with the growing importance of the private sector, more and more elements of civil society, including scientists, participate in space flights. But even taking this into account, the practice of the States is in agreement with the existing norm since the Moon was only used for peaceful purposes<sup>53</sup>.

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<sup>51</sup> TRONCHETTI, Fabio, in Frans von der Dunk and Fabio Tronchetti (eds.), “Legal aspects of the military uses of outer space”, *Handbook of Space Law*. Edward Elgar Publishing, 2015, pp. 331-382, 338.

<sup>52</sup> Furthermore, weapons are not considered “equipment”. See, SCHROGL, Kai-Uwe and NEUMANN, Julia, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.), “Article IV”, *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 285-351, 326.

<sup>53</sup> *Ibid*, pp. 324-325.

### 2.1.2.1 Peaceful purposes

The OST does not provide any definition of "peaceful purposes", which caused great debate and boiled down to two major positions. The broader one (non-military) - headed by China and Russia - aims to prohibit any type of activity for military purposes in outer space and the restrictive one (non-aggressive) - headed by the so-called western world - argues that military activities in outer space, are legal as long as carried out according to Article 2 (4) of the UN Charter, which prohibits the threat and use of force. This latter approach has gained more support as States accept passive military operations such as reconnaissance and surveillance in outer space<sup>54</sup>.

However, it is important to emphasise that when Article IV (2) states that “The Moon and other celestial bodies shall be used by all States Parties to the treaty *exclusively* for peaceful purposes”, it leaves no doubt as to the scope of this specific provision concerning celestial bodies, that is, the prohibition of any military use, even if non-aggressive. In addition, the subsequent provisions creating exceptions to the rule, authorising certain military activities, emphasize the existence of this prohibition<sup>55</sup>.

The Antarctic Treaty also presents a similar provision, "for peaceful purposes only", referring to a total demilitarization of the continent, and knowing that the OST was heavily inspired by it, this is another indicator of the meaning of “*exclusively*”<sup>56</sup>.

We can also look at the practice of States in order to interpret "*exclusively* for peaceful purposes". Article 31 (3) of the Vienna Convention stipulates that (b) “Any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation” shall be taken into account.

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<sup>54</sup> TRONCHETTI, Fabio, in Frans von der Dunk and Fabio Tronchetti (eds.), “Legal aspects of the military uses of outer space”, *Handbook of Space Law*. Edward Elgar Publishing, 2015, pp. 331-382, 339-340.

<sup>55</sup> SCHROGL, Kai-Uwe and NEUMANN, Julia, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.), “Article IV”, *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 285-351, 318.

<sup>56</sup> *Ibid*, p. 295.

Consequently, looking at subsequent practice, the provision under analysis is reiterated in Article 3 (1) of the Treaty of the Moon, whose all States Parties are also members of the OST. It should also be noted that the treaty has failed universal acceptance largely by the resource exploitation regime that it envisaged and not by the notion of demilitarization of the Moon. Therefore, although the treaty itself does not serve as a guide for the general practice of States, it does not mean that it is not relevant to this specific matter<sup>57</sup>.

Article 141 of the UNCLOS establishes a regime in the Area *exclusively* for peaceful purposes, which is interpreted as non-military, in contrast the High Seas must be used for peaceful purposes (emphasizing the omission of *exclusively*), allowing non-aggressive military uses. This is important for State practice especially considering that 166 States have ratified it.

In contrast there are also instances that contradict the meaning of *exclusively* for peaceful purposes. Article II of the ESA Convention states that “The purpose of the Agency shall be to provide for and to promote, for *exclusively* peaceful purposes, co-operation among European States in space research and technology and their space applications”. Although initially this provision was interpreted in such a way as to reiterate the Agency’s primarily civilian function, rejecting its involvement in military studies or activities, this stance is not as strict today, leading it to a different interpretation of this rule, one that is more comprehensive by including activities of dual-use<sup>58</sup>, meaning both for military and civil purposes.

ESA's participation in the Global Monitoring for Environmental Security / Copernicus program, later changed to "Global Monitoring for Environmental *and* Security" is a seminal example<sup>59</sup>. Then again, this Convention cannot also be considered as general practice of States, as it only applies to ESA Member States.

INMARSAT’s Article 3 (3) also provides that “The Organization shall act *exclusively* for peaceful purposes”, however its services were not only used by

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<sup>57</sup> Ibid, p. 320.

<sup>58</sup> Ibid, p. 321.

<sup>59</sup> VON DER DUNK, Frans, in Frans von der Dunk and Fabio Tronchetti (eds.), “International organizations in space law”, *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 269-331, 315.

American troops in the 1991 Gulf War, but were later developed especially with the aim to support military activities in operations in Afghanistan and Iraq. Both of these cases contributed to a global dilution of what is understood by space activities *exclusively* for peaceful purposes<sup>60</sup>.

### ***2.1.3 Cooperation and consultations***

Although the history of Article IX is related to potential harmful changes of the natural environment caused by space activities, the principle of avoiding potentially harmful interference is closely linked to the use of outer space for peaceful uses and military uses<sup>61</sup>. Indeed, two main events marked the discussions for the drafting of this article: the nuclear experiments in Earth's atmosphere conducted by both the USA and USSR and the "West Ford Experiment" by the Americans (both in the 1960s), a project about telecommunications which involved the deployment of millions of copper needles in medium earth atmosphere to reflect radio waves originating from stations in the ground<sup>62</sup>.

Article IX complements Article IV by establishing indirect limitations on military activities in outer space. But although the third sentence stipulates the duty to "undertake appropriate international consultations" before starting an activity or experience that can potentially cause "harmful interference" with the activities of other States<sup>63</sup>, this duty was allegedly violated by China in its January 2007 ASAT weapon test.

Furthermore, the first sentence of the article indicates 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". Since Article IX is independent from Article IV, this means that in a warlike scenario this article loses its relevance, since the Parties would no longer

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<sup>60</sup> Ibid, p. 317.

<sup>61</sup> MARCHISIO, Sergio, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.) , "Article IX", *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 551-591, 558.

<sup>62</sup> Ibid, p. 559.

<sup>63</sup> TRONCHETTI, Fabio, in Frans von der Dunk and Fabio Tronchetti (eds.), "Legal aspects of the military uses of outer space", *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 331-382, 341.



envisage the exploration and peaceful use of outer space, thus applying the *jus ad bellum*<sup>64</sup>.

Nevertheless, the principle of due regard sought out in this provision, presents itself as the limitation of a State's freedom by taking into account the interests and rights of other States. This is further emphasised by the notion of "corresponding interests". This means taking care beyond a reasonable doubt that everything possible was done not to hamper or threaten the peaceful activities of others<sup>65</sup>.

Therefore, if a State believes its space activities will produce such harmful effects then it is required to enter into consultation prior to the authorisation of those activities. On the other hand, the potentially affected State can ask for consultation both before and during such activities or experiments. Two important points noted by Sergio Marchisio are that *i*) Article IX deals with activities that are not prohibited by international law and *ii*) it is not a mere formality with no intention of reaching a solution acceptable to both sides; thus, although it does not provide any sort of veto power for that matter, it tries to strike a balance by relying on the procedure itself, that is, invoking corrective measures in *prior* consultations (emphasis added)<sup>66</sup>. Furthermore, just the fact that the acting State informs the potentially affected State, gives the latter time to take preventive measures for mitigation of the harmful effects, even if no agreement is reached.

#### ***2.1.4 Conclusions of the OST***

Although the OST presents itself as the heart of the regulations of space activities, including military activities, it does not provide a comprehensive framework for the latter, especially concerning conventional military activities. This may not be surprising giving that the treaty was never supposed to lay down strict and encompassing rules, it is a treaty of principles to be complemented by other legal instruments, which will be analysed below.

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<sup>64</sup> SCHROGL, Kai-Uwe and NEUMANN, Julia, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.), "Article IV", *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 285-351, 327-328.

<sup>65</sup> MARCHISIO, Sergio, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.) , "Article IX", *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 551-591, 568 and 570.

<sup>66</sup> *Ibid*, pp. 581-582.

Hence, Article IV does not establish a comprehensive regime for all aspects of military activities in outer space, and their different interpretations and practical applications are controversial. It only partially prohibits weapons in outer space. States are free to deploy any type of satellites in outer space, even to pursue military activities, as long as they are within the general principles of international law and in particular those included in the UN Charter.

The stringiest regime we can find is within Article IV (2) prohibiting all types of weapons on the Moon and other celestial bodies, as well as the establishment of military bases, installations and fortifications, the testing of any weapon and the conducting of military manoeuvres on celestial bodies. On the other hand, it allows the use of military personnel, equipment and facilities necessary for its peaceful exploration.

## **2.2 Other relevant legal regimes for conventional weapons in outer space**

### ***2.2.1 The Hague Code of Conduct***

The Hague Code of Conduct against Ballistic Missile Proliferation is a non-binding legal instrument establishing transparency and confidence measures by asking States to annually share a report on their ballistic missile programs and to provide pre-launch notifications for them and space vehicles<sup>67</sup>. This instrument is important to conventional weaponry because ballistic missiles can be modified to serve as launch vehicles as well as ASAT weapons.

Although the United States and Russia adhere to this instrument, Iran, China, North Korea, Brazil, among others, do not, undermining its credibility<sup>68</sup>, and thus why the current main objective of the Hague Code of Conduct is to achieve universalisation<sup>69</sup>.

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<sup>67</sup> SCHROGL, Kai-Uwe and NEUMANN, Julia, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.), "Article IV", *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 285-351, 329.

<sup>68</sup> TRONCHETTI, Fabio, in Frans von der Dunk and Fabio Tronchetti (eds.), "Legal aspects of the military uses of outer space", *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 331-382, 346.

<sup>69</sup> Press release of the 18th regular meeting of the subscribing states to the Hague Code of Conduct against ballistic missile proliferation.

### ***2.2.2 Registration Convention and Liability Convention***

The Registration Convention creates the obligation of the State to register the space objects with the United Nations (Article II). Although it is possible to register its use as military, this is not necessary and most are registered for "general function"<sup>70</sup>. The Liability Convention establishes absolute liability to the launching State for damage caused by a space object on the Earth's surface or to aircraft in flight<sup>71</sup>, and "in the event of damage being caused elsewhere than on the surface of the Earth" the launching State "shall be liable only if the damage is due to its fault or the fault of persons for whom it is responsible"<sup>72</sup>. Among a set of weaknesses, the biggest one for the issue of regulation of conventional weapons in outer space is that, although there were already various incidents involving ASAT weapons, it was never formally applied<sup>73</sup> revealing that it does not serve as a deterrent for that kind of behaviour.

### ***2.2.3 The Anti-Ballistic Missile Treaty (1972)***

The ABM Treaty was the first concrete legal step to reinforce the partial demilitarization of the outer space after the OST. Article V bans the testing and establishment of ABM systems and components based on space, sea and air.

Tronchetti argues that it banned ASAT weapons because Article XII (2) states that "each State Party undertakes not to interfere with the national technical means of verifying the other Party to operate in accordance with paragraph 1 of this article". National technical means of verification is often characterized by the use of satellites to verify if the dispositions of the treaty are being upheld. In this sense Tronchetti is correct, however it was a very limiting ban on ASAT weapons because the protection of satellites (and space activities for that matter) was not the purpose of this Treaty. Still, this treaty has the merit of being the only one that prohibited the testing and establishment of weapons in outer space other than

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<sup>70</sup> SCHROGL, Kai-Uwe and NEUMANN, Julia, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.), "Article IV", *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 285-351, 329.

<sup>71</sup> Liability Convention, Article II.

<sup>72</sup> Liability Convention, Article III.

<sup>73</sup> VON DER DUNK, Frans, in Frans von der Dunk and Fabio Tronchetti (eds.), "International Space Law", *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 29-125, 93-94.

nuclear and WMDs. Being a bilateral treaty, the US withdrawal in 2002 made it officially null and void.

#### ***2.2.4 Convention of the International Telecommunication Union (ITU, 1992)***

The ITU regulates its Member States use of radio frequencies. Article 48 mentions that “Member States retain their entire freedom with regard to military radio installations”<sup>74</sup>, nevertheless they must observe statutory provisions taken to prevent harmful interference<sup>75</sup>, such as Article 45 which provides that all stations should be established and operated so to not cause harmful interference to the radio services or communications of other Member States or recognised operating agencies.

### **2.3 Conclusions**

*“The Outer Space Treaty is clearly an arms control treaty”.*<sup>76</sup>

The OST is often portrayed as a failure of international law, a botched treaty that is a mere anachronism of the Cold War. And although there is a lot to criticize in it, it was successful to help answer the questions of its time, namely the dangers of nuclear weapons and other WMDs. That was its main function. To say the OST failed to put forward a comprehensive legal framework is to attribute a purpose that it was never meant to have.

The OST *also* set out principles that were supposed to pave the way for more specific legal frameworks, namely for other military activities in outer space. Yet, after more than 50 years, there are still no detailed legal norms concerning conventional military activities, and the only one that covered them (ABM Treaty) is void since 2002. This failure is attributable not only to the negotiation mechanisms that seem to be outdated (for instance, the kind of multilateralism and

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<sup>74</sup> ITU Convention, Article 48 (1).

<sup>75</sup> Ibid, Article 48 (2).

<sup>76</sup> Cit. SCHROGL, Kai-Uwe and NEUMANN, Julia, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.), “Article IV”, *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 285-351, 291.

consensus in the COPUOS) but mainly to the lack of political will from the States<sup>77</sup>, definitely not the treaty that envisaged the negotiations in the first place.

In Part II the current proposals will be scrutinized and compared to see what possible solutions are there for the mitigation of usage of conventional weaponry in space, and why none of them was adopted so far.

## **II. PROPOSALS FOR THE REGULATION OF CONVENTIONAL MILITARY ACTIVITIES IN OUTER SPACE**

### **3. The Prevention of an Arms Race in Outer Space (PAROS)**

#### **3.1 Introduction to PAROS**

The PAROS question was first discussed in the Tenth Special Session of the General Assembly devoted to disarmament in 1978, but it was in 1981 that the first two General Assembly Resolutions emerged. The issue soon found itself in a deadlock with opposing views from antagonistic sides of the Iron Curtain; still, procedural advances were made by including it in the Conference for Disarmament's (CD) agenda in 1985<sup>78</sup> which had been formally established in 1979 as a forum to negotiate arms control and disarmament matters<sup>79</sup>.

The CD, although independent from the UN, can be asked by the UNGA for analysis of specific arms control and disarmament matters; moreover, the CD reports annually to the UNGA. Hence, the PAROS issue is traditionally on the CD's agenda since 1985 although without significant breakthroughs in a deeply politicised forum where countries at times cannot even reach a working agenda and are divided by groups according with their interests and political allegiances, such as the Western Group and the Group of 21 (Non-Aligned Nations)<sup>80</sup>.

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<sup>77</sup> Namely another forum of discussion, the Conference on Disarmament, has been unable to at times even reach an agenda for its meetings. One of the main disagreements revolve around the Prevention of an Arms Race in Outer Space (PAROS), the US argues that there is no such thing as an arms race in outer space and thus there is no need for negotiations. This issue will also be further discussed in the next Part. See: JANKOWITSCH, Peter, in Frans von der Dunk and Fabio Tronchetti (eds.), "The Background and History of Space Law", *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 1-29, 19.

<sup>78</sup> SILVERSTEIN, Benjamin, PORRAS, Daniel and BORRIE, John, "Alternative Approaches and Indicators for the Prevention of an Arms Race in Outer Space", *UNIDIR Space Dossier 5*, UNIDIR, 2020, p. 9.

<sup>79</sup> Secure World Foundation, Fact Sheet Conference on Disarmament, 2009.

<sup>80</sup> Ibid.

In today's world we can identify two major positions that root back to the same arguments brought up during the Cold War. The first one is led by China and Russia, and advocates the prohibition on the placement of weapons in outer space through a treaty forged within the designated UN bodies, meaning that its main objective is to curb threats from space systems. This is largely due to the historical threat perceived by such countries, and especially Russia, from the Space Defence Initiative (SDI)<sup>81</sup>. The second one, headed by the Western European States, focuses on mitigating threats to space objects and argues for voluntary transparency and confidence-building measures given that, according to its proponents, the current legal instruments are sufficient for the assurance of the use of outer space for peaceful purposes<sup>82</sup>. Just as the arguments stayed largely unchanged so did the deadlock within the CD and the broader discussion surrounding PAROS.

The UNGA has adopted annual Resolutions on PAROS since 1981 which have been repeatedly opposed by the US. Furthermore, the American Administrations consistently refused to negotiate PAROS within the CD<sup>83</sup>. The main arguments I found on the behalf of the US for this stance were that: *i*) because a space race does not exist, there is no need to negotiate the prevention of an arms race in outer space<sup>84</sup>; *ii*) it would be impossible to verify an agreement banning such weapons<sup>85</sup> and; *iii*) that space as already been weaponized (i.e. you can't prevent something that has already happened)<sup>86</sup>. However, aside from the ideological differences in

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<sup>81</sup> A program that envisaged an orbital defence arrangement capable of intercepting nuclear weapons, envisaging "the deployment of thousands of orbital weapons". Cit. MOLTZ, James Clay, "The politics of space security: strategic restraint and pursuit of national interests", third edition, *Stanford University Press*, California, 2019, p.176.

<sup>82</sup> SILVERSTEIN, Benjamin, PORRAS, Daniel and BORRIE, John, "Alternative Approaches and Indicators for the Prevention of an Arms Race in Outer Space", *UNIDIR Space Dossier 5*, UNIDIR, 2020, pp. 9-11.

<sup>83</sup> <https://www.nti.org/learn/treaties-and-regimes/proposed-prevention-arms-race-space-paros-treaty/>

<sup>84</sup> This argument, echoed by some Western countries, was largely due to the end of the Cold War and its competitive struggle. See JANKOWITSCH, Peter, in Frans von der Dunk and Fabio Tronchetti (eds.), "The Background and History of Space Law", *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 1-29, 19 and Secure World Foundation, Fact Sheet CD, 2009.

<sup>85</sup> On the proposal of the PPWT, which will be further analysed below. SILVERSTEIN, Benjamin, PORRAS, Daniel and BORRIE, John, "Alternative Approaches and Indicators for the Prevention of an Arms Race in Outer Space", *UNIDIR Space Dossier 5*, UNIDIR, 2020, p. 12.

<sup>86</sup> FORD, Christopher, "Whither Arms Control in Outer Space? Space Threats, Space Hypocrisy, and the Hope of Space Norms", speech, Center for Strategic and International Studies, Washington DC, 6 April 2020.

the approach to outer space activities and its peaceful use, in a more realist sense this may be attributed to the American superiority in the space environment; after all, “*If you are Gulliver, why tie yourself to the ground for the sake of Lilliput?*”<sup>87</sup>.

### **3.2 Two major points of contention**

Since the beginning of the space age, space has been used to support military planning and operations on Earth; that is, to gather intelligence, for communications, navigation and other functions that enhance military capabilities on the ground. During the Second Gulf War this relationship was demonstrated to a potential never seen before. This passive support of military operations using space systems is referred as militarization of outer space, and is presently generally accepted by the international community<sup>88</sup>, mainly because virtually every State does it to some degree.

A 1991 UN report on space security states that the term weaponization of outer space has been used to include space-based weapons consisting of space/Earth-strike devices. For some delegations, however, weaponization of outer space also covers ground-based weapons consisting of space-strike devices<sup>89</sup>. Therefore, to reach to a conclusion a definition on space weapons needs to be attained first.

Broadly speaking, a space weapon can be defined by originating in space or have effects in space. Therefore, weapons that originate on Earth and have effects on Earth, even if they transit through space, are not within its scope. Considering this definition, we can sort space weapons by where they originate and where they have effects; as such, weapons can be subdivided in Earth-to-Space, Space-to-Space and Space-to-Earth. This approach was endorsed by the Group of Governmental Experts in 2018 as an alternative approach to the PAROS debate enabling States to focus their attention on specific solutions<sup>90</sup>.

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<sup>87</sup> Cit. KLIMENT, Alex, “The invisible threat to global peace”, Gzero, September 2020.

<sup>88</sup> HARRISON, Todd, “International Perspectives on Space Weapons”, report, *Center for Strategic and International Studies*, 2020, p. 3.

<sup>89</sup> *Ibid*, p. 4.

<sup>90</sup> SILVERSTEIN, Benjamin, PORRAS, Daniel and BORRIE, John, “Alternative Approaches and Indicators for the Prevention of an Arms Race in Outer Space”, *UNIDIR Space Dossier 5*, UNIDIR, 2020, p. 25.

Moreover, a weapon can be kinetic or non-kinetic totalling six possible combinations<sup>91</sup>. Accordingly, only a narrow definition of space weapon permits to conclude that space has not been weaponized yet. Three of the six possible categories have already been officially tested (earth-to-space kinetic and non-kinetic and space-to-space kinetic)<sup>92</sup>. Furthermore, space-to-space non-kinetic weapons might also been tested already, for instance, in 2018 France accused Russia of manoeuvring one of its satellites close enough to a French space object to intercept military communications. Besides, manoeuvring a satellite in close proximity to another State's satellite and without prior coordination can be interpreted as threatening<sup>93</sup>.

Another major sticking point are the mechanisms of verification and enforcement<sup>94</sup> which often revert into the debate of a soft law or hard law approach the weaponization of outer space. The proposals for arms control can thus provide insight about the countries perspectives on space weapons and which activities and capabilities they want to restrict<sup>95</sup>. That will be the purpose of the following chapters.

#### **4. The draft Treaty on the Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force against Outer Space Objects (PPWT)**

##### **4.1 Introduction to the 2008 draft PPWT**

Although the PAROS issue found itself deadlocked since its early days, it still materialized in the form of the PPWT. The PPWT aims to fill in the gaps left by the OST by providing new definitions, terms, conditions and obligations. It was submitted to the CD in 2008 and its two main proponents, Russia and China, propose a hard law approach to the prevention of an arms race in outer space<sup>96</sup>. The starting point for the proposal of the draft treaty is largely the same as the one

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<sup>91</sup> See Annex 1.

<sup>92</sup> HARRISON, Todd, "International Perspectives on Space Weapons", report, *Center for Strategic and International Studies*, 2020, p. 5.

<sup>93</sup> *Ibid*, pp 17-18.

<sup>94</sup> *Ibid*, p. 22.

<sup>95</sup> *Ibid*, p. 9.

<sup>96</sup> HENDERSON, Stacey, in Kai-Uwe Schrogl (eds.), "Arms Control and Space Security", *Handbook of Space Security*. Springer, 2020, p. 8.



discussed previously, that is the danger posed by the weaponization of outer space, which is also recognized by the UNGA itself<sup>97</sup>.

The Preamble of the document presents its legal foundation by recalling the UNGA Resolution “Prevention of an arms race in outer space”. The draft treaty begins by defining outer space<sup>98</sup>, outer space object, weapons in outer space and the use or threat of using force. I will focus on certain aspects of the draft treaty that were met with criticism. In general, this draft treaty was heavily criticized for ignoring the most pressing threats regarding space objects, while allegedly favouring the strategic interests of its sponsors.

#### **4.2 Definition of “weapons in outer space” and of the threat or use of force**

Article I (c) states that “weapon in outer space” “means any device placed in outer space, based on any physical principle, which has been specially produced or converted to destroy, damage or disrupt the normal functioning of objects in outer space, on the Earth or in the Earth’s atmosphere, or to eliminate a population or components of the biosphere which are important to human existence or inflict damage on them”. Furthermore, Article I (d) further states that “A weapon shall be considered to have been “placed” in outer space if it orbits the Earth at least once, or follows a section of such an orbit before leaving this orbit, or is permanently located somewhere in outer space”.

The main critique surrounding these provisions concerns its overly restrictive view. By mentioning that a space weapon has to be placed in outer space it automatically leaves out both ballistic missiles<sup>99</sup> and any Earth-based weapons, which China and Russia justified due to the difficulty of verifying their development and effective location. In particular, direct-ascent ASAT weapons<sup>100</sup>

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<sup>97</sup> A/RES/58/36, and many others.

<sup>98</sup> There is still no precise definition of where outer space begins and Earth atmosphere ends, but that discussion is out of the scope of this dissertation. For a good analysis of this issue see: VON DER DUNK, Frans, in Frans von der Dunk and Fabio Tronchetti (eds.), “International Space Law”, *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 29-125, 60-78.

<sup>99</sup> Which can be used to target satellites and although they go through space they are not placed in space. See: SU, Jinyuan, “The “peaceful purposes” principle in outer space and the Russia–China PPWT Proposal”, *Space Policy*, Vol. 26, Issue 2, Elsevier, 2010, pp. 81-90, 85.

<sup>100</sup> See Annex 1, Earth-to-Space kinetic weapons.

are regarded by many as one of the biggest threats to outer space<sup>101</sup> because they are possessed by numerous States, have been tested several times producing a devastating amount of space debris which already began to affect the functioning of outer space objects<sup>102</sup>, and its possible they would be used in case of conflict<sup>103</sup>. Regarding dual-use space objects, they have been omitted since they have not been “specially produced or converted” to damage other space objects<sup>104</sup>. Still, the implications of the dual use nature of space objects cannot be overstated. For instance, some argue that one of the main strategies for the Chinese space defensive operations is camouflaging satellites and space assets, meaning the active pursuit of the dual use nature of space objects to give the impression that any commercial spacecraft can potentially be a satellite with military capabilities<sup>105</sup>. In the US perspective the Chinese strategy of reliance on the ambiguity of dual-use purposes is also replicated in other domains as part of the broader “Military-Civil Fusion Development Strategy”<sup>106</sup>.

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<sup>101</sup> As a consequence of the 2007 Chinese ASAT test, “by July 2012 a total of over 5,500 debris particles had been officially catalogued in the SSN following these break-ups, 90 per cent of which were still in orbit. These pieces of debris account for 36 per cent of all LEO (Low Earth Orbit) objects. Even a single break-up incident (let alone several) can thus make a big difference”. See: VIIKARI, Lotta, in Frans von der Dunk and Fabio Tronchetti (eds.), “Environmental aspects of space activities”, Handbook of Space Law, Edward Elgar Publishing, 2015, pp. 717-765, 721. PORRAS, Daniel, “Shared risks: An examination of universal space security challenges”, Briefing paper for the United Nations Disarmament Commission, UNIDIR, 2020, pp. 12-13.

<sup>102</sup> LISTNER, Michael and RAJAGOLAPAN, Rajeswari Pillai, “The 2014 PPWT: a new draft but with the same and different problems”, *The Space Review*, August 2014.

<sup>103</sup> TRONCHETTI, Fabio and HAO, Liu, “The 2014 updated Draft PPWT: Hitting the spot or missing the mark?”, *Space Policy*, Vol. 33, Part 1, Elsevier, 2015, pp. 38-49, 40.

<sup>104</sup> On the dual-use dilemma: “One delegation holds that it is not easy to identify what is or is not a weapon in outer space. The logic is that anything in outer space with the ability to alter its trajectory, including any of the current meteorological, communications, remote-sensing, or navigation satellites currently in orbit, could be a weapon and any of these could, in principle, have its orbit altered so as to collide with another satellite, with obviously harmful results to the target. The same delegation argues that the inability to define space weapons is the main barrier to a treaty” Cit. CD/1818, para. 39. Also as Frans von der Dunk metaphorically and eloquently explained: “On my way to boarding the plane (...) I was not allowed to take, inter alia, any knife with me into the aircraft. Mind you: not just knives specially produced or converted to wound or kill people, but any knife, including knives specially produced or converted for example to cut bread—because, obviously, also those could wound or kill people on an aircraft, and there would be little upfront guarantee about absence of malicious intent (...) to use any knife for such purposes.” VON DER DUNK, Frans, “Cutting the Bread”, *Space Policy*, Volume 29, Issue 4, Elsevier, 2013, pp. 231-233, 231.

<sup>105</sup> ROULEAU, Sam, in Damon Coletta and Michelle Black (eds.), “China’s Military Space Strategy: A Dialectical Materialism Perspective”, *Space & Defense*, Eisenhower Center for Space and Defense Studies, 2019, pp. 3-23, 13.

<sup>106</sup> Office of the Secretary of State, “Military and Security Developments Involving the People’s Republic of China 2020”, *Annual report to Congress*, pp. 18-23.

Under the PPWT, the States Parties are prohibited from using force against space objects<sup>107</sup>, which covers both direct-ascent ASAT weapons and dual-use satellites; however, many questions remain concerning the threat of force for example regarding the testing of such weapons and close flybys which the draft PPWT permits<sup>108</sup>. The hostile intent of the States Parties would need to be confirmed, but by what means particularly considering the distant and unreceptive nature of the outer space environment? This question renders the only possible provision of the draft PPWT against the testing of such weapons effectively void. Furthermore, some even argue that the expression “*hostile actions*” establishes an important caveat that permits the testing of weapons that are not placed in space, given that a State cannot be “hostile” to itself, *ergo*, it authorises testing the kind of technologies that are more dangerous to space objects such as the 2007 Chinese ASAT weapon test, the American reaction in 2008 and others<sup>109</sup>.

China and Russia posit that the destruction of their own satellites would be allowed only in specific circumstances. For example on satellites that are not working well or to eliminate threats to other space objects or activities on Earth. This reasoning is justified and is even similar to the ICoC, however this is not specified in the PPWT<sup>110</sup>.

By barring access exclusively to one category of ASAT weapons it may lead to the proliferation of the other categories that are not prohibited, namely direct-ascent ASAT weapons. In this sense, this overly restrictive definition of space weapon gives little assurances to other delegations<sup>111</sup>.

Above-all, direct-ascent weapons pose the greatest imminent danger to all outer space and there are several States that already have this capability while others are

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<sup>107</sup> 2008 Draft PPWT, Article I (e): “The “use of force” or the “threat of force” mean any *hostile actions* against outer space objects including, inter alia, actions aimed at destroying them, damaging them, temporarily or permanently disrupting their normal functioning or deliberately changing their orbit parameters, or the threat of such actions.”

<sup>108</sup> CD/1847, para. 13.

<sup>109</sup> Ibid, para. 12.

<sup>110</sup> CD/1872, Question 4.

<sup>111</sup> TRONCHETTI, Fabio and HAO, Liu, “The 2014 updated Draft PPWT: Hitting the spot or missing the mark?”, *Space Policy*, Vol. 33, Part 1, Elsevier, 2015, pp. 38-49, 40.

developing it. At the moment it is the easiest and most efficient way to attack satellites. On the other hand, no State has placed weapons in orbit, in the same way that none considers doing so. Moreover, the way the proposal ignores the dual-use dilemma may actually aggravate the space debris problem. For instance, a State could easily either accuse another State's technology designed to remove space debris as a disguised weapon or use its own as a cover for the weaponization of outer space<sup>112</sup>. In effect, this draft treaty focuses its efforts on a type of ASAT weapon that is the least concern<sup>113</sup> while opening the door to new loopholes.

It seems to be a decision based on the strategic interests of the PPWT proponents (Russia and China) who are betting on the development of land-based direct-ascent ASAT weapons<sup>114</sup> to the detriment of others like the United States which historically have focused on missile defence systems that include components based on space *a priori* excluded by the PPWT, although all the initiatives – the flagship one being the SDI program – never really materialised<sup>115</sup>. Still, the US sees this rule as a possible threat to its national security given that it permits States to build “breakout capability”, that is, to do research, develop, test, produce, store and deploy both space-based weapons and more importantly terrestrial-based weapons, such as direct-ascent ASAT weapons that can be used when the time comes<sup>116</sup>.

### 4.3 The self-defence clause

Article V of the 2008 draft PPWT authorizes the use of ASAT weapons in case of self-defence, subject to the conditions of proportionality and necessity<sup>117</sup>. One of the great concerns of the US was how to apply the right of self-defence enshrined

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<sup>112</sup> LISTNER, Michael and RAJAGOLAPAN, Rajeswari Pillai, “The 2014 PPWT: a new draft but with the same and different problems”, *The Space Review*, August 2014.

<sup>113</sup> TRONCHETTI, Fabio and HAO, Liu, “The 2014 updated Draft PPWT: Hitting the spot or missing the mark?”, *Space Policy*, Vol. 33, Part 1, Elsevier, 2015, pp. 38-49, 40-41.

<sup>114</sup> LISTNER, Michael, “An exercise in the Art of War: China's National Defense white paper, outer space, and the PPWT”, *The Space Review*, April 2011.

<sup>115</sup> MOLTZ, James Clay, “The politics of space security: strategic restraint and pursuit of national interests”, third edition, *Stanford University Press*, California, 2019, pp.176-227.

<sup>116</sup> SU, Jinyuan, “The “peaceful purposes” principle in outer space and the Russia–China PPWT Proposal”, *Space Policy*, Vol. 26, Issue 2, Elsevier, 2010, pp. 81-90, 86. Also CD/1847, para. 8 and 9.

<sup>117</sup> CD/1872, Question 3, Answer (2).

in this article considering it can overrule the prohibition to “not to resort to the threat and use of force against outer space objects” set out in Article II.

Further questions and potential problems can be foreseen when considering the different interpretations of Article 51 of the UN Charter already briefly explored above, namely the right to pre-emptive self-defence: what for one State is a pre-emptive measure of self-defence allowing the weaponization of space, for another is a threat of the use of force, creating a spiral of preventive measures<sup>118</sup>.

Additionally, the recognition of the right to self-defence is not a novelty because as pointed in Part I of this dissertation Article III of the OST already establishes the applicability of Article 51 of the UN Charter; thus, to be pertinent, the draft PPWT provision should lay down the parameters to invoke the clause, which it does not<sup>119</sup>.

#### **4.4 Absence of verification mechanisms and the procedural instruments**

Another critic of the draft treaty is its failure to provide a legally-binding verification regime. This fundamentally undermines its enforcement. The proponents of the draft treaty state that such a regime is difficult to negotiate and implement and consequently, to avoid dragging out the ratification of a legal document that envisages the *prevention* of a weapons race to outer space, it should be established in a subsequent additional protocol<sup>120</sup>.

Moreover, the settlement mechanism is intentionally opaque, based on an Executive Organisation (Article VII) that will again only be established later with an additional protocol (Article VIII<sup>121</sup>), effectively leaving the treaty in draft mode even after being ratified. Lastly, Article X states that amendments are approved by simple majority vote<sup>122</sup>. It is easy to understand why this is a problem with such a

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<sup>118</sup> SU, Jinyuan, “The “peaceful purposes” principle in outer space and the Russia–China PPWT Proposal”, *Space Policy*, Vol. 26, Issue 2, Elsevier, 2010, pp. 81-90, 88.

<sup>119</sup> TRONCHETTI, Fabio and HAO, Liu, “The 2014 updated Draft PPWT: Hitting the spot or missing the mark?”, *Space Policy*, Vol. 33, Part 1, Elsevier, 2015, pp. 38-49, 41.

<sup>120</sup> 2008 Draft PPWT, Article VI, and SU, Jinyuan, “The “peaceful purposes” principle in outer space and the Russia–China PPWT Proposal”, *Space Policy*, Vol. 26, Issue 2, Elsevier, 2010, pp. 81-90, 89.

<sup>121</sup> 2008 Draft PPWT, Article VIII, “(...) The title, status, specific functions and forms of work of the executive organization of the Treaty shall be the subject of an additional protocol to this Treaty.”

<sup>122</sup> Ibid, Article X, “(...) Any amendment to this Treaty shall be approved by a majority of the votes of the States Parties.”

sensitive matter that involves national security. That being said, the US Delegation understandably voiced its opposition on the matter<sup>123</sup>.

#### **4.5 Introduction to the 2014 draft PPWT**

Although the 2008 draft PPWT received support for stirring the debate around the PAROS issue, and is often regarded as a good starting point for further negotiations, no delegation seemed thrilled enough to formally embed it into the work of the CD on PAROS<sup>124</sup>. In 2014 a revised draft PPWT was presented by the Chinese and Russian delegations with improved aspects built on early criticism, however even though most of it was rewritten or somehow changed, the key disagreements over the draft treaty were apparently ignored.

#### **4.6 Positive aspects of the revision**

The definition of outer space was removed. Although the intricacies of this debate were not explored here, as mentioned before, it is a debate far from being solved and a potential barrier to the acceptance of the draft treaty by certain parties. Therefore, by eliminating this definition the drafters hoped to improve the chances of acceptance of the document<sup>125</sup>.

The role of the Executive Organisation was clarified by means of a procedure of settlement of disputes where States Parties can resolve their disputes bilaterally, by asking its assistance and with it bring the case to the UNGA or the Security Council<sup>126</sup>. Additionally, the amendment procedure was changed from a simple majority vote to consensus<sup>127</sup>.

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<sup>123</sup> TRONCHETTI, Fabio and HAO, Liu, “The 2014 updated Draft PPWT: Hitting the spot or missing the mark?”, *Space Policy*, Vol. 33, Part 1, Elsevier, 2015, pp. 38-49, 41-42.

<sup>124</sup> Ibid, p. 42.

<sup>125</sup> Ibid, p. 43.

<sup>126</sup> 2014 draft PPWT, Article VII, “(...) If the consultations do not lead to a mutually acceptable settlement which has due regard to the interests of all States Parties, any State Party or group of States Parties shall *seek the assistance of the executive organization of the Treaty*, submitting relevant evidence for the further consideration of the dispute. The executive organization may convene a meeting of States Parties to examine the dispute, make a decision establishing a violation of the Treaty and prepare recommendations based on States Parties’ proposals to settle the dispute and remedy the violation. If it is not able to settle the dispute or remedy the violation, *the executive organization may bring the issue, including the relevant information and conclusions, to the attention of the United Nations General Assembly or the United Nations Security Council.*”

<sup>127</sup> Ibid, Article XI, “(...) Amendments shall enter into force upon their acceptance by *consensus.*”

#### **4.7 Definition of “weapons in outer space”, the threat or use of force and the self-defence clause**

The scope of the definition of weapons regarding this treaty remained the same and so did the omission of dual-use space objects<sup>128</sup>. By reaffirming this restrictive definition, the drafters are defending a very limited view of weaponization of outer space, one that is insufficient to a lot of delegations and further confirmed by once more excluding the testing of Earth-based ASAT weapons from the scope of “threat of force”, stating that it must be carried out against a space object under the jurisdiction/control of another State<sup>129</sup>.

Furthermore, the new definition of the use or threat of force created a new point of contention, as the US “does not believe an action must be specifically “intended” to inflict damage in order to constitute a use of force under existing international law”. In any case, the US also explicitly stated that it “does not support attempts to negotiate a definition of this concepts for purposes of this treaty”, imposing what it seems a deadlock on this matter<sup>130</sup>.

Concerning the “breakout capability”, China and Russia counter argued that the high cost of researching, developing, producing and storing space-based weapons would be pointless considering that their use and placement was banned under the PPWT<sup>131</sup>. However, this is not a very solid argument for the prevention of an arms race. In an arms race States typically overspend not only because the objective is to have more offensive capabilities than the adversary – both in quantity and quality<sup>132</sup> – but also because the international environment in the context of heightened tensions is often characterized by suspicion and shallow diplomatic

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<sup>128</sup> Ibid, Article I, (b) of the 2014 draft PPWT, “The term “weapon in outer space” means any outer space object or component thereof *which has been produced or converted* to destroy, damage or disrupt...”

<sup>129</sup> Ibid, Article I, (d), “the terms “use of force” or “threat of force” mean, respectively, any intended action to inflict damage to outer space object under the jurisdiction and/or control of other States...”

<sup>130</sup> CD/1998, para. 12.

<sup>131</sup> CD/2042, para. 7.

<sup>132</sup> “Arms races are the outgrowth of competitive pressures that motivate or otherwise induce States to improve the quality of, or expand, their armed forces (...) often captured in an inter-State ‘action-reaction’ dynamic (...) hoping to achieve an advantage in military power by increasing the quantity or improving the quality of its armaments or armed forces”. Cit. SILVERSTEIN, Benjamin, PORRAS, Daniel and BORRIE, John, “Alternative Approaches and Indicators for the Prevention of an Arms Race in Outer Space”, *UNIDIR Space Dossier 5*, UNIDIR, 2020, pp. 15-16.

ties, meaning that a State will probably overestimate its adversary's capabilities due to the lack of reliable information. This means that even if a State cannot not legally use space-based weapons, there is a valid argument to develop them (even with the involved high-costs).

Regarding the questions surrounding the self-defence clause, they were not addressed, the only change being the specific inclusion of individual and collective right of self-defence<sup>133</sup>.

#### **4.8 Absence of verification mechanisms and the procedural instruments**

The absence of a verification mechanism also remains<sup>134</sup>, and so does the opaque nature of the Executive Organisation (despite the improvements relating the settlement mechanism) leaving open the establishment, composition and operating procedures to a future separate protocol<sup>135</sup>.

On the subject of verification, Russia, China and the US agree on the unfeasibility of an intrusive regime, that is, with on-site inspections for instance<sup>136</sup>. Therefore, Russia and China often point out an alternative based on the use of observation of space objects and technology; however, the US not only does not support the Sino-Russian approach of agreeing the verification regime in a subsequent protocol but also argues that humanity does not possess the technology to effectively verify even if such regime existed<sup>137</sup>. This means that another deadlock has been reached with the current US Administration<sup>138</sup>.

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<sup>133</sup> 2014 draft PPWT, Article IV, "Nothing in the present Treaty shall impair the States Parties' inherent right to *individual or collective* self-defence, as recognized in Article 51 of the Charter of the United Nations."

<sup>134</sup> Ibid, Article V, "The States Parties recognize the need for measures to verify compliance with the Treaty, which *may form the subject of an additional protocol*. With a view to promoting confidence in compliance with the provisions of the Treaty, States Parties may implement agreed transparency and confidence-building measures, on a voluntary basis, unless agreed otherwise."

<sup>135</sup> Ibid, Article VI, "(...) The procedure for the formation and the composition of the working bodies, as well as the rules and regulations and the arrangement of the work of the executive organization of the Treaty shall form the subject of an additional protocol."

<sup>136</sup> Such difficulties clearly expressed by China and Russia as a justification of why the delegations did not incorporate Earth-based weaponry in the treaty. See: CD/1872, Question 3, Answer (2) and Question 6.

<sup>137</sup> CD/1998, para. 1 (a).

<sup>138</sup> POBLETE, Yleem D.S., "United States Remarks at the Conference on Disarmament", speech, Conference of Disarmament, Geneva, 14 August 2018.



## 4.9 Conclusions

*“A space weapon in their draft treaty is defined in the eye of the observer, and there are no verification provisions.”<sup>139</sup>*

Although the draft PPWT has merit in stirring the debate about PAROS in reality it did little more than that. Yes it does have some interesting ideas, it is a proposal for hard law with all its advantages and disadvantages; however it failed to capitalize on the advantages by ignoring criticisms on the definition of space weapon and failing to incorporate verification and compliance mechanisms. Since the latest update of the draft PPWT in 2014, it seems the proposal is dead in the water: unable to address the criticisms that various delegations presented, the negotiations stagnated.

## 5. The draft International Code of Conduct for Outer Space Activities (ICoC or Code)

### 5.1 Introduction

As a response to the lack of transparency over China's 2007 ASAT weapon test, Italy introduced a document to the CD entitled "Food For Thought on a Possible Comprehensive Code of Conduct for Space Objects" which called for new binding and non-binding TCBMs. The EU, in support of the initiative, endorsed COPUOS to consider a Code of Conduct instead of a more broad discussion on rules of the road. Still in the same year, the Portuguese EU Presidency prepared the first version of the EU Code of Conduct which the Slovenian Presidency then updated and circulated in the beginning of 2008<sup>140</sup>.

The summer of 2008 brought the first informal consultations with the US, China and Russia and also a new trio for the Presidency of the Council of the European Union with the French Presidency officially releasing the "Draft Code of Conduct by the EU Council" in December 2008 with the purpose of helping implement the

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<sup>139</sup> Cit. KREPON, Michael, "Norm-Setting for Outer Space", *Arms Control Wonk*, September 2014.

<sup>140</sup> RATHGEBER, Wolfgang, REMUSS, Nina-Louisa and SCHROGL, Kai-Uwe, in Kerstin Vignard (eds.), "Space security and the European Code of Conduct for Outer Space Activities", *Disarmament Forum*, Issue 4, UNIDIR, 2009, pp. 33-41, 35-36.

existing UN treaties, principles and other arrangements and complement those same instruments by codifying new best practices.

Afterwards the EU introduced the Code to other nations and started bilateral negotiations with Brazil, Canada, India, Indonesia, Israel, South Korea, South Africa and Ukraine<sup>141</sup>. The ICoC would be revised a number of times until its current version of march 2014; however, all of this consultations were done outside the traditional multilateral institutions like the UN and the CD as a response to the inability of this negotiation fora in answering the question of security in outer space.

Some contend that the unveiling of the 2014 updated PPWT two weeks after the EU completed their third Open-Ended Consultations for the development of the International Conduct for Outer Space Activities is not a coincidence. That the 2014 draft PPWT is politically motivated solely to preserve Chinese and Russian soft power among third-world nations in the UN and remove the spotlight from the ICoC. Whether this is true or not only policy makers know, but it brings to attention this apparent political competition not only in terms of legal approach but also how both the PPWT and the ICoC became a political statement of a divide in space politics<sup>142</sup>.

Considering the above stated, the Code was negotiated outside the CD and therefore its nature is different from the PPWT in the sense that it is not a pure arms control treaty, having an important environmental component to it, thus giving priority to kinetic ASAT weapons that generate debris. It is in line with the EU position on establishing rules of behaviour (rather than evaluating the legality of weapons in outer space) and avoiding conflict in outer space<sup>143</sup>.

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<sup>141</sup> ROBINSON, Jana, “Transparency and confidence-building measures for space security”, *Space Policy*, Vol. 37, Part 3, Elsevier, 2016, pp. 134-144, 141.

<sup>142</sup> LISTNER, Michael and RAJAGOLAPAN, Rajeswari Pillai, “The 2014 PPWT: a new draft but with the same and different problems”, *The Space Review*, August 2014.

<sup>143</sup> HENDERSON, Stacey, in Kai-Uwe Schrogl (eds.), “Arms Control and Space Security”, *Handbook of Space Security*. Springer, 2020, pp. 12-13. And also, EU Explanation of Vote – United Nations 1st Committee: No First Placement of Weapons in Outer Space, New York, 2017: “(...) the EU and its Member States believe it would be more useful to address the behaviour in, and use of, outer space in order to advance meaningful discussions and initiatives on how to prevent space from becoming an arena for conflict and to ensure the long-term sustainability of the space environment.”

The Code of Conduct consists of a Preamble and 10 articles subdivided into four sections: Section I, Purpose, Scope and General Principles; Section II, Safety, Security and Sustainability of Outer Space Activities; Section III, Cooperation Mechanisms and; Section IV, Organisational Aspects. The ICoC addresses discussions that were traditionally reserved for the CD at the helm of the PAROS process in general. Although it does not explicitly prohibit any military technologies in space it aims to be a "comprehensive" proposal that wishes to establish norms of behaviour for all space activities, both in the civilian and military domains of outer space<sup>144</sup>.

## **5.2 Preamble: the reflection of a strategy of mediation**

Academics mention the Code as the attempt by the European Union to assert itself as an international player in space or more specifically as a “global civilian leader”<sup>145</sup>, by steering the debate in a way that is in line with EU's values such as endorsing transparency, confidence, international cooperation and multilateralism, as a way to promote multilateral rule-based solutions to security problems and its interests such as the preservation of a safe and secure space environment and, by extent, of the European satellites<sup>146</sup>.

However, conscious of the differences between the various nations, the EU acted as a mediator as shown by the Preamble, reflecting the interests of different States. As such, US interests are clearly outlined when it recognises that “space activities and capabilities, including associate ground and space segments and support links, are vital to national security and to the maintenance of international peace and security”<sup>147</sup>. It also recognises the need for the widest possible adherence to the

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<sup>144</sup> TRONCHETTI, Fabio, “Preventing the weaponization of outer space: Is a Chinese–Russian–European common approach possible?”, *Space Policy*, Vol. 27, Issue 2, Elsevier, 2011, pp. 81-87, 85.

<sup>145</sup> ROBINSON, Jana, “Transparency and confidence-building measures for space security”, *Space Policy*, Vol. 37, Part 3, Elsevier, 2016, pp. 134-144, 134.

<sup>146</sup> MUTSCHLER, Max M., VENET, Christophe, The European Union as an emerging actor in space security?”, *Space Policy*, Vol. 28, Issue 2, Elsevier, 2012, pp. 118-124, 122.

<sup>147</sup> The similarities to the wording in the 2006 National Space Policy are evident: “The United States considers space capabilities -- including the ground and space segments and supporting links -- vital to its national interests”.

relevant existing international instruments that promote the peaceful exploration and use of outer space<sup>148</sup>.

The specific reference to *i*) associate ground components, *ii*) national security and *iii*) the promotion of the existing mechanisms are all central to US interests in space. The first underlines the fact that space activities are not just the ones present in space, this includes namely the contested issue of direct-ascent ASAT weapons. The latter ones are basic aspects of US space policy, meaning that the ability to use outer space is a matter of national interest<sup>149</sup> hence an attack upon which will be dealt accordingly<sup>150</sup>, and the reluctance to develop new legal instruments for outer space activities since the US considers that the current framework is enough and that the international community should first focus on the universalisation and abiding of the current norms<sup>151</sup>. The US Administration under President Barack Obama was less stringent in this classic American position and tentatively agreed on the acceptance of an agreement comprised of TCBMs as a viable instrument to further the peaceful uses of space activities<sup>152</sup>.

Next the interests of Russia and China are present. Namely by "noting the importance of preventing an arms race in outer space", directly in line with the PAROS question which is under the leadership of these two countries in the CD and viewed with great reluctance by the US<sup>153</sup>. But also by stating that the Code is without prejudice to ongoing and future work in their appropriate international fora such as the COPUOS and the CD.

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<sup>148</sup> Although the 2010 US Space Policy was somewhat more permissive to the idea of adopting new treaties concerning outer space, the US has a long-standing position that the current regime is enough to guarantee the freedom of exploration and use of outer space. Therefore even with the softer 2010 Space Policy the primacy of the existing international agreements remains. See: LISTNER, Michael, "An exercise in the Art of War: China's National Defense white paper, outer space, and the PPWT", *The Space Review*, April 2011.

<sup>149</sup> SHEEHAN, Michael, in Kai-Uwe Schrogl et al. (eds.), "Defining Space Security", *Handbook of Space Security*, Springer, 2015, pp. 7-23, 8.

<sup>150</sup> As laid down in the 2006 and 2010 National Space Policy as well as the 2018 National Space Strategy.

<sup>151</sup> LISTNER, Michael, "An exercise in the Art of War: China's National Defense white paper, outer space, and the PPWT", *The Space Review*, April 2011.

<sup>152</sup> KREPON, Michael, "Is Space the Final War-Fighting Frontier?", *Arms Control Wonk*, July 2017.

<sup>153</sup> As mentioned above the UNGA annual Resolutions on PAROS are repeatedly opposed by the US and the American Administrations consistently refuse to negotiate PAROS within the CD.

The EU recognised that a treaty dealing with security in outer space is very improbable, viewing soft law as the probable near future. It then tried to set up the pace promoting what is seen as an instrument paving the way for a broad legal framework by means of a set of non-binding rules to govern space activities in a sustainable way. Therefore, the EU approach not only deals with security in outer space but also safety.

Both terms (security and safety) although interlinked are actually different. The first changed the most throughout space history, initially dependant on military issues and in the bipolar mind-set of the Cold War where the objective was to keep the freedom of access and use of outer space, but progressively broadening its scope to be “the secure and sustainable access to, and use of, outer space in accordance with international laws and treaties, free from the threat of disruption, as well as security of terrestrial human and state security from threats emanating from space”<sup>154</sup>.

The latter “refers to space mission hazards and relevant risk avoidance and mitigation measures. The space mission hazards include threats to human life, loss of space systems, and pollution of the Earth environment. Space safety, in a wider sense, encompasses the safeguard of critical and/or high-value space systems and infrastructures, as well as the protection of orbital and planetary environments”<sup>155</sup>. In this sense the main areas covered by this term are launch safety, on-orbit safety, re-entry safety and human space flight safety. One such issue that shows how intertwined these two concepts are is space debris where in a security sense can compromise the secure access and use of outer space and in a safety sense it deals with space hazards and is especially relevant for “on-orbit safety”.

Accordingly, the EU tries to appeal to the sense of community and common interest of States because even if they are rivals, irresponsible behaviour will affect the interests of all, not just their adversaries. That being said the Preamble takes

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<sup>154</sup> Cit. SHEEHAN, Michael, in Kai-Uwe Schrogl et al. (eds.), “Defining Space Security”, *Handbook of Space Security*, Springer, 2015, pp. 7-23, 21.

<sup>155</sup> Cit. PELTON, Joe, SGOBBA, Tommaso, TRUJILLO, Maite, in Kai-Uwe Schrogl et al. (eds.), “Defining Space Security”, *Handbook of Space Security*, Springer, 2015, pp. 203-231, 204.

into account that space debris affects the sustainable use of outer space and recognises that it is in the *shared interest of all States* to reinforce international norms for responsible behaviour in outer space. Moreover, it mentions the recommendations of the Group of Governmental Experts on Transparency and Confidence-Building Measures in outer Space activities in UNGA Resolution 65/68<sup>156</sup>.

### **5.3 Purpose and scope**

The purpose of the Code is to “enhance safety, security, and sustainability of all outer space activities pertaining to space objects, as well as the space environment”<sup>157</sup>. The ICoC is ambitious in the sense that it is applicable to outer space activities involving all space objects, hence it covers both military and civil purposes<sup>158</sup>. Furthermore, the Code is explicitly “not legally binding and without prejudice to applicable international and national law”<sup>159</sup>.

### **5.4 General principles and compliance with international arrangements**

The general principles set forth in Article 2 are the *i*) “Freedom of all States to access, explore, and use outer space for peaceful purposes without harmful interference, fully respecting the security, safety and integrity of space objects”, *ii*) “Responsibility of States to refrain from the threat or use of force” and the “inherent right to individual or collective self-defence as recognized by the UN Charter”, *iii*) “Responsibility to take all appropriate measures and cooperate in good faith to avoid harmful interference with outer space activities”, *iv*) the responsibility of States to conduct their activities in a way to “promote the peaceful exploration and use of outer space for the benefit and interest of humankind and to

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<sup>156</sup> “The Group of Governmental Experts (GGE) on Transparency and Confidence-building Measures (TCBMs) in Outer Space Activities is a United Nations initiative. The UN General Assembly regularly establishes such groups to investigate emerging concerns and make recommendations. The objectives for the GGE on TCBMs in space were to improve international cooperation and reduce the risks of misunderstanding, mistrust, and miscalculations in outer space activities.” Cit. JOHNSON, Christopher, “The UN Group of Governmental Experts on Space TCBMs, fact sheet, *Secure World Foundation*, 2014.

<sup>157</sup> Code of Conduct, Article 1.1.

<sup>158</sup> Ibid, Article 1.2, “This Code addresses outer space activities involving all space objects launched into Earth orbit or beyond, conducted by a Subscribing State, or jointly with other States, or by non-governmental entities under the jurisdiction of a Subscribing State, including those activities conducted within the framework of international intergovernmental organisations.”

<sup>159</sup> Ibid, Article 1.4.

take all appropriate measures to prevent outer space from becoming an arena of conflict”.

Article 3 states that the subscribing States reaffirm their commitment to the UN Charter, and promote the universal adoption, implementation, and full adherence of the treaties from the “golden age” of space law (except the Moon Treaty), the ITU, Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water (1963) and the Comprehensive Nuclear Test Ban Treaty (1996) and a number of UNGA Resolutions. Importantly, it mentions the Hague Code of Conduct; however, China is not a subscriber of this soft law instrument.

### **5.5 Key restrictions and recommendations**

The key restrictions laid in the Code are present in Article 4.2 stating that subscribing States resolve to refrain from damaging or destructing space objects. There are some exceptions to the rule, namely: in case of self-defence; if such actions reduce the amount of space debris and; by imperative safety considerations.

At the same time this prohibition applies regardless if the damage or destruction generates debris or not, if such attack originates from Earth or space, and even if the damage and destruction is directed at the State’s own space object given that it does not make that distinction<sup>160</sup>. Importantly, as Jinyuan Su and Zhu Lixin noted, the fact that the word “safety” and not “security” was used in this last exception gives the impression that reasons of national security are not expressly authorised under this clause. The effects of this article are on one hand the prohibition of using and testing ASAT weapons with the abovementioned exceptions and on the other hand, no limits on researching, development and *deployment* of weapons in outer space, creating a stark contrast with the PPWT<sup>161</sup>.

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<sup>160</sup> Ibid, Article 4.2, “The Subscribing States resolve, in conducting outer space activities, to: refrain from any action which brings about, directly or indirectly, damage, or destruction, of space objects unless such action is justified: by imperative safety considerations, in particular if human life or health is at risk; or in order to reduce the creation of space debris; or by the Charter of the United Nations, including the inherent right of individual or collective self-defence. and where such exceptional action is necessary, that it be undertaken in a manner so as to minimise, to the greatest extent practicable, the creation of space debris;”

<sup>161</sup> SU, Jinyuan and LIXIN, Zhu, “The European Union draft Code of Conduct for outer space activities: An appraisal”, *Space Policy*, Vol. 30, Issue 1, Elsevier, 2014, pp. 34-39, 36.

Articles 4.3 and 4.4 establish that subscribing States resolve to minimise the creation of space debris with emphasis on mitigating any activity that may generate long-lived space debris. To that end they resolve to implement appropriate policies and procedures “in order to implement the Space Debris Mitigation Guidelines of the United Nations Committee for the Peaceful Uses of Outer Space as endorsed by United Nations General Assembly Resolution 62/217 (2007)”.

The space debris mitigation guidelines is one of the greatest achievement of COPUOS, and indeed of the soft law approach to the regulation of outer space activities. Its fundamental principles are *i*) Preventing on-orbit break-ups; *ii*) Removing spacecraft and orbital stages that have reached the end of their mission operations from useful densely populated orbit regions and; *iii*) Limit the objects released during normal operations<sup>162</sup>.

### **5.6 Transparency and Confidence-Building Measures (TCBMs) in the Code**

Transparency is defined as “the degree of openness in conveying information and a device of strategic negotiations signalling the trustworthiness of the actor in negotiations”<sup>163</sup>. In turn, confidence-building measures generally involve *i*) sharing information about policies, military capabilities, arms exports and imports *ii*) facilitating dialogue through preventive consultations, *iii*) notification about certain operations, *iv*) mechanisms to discourage or outright prohibit certain activities and, *v*) access measures such as on-site inspections<sup>164</sup>. Most of all, TCBMs aim to mitigate the risk of conflict by reducing the amount of variables and lack of information in the State's perception of the international arena.

The ICoC is heavily dependent on TCBMs to help implement soft law. Therefore Article 5.1 starts by stating that "guided by the principle of cooperation and mutual assistance", the subscribing States should notify each other to the greatest extent possible on their outer space activities, especially if it poses a risk to others.

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<sup>162</sup> BEARD, Jack M., “Soft Law’s Failure on the Horizon: The International Code of Conduct for Outer Space Activities”, *University of Pennsylvania Journal of International Law*, Vol. 38, Issue 2, 2016, p. 33.

<sup>163</sup> Ball C. “What is transparency?” *Public Integrity* 2009; 11.4:297 *apud* ROBINSON, Jana, “Transparency and confidence-building measures for space security”, *Space Policy*, Vol. 37, Part 3, Elsevier, 2016, pp. 134-144, p. 134.

<sup>164</sup> *Ibid*, pp. 134-135.



Furthermore, on an annual basis, subscribing States resolve to "share their space strategies and policies, including those which are security-related"<sup>165</sup>, as well as their major outer space research and programmes, and may consider sharing information on data relevant to governmental and non-governmental entities of other subscribing States, particularly on phenomena that may pose a hazard to spacecraft<sup>166</sup>.

In addition, subscribing States resolve to implement a consultation mechanism whereby a subscribing State or States that may be directly affected by certain outer space activities of another State or States and has reason to believe such actions are contrary to the Code, "may request consultations with a view to achieving mutually acceptable solutions in order to prevent or minimise the risks of damage to persons or property, or of harmful interference to a Subscribing State's outer space activities". This consultation mechanism asks States to work in a timeframe sufficiently urgent to mitigate or eliminate the abovementioned risk<sup>167</sup>.

Moreover, they may propose to create, on a voluntary and *ad hoc* basis, missions to analyse specific incidents. These missions are to be established by consensus by the Meeting of the Subscribing States and its findings and any recommendations would be of an advisory nature and could be shared, with the consent of the subscribing States involved with other States<sup>168</sup>. This consultation mechanism is without prejudice to existing consultation mechanisms provided for in Article IX of the OST and ITU<sup>169</sup>.

Article 8.1 states that States shall hold regular meetings annually to define, review and further develop the Code and facilitate its implementation, while additional meetings may be held if decided by consensus. All decisions are to be taken by consensus of the States. Lastly, the Code establishes that a Central Point of Contact that will serve to receive notifications, facilitate communication of information

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<sup>165</sup> Code of Conduct, Article 6.1.

<sup>166</sup> Ibid, Article 6.2.

<sup>167</sup> Ibid, Article 7.1.

<sup>168</sup> Ibid, Article 7.2.

<sup>169</sup> Ibid, Article 7.1.

exchanged, secretariat at the Meetings of States and maintain an electronic database and communications system<sup>170</sup>.

## 5.7 Criticisms

### 5.7.1 Drafting process and lack of adherence

The Code of Conduct does not seek the seemingly impossible task of constraining military technologies, instead focusing on the promotion of cooperation, on one hand, and avoiding dangerous activities on the other. The conclusion would be that it is in the best interest of all space faring States to agree on such initiative<sup>171</sup>; nevertheless, this soft law instrument was never adopted.

The EU had the mission of promoting the Code virtually alone<sup>172</sup>. No easy task but also an opportunity to assert itself as a leader in space policy<sup>173</sup>. The drafting process was done outside the COPUOS and CD because of the prospects that those UN-sanctioned multilateral bodies could stall negotiations<sup>174</sup>. At the same time, the US is very distrustful of those forums as it feels they are captured by certain States with their interests<sup>175</sup>.

However, this choice backfired. The BRICS and NAM were against the Code on the grounds that the negotiation process was not inclusive enough. It was argued by Brazil and some NAM countries that the Code should be negotiated with the issue of "peaceful purposes" in mind and within the COPUOS whose mandate does not include military space-related issues<sup>176</sup>. On their part, Russia and China stated that *i*) both the agenda of the negotiations and the negotiations should be decided and held on a multilateral formal basis; *ii*) the EU's efforts overlap those made within the COPUOS and the CD which were specially designated to receive the diplomatic efforts involving the questions the Code tries to address; *iii*) the EU is

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<sup>170</sup> Ibid, Article 9.1.

<sup>171</sup> KREPON, Michael, "Is Space the Final War-Fighting Frontier?", *Arms Control Wonk*, July 2017.

<sup>172</sup> Given that the US efforts at the time were focused on the negotiation of the New Start Treaty. See: KREPON, Michael, "Space Code of Conduct Mugged in New York", *Arms Control Wonk*, August 2015.

<sup>173</sup> MUTSCHLER, Max M., VENET, Christophe, The European Union as an emerging actor in space security?", *Space Policy*, Vol. 28, Issue 2, Elsevier, 2012, pp. 118-124, 122.

<sup>174</sup> KREPON, Michael, "Space Code of Conduct Mugged in New York", *Arms Control Wonk*, August 2015.

<sup>175</sup> LISTNER, Michael, "The art of lawfare and the real war in outer space", *The Space Review*, September 2018.

<sup>176</sup> KREPON, Michael, "Space Code of Conduct Mugged in New York", *Arms Control Wonk*, August 2015.

“selective” towards the comments of the States and the ICoC made no reference to the PPWT. Furthermore, in stark contrast with the PPWT, the Code places no constraints on the deployment of space-based weapons which is a recipe for the non-acceptance of China and Russia<sup>177</sup>.

Still, despite the critics, Russia and China declared that they view the initiative positively and would like to participate in its negotiations. This was mainly because any State that stayed outside the process would be regarded as an irresponsible actor and in the event that the Code was successful and eventually became Customary Law both States needed to ensure that their interests were also reflected in it<sup>178</sup>.

As the relations between Washington and Moscow and Beijing soured so did the prospects that even the US complete support for the ICoC would make a difference. On the contrary, in a meeting convened by the EU and the UN in July 2015 one of the criticisms to the Code was that it legitimized a pre-emptive war in space because it included a provision based on the UN's Charter recognizing the right of self-defence (although the PPWT also has a similar provision, giving the impression that the objection is based on political reasons). The prospect of the US joining the Code now seemed to bring more questions than answers to countries like Russia and China with active anti-satellite programs due the US interpretation of the self-defence clause.

There was a risk that the Code could polarize and entrench political stances if a competition logic was to develop between the PPWT and the Code<sup>179</sup>. It seems that those risks were real: the political stances surpassed the perceived best interest of all States and consequently even when the EU agreed to incorporate the Code into the COPUOS discussions it was too late and the process stalled in 2015<sup>180</sup>.

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<sup>177</sup> SU, Jinyuan and LIXIN, Zhu, “The European Union draft Code of Conduct for outer space activities: An appraisal”, *Space Policy*, Vol. 30, Issue 1, Elsevier, 2014, pp. 34-39, 36.

<sup>178</sup> *Ibid*, p. 35.

<sup>179</sup> JARAMILLO, Cesar, “New competition for a space security regime”, *The Ploughshares Monitor*, Vol. 31, Issue 2, Project Ploughshares, 2010, pp. 3-6, 4.

<sup>180</sup> HARRISON, Todd, “International Perspectives on Space Weapons”, Report, Center for Strategic and International Studies, 2020, p. 15.

### ***5.7.2 No definitions***

Some argue that the provision banning harmful interference with satellites, ideally embedded in international behaviour through a broad adoption by States, would create enormous international pressure on the States that broke them (as in a pariah logic). If we add that to the deterrence strategies, then the Code could envisage the crystallization of the security *status quo* in outer space<sup>181</sup>.

Firstly, that would only be possible if the Code attained universalisation, otherwise the pariah State would have escape routes to take a breath of relief and ways to circumvent political, economic and social pressures by teaming up with other non-complying States. And this is especially true if one of the three major space-faring nations US, China or Russia was on the non-compliance side.

Secondly, although there are five instances where the ICoC mentions the State's responsibility to prevent "harmful interference", it never really defines it. Even if some legal instruments already used the term without giving a definition, namely Article IX of the OST, its objective was much more limited (as in a principle) and, contrary to the ICoC, it did not try to provide a comprehensive prohibition to all forms of harmful interference with space objects. Even proponents of the Code find this a great handicap and likewise caused discomfort to the US administrations<sup>182</sup>. Therefore, if the rule is not well defined, then the international community cannot clearly point out non-compliant States.

### ***5.7.3 An existential crisis and no means of verification***

The prospect of low participation of States, made negotiating parties recognise the insecurity that sharing sensitive information with non-participating States would bring. Consequently, the Code implements restrictive information sharing with "other subscribing States" instead of open sharing. However, this goes against the spirit of the Code on "enhancing the safety, security, and sustainability of outer

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<sup>181</sup> ROBINSON, Jana, "Transparency and confidence-building measures for space security", *Space Policy*, Vol. 37, Part 3, Elsevier, 2016, pp. 134-144, 140.

<sup>182</sup> BEARD, Jack M., "Soft Law's Failure on the Horizon: The International Code of Conduct for Outer Space Activities", *University of Pennsylvania Journal of International Law*, Vol. 38, Issue 2, 2016, pp. 13-14.

space activities"<sup>183</sup> considering that dangerous activities in outer space potentially affect all space-faring States, even the ones outside the Code, and that therefore “space law generally seeks to maintain a focus on the free and open sharing of information for the benefit and safety of all nations”<sup>184</sup>. Furthermore, the fact that States can provide varying amounts of data is also a major setback for the Code since the information provided can be insufficient, inaccurate and irregular.

It seems to me that the Code of Conduct is in an existential crisis. On one hand it aims to provide an answer to the environmental problem in outer space (space debris), on the other it tries to tie some loose ends concerning conventional weaponry in outer space. Both problems are connected yet that does not mean that can be solved with the same solution. To regulate an environmental crisis TCBMs might be a viable solution, but to implement an arms control regime one needs clear rules and means of verification, which the Code does not have. Although the provisions concerning debris mitigation can limit the testing of certain ASAT weapons, none of them would effectively stop an arms race from unfolding<sup>185</sup>.

## 5.8 Conclusions

*“States could apply this approach to PAROS and focus on the destructive technologies that can put more objects in space at risk, especially those raising the prospect of ‘tragedy of the commons’ situations, for example due to the generation of persistent space debris.”<sup>186</sup>*

The above quote refers to an approach on the PAROS issue discussed by the UN PAROS GGE in 2018-2019 that is based on the dichotomy of destructive versus non-destructive technologies. The counterspace technology was distributed on a

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<sup>183</sup> Cit. Council of the European Union, “Draft International Code of Conduct for Outer Space Activities”, March 2014, Preamble.

<sup>184</sup> BEARD, Jack M., “Soft Law’s Failure on the Horizon: The International Code of Conduct for Outer Space Activities”, *University of Pennsylvania Journal of International Law*, Vol. 38, Issue 2, 2016, p. 41.

<sup>185</sup> MUTSCHLER, Max M., VENET, Christophe, “The European Union as an emerging actor in space security?”, *Space Policy*, Vol. 28, Issue 2, Elsevier, 2012, pp. 118-124, 122-123. Also this issue is further developed in the next chapter.

<sup>186</sup> Cit. SILVERSTEIN, Benjamin, PORRAS, Daniel and BORRIE, John, “Alternative Approaches and Indicators for the Prevention of an Arms Race in Outer Space”, UNIDIR Space Dossier 5, UNIDIR, 2020, p. 31.

spectrum based on its destructive capability<sup>187</sup>. From jamming capabilities on the lower end of the spectrum to nuclear detonations on the most destructive end, "ground-based anti-satellite weapons, which can destroy space-based objects through kinetic or explosive impacts" were placed just before the nuclear weapons<sup>188</sup>. This last category includes direct-ascent ASAT weapons.

The spirit of the Code of Conduct appears to be the same as this approach; however, it also appears that it has underestimated how much humanity is willing to play with fire. The EU hinged on the common interest of the nations to avoid the "tragedy of the commons" and push forward its proposal, but diplomatic miscalculations and too much reliance on the idea that adopting a soft law instrument would make negotiations easier proved to cost the political momentum and stripped the Code from being a legally meaningful document by not providing definitions.

## **6. Lessons from the PPWT and the ICoC**

### **6.1 Soft law versus hard law**

#### ***6.1.1 Defending soft law***

One of the major points of contention between the PPWT and the ICoC is the debate between an approach based on hard law and on soft law. Arguments for the latter often start by pointing that in the past 30 years the PAROS process has been deadlocked in the multilateral forum of the CD and that there is no sign that this will change anytime soon. Therefore, there is a need for a more flexible instrument that has more open-ended provisions and is ready for adoption and implementation no matter how many or what States may decide to agree with it. This is especially relevant in time consuming sensitive matters such as arms control and even more pertinent considering the rapidly changing strategic landscape in outer space<sup>189</sup>. Moreover, eventually this soft law mechanisms will affect the behaviour of States

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<sup>187</sup> Ibid, p. 30.

<sup>188</sup> Report by the Chair of the Group of governmental experts on further practical measures for the prevention of an arms race in outer space, New York, 2019, p. 9.

<sup>189</sup> TRONCHETTI, Fabio, "Preventing the weaponization of outer space: Is a Chinese–Russian–European common approach possible?", *Space Policy*, Vol. 27, Issue 2, Elsevier, 2011, pp. 81-87, 86-87.

to create new norms which might enter the realm of customary law and get transposed to a legally binding document.

Thus, soft law may be used in different kinds of situations. The first one is to further define or narrow the concepts of legally binding notions, that is, "in order to assist in the interpretation of language" for instance. Secondly, these instruments can be adopted to create obligations of a procedural nature. And, lastly, they can help harmonize international procedural standards by serving as basis for binding national or international law or to become customary law<sup>190</sup>.

### ***6.1.2 Defending hard law***

When proponents of the soft law argue for non-binding legal agreements, they usually refer the end goal to be the eventual creation of new binding rules of customary international law. For example, the executive power in the US does not need the permission of the legislative power to adopt soft law mechanisms exactly because they are not binding international agreements. It is here then that a problem starts to arise when what seems to be soft law agreement is in fact just a long road to adopt legally binding norms without the consent of national legislatures, thus contributing to a democratic deficit. The issue here is that if national legislatures arrive to this conclusion, and especially considering matters of *national security*, then they will firmly oppose such agreements<sup>191</sup>. This is the case of the Senate and the Congress in the US where members of both Houses voiced their opposition to the Code, namely congressmen argued that the ICoC could "establish the foundation for a future arms control regime that binds the United States without the approval of Congress"<sup>192</sup>.

Another major argument of the proponents for a hard law regime is that soft law is too weak in the sense that it is not binding, thus presenting itself with diminished

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<sup>190</sup> BEARD, Jack M., "Soft Law's Failure on the Horizon: The International Code of Conduct for Outer Space Activities", *University of Pennsylvania Journal of International Law*, Vol. 38, Issue 2, 2016, pp. 9-11.

<sup>191</sup> *Ibid*, pp. 44-47

<sup>192</sup> Letter from Rep. Michael Turner et al. *apud* BEARD, Jack M., "Soft Law's Failure on the Horizon: The International Code of Conduct for Outer Space Activities", *University of Pennsylvania Journal of International Law*, Vol. 38, Issue 2, 2016, p. 45.

obligations and usually has imprecise language (as is the case of the Code), given that States don't "need" to negotiate key terms. This is a major blunder when the objective is to create an arms control regime: precise terms are essential to make it effective because the rationale behind such agreements must be based on a win-win situation whereby the national security of the States involved is enhanced by such regime. However, no matter how tight the monitoring and verification measures are, if the provisions are ambiguous one cannot discern cheating which is instrumental for the States Parties to make sure the regime is not in fact a win-lose equation.

Because space debris is a problem common to all space faring nations, it provides a starting point to negotiate an arms control regime on the destructive type of weaponry; however, it also leads us to believe that States will not breach the agreement given that it would go against their own interests. Game theorists often argue that the main strategy of States will be to cheat, and that is because of the perceived security threats posed by the possibility of the other States doing the same, hence the natural step in arms control regimes is to cheat in order to be one step ahead. Therefore, clear commitments are needed to make sure that a set of rules is followed, otherwise States will be wary of their partners obligations creating a situation where they might be giving up strategic ground to a potential adversary<sup>193</sup>. Additionally, soft law mechanisms do not benefit from the comprehensive framework of rules for observance, operation, application and interpretation granted by VCLT to legally binding agreements<sup>194</sup>.

It may well be that a soft law instrument with well-defined concepts and rules might give rise to legally binding instruments, however when States agree on ill-defined rules such scenario becomes very unlikely because no State will give up strategic ground in the development of defensive and offensive capabilities for a

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<sup>193</sup> Ibid, p. 18.

<sup>194</sup> Ibid, p. 19.



hand full of nothing, where States can unilaterally argue that they are inbounds of the agreement as well as the opposite without real legal basis to do so.

The process of drafting a hard law instrument, although slow, is also an important part of the perceived commitment to the arms control regime whereby the creation of legally binding rules stimulates compliance through a sense of obligation and legitimacy<sup>195</sup>. The national process of adoption of a treaty is very important in creating legitimacy. The fact that a country as to ratify an agreement means that the next leader still has to comply with such provisions. Moreover, in case the agreement goes through the national legislature it signals that the State is more prone to fulfil the obligations due to the perceived "cost of legislative involvement" and also because the same institutions - at least in liberal democracies - can get in the way of implementing international obligations<sup>196</sup>. Importantly as seen above, the US is one of those cases where the national legislature sees arms control as a vital matter that should need its approval.

On the other hand, authoritarian States face less scrutiny on the fulfilment of their international obligations. This does not necessarily mean that they are less likely to comply but that firstly a breach of a legal or political commitment has no consequences as long the world community is not aware of it (this is especially true for arms control because these programs are usually involved in a high degree of secrecy), and secondly in soft law agreements authoritarian regimes face less restrictions to exploit ambiguous provisions due to the lack of pressure from their own society. On the contrary, in democratic societies a political commitment although non-binding could for instance exert pressure on the research and development of certain weapons to be used in outer space<sup>197</sup>.

In this sense, soft law mechanisms have an uphill battle for legitimacy and perceived commitment of a State due to the lack of obligatory nature, especially when dealing with matters of an existential nature. Soft law may present itself has

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<sup>195</sup> Ibid, p. 22.

<sup>196</sup> Ibid, pp. 24-25.

<sup>197</sup> Ibid, pp. 27-29.

a stone in the shoe of arms control, not the solution, as it may bring uncertainties that will further undermine trust between States and ultimately increase insecurity in outer space<sup>198</sup>. The Code of Conduct faced these problems as shown by the lack of definitions and verification measures which made it impossible for States to adopt it even as a political commitment.

## 6.2 Space weapons

While the main concern when PAROS was first brought up during the Cold War was preventing space from becoming a domain of armed conflict between two superpowers<sup>199</sup>, the changing political and technical landscape transformed the meaning of PAROS. In the PPWT, the focus is on space-to-space weapons by virtue of focusing on the placement of weapons in outer space while in the Code of Conduct the focus is on both earth-to-space and space-to-space kinetic weapons (the most destructive kind of ASAT weapons) derived by its main concern on the risk of space debris. Therefore, the proponents of each proposal have different views on what constitutes an arms race, or at least what is its most pressing dimension worth tackling.

As pointed out in the beginning of the second part of this dissertation, only if we adopt a narrow idea of what constitutes a space weapon can we assume that space has not been weaponized yet. Russia and China seem to focus their efforts on the prevention of the placement of space-to-space weapons while the US seems convinced the efforts came too late, being defeated by the ones that swore not to place weapons in outer space<sup>200</sup>. Furthermore, not only the PPWT had a narrow view of space weapon but it also didn't have mechanisms of verification embedded. By not providing clear definitions and mechanisms of verification the

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<sup>198</sup> Ibid, p. 26.

<sup>199</sup> SILVERSTEIN, Benjamin, PORRAS, Daniel and BORRIE, John, "Alternative Approaches and Indicators for the Prevention of an Arms Race in Outer Space", UNIDIR Space Dossier 5, UNIDIR, 2020, p. 15.

<sup>200</sup> In 2004 Russia announced a policy of "no first placement of weapons in outer space" and proposed a Resolution to the UNGA on that matter in 2018 which was adopted by 126 votes in favour, 46 abstentions and 4 against, the US being one of the States that voted against it. HENDERSON, Stacey, in Kai-Uwe Schrogl (eds.), "Arms Control and Space Security", *Handbook of Space Security*, Springer, 2020, p. 7. The US as since accused Russia of placing weapons in outer space. See: FORD, Christopher, "Whither Arms Control in Outer Space? Space Threats, Space Hypocrisy, and the Hope of Space Norms", speech, *Center for Strategic and International Studies*, Washington DC, 6 April 2020.

PPWT could not harvest the mentioned strengths of the hard law approach. Furthermore, it failed to provide an adequate answer to the problem of dual-use space objects. The fact that a space object can be used simultaneously for military and civilian purposes is a major problem for any arms control treaty because it makes verification almost impossible. For instance, a satellite placed in space with the objective to remove space debris can also be used to damage other satellites.

Furthermore, even if an arms control framework would be devised just for direct-ascent ASAT weapons, given that they are the greatest current danger to the freedom of exploration and use of outer space, it would not be possible to verify it because both the US, Russia and China would not accept on-site inspections. Moreover, considering that Russia and China in terms of counterspace capabilities betted their resources on those programs, they will not relinquish their strategic offensive capabilities in space.

### **6.3 Brief analysis in light of International Relations Theory**

In international relations neorealists argue that the world is anarchic and States can only trust on their own ability to survive (self-help). Therefore, the best way to do so is by maximizing their security. In this sense the amount of power, especially in relation to other States, is crucial. As such, States are seen as units whose capabilities are measured by military and economic factors<sup>201</sup>. Considering that the US is "unequivocally ahead" in terms of space technology, in light of the neorealist school of thought, the fact that China and Russia proposed the PPWT makes sense given that it proposes banning the deployment of sophisticated space-based weapons while ignoring the development of less sophisticated direct-ascent ASAT technology. For the US this would certainly mean a relative loss of power and thus it also makes sense that it rejected it<sup>202</sup>.

On the other hand, neoinstitutionalism fits well in the above sub-chapter on hard law versus soft law. It recognizes the anarchical structure of the international system but argues for a system of interdependence between States in order to cope

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<sup>201</sup> MUTSCHLER, Max M., in Kai-Uwe Schrogl et al. (eds.), "Security Cooperation in Space and International Relations Theory", *Handbook of Space Security*, Springer, 2015, pp. 42-54, 48.

<sup>202</sup> Ibid, p. 49.

with it by maximizing their utility through mutual interests. It is the antithesis of the zero-sum game logic whereby a win for State A is necessarily a loss for State B.

One of the greatest problems, however, is the fear of cheating, especially when dealing with security. The main solution for this issue is the creation of a regime that sets up rules that define cheating and help verify compliance, as "no State wants to abandon the development of space weapons only to find out that other States have developed these technologies".

The natural high degree of interdependence provided by the space environment – where one action affects all – provides a good basis for the development of cooperation mechanisms for the implementation of such a regime<sup>203</sup>. Yet, space also provides particularly hard obstacles for effective cooperation. Firstly, the space environment makes it difficult to provide empirical proof of compliance. Secondly, the different interpretations of what a space weapon is plus the dual-use conundrum undermines a common understanding between the parties on what would constitute a breach of the arms control regime. Therefore, it is virtually impossible to establish a cooperation regime on arms control.

#### **6.4 Space deterrence**

PAROS resolutions have been voted yearly since 1988 recognizing that the current legal framework is not enough to guarantee the prevention of an arms race in outer space, posing great danger to the international peace and security. They have been repeatedly opposed by the US. The first resolution was passed in 1988 with a single vote against from the Americans. However, in 2019 the annual resolution was only approved with a vote of 124 in favour, 41 against and 10 abstentions, revealing a changing of attitudes towards PAROS<sup>204</sup>.

As the main space faring nation historically, the US relies on deterrence to protect itself, hence it has been an integral part of US policy to oppose anything that

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<sup>203</sup> Ibid, pp. 50-51

<sup>204</sup> HENDERSON, Stacey, in Kai-Uwe Schrogl (eds.), "Arms Control and Space Security", *Handbook of Space Security*, Springer, 2020, p. 6.

impairs its ability to maintain that status<sup>205</sup>. Therefore, from the US point of view, anything that impairs its current and future capabilities (such as an arms control regime) must provide as much security as the *status quo*. The matter of fact is that the failed adoption of the PPWT and the ICoC seem to have confirmed the US doubts about changing the current strategic and legal framework.

The proposals put forward would not enhance the security of the US enough to replace the *status quo*. Likewise, any of this proposals would need the US adoption to make them viable. Therefore, the US reluctance to join the efforts for the adoption of a Code of Conduct and its rejection of the PPWT proved to be a sobering moment on the PAROS issue for a whole range of other States, not just the US.

Accordingly, presently, the main strategy of the US to preserve its security in outer space is still deterrence<sup>206</sup>. Space deterrence can be defined as “detering from the attack on space objects and all means supporting space activities, undertaken to interrupt their operations temporarily or permanently”<sup>207</sup>. It is not however a guarantor of security, especially when considering that space deterrence is fundamentally different from nuclear deterrence, which is credited with the prevention of a war between the two superpowers through the mutually assured destruction system.

Firstly, the international system within which is established is not as stable (bipolar versus multipolar). Secondly, the fact that the US is much more dependent from space than any other country means that in the event that an adversary attacks US space assets, even if the US responds in a disproportionately harsh way, it is likely that the resulting losses would be favourable to the enemy. This is the so-called vulnerability gap.

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<sup>205</sup> Ibid, p. 14, “The US repeatedly stated that it will oppose any new legal regime or other restriction that seek to prohibit or limit US access to or use of space and arms control agreements cannot impair the rights of the US to conduct activities for US national interests.”

<sup>206</sup> FORD, Christopher, “Whither Arms Control in Outer Space? Space Threats, Space Hypocrisy, and the Hope of Space Norms”, speech, Center for Strategic and International Studies, Washington, DC, 6 April 2020.

<sup>207</sup> Cit. KOPEĆ, Rafał, “Space Deterrence: In Search of a "Magical Formula"”, *Space Policy*, Vol. 47, Elsevier, 2019, p. 123.

Moreover, space offers incentives to make the first strike not only because it would constitute a starting advantage to the pre-emptive striker, but also because space assets are very difficult to defend for a number of reasons (one of which, for instance, is the predictive trajectory satellites take due to being in orbit). Additionally, the attack would probably target the adversary's own ASAT capabilities presenting a situation of "use it or lose it", not to mention that generally it is more cost-effective to develop offensive capabilities. Lastly, there is both the absence of an existential threat of retaliation in outer space and of second strike capability – which in nuclear deterrence ensured that no matter how hard the first striker would attack, retaliation was inevitable<sup>208</sup>.

### **6.5 The US as the lead norm builder**

The negotiating processes of the Sino-Russian PPWT and the European Code of Conduct confirmed the US expectations that an arms control regime would be very difficult to attain, hence having to continue to trust mechanisms of self-help, namely space deterrence. Nevertheless, the US also knows that this strategy cannot by itself guarantee its security given that outer space environment is based on interdependence and thus no country can guarantee space sustainability alone<sup>209</sup>.

The US, recognizing that none of the previous efforts are managing to curb the emerging security problems, is working to develop approaches to outer space norms that will help improve predictability and collective "best practices" alongside deterrence.

It seeks to develop verifiable norms of responsible behaviour, meaning that they are ought to be specific enough to check for compliance, one recent example of what would be considered an irresponsible behaviour given by the US concerns proximity operations with satellites of other space faring nations without prior consultations. The objective is to avoid situations of heightened tensions like the one mentioned previously regarding France and Russia. For that reason, the US continues dialogue with Russia and its Western partners in order to develop mutual

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<sup>208</sup> Ibid, pp. 124-125.

<sup>209</sup> MUTSCHLER, Max M., in Kai-Uwe Schrogl et al. (eds.), "Security Cooperation in Space and International Relations Theory", *Handbook of Space Security*, Springer, 2015, pp. 42-54, 50.

understanding of what responsible behaviour means. Additionally, the US expects its Western allies to ramp up their calls for "malign behaviour both privately and publicly"<sup>210</sup>.

One of the chief indicators that the US is moving to lead norm setting in outer space regarding security is Donald Trump's Administration latest announcement: the Artemis Accords. The Accords aim to establish principles for cooperation in the civil exploration and use of the Moon, Mars, comets and asteroids for peaceful purposes and were signed on the 13<sup>th</sup> of October of 2020 by the US, Australia, Canada, Italy, Japan, Luxembourg, United Arab Emirates and the United Kingdom<sup>211</sup>. The Accords are tied to the Artemis Program which aims to land the first woman and the next man on the Moon by 2024 with international partnerships playing a key role for its sustainability<sup>212</sup>.

The US wants countries to abide by the principles in the existing multilateral agreements such as the OST. Therefore, the Artemis Accords are first and foremost the reiteration of those agreements. As such, at the core of the Accords is the requirement that all activities will be conducted for peaceful purposes, according with the OST. The scope set out in Section 1 (2) of the Artemis Accords states that the principles "apply to civil space activities conducted by the civil space agencies of each Signatory (...) on the Moon, Mars, comets, and asteroids, including their surfaces and subsurfaces, as well as in orbit of the Moon or Mars, in the Lagrangian points for the Earth-Moon system, and in transit between these celestial bodies and locations".

Importantly, the Artemis Accords do not aim to be an answer to the PAROS issue. In fact, the Accords are restricted to "civil space activities conducted by the civil space agencies", nevertheless it still deals with matters of space security. Indeed, quoting NASA administrator Jim Bridenstine, "fundamentally, the Accords are

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<sup>210</sup> FORD, Christopher, "Whither Arms Control in Outer Space? Space Threats, Space Hypocrisy, and the Hope of Space Norms", speech, *Center for Strategic and International Studies*, Washington, DC, 6 April 2020.

<sup>211</sup> Artemis Accords.

<sup>212</sup> GOLD, Mike, in Space Court Foundation (org.), "Artemis Accords Volume II: the future of space governance", October 2020.

about avoiding conflict, transparency, public registration, deconflicting activities. These are the principles that will preserve peace”<sup>213</sup>.

As such, Section 3 states that “cooperative activities under these Accords should be exclusively for peaceful purposes and in accordance with relevant international law” echoing the wording present in Article IV of the OST.

Furthermore, Section 11 titled “Deconfliction of Activities” reaffirms the principle of due regard and the right to invoke consultations if the operating parties have reason to believe there will be harmful interference present, resonating Article IX of the OST. Regarding harmful interference, Section 11 (4) further states that “the signatories commit to seek to refrain from any intentional actions that may create harmful interference with each other’s use of outer space in their activities” under the Artemis Accords. Here some of the aforementioned doubts persist, namely what constitutes harmful interference and how do States distinguish something intentional from unintentional.

But probably the most contentious point comes from Section 11 (7) onwards with the idea of “safety zones”: areas “wherein notification and coordination will be implemented to avoid harmful interference” which are not in any way envisaged in the OST. It creates an obligation on the Party operating on the Moon to notify the UN and coordinate with anyone who enters the area where it might occur harmful interference. Importantly, as Mike Gold emphasised, the safety zones are not exclusionary, and freedom of access is paramount<sup>214</sup>. Still, there are reservations about if such a regime will create *de facto* spheres of influence<sup>215</sup>.

Although there is the caveat of the scope restricting the Artemis Accords to civil activities, worries about the lack of definitions and the concept of safety zone, the United States is still taking the initiative to operationalize the Accords, something that the EU did not do with the Code. As a result, the US already avoided one

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<sup>213</sup> FOUST, Jeff, “The Artemis Accords take shape”, *The Space Review*, October 2020.

<sup>214</sup> GOLD, Mike, in Space Court Foundation (org.), “Artemis Accords Volume II: the future of space governance”, October 2020.

<sup>215</sup> WANG, Guoyu, “NASA’s Artemis Accords: the path to a united space law or a divided one?”, *The Space Review*, August 2020.



important mistake of the Code of Conduct: while it was also negotiated outside the existing multilateral forums such as the COPUOS, it did not let itself get bogged down by trying to achieve a high degree of acceptance before implementation.

The fact that it is tied to an exploration program of outer space means that State practice in observance of the Artemis Accords principles will take place no matter what, and countries will carefully analyse and take conclusions on how these new norms are being applied to outer space activities. The strategy then seems to rely on State practice to ultimately define what the letter does not provide, such is even foreseen in Section 11 (4): “The signatories intend to use their experience under the Accords to contribute to multilateral efforts to further develop international practices, criteria, and rules applicable to the definition and determination of safety zones and harmful interference”. Moreover, the US already declared that it will bring the Artemis Accords to be discussed in the COPUOS and that further contributions can be done through bilateral agreements<sup>216</sup>.

Another advantage in relation to the Code is that it has pull factors such as *i*) the largest space faring nation leading its implementation *ii*) the economic benefits that might result from the program since it envisages resource exploration, *iii*) the opportunity to help build State practice, which is especially important if a space faring nation wants to have a say in the future of space law, and *iv*) the potential of political, economic and social bandwagon in the sense that the US is advertising the Artemis Program as the next big leap of humankind and it may create a snowball effect of countries wanting to join<sup>217</sup>. This means that it should gather signatories much more easily than the Code of Conduct. Indeed the Brazil already stated its interest for instance<sup>218</sup>.

As a soft law instrument the Artemis Accords do not have to be approved by national legislatures. However, circumventing those institutions might create

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<sup>216</sup> GOLD, Mike, in Space Court Foundation (org.), “Artemis Accords Volume II: the future of space governance”, October 2020.

<sup>217</sup> See generally NASA, Artemis Plan: NASA’s Lunar Exploration Program Overview, September 2020.

<sup>218</sup> GOLD, Mike, in Space Court Foundation (org.), “Artemis Accords Volume II: the future of space governance”, October 2020.

internal problems and friction between different branches of power, namely the legislative and executive which can undermine the implementation of the enshrined principles in the political declaration. Moreover, the process of approval by those same institutions creates a sense of commitment which soft law mechanisms have a hard time replicating.

The first problem is mitigated by the fact that the Accords are not an arms control instrument and do not seem to impair the State's ability to conduct research, development, testing, and operations or other activities in space, and, as argued above, the aforementioned friction takes place mostly with matters of national security like arms control. The Accords are tied with a program which will run at least until 2024<sup>219</sup>, giving the perception that the US will not back down from its political promise, and neither the program backers.

Furthermore, the US has stated that it expects these standards to affect even those who do not join the Artemis Accords<sup>220</sup>. The ambition of the Artemis Accords goes beyond the Artemis Program and its signatories. It attempts to create a normative framework that will endure even outside the Artemis missions, for States to continue to act in a "responsible" way, but also a normative spill over for those who did not sign the Artemis Accords. It seems that so far the Accords have a real possibility of achieving the main objective of a soft law instrument which is to become customary law.

## **7. Final remarks**

The hard law instruments left by the golden age of space law do not provide an answer to the weaponization of outer space, while the multilateral fora developed during the Cold War does not seem to be able to provide more hard law instruments in the multipolar world. Space law is thus moving away from hard law since the end of the Cold War. The PAROS process is not the exception but the rule.

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<sup>219</sup> NASA, "Artemis Plan: NASA's Lunar Exploration Program Overview", September 2020, p. 14.

<sup>220</sup> GOLD, Mike, in Space Court Foundation (org.), "Artemis Accords Volume II: the future of space governance", October 2020.

The classic idea of the prevention of an arms race in outer space had at its base the need of an arms control regime. Such a regime would require clear rules and effective means of verification and compliance which neither the PPWT nor the Code have. Consequently, the idea of PAROS needs to update itself on more realistic grounds bearing in mind the technical, political and strategic constraints.

The concept of the Prevention of an Arms Race in Outer Space as changed throughout the years. The PPWT represents its classic idea of a hard law instrument seeking to implement an arms control regime; it failed because States were not able to agree on fundamental matters. The Code of Conduct aimed to answer this through soft law, hoping that by not establishing legal obligations it would make it easier for States to adopt it, however its encompassing scope stripped of definitions proved to be fatal.

Even though the Code failed, it remained evident that States have to develop soft law mechanisms that help them make the space environment more predictable and transparent, and is able to respond to possible flaws in the policy of deterrence. It also became apparent that drafting law for security issues – even if soft law – is a sensitive issue that cannot be dealt with encompassing legal instruments, especially in space where technology is widely varied and demands specific rules that can be subject to verification. Consequently, a series of precise agreements tackling issues such as space debris, ASAT weapons test guidelines and guidelines for on-orbit proximity operations can prove to be more effective<sup>221</sup>.

From the perspective of the USA, space has already been weaponized and now it has to manage this process through deterrence. However, the starting point remains the same, no State wants conflict in space because it would be the "tragedy of the commons", but that does not mean that it is impossible to happen, especially in a more politically unstable world. The failure of both the Russian-Chinese and the EU proposals presents a vacuum in the regulation of conventional military activities that can be filled by the US.

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<sup>221</sup> UNIDIR Space Security Conference 2019, "Supporting Diplomacy: Clearing the Path for Dialogue", 28-29 of May 2019, p. 8.

There are important lessons from the drafting process of both proposals as well as the criticisms and limitations of each initiative. But although there are major differences between the PPWT and the ICoC, namely regarding the two previously approach to the definition of space weapon and the mechanisms of verification and consent, it is also worth mentioning what the proposals have in common. Both proposals acknowledge the need to prevent an arms race into outer space<sup>222</sup>, and reaffirm the existing international legal instruments related to outer space activities<sup>223</sup>. Furthermore, none intends to undermine the freedom of exploration and use of outer space<sup>224</sup>, and neither the right of self-defence<sup>225</sup> while prohibiting attacks against space objects<sup>226</sup>. And even though one proposal is a hard law instrument and the other soft law, both recognise the positive contribute TCBMs can have for the security and safety of space activities<sup>227</sup>.

Although the Artemis Accords does not aim to provide an answer to PAROS, it can still be the beginning of an alternative approach to the weaponization of outer space by presenting a new way to rally banners for political commitments in matters that deal with security in space. Hence it might be a symptom of yet another change in the approach to the prevention of an arms race in outer space. As expected, some criticisms to the Artemis Accords are starting to appear; however, as concluded in the UNIDIR Space Security Conference in 2019, one of the keys to unblock the path forward is to lead by example. It is my opinion that it is time that the US, as the main space faring nation, should do just that.

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<sup>222</sup> 2014 draft PPWT, Preamble and Code of Conduct, Preamble.

<sup>223</sup> 2014 draft PPWT, Preamble and Code of Conduct, Preamble and Article 3.

<sup>224</sup> 2014 draft PPWT, Article III and Code of Conduct, Article 2.

<sup>225</sup> 2014 draft PPWT, Article IV and Code of Conduct, Article 4.2.

<sup>226</sup> 2014 draft PPWT, Article II, and Code of Conduct, Article 4.2.

<sup>227</sup> 2014 draft PPWT, Article V and Code of Conduct, Article 1.3.

## Bibliography

BEARD, Jack M., “Soft Law’s Failure on the Horizon: The International Code of Conduct for Outer Space Activities”, *University of Pennsylvania Journal of International Law*, Vol. 38, Issue 2, 2016.

COUTINHO, Francisco Pereira, “A proibição do uso da força no século XXI”, in Roberto Caldas et al. (coord.), *Guerra e Paz no Século XXI: políticas e direito internacional*, Almedina, 2018, pp. 83-100.

DÖRR, Oliver, “Use of Force, Prohibition of”, in Rüdiger Wolfrum (ed.), *Max Planck Encyclopaedia of Public International Law*, Oxford University Press, 2015.

DRMOLA, Jakub and HUBIK, Tomas, “Kessler Syndrome: System Dynamics Model”, *Space Policy*, Volumes 44-45, Elsevier, 2018, pp. 29-39.

HENDERSON, Stacey, in Kai-Uwe Schrogl (eds.), “Arms Control and Space Security”, *Handbook of Space Security*, Springer, 2020.

HOBE, Stephan, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.), “Historical Background”, *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 105-151.

JANKOWITSCH, Peter, in Frans von der Dunk and Fabio Tronchetti (eds.), “The Background and History of Space Law”, *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 1-29.

JARAMILLO, Cesar, “New competition for a space security regime”, *The Ploughshares Monitor*, Vol. 31, Issue 2, Project Ploughshares, 2010, pp. 3-6.

KOPEĆ, Rafał, “Space Deterrence: In Search of a "Magical Formula"”, *Space Policy*, Vol. 47, Elsevier, 2019, pp. 121-129.

MARCHISIO, Sergio, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.) , “Article IX”, *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 551-591.

MUTSCHLER, Max M., in Kai-Uwe Schrogl et al. (eds.), “Security Cooperation in Space and International Relations Theory”, *Handbook of Space Security*, Springer, 2015, pp. 42-54.

MUTSCHLER, Max M., VENET, Christophe, “The European Union as an emerging actor in space security?”, *Space Policy*, Vol. 28, Issue 2, Elsevier, 2012, pp. 118-124.

MOLTZ, James Clay, “The politics of space security: strategic restraint and pursuit of national interests”, third edition, *Stanford University Press, California*, 2019.

MONTGOMERY, Field Marshall, “The Role of Science in Warfare of the Future”, *Engineering and Science*, 18 (3), 1954, pp. 20-28, 22.

PELTON, Joe, SGOBBA, Tommaso, TRUJILLO, Maite, in Kai-Uwe Schrogl et al. (eds.), “Defining Space Security”, *Handbook of Space Security*, Springer, 2015, pp. 203-231.

RATHGEBER, Wolfgang, REMUSS, Nina-Louisa and SCHROGL, Kai-Uwe, in Kerstin Vignard (eds.), “Space security and the European Code of Conduct for Outer Space Activities”, *Disarmament Forum*, Issue 4, UNIDIR, 2009, pp. 33-41.

RIBBELINK, Olivier, “Article III”, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.), *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 271-285.

ROBINSON, Jana, “Transparency and confidence-building measures for space security”, *Space Policy*, Vol. 37, Part 3, Elsevier, 2016, pp. 134-144.

ROULEAU, Sam, in Damon Coletta and Michelle Black (eds.), “China’s Military Space Strategy: A Dialectical Materialism Perspective”, *Space & Defense*, Eisenhower Center for Space and Defense Studies, 2019, pp. 3-23.

SCHROGL, Kai-Uwe and NEUMANN, Julia, in T. Hobe, B. Schmidt-Tedd and K. Schrogl (eds.), “Article IV”, *Cologne Commentary on Space Law*, Volume 1, Berliner Wissenschafts-Verlag, 2017, pp. 285-351.

SHEEHAN, Michael, in Kai-Uwe Schrogl et al. (eds.), “Defining Space Security”, *Handbook of Space Security*, Springer, 2015, pp. 7-23.

SILVERSTEIN, Benjamin, PORRAS, Daniel and BORRIE, John, “Alternative Approaches and Indicators for the Prevention of an Arms Race in Outer Space”, *UNIDIR Space Dossier 5*, UNIDIR, 2020.

SU, Jinyuan and LIXIN, Zhu, “The European Union draft Code of Conduct for outer space activities: An appraisal”, *Space Policy*, Vol. 30, Issue 1, Elsevier, 2014, pp. 34-39.

SU, Jinyuan, “The ‘peaceful purposes’ principle in outer space and the Russia–China PPWT Proposal”, *Space Policy*, Vol. 26, Issue 2, Elsevier, 2010, pp. 81-90.

TRONCHETTI, Fabio and HAO, Liu, “The 2014 updated Draft PPWT: Hitting the spot or missing the mark?”, *Space Policy*, Vol. 33, Part 1, Elsevier, 2015, pp. 38-49.

TRONCHETTI, Fabio, in Frans von der Dunk and Fabio Tronchetti (eds.), “Legal aspects of the military uses of outer space”, *Handbook of Space Law*. Edward Elgar Publishing, 2015, pp. 331-382.

TRONCHETTI, Fabio, “Preventing the weaponization of outer space: Is a Chinese–Russian–European common approach possible?”, *Space Policy*, Vol. 27, Issue 2, Elsevier, 2011, pp. 81-87.

VIIKARI, Lotta, in Frans von der Dunk and Fabio Tronchetti (eds.), “Environmental aspects of space activities”, *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 717-765.

VON DER DUNK, Frans, “Cutting the Bread”, *Space Policy*, Volume 29, Issue 4, Elsevier, 2013, pp. 231-233.

VON DER DUNK, Frans, in Frans von der Dunk and Fabio Tronchetti (eds.), “International Space Law”, *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 29-125.

VON DER DUNK, Frans, in Frans von der Dunk and Fabio Tronchetti (eds.), “International organizations in space law”, *Handbook of Space Law*, Edward Elgar Publishing, 2015, pp. 269-331.

### **Online Articles**

FOUST, Jeff, “The Artemis Accords take shape”, *The Space Review*, October 2020.

<https://www.thespacereview.com/article/4054/1>

KLIMENT, Alex, “The invisible threat to global peace”, *Gzero*, September 2020.

<https://www.gzeromedia.com/the-invisible-threat-to-global-peace>

KREPON, Michael, “Is Space the Final War-Fighting Frontier?”, *Arms Control Wonk*, July 2017.

<https://www.armscontrolwonk.com/archive/1203399/is-space-the-final-war-fighting-frontier/>

KREPON, Michael, “Norm-Setting for Outer Space”, *Arms Control Wonk*, September 2014.

<https://www.armscontrolwonk.com/archive/404264/norm-setting-for-outer-space/>

KREPON, Michael, “Space Code of Conduct Mugged in New York”, *Arms Control Wonk*, August 2015.

<https://www.armscontrolwonk.com/archive/404712/space-code-of-conduct-mugged-in-new-york/>

LISTNER, Michael, “An exercise in the Art of War: China’s National Defense white paper, outer space, and the PPWT”, *The Space Review*, April 2011.

<https://www.thespacereview.com/article/1828/1>



LISTNER, Michael and RAJAGOLAPAN, Rajeswari Pillai, “The 2014 PPWT: a new draft but with the same and different problems”, *The Space Review*, August 2014.

<https://www.thespacereview.com/article/2575/1>

LISTNER, Michael, “The art of lawfare and the real war in outer space”, *The Space Review*, September 2018.

<https://www.thespacereview.com/article/3571/1>

WANG, Guoyu, “NASA’s Artemis Accords: the path to a united space law or a divided one?”, *The Space Review*, August 2020.

<https://www.thespacereview.com/article/4009/1>

### **Reports, conferences, webinars and informative documents**

America First National Space Strategy Infrastructure & Technology, issued March 2018. (2018 National Space Strategy)

GOLD, Mike, in Space Court Foundation (org.), “Artemis Accords Volume II: the future of space governance”, October 2020.

HARRISON, Todd, “International Perspectives on Space Weapons”, Report, Center for Strategic and International Studies, 2020.

JOHNSON, Christopher, “The UN Group of Governmental Experts on Space TCBMs, fact sheet, *Secure World Foundation*, 2014.

NASA, Artemis Plan: NASA’s Lunar Exploration Program Overview, September 2020.

National Space Policy of the United States of America 2006 (2006 National Space Policy)

National Space Policy of the United States of America 2010 (2010 National Space Policy)

Office of the Secretary of State, “Military and Security Developments Involving the People’s Republic of China 2020”, *Annual report to Congress*, pp. 18-23.

Report by the Chair of the Group of governmental experts on further practical measures for the prevention of an arms race in outer space, New York, 2019.

PORRAS, Daniel, “Shared risks: An examination of universal space security challenges”, Briefing paper for the United Nations Disarmament Commission, *UNIDIR*, 2020.

Secure World Foundation, Fact Sheet Conference on Disarmament, 2009.

UNIDIR Space Security Conference 2019, “Supporting Diplomacy: Clearing the Path for Dialogue”, 28-29 of May 2019.

United Nations Institute for Disarmament Research, “Counterspace Capabilities”, Prepared for the United Nations Group of Governmental Experts on Further Practical Measures for the Prevention of an Arms Race in Outer Space, Geneva, 6–17 August 2018.

## **Official Documents**

### *Treaties and other fundamental documents*

Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (adopted by UNGA Resolution 2222 (XXI) of 19 December 1966, opened for signature on 27 January 1967, entered into force 10 October 1967) 610 UNTS 205. (OST).

Treaty Between the United States of America and the Union of Socialist Soviet Republics on the Limitation of Anti-Ballistic Missile Systems, Moscow, done 26 May 1972, entered into force 3 October 1972, no longer in effect 13 June 2002; 944 UNTS 13. (ABM Treaty)

Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, adopted by UNGA Resolution 2345 (XXII) of 19 December 1967, opened for signature on 22 April 1968, entered into force

on 3 December 1968, 672 UNTS 119. (Rescue Agreement)  
Convention on the International Liability for Damage Caused by Space Objects  
(adopted by UNGA Resolution 2777 (XXVI) of 29 November 1971, opened for  
signature 29 March 1972, entered into force 01 September 1972) 961 UNTS 187.  
(Liability Convention).

Convention on Registration of Objects Launched into Outer Space adopted by  
UNGA Resolution 3235 (XXIX) (12 November 1974), opened for signature on 14  
January 1975, entered into force on 15 September 1976, 1023 UNTS 15.  
(Registration Convention).

Agreement Governing the Activities of States on the Moon and Other Celestial  
Bodies (adopted by UNGA Resolution 34/68 of 5 December 1979, opened for  
signature 18 December 1979, entered into force 11 July 1984) 1363 UNTS 3.  
(Moon Treaty).

Convention of the International Telecommunication Union, Geneva, done 22  
December 1992, entered into force 1 July 1994; 1825 UNTS 1. (ITU Convention).

#### *United Nations Resolutions*

Resolution 1348 (XIII), 13/12/1958, in General Assembly, Question of the  
Peaceful Use of Outer Space.

Resolution 1472 (XIV), 12/12/1959, in General Assembly, International Co-  
operation in the Peaceful Uses of Outer Space.

Resolution 1721 (XVI), 20/12/1961, in General Assembly, International Co-  
operation in the Peaceful Uses of Outer Space.

Resolution 1962 (XVIII), 13/12/1963, in General Assembly, Declaration of Legal  
Principles Governing the Activities of States in the Exploration and Use of Outer  
Space.

#### *Conference of Disarmament work*

CD/1818, 14 March 2007

CD/1839, Draft “Treaty on the Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force Against Outer Space Objects (PPWT) introduced by the Russian Federation and China”, 29 February 2008.

CD/1847, 26 August 2008

CD/1872, 18 August 2009

CD/1985, updated “draft treaty prevention of the placement of weapons in outer space and of the threat or use of force against outer space objects (PPWT) introduced by the Russian Federation and China”, 12 June 2014

CD/1998, 3 September 2014

CD/2042, 14 September 2015

POBLETE, Yleem D.S., “United States Remarks at the Conference on Disarmament”, speech, Conference of Disarmament, Geneva, 14 August 2018.

<https://geneva.usmission.gov/2018/08/14/remarks-by-assistant-secretary-yleem-d-s-poblete-at-the-conference-on-disarmament/>

### *Soft law instruments*

The Artemis Accords Principles for Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids, signed 13 October 2020. (Artemis Accords)

Council of the European Union, “Draft International Code of Conduct for Outer Space Activities”, March 2014. (Code of Conduct)

### **Jurisprudence**

Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda), Judgment, I.C.J. Reports 2005, p.168.

Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, I.C.J. Reports 1996, p. 226.

Military and Paramilitary Activities in und against Nicaragua (Nicaragua v. United States of America). Merits, Judgment. I.C.J. Reports 1986, p. 14.

Oil Platforms (Islamic Republic of Iran v. United States of America), Judgment, I.C.J. Reports 2003, p. 16.

### **Speeches and press releases**

18<sup>th</sup> Press release of the 18th regular meeting of the subscribing states to the Hague Code of Conduct against ballistic missile proliferation, Vienna, 3-4 June 2019.

FORD, Christopher, “Whither Arms Control in Outer Space? Space Threats, Space Hypocrisy, and the Hope of Space Norms”, speech, Center for Strategic and International Studies, Washington, DC, 6 April 2020.

EU Explanation of Vote – United Nations 1st Committee: No First Placement of Weapons in Outer Space, New York, 2017.

### **Websites**

ESA, “About Space Debris”, [https://www.esa.int/Safety\\_Security/Space\\_Debris/About\\_space\\_debris](https://www.esa.int/Safety_Security/Space_Debris/About_space_debris) (last accessed 13 November 2020).

Nuclear Threat Initiative, “Proposed Prevention of an Arms Race in Space (PAROS) Treaty”, <https://www.nti.org/learn/treaties-and-regimes/proposed-prevention-arms-race-space-paros-treaty/> (last accessed 10 October 2020).

Stuff in Space, <http://stuffin.space/> (last accessed 10 October 2020).

**Annex 1**, “Framework for Types of Space Weapons”, in HARRISON, Todd, “International Perspectives on Space Weapons”, Report, Center for Strategic and International Studies, 2020.

*Table 1: Framework for Types of Space Weapons*

	Kinetic	Non-Kinetic
Earth-to-Space	<p><b>Example</b> Direct-ascent ASAT</p> <p><b>How do they work?</b> A missile fires a warhead or projectile into space to directly strike or detonate near a target satellite. The warhead can be conventional or nuclear.</p> <p><b>What are the effects?</b> A kinetic Earth-to-space weapon produces space debris that can affect the safe operation of other satellites in affected orbits. Nuclear detonations in space increase the radiation exposure of other satellites and can significantly shorten their lifespan.</p> <p><b>Have they been demonstrated?</b> Earth-to-space kinetic weapons have been tested by the United States, Russia, China, and India. The United States and Soviet Union tested nuclear weapons in space in the 1960s.</p>	<p><b>Examples</b> Uplink Jammer, Laser Dazzler/Blinder, Cyberattack</p> <p><b>How do they work?</b> Non-kinetic counterspace weapons can be stationed on ground, maritime, or airborne platforms and used to affect the operation of satellites or the sensors they carry, without making physical contact.</p> <p><b>What are the effects?</b> Non-kinetic weapons disrupt or degrade the ability of satellites to function properly. They can have temporary or permanent effects, but they do not generally produce orbital debris or other collateral damage.</p> <p><b>Have they been demonstrated?</b> Multiple nations have demonstrated these capabilities, including Russia, China, Iran, and others.</p>
Space-to-Space	<p><b>Examples</b> Co-orbital ASAT, Space-based Missile Defense Interceptors</p> <p><b>How do they work?</b> A satellite is placed into orbit and maneuvers to intercept its target by striking it directly or detonating a conventional or nuclear warhead in its vicinity.</p> <p><b>What are their effects?</b> A kinetic space-to-space weapon would produce space debris that can affect the safe operation of other satellites in similar orbits. A nuclear detonation in space would increase the radiation exposure of other satellites and significantly shorten their lifespan.</p> <p><b>Have they been demonstrated?</b> The Soviet Union tested co-orbital kinetic ASAT weapons repeatedly during the Cold War.</p>	<p><b>Examples</b> Co-orbital Crosslink Jammer, Co-orbital High-powered Microwave</p> <p><b>How do they work?</b> A satellite is placed into orbit and uses non-kinetic means (such as a high-powered microwave or jammer) to disrupt the operation of another satellite.</p> <p><b>What are their effects?</b> They can degrade, disrupt, or destroy a target satellite without making physical contact, producing orbital debris or otherwise affecting other satellites. The effects can be temporary or permanent depending on the form of attack used and the protections on the target satellite.</p> <p><b>Have they been demonstrated?</b> No open-source examples could be found of such a system being demonstrated, although such tests could look like remote proximity operations to outside observers.</p>
Space-to-Earth	<p><b>Examples</b> Space-based Global Strike (e.g., “Rods from God”)</p> <p><b>How do they work?</b> Weapons are placed in orbit and, when commanded, deorbit and reenter the atmosphere to strike a target on the Earth. Damage can be inflicted using the kinetic energy of the weapon itself, or a warhead can be deployed from the reentry vehicle (either conventional or nuclear).</p> <p><b>What are their effects?</b> The effects depend greatly on the type of warhead used (conventional or nuclear) but would be like terrestrial-based ballistic missiles in terms of their ability to hit targets anywhere on Earth with little warning.</p> <p><b>Have they been demonstrated?</b> While the idea of using space-based weapons for prompt global strike has been contemplated by the U.S. military, there are no open-source examples of such a system being tested.</p>	<p><b>Examples</b> Space-based Downlink Jammer, Space-based High-powered Laser</p> <p><b>How do they work?</b> A satellite equipped with a non-kinetic weapon could target forces on Earth, such as a laser used to intercept missiles or aircraft in-flight or a jammer used to interfere with radars or satellite ground stations.</p> <p><b>What are their effects?</b> When used, the effects would be localized to the target area, but such a system could theoretically strike anywhere without warning.</p> <p><b>Have they been demonstrated?</b> While the U.S. military has contemplated space-based lasers for boost-phase missile defense, there are no open-source examples of such a system being tested.</p>

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