Evolving Norms on Pre-Launch Notifications of Space Launch Vehicles and Space Object Registration: A Historical Perspective in the Context of UNISPACE+50 Thematic Priority Three

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Abstract

The development of the requirements for information exchange on space objects and events (now identified as UNISPACE+50 thematic priority three) has been accelerating from around the mid-2000s. However, it has yet to be highlighted that, for around 30 years, many proposals of these norms appeared repeatedly with many similarities in different international bodies. The purpose of this study is to better understand the chronology of the evolution of these norms, and to evaluate how and why certain current norms, specifically the "Guidelines for the Long-term Sustainability of Outer Space Activities" ("LTS Guidelines"), were able to evolve upon states reaching a consensus and agreeing upon formalized text, as compared to similar proposals in the past which failed to reach a consensus. Analyzing

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the conference room papers in the Ad hoc Committee ("AHC") on the Prevention of an Arms Race in Outer Space ("PAROS") in the Conference on Disarmament ("CD") and the diplomatic records in Japan until the mid-1990s, research shows that the following three proposals on Confidence Building Measures ("CBM") of outer space (that were never implemented) ended up entering the discussion that led to the LTS Guidelines: (a) proposals on ensuring the immunity of satellites; (b) strengthening the Registration Convention; and (c) pre-launch notifications. This paper discusses the deliberative process of proposals (b) and (c) in the AHC, and how these two proposals later evolved into the LTS Guidelines on enhancing the practice of registering space objects as well as guidelines on pre-launch notification of space launch vehicles. It is noteworthy that, while the proposal on pre-launch notifications had gathered positive reactions in the AHC on PAROS, the US insisted that the issue be dealt with in the Missile Technology Control Regime ("MTCR"), which resulted in the formulation of the International Code of Conduct against Ballistic Missile Proliferation (also known as the Hague Code of Conduct or "HCOC") after consultation with like-minded countries outside the UN. However, recently, these discussions regarding the current LTS Guidelines on pre-launch notification of space launch vehicles returned to be discussed at the UN and a consensus was partially reached. The HCOC is sometimes criticized by non-Subscribing States that it was formulated by the initiatives of non-UN countries that possess missile technology. However, the LTS Guidelines demonstrate that norms on pre-launch notification are also acceptable in the UN in the context of the safety of space activities. These findings indicate that the norms on outer space lie across multiple areas such as peaceful uses of outer space, disarmament, arms control and non-proliferation. They have gradually progressed to change the international arena, slowly and intermittently.

1. Introduction

The Committee on the Peaceful Uses of Outer Space ("COPUOS"), at its fifty-ninth session, endorsed seven thematic priorities of UNISPACE+50, including thematic priority 3 - enhancing information exchange of space objects and events[1]. Thematic priority 3 has the objective of defining and developing requirements for enhanced information procedures under the United Nations Register of Objects Launched into Outer Space[2].

The development of possible norms with regard to measures on enhanced information exchange of space objects and events attracted intense attention from many countries especially after the mid-2000s and was triggered by the

1 A/71/20, para. 296.
2 A/AC.105/117, para. 2.

Chinese anti-satellite missile test ("ASAT") test in 2007. For example, (i) the European Union ("EU") published the first draft of the International Code of Conduct for Outer Space Activities ("ICOC") in 2008; (ii) Mr. Gérard Brachet, the former chairman of the COPUOS, proposed to discuss the long-term sustainability of space activities in the Scientific and Technical Subcommittee ("STSC") of COPUOS with hopes of producing guidelines in 2008[3]; and (iii) the Group of Governmental Experts ("GGE") on Transparency and Confidence-Building Measures ("TCBM") in Outer Space Activities was established under the Secretary-General pursuant to General Assembly resolution 65/68 in 2012.

However, it has yet to be highlighted that, for around 30 years, many proposals of such norms appeared repeatedly with many similarities in different international bodies, including disarmament, non-proliferation and peaceful uses on outer space. The purpose of this study is to better understand the chronology of such evolution of norms, and to evaluate how and why current norms, such as the "Guidelines for the Long-term Sustainability of Outer Space Activities" ("LTS Guidelines"), discussed in STSC of COPUOS since 2010, developed to include concepts regarding the enhancement of registering space objects and pre-launch notification of space launch vehicles[4]. This will be compared to past similar proposals raised in the Ad hoc Committee ("AHC") on the Prevention of an Arms Race in Outer Space ("PAROS") under Conference on Disarmament ("CD") established from 1985 to 1994, which failed to reach a consensus.

2. Consultative Process on Confidence Building Measures ("CBM") in the AHC on PAROS

2.1 Classification of CBM proposals

Given the wide variety of proposals to prevent weaponization on outer space discussed in the AHC on PAROS, CBM proposals became mainstream from around the late-1980s. These proposals can be mainly divided into the following four categories: (i) verification by satellite monitoring to outer space or crisis on the ground (e.g. the "ISMA" proposal by France[5] and the "PAXSAT" proposal by Canada[6]); (ii) ensuring the immunity of satellites (e.g. the "rules of the road" proposal by West Germany[7] and the "code of conduct" proposal by France[8]); (iii) strengthening the Registration

3 A/AC.105/911.
4 A/AC.105/2018/CRP.20.
5 CD/905, pp18-20; CD/937, pp4-5; CD/945.
6 CD/905, pp20-21; CD/1785.
7 CD/905, pp8-11.
8 CD/937, pp6-9; CD/1092, pp2-4.

Convention[9] proposed by Australia and Canada in 1988[10] and Argentina in 1990[11]; and (iv) pre-launch notifications proposed by France in 1993[12].
These proposals were supported by many delegations, but some delegations expressed the opposite view. For example, the delegation of China emphasized in 1993 at the meeting in the AHC that while CBM contributed to the positive development in international relations, their role was limited and they could not eliminate the danger of weaponization in outer space[13].
After a thorough discussion in the AHC, delegations could not reach any consensus on all of these proposals. Meanwhile, proposals (ii), (iii) and (iv) were passed down to the discussion on different norms which were incorporated in the ICOC draft, the report of GGE on TCBM and the LTS Guidelines with many commonalities.
Sections 2.2 and 2.3 below will focus on the deliberation processes of the proposals of (iii) strengthening the Registration Convention and (iv) pre-launch notifications in the AHC.

2.2 The deliberation process at the AHC: strengthening the Registration Convention

The representative of Canada said in his statement in July 1988 that the Registration Convention should go beyond the requirement of disclosing the general function of space objects and provide more detailed and timely information concerning the function of a satellite for arms control purposes[14].
A similar attitude was expressed by India at the AHC[15]. In August 1988, Australia and Canada submitted working paper CD/OS/WP.25. In 1990, Argentina expressed that the Registration Convention, by providing concrete information about the nature and functions of space objects, is, de facto, an essential database for any subsequent confidence building measure on outer space, and the strengthening of the regime ought to be undertaken on two levels: first, that of scope of the information, and second, that of its timeliness[16].
The delegation of the United States, however, provided a critical response on August 1988 that the Registration Convention is not an arms control or confidence-building instrument, which was negotiated in order to establish an international registry of objects for the purpose of giving practical effect to

9 Convention on Registration of Objects Launched into Outer Space, 1023 UNTS 15, 1628 UST 695
10 CD/905, pp24-25.
11 CD/1015.
12 CD/1217, para 11; CD/OS/WP.59.
13 CD/1217, para 14.
14 CD/905, p24.
15 Ibid, p24.
16 CD/1015, pp5-6.

the Liability Convention, hence consideration falls properly within the venue of COPUOS, and not the AHC[17].
The delegation of Japan made a statement at the plenary meeting in the CD of 1987 that Japan could support the basic concept of this proposal, while further consideration is necessary from various perspectives as to whether this proposal could lead to concrete and effective measures[18].
Other delegations such as France, Poland, the Soviet Union, West Germany and non-aligned movement ("NAM") countries supported this proposal, but delegations cannot reach a consensus in AHC.

2.3 Consultative process: pre-launch notifications

In 1993, the delegation of France introduced a proposal for pre-launch notification regarding space objects and ballistic missiles in its working paper (CD/OS/WP.59). According to this working paper, France proposed that the States parties to the new international instrument should transmit a in writing to an international centre set up under the auspices of the United Nations, notification of launches of space launchers and ballistic missiles. Such notification could take place one month before the planned date of launch an would be confirmed 24 hours before the actual launch. As for space launchers, the launching State should communicate the geographic impact area as well as space objects information such as name of owning State or State of registry, orbital parameters, general function and so on. With respect to missiles with a ballistic trajectory having a range of 300 km or more, the launching State should communicate the date of launch, the launching area and the impact area. The international centre, in collecting and centralizing the information provided by States parties, was expected to contribute to increasing the predictability and hence the security of space activities.
The contents of this proposal are quite similar with the current framework of the International Code of Conduct against Ballistic Missile Proliferation (HCOC), but the crucial difference is that this proposal aims to set up an international centre under the auspices of United Nations, while the HCOC is outside the UN framework for non-proliferation.
Diplomatic records of Ministry of Foreign Affairs (MOFA) in Japan at that time show that the French diplomat explained the motive of this proposal was the non-proliferation of ballistic missiles and the establishment of a more universal and international regime to complement the Missile Technology Control Regime (MTCR) which was criticized by some countries as discriminatory due to its limited membership. Accordingly, the French diplomat was confident that this proposal could avoid such criticism. In fact,

17 CD/905, p24.
18 Statement by Mr. Chusei Yamada, Ambassador of Japan to the Conference on Disarmament, at the Plenary meeting of the CD as of 7 July 1987.

a number of delegations, at least Belgium, Brazil, Russia, Sweden and Turkey, supported this initiative, considering that it could offer a realistic solution to the present deadlock in the AHC[19].
Meanwhile, according to the diplomatic records of MOFA in Japan at that time, Japan supported this proposal in principle but at the same time was willing to observe the view of United States because Japan has concerns about the possible negative impact to the regime of Global Protection Against Limited Strikes (GPALS).
The United States consistently opposed this proposal. On February 1994, the United States delegation stated that the French proposal should be deliberated in the MTCR, which is inconsistent with the deliberation item in CD, according to the diplomatic records of MOFA in Japan at that time. A similar attitude was expressed by England. The Chinese delegation also pointed out that the notification of launches of ballistic missiles was not directly related to the work in the AHC.[20]
As a result of the deliberation process, this proposal did not reach a consensus in AHC. As the delegation of the United States envisioned, the necessity of norms regarding pre-launch notifications of space launch vehicles and ballistic missiles started to be discussed after late-1990s in the MTCR, followed by several informal meetings by other like-minded countries, which eventually led to the formulation of the HCOC in 2002.

3. LTS guidelines on enhancing the practice of registering space objects

This section provides an overview of the LTS Guidelines on enhancing the practice of registering space objects (Guideline A.5, A/AC.105/2018/CRP.20) and discusses how we can see that these guidelines evolved from past AHC proposals of strengthening the Registration Convention.

3.1 The characteristics of registration

The characteristics of registration under the Registration Convention are understood as the following: assisting in the identification of space objects; clarifying which State retains jurisdiction and control over such objects and personnel; and providing a link for attributing liability to the "launching State" pursuant to Liability Convention, as the delegation of the United States stated in the AHC in 1988.
Guideline A.5, paragraph 1 of the LTS Guidelines requests States and international intergovernmental organizations to develop and/or implement an effective and comprehensive registration practice – "proper registration of space objects is a key factor in the safety and the long-term sustainability of space activities".

19 CD/1217, para11.
20 Ibid, para 15.

It should be noted that in this sentence the characteristics of registration seem to extend to the assurance of "safety" and "the long-term sustainability of space activities", which diverts from the original concept of the Registration Convention. While there was no consensus in the AHC to regard registration as another function such as confidence building measures or arms control, LTS Working Group members now seem to accept the concept regarding registration as a tool to ensure safety of outer space, which was not initially envisioned in the Registration Convention.

3.2 Providing timely information for registration

Pursuant to article IV, paragraph 1 of the Registration Convention, each state of registry has an obligation to furnish the Secretary-General of the United Nations with space object information as soon as practicable

Guideline A.5, paragraph 2 of the LTS guidelines requests States and international intergovernmental organizations to "bear in mind the need to provide timely information that contributes to the long-term sustainability of outer space activities".

As mentioned in section 2.2, the necessity to provide "timely information" of space objects was what the delegation of Australia, Canada and Argentina proposed in AHC. Hence, it could be said that their proposals have come back to the UN fora to be partially incorporated into this guideline after around 30 years, although this guideline requires states to "bear in mind" this concept. We also need to note that "timeliness" is only necessary with respect to the timing of registering space objects and is not required throughout the lifetime of the space objects operation.

It is noteworthy that we can see also here an evolved norm of providing timely information of space objects, while the Registration Convention only stipulates to furnish space object information "as soon as practicable".

3.3 Providing expanded registration information

Pursuant to Article IV, Paragraph 2 of the Registration Convention, each state of registry may, from time to time, provide the Secretary-General of the United Nations with additional information concerning a space object carried on its registry. Furthermore, the "Recommendations on enhancing the practice of States and international intergovernmental organization in registering space objects" (General Assembly resolution 62/101) recommends considering furnishing several other areas of additional appropriate information to the Secretary-General[21].

Guideline A.5, paragraph 6 of LTS Guidelines requests States and international intergovernmental organizations to encourage space launch service providers and users under their jurisdiction and/or control to consider adopting a provision regarding "expanded registration information.". LTS

21 General Assembly resolution 62/101, para2 (b)

Guidelines do not provide any definitions or examples of "expanded registration information," so it is difficult to understand the difference between this and the concept of "additional information" under Article IV, Paragraph 2 of the Registration Convention. It can be speculated that "expanded registration information" could include, for example, hazardous information of space objects such as loss of ability to control the flight, risk of potentially hazardous conjunctions with other space objects and hazardous re-entry, given that a draft of the LTS Guidelines as of 7 February 2017 mentions this information to be contained as changes of status of operations[22]. However, since these examples do not appear in the final agreed-upon text, how Guideline A.5.6 works would depend on how states and international intergovernmental organizations interpret and take measures on "expanded registration information".

Even so, it is noteworthy that this guideline requests to consider expanding the range of necessary registration information in an autonomous way of each state and international intergovernmental organization, which partially meets with the proposals by the delegation of Australia, Canada and Argentina in the AHC to provide more concrete and detail information. It could be said that their proposals in the AHC were not forgotten and still remain ongoing issues.

4. LTS Guidelines on pre-launch notification of space launch vehicles

This Section provides an overview of LTS guidelines on pre-launch notification of space launch vehicles (Guideline B.5, paragraph 6, A/AC.105/2018/CRP.20), especially the points in which we can see the evolution from the past proposals on pre-launch notifications in AHC.

The HCOC is an international non-binding framework of confidence building measures for non-proliferation of ballistic missiles formulated in 2002 outside the United Nations, after discussion in the MTCR and other informal meetings among like-minded countries as stated in section 2.3. The HCOC requests Subscribing States to exchange pre-launch notifications regarding their Ballistic Missile and Space Launch Vehicle launches and test flights. These notifications should include information such as the generic class of the Ballistic Missile or Space Launch Vehicle, the planned launch notification window, the launch area and the planned direction.[23] The HCOC is sometimes criticized by non-Subscribing States that it was formulated by the initiatives of countries possessing missile technologies outside the United Nations. This criticism has been a major obstacle for subscribing states to accomplish "universalization" of the HCOC. At present, China, Pakistan,

22 A/AC.105/C.1/2017/CRP.29, Guideline 6.6.

23 International Code of Conduct against Ballistic Missile Proliferation, paragraph 4 a (iii).

Iran and many countries possessing missile technologies do not participate in this framework, some of which countries insist upon the foregoing criticism.
Guideline B.5, paragraph 6 of the LTS Guidelines requests States and international intergovernmental organizations to:

> consider providing, using, as appropriate, applicable existing and/or new dedicated mechanisms, information on launch schedules useful for assessing changes in the future population of space objects, pre-launch notifications containing information on the launch plan that would be useful for assisting in the identification of newly launched space objects.

This guideline is historic, given that it achieves a consensus in the LTS Working Group under the COPUOS STSC to request States and international intergovernmental organizations to consider pre-launch notifications containing information on the launch plan. It should be highlighted that the French proposal in the AHC in 1993 for prior notification of launches of space objects and ballistic missiles under the auspices of the United Nations partially became realized as a norm in this guideline within the United Nations, in addition to the HCOC outside the United Nations.
Furthermore, this guideline gives both options to use applicable existing mechanisms, such as the HCOC, and new dedicated mechanisms. Therefore, it would be significant also for HCOC Subscribing States to acquire legitimacy by the United Nations and to promote "universalization" of HCOC.

5. Analysis

Based on these findings, this section attempts to evaluate possible reasons why discussions were able to evolve to the point where states were able to agree upon the LTS Guidelines, while past similar CBM proposals in AHC never ended up reaching a consensus to become formalized.
(i) A fundamental problem that prevented effective deliberations of proposals regarding strengthening the Registration Convention and pre-launch notifications in the AHC may lie in how the negotiations took place at the forum of disarmament and arms control, which addressed many controversial issues. Especially, the position of the United States has been consistent: there were currently no arms race in outer space, so it was not necessary to discuss CBM of outer space in the CD. Thus, even if these proposals contained valuable points, it was significantly difficult to achieve any consensus in this forum.
(ii) During the 20 year period after the AHC, space-faring nations began to believe that ensuring the safety of outer space activities is important, since the space environment is becoming rapidly congested and space debris is increasing. Given these realizations, the discussion on CBM proposals was

revived in the United Nations in the context of "space safety," instead of the context of disarmament and arms control, which has resulted in consensus building of similar subject matters that were proposed around 30 years ago.
These findings indicate the norms on outer space lie across multiple areas such as peaceful uses of outer space, disarmament, arms control and non-proliferation. They are gradually changing the international fora, slowly and intermittently.

6. Conclusions

The LTS Guidelines on enhancing the practice of registering space objects and guidelines regarding pre-launch notification of space launch vehicles clearly go beyond existing international norms. The development of these concepts provides an important foundation to ensure the safety of outer space activities.
These guidelines include contents proposed in the AHC on strengthening the Registration Convention and pre-launch notifications, which failed to reach a consensus at that time. The evolution of these norms was enabled by changing the context within which they were discussed from disarmament and arms control to "space safety.".
On the other hand, these guidelines contain unclear definitions with few concrete or illustrative examples, which requires states to depend on the future interpretation and implementation of other states and international intergovernmental organizations. It becomes necessary for them to formulate a mutual understanding in the interpretation of these guidelines and to exchange information of accumulated practice and experience to activate these new norms in the international arena.