by everyone.[272] Consequently, despite substantial efforts towards the creation of a common European Space Military, this option has not yet come to be.[273]

The European Union has not remained passive, however, on the face of challenges such as the ones presented above. Like Russia and China, the European Union has presented its own international instrument addressing some of the issues caused by the militarisation of outer space. Unlike Russia and China though, the European Union has opted for a non-binding instrument, and has hence presented a draft Code of Conduct for Outer Space Activities.[274] The draft Code is an attempt to minimize the negative impact of certain activities, to make space more sustainable and indirectly control the militarisation and weaponisation of outer space. It has been agreed upon by the European Union, revised following consultations with other space faring nations and presented to the Conference on Disarmament, as an alternative method of regulating existing issues with regards to space. It reflects the fundamental premise of the European Union for the strengthening the security of activities in outer space in the context of expanding space activities that contribute to the development and security of States.[275] The first purpose of the draft Code is to encourage participation on a voluntary basis in measures for transparency, confidence building etc., not exclusively by the European Union States, but also by as many States as possible in general.[276] The ultimate purpose is to maintain international peace and security,[277] through the freedom of access to space for all, for peaceful purposes and the preservation and security of space objects, taking into account the considerations for legitimate defence of States.[278] The drafters of the Code made an effort to show that it was actually a codification of new best practices,[279]

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[272] Isabelle Soubrès-Verger, *La militarisation de l'espace: perspective européenne*, 29 ANNALS AIR & SPACE L. 357, 359 (2004).

[273] *Id.* at 374.

[274] European Council Document 14455/10 (2010), *Council Conclusions concerning the revised draft Code of Conduct for Outer Space Activities* [hereinafter Draft Code of Conduct].

[275] *Id.* at 2.

[276] *Id.* art. 1,§4.

[277] *Id.* art. 1,§1.

[278] *Id.* art. 2.

[279] *Id.* art. 1,§3.

though in fact it is, as the following analysis of the most important provisions will demonstrate, a reiteration of the current legal regime governing outer space.

In particular, under Article 3 of the Draft Code of Conduct, Subscribing States take to re-affirm their commitment to the existing legal framework and take steps of progress, application and adherence to the following international instruments:

> (a) the existing framework regulating outer space activities, inter alia:
>
> - the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (1967);
> - the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (1968);
> - the Convention on International Liability for Damage Caused by Space Objects (1972);
> - the Convention on Registration of Objects Launched into Outer Space (1975);
> - the Constitution and Convention of the International Telecommunications Union and its Radio Regulations (1995), as amended**;**
> - the Treaty banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water (1963) and the Comprehensive Nuclear Test Ban Treaty (1996); and
> - the International Code of Conduct against Ballistic Missile Proliferation(2002).
>
> (b) Declarations and Principles, inter alia:
>
> - the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space as adopted by UNGA Resolution 1962 (XVIII), (1963);

- the Principles Relevant to the Use of Nuclear Power Sources in Outer Space as adopted by UNGA Resolution 47/68 (1992);
- the Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries as adopted by UNGA Resolution 51/122 (1996); and
- the Recommendations on the Practice of States and International Organisations in Registering Space Objects as stated in UNGA Resolution 62/101 (2007).[280]

Emphasis should be given to the characterisation of States just before the listing of the aforementioned instruments. States are called "subscribing," for they are not bound by the Code of Conduct, nor do they have to be Parties or signatories to the aforementioned instruments. It should also be noted that the Moon Agreement does not form part of the list of instruments of Article 3, whereas non-binding documents, such as the 1962 Legal Principles Resolution, which was later incorporated in the Outer Space Treaty, or the principles relevant to the use of nuclear power sources and the declaration on international cooperation, are included in this enumeration. It is doubtful that the inclusion of this soft law instruments in another soft law document, such as the Code of Conduct, will somehow strengthen their legal value. Without being too cynical about it, one would have to assume that there must be some kind of intention behind this inexplicable choice, for it would be too easy to just think of this selection as the result of "clumsy" drafting.

Article 5 of the Draft Code of Conduct addresses the issue of space debris, in providing that States should "refrain from the intentional destruction of any on-orbit space object or other activities which may generate long-lived space debris."[281] Reference is also made to the UN Space Debris Mitigation Guidelines[282], however it makes no further references to what States should do to

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[280] *Id.* art. 3.

[281] *Id.* art. 5,§1.

[282] G.A. Res. 62/217, U.N. Doc. A/RES/62/217 (Feb. 1, 2007).

remove the existing debris, or indeed provide any tangible example of best practices in this field.

Last but not least, some special attention should be paid to the provisions of Articles 6, 8 and 9, which are all included under the general title "Cooperation Mechanisms" and respectively read as follows:

> Article 6. Notification of outer space activities
>
> 6.1. The Subscribing States commit to notify, in a timely manner, to the greatest extent feasible and practicable, all potentially affected Subscribing States on the outer space activities conducted which are relevant for the purposes of this Code, inter alia:
>
> - scheduled manoeuvres which may result in dangerous proximity to the space objects of both Subscribing and non-Subscribing States;
> - pre-notification of launch of space objects;
> - collisions, break-ups in orbit, and any other destruction of space objects generating measurable orbital debris which have taken place;
> - predicted high-risk re-entry events in which the re-entering object or residual material from the re-entering object either likely would survive to cause potential significant damage, or might cause radioactive contamination; and
> - malfunctioning of orbiting space objects which could result in a significantly increased probability of a high risk re-entry event or a collision between space objects in orbit.
>
> 6.2. The Subscribing States commit to provide the notifications described above through diplomatic channels, or by any other method as may be mutually agreed.
>
> Article 8. Information on outer space activities
>
> 8.1. The Subscribing States resolve to share, on an annual basis, where available and appropriate information on:

- their space policies and strategies, including basic objectives for security and defence related activities in outer space;
- their space policies and procedures to prevent and minimise the possibility of accidents, collisions or other forms of harmful interference;
- their space policies and procedures to minimise the creation of space debris; and
- efforts taken in order to promote universal adherence to legal and political regulatory instruments concerning outer space activities;

8.2. The Subscribing States may also consider providing timely information on space environmental conditions and forecasts to the governmental agencies and the relevant nongovernmental entities of all space faring nations**,** collected through their space situational awareness capabilities.

Article 9. Consultation mechanism

9.1. Without prejudice to existing consultation mechanisms provided for in Article IX of the Outer Space Treaty of 1967 and in Article 56 of the ITU Constitution, the Subscribing States have decided on the creation of the following consultation mechanism:

- A Subscribing States that may be directly affected by certain outer space activities conducted by one or more Subscribing State(s) and has reason to believe that those activities are, or may be contrary to the core purposes of the Code may request consultations with a view to achieving mutually acceptable solutions regarding measures to be adopted in order to prevent or minimise the inherent risks of damage to persons or property, or of potentially harmful interference to a Subscribing State's outer space activities.
- The Subscribing States involved in a consultation process commit to:

- consulting through diplomatic channels or by other methods as may be mutually determined; and
- working jointly and cooperatively in a timeframe sufficiently urgent to mitigate or eliminate the identified risk initially triggering the consultations.

- Any other Subscribing State(s) which has reason to believe that its space activities would be affected by the identified risk and requests to take part in the consultations is entitled to take part, with the consent of the Subscribing State(s) which requested consultations and the Subscribing State(s) which received the request.
- The Subscribing States participating in the consultations are to seek mutually acceptable solutions in accordance with international law.

9.2. In addition, the Subscribing States may propose, on a voluntary basis, to create a mechanism to investigate proven incidents affecting space objects and to collect reliable and objective information facilitating their assessment. The mechanism, to be determined at a later stage, should utilize information provided on a voluntary basis by the Subscribing States, subject to national laws and regulations, and a roster of internationally recognised experts to undertake an investigation. The findings and any recommendations of these experts are to be advisory, and are not binding upon the Subscribing States involved in the incident that is the subject of the investigation.[283]

Presented in their entirety, these provisions clearly demonstrate the intention of recirculating, or perhaps even duplicating, already existing information, exchanged among States through COPUOS, by the creation of completely new and different mechanisms, such as biannual meetings of the subscribing States. The creation of an additional layer of international dialogue, as a means of solving the existing problem resulting from the various

[283] Draft Code of Conduct, *supra* note 274, arts. 6, 8 & 9.

military uses of outer space, appears to the more sceptical eyes as a further attempt to by-pass the UN institutions and segregate outer space from its jurisdiction.

E. The issue of verification of space objects.

The issue of verification has been almost synonymous to the effort to control an arms race at a global level ever since World War II. At first aimed primarily towards monitoring the compliance of disarmament of nuclear weapons, verification has nowadays gone a long way from the 1962 proposals of both the USSR and the USA about a "general and complete disarmament" that included relevant verification procedures.[284] As a process tied to an arms control instrument, verification takes place in three different stages: first, the activities of the parties to the disarmament treaty have to be mutually monitored; second, the information resulting from such monitoring procedure must be interpreted and analysed; and third, an assessment must be made as to what kind of risk the activities of the monitored State parties pose for the security of the monitoring and assessing State.[285] It is evident that the greatest burden of the verification process falls upon the shoulders of the intelligence services worldwide, as they are expected to perform all three stages before final action, if any, is to be taken. For indeed, even in cases where violations of a disarmament treaty have been discovered through the verification process, it is not necessary that action was taken against the violating State. Disarmament treaties are a prime example of international law working on the basis of reciprocity: if one State does not fulfil its international obligation *vis-à-vis* its contractual counterparts, then they in return can delay the fulfilment of theirs, action which could be easily described as taking countermeasures against the offending State.[286] In fact, a State or the States towards this obligation is owed can assert the international respon-

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[284] *See* Nicolas Mateesco Matte, *International Verification Procedures: Past and Future Prospects*, 11 ANNALS AIR & SPACE L. 237 (1986).

[285] ISABELLA H. PH. DIEDERIKS-VERSCHOOR & VLADIMIR. KOPAL, AN INTRODUCTION TO SPACE LAW 138 (Kluwer Law International 2008).

[286] Linos-Alexandre Sicilianos, *Les réactions décentralisées à l'illicite: Des contremesures à la légitime défense* 501-525 (Librairie générale de droit et de jurisprudence, Paris 1990).

sibility of the State violating the provisions of the disarmament instrument, as its non-compliance "[i]s of such a character as radically to change the position of all the other States to which the obligation is owed with respect to the further performance of the obligation."[287] Additionally, the affected State or States can in fact suspend or even terminate the disarmament treaty, even towards those other Parties that were at all times acting lawfully,[288] since the obligation of lawful performance is effectively conditioned upon and requires the performance of all the other parties as well.[289] A strong interest on behalf of all State parties in the cessation and the reparation of the unlawful act is a precondition to claiming such international responsibility,[290] which evidently exists in the case of reducing space arsenals in a significant manner.

Verification is indeed believed to be a *conditio sine qua non* for the concluding of an arms control agreement.[291] Scholars have been actively advocating the need to enhance the equipment available, mostly on military satellites, so that more accurate and precise data can be collected, making it thus easier to discover violations of the agreement and leaving little room to the violating State to conceal its unlawful conduct.[292]

Therefore, one of the most important provisions of the ABM treaty and the SALT-I is that prohibiting any interference with the "national technical means"[293] of the other party, used for treaty compliance verification purposes.[294] Although not defined in

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[287] ASR, *supra* note 50, art. 42(b)(ii).

[288] VCLT, *supra* note 99, art. 60,§2.

[289] ASR, *supra* note 50, at 119.

[290] *Id.*

[291] Carl Q. Christol, *The Use of Outer Space for Peaceful Purposes, Legal and Political Considerations*, *in* PROCEEDINGS 28TH COLLOQUIUM 4-7 (Stockholm 1985); A. S. Piradov & B. C. Maiorsky, *On the Question of the Non-Use of Force in Outer Space and from Space Against the Earth (components of an international legal regime)*, *in* PROCEEDINGS 27TH COLLOQUIUM 349-353 (Lausanne 1984); Nicolas Mateesco Matte, *International Verification Procedures: Past and Future Prospects*, 11 ANNALS AIR & SPACE L. 237 (1986); Ivau Kotlyarov, *Space Law and International Control*, 3 SPACE & L. 147 (1985).

[292] HE QIZHI, I TOWARDS LEGAL CONTROL OF SPACE ARMS, A DIFFICULT PROCESS, ARMS CONTROL AND DISARMAMENT IN OUTER SPACE 125-141 (1985).

[293] David A. Koplow*, Arms Control Inspection: Constitutional Restrictions on Treaty Verification in the United States*, 63 N.Y.U. L. REV. 229, 240 (1988); Louis Haeck, *Le droit de la guerre spatiale*, 16 ANNALS AIR & SPACE L. 307, 329 (1991).

[294] ABM Treaty, *supra* note 236, art. XII; SALT I, *supra* note 236, art V.

these instruments, it was understood that "national technical means" referred to the intelligence capacities of a State used to collect data from outside the monitoring State,[295] including land-based and mobile radar, various kinds of sensors and reconnaissance satellites and space-based sensors.[296] A similar provision was also included in the Treaty on Conventional Armed Forces in Europe,[297] concluded between the then NATO States and six former States of the Warsaw Pact, the only exception being that the protection from interference is also granted to multinational technical verification means.[298] The CFE Treaty nowadays has been amended to include as many as 30 States, preventing them from interfering purposefully with the national technical means of the other signatories, unless acting in self-defence or under a Security Council authorisation.[299]

It should be noted however that the ABM Treaty and the SALT-I were not the only effort to address the issue of disarmament verification. In fact, in 1978 France proposed the creation of an International Satellite Monitoring Agency (IMSA)[300] for the purposes of verifying the progress of arms control and disarmament agreements,[301] a suggestion which was most welcome by the academic community.[302] Despite the positive reaction of the academic world and the fact that nothing in international law in general and space law in particular prevents the establishment of such an international monitoring organisation, the French proposal was dropped, as the USA considered the project financially unattractive, with the USSR making no comments at the time.[303]

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[295] Christopher M. Petras, *"Eyes" on Freedom – A View of the Law Governing Military Use of Satellite Reconnaissance in US Homeland Defense*, 31-I J. SPACE L. 81, 91 (2005).

[296] Koplow, *supra* note 293.

[297] 1990 Treaty on Conventional Armed Forces in Europe, 30 I.L.M. 1 [hereinafter CFE Treaty].

[298] *Id.* art. XV.

[299] Christopher Petras, *The Debate over the Weaponization of Space – A Military-Legal Conspectus*, 28 ANNALS AIR & SPACE L. 171, 194 (2003).

[300] G.A. Devoted to Disarmament, *French Proposal for Establishment of Int'l Satellite Monitoring Agency (ISMA)*, U.N. Doc. A/S-10/AC.1/7 (June 1, 1978).

[301] Ram Jakhu & Riccardo Trecroce, *International Satellite Monitoring for Disarmament and Development*, 5 ANNALS AIR & SPACE L. 509, 511 (1980).

[302] He Qizhi, *Space Arms Control and International Verification*, *in* AN ARMS RACE IN OUTER SPACE, PROCEEDINGS OF A SYMPOSIUM 119-125 (McGill University 1985).

[303] DIEDERIKS-VERSCHOOR, *supra* note 285, at 139.

A little more than a decade later though, and just before its collapse, the USSR proposed the creation of a monitoring organ within the UN for the purposes of arms control and disarmament treaty compliance verification purposes.[304] In the meantime, the USSR had made repeated proposals to the UN about the adoption of an international instrument of complete space disarmament.[305] All proposals included verification processes, which would be realized by the use of national technical means,[306] which were to be protected.[307] In fact, these proposals echoed to a great extent the provisions already included in the ABM Treaty and the SALT-I and SALT-II, which were however binding only between the USA and the USSR. Despite any weaknesses, scholars seemed amenable towards the adoption of the instruments proposed by the USSR, since they believed "it could serve the cause of strengthening confidence among States in the process of demilitarization of outer space,"[308] as the use of force anywhere in space and against any space object placed anywhere in space (space, orbit, celestial body) was expressly prohibited.[309] The Soviet proposals were further supported by the very optimistic plan proposed in the mid-1980s by the USSR to eliminate nuclear weapons by the beginning of the new millennium, which would combine the creation of a nuclear free world with the maintenance of a peaceful outer space.[310] None of the proposals made by the USSR managed to acquire sufficient support in the UN so as to be adopted. Instead, throughout the

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[304] G. P. Sloup, *Arms Control Verification – The Poor Person's Approach*, *in* PROCEEDINGS 29TH COLLOQUIUM 77-83 (Innsbruck 1986); Bhupendra Jasani, *ISMA – Will it ever happen?*, 8 SPACE POL'Y 13 (1992).

[305] G.A. Res. 36/192, U.N. Doc. A/36/192 (Dec. 17, 1981); G.A. Res. 38/194, U.N. Doc. A/38/194 (Dec. 20, 1983).

[306] Sune Danielsson, *Examination of Proposals Relating to the Prevention of an Arms Race in Outer Space*, *in* NANDASIRI JASENTULIYANA (ED.), MAINTAINING OUTER SPACE FOR PEACEFUL PURPOSES – PROCEEDINGS OF A SYMPOSIUM HELD BY THE UNITED NATIONS UNIVERSITY 277-289, at 281 (The Hague 1984).

[307] Article 4 Draft Treaty on the Prohibition of the Stationing of Weapons of Any Kind in Outer Space: Article 4 Draft Treaty on the Prohibition of Use of Force in Outer Space and From Space against the Earth.

[308] Carl Q. Christol, *Arms Control and Disarmament in Space: The Rough Road to Vienna 1984*, 1 SPACE POL'Y 26, 41 (1985).

[309] Yuri M. Kolossov, *Non-Use of Force in Outer Space*, *in* PROCEEDINGS 26TH COLLOQUIUM 205-209 (Budapest 1983).

[310] Vladlen S. Vereshchetin, *Strategic Defense Initiative and International Law*, *in* PROCEEDINGS 29TH COLLOQUIUM 94-99 (Innsbruck 1986).

1980s and henceforth, the UN had entered the soft law era of space law. Just in 1981 as many as 48 Resolutions were adopted by the General Assembly with regards to disarmament. For the purposes of the present Article, the most important of them was the Resolution Preventing an Arms Race in Outer Space,[311] for it was the beginning of the PAROS era.

EPILOGUE

The present Article attempted to highlight some of the problems that the rapid increase of and dependence upon military applications of outer space has created. While voices have been heard that the current legal regime is vulnerable to the challenges posed by the ever-developing State practice in the field of space militarisation,[312] it is my contention that the current legal regime, if applied correctly and consistently, can address the majority of these problems.

Under Part I, it was demonstrated that general space law and general public international law can coexist harmoniously, in order to maintain international peace and security, an aspect of which is safeguarded by demanding the use of outer space for peaceful purposes. While the term "peaceful" has been considered as rather nebulous,[313] its true meaning can be understood better when put it context. The oxymoron of allowing non-aggressive military uses of space is in fact perfectly rational: if we accept that measures utilising force can be taken down on Earth for the maintenance, or even restoration, of international peace and security, then we have to accept that similar measures should be considered permissible under international space law. Examples of military uses of civilian/commercial space assets,[314] especially when under the auspices of the UN, such as those of INMARSAT during the early 1990s,[315] further prove this point. General international law has developed over the years to a sufficient degree to

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[311] G.A. Res. 36/97, U.N. Doc. A/RES/36/97C (Dec. 9, 1981).

[312] DIEDERIKS-VERSCHOOR, *supra* note 285, at 144.

[313] Stephen Gorove, *Arms Control Provisions in Outer Space Treaty: A Scrutinizing Reappraisal*, 3 GA. J. INT'L & COMP. L. 114, 120 (1973).

[314] *See* Morgan, *supra* note 150.

[315] Wolf D. von Noorden, *INMARSAT Use by Armed Forces: A Question of Treaty Interpretation*, 23-I J. SPACE L. 1, 8 (1995).

allow for specific prerequisites to determine the lawfulness of State action with regards to outer space,[316] prerequisites that contemporary (defensive) technology can in fact meet, or should at least strive to meet through improvement.

Part II addressed some of the contemporary challenges to the current legal regime,[317] by providing specific examples of action and the proposed methods of resolving the problematic situations. The proposals submitted by various States and the reluctance or enthusiasm with which they were treated by the international community prove in the clearest way possible that the prospect of amending the current legal framework in order to modernise it, will be nothing short of a cumbersome and time-consuming endeavour. With the situation in outer space changing so rapidly, it is questionable whether the international community can afford the wait and the quantities of ink to be spilled, before a compromising solution can be reached. And indeed, a compromise would be necessary, in order to balance the conflicting interests of actual and potential space-faring Nations, which do not partake in the space race on an equal financial, technological and capacity footing.[318] The antagonism demonstrated with the recent ASAT tests is just the tip of what could be a really big iceberg of a Cold-War-reminiscent arms race between incumbent and emerging space powers.[319] It would seem more prudent for States to re-evaluate their own conduct, so as to make it compatible with both the letter and the spirit of the law as it stands, instead of seeking to bend the law to their will.[320] It is true that what is urgently needed is the standardisation of terms and expression in the legal instruments currently in effect; however the current state of things shows that States lack the political will to engage in such a fruitful and meaningful discussion, all being preoccupied and focused on their individual interests.

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316 *See* Ricky J. Lee, *The Jus ad Bellum in Spatialis: The Exact Content and Practical Implications of the Law on the Use of Force in Outer Space*, 29-I J. SPACE L. 93 (2003).

317 *See* Nair, *supra* note 224.

318 Stephen Gorove, *Arms Control in Space: Issues and Alternatives*, 33 ZEITUNG FÜR LUFT UND WELTRAUMRECHT 191, 194 (1984).

319 Maogoto, *supra* note 11, at 17.

320 *See* Major David L. Willson, *An Army View of Neutrality in Space: Legal Options for Space Negation*, 50 A.F. L. REV. 175 (2001).

If anything, what I believe is really needed in outer space, is closer, international, honest and meaningful cooperation among all States,[321] in order to safeguard the continuous enjoyment of space-related benefits. It is important to remember that such co-operation is not a eulogy, but in fact an international legally binding obligations upon States, pursuant to Article IX of the OST.[322] The new conditions created by the increasing correlation between civilian and military applications of outer space will continue to challenge the current legal framework, due to the (presumed) implications created for national security.[323] States must face these new developments on a multilateral, global level, even more so when they are, actually or potentially, affecting international peace and security.

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[321] *See* Eilene Galloway, *Maintaining International Space Cooperation for Peaceful Uses*, 30-II J. SPACE L. 311 (2004).

[322] Michael C. Mineiro, *FY-1C and USA-193 ASAT Intercepts: An Assessment of Legal Obligations Under Article IX of the Outer Space Treaty*, 34-II J. SPACE L. 321, 340 (2008).

[323] *See* Captain Michael R. Hoversten, *U.S. National Security and Government Regulation of Commercial Remote Sensing from Outer Space*, 50 A.F. L. REV. 253 (2001); Major Christopher M. Petras, *"Space Force Alpha": Military Use of the International Space Station and the Concept of "Peaceful Purposes"*, 53 A.F. L. REV. 135 (2004); Major Elizabeth S. Waldrop, *Integration of Military and Civilian Space Assets: Legal and National Security Implications*, 55 A.F. L. REV. 157 (2006).

NEW HABITS AND HARD LAW: PUTTING OLD SOFT LAW "SANCTIONS" AND THE SPACE DEBRIS EPIDEMIC OUT TO PASTURE

George T. Lyons III[*]

INTRODUCTION

On January 11, 2007, the People's Republic of China undertook an Anti-Satellite Technology (ASAT) interception of the FY-1C weather satellite at an altitude of approximately 525 miles above the earth's surface. Although there have been numerous criticisms advanced concerning the actual interception and its ineffectiveness in minimizing the amount of debris this event created, the largest body of international disapproval has come from the events leading up to the actual test. China provided absolutely no method of notification or justification to the rest of the world prior to their ASAT test. This lack of notification was seen by many as a direct violation of Article IX of the Outer Space Treaty (OST). Although a direct violation of Art. IX of the OST was not established or sought for sanction by the international community, a large number of critics classified the actions of China, undeniably, as in opposition to the spirit of the OST.

Almost a year later, the United States commenced what would be viewed by many as a more responsible ASAT engagement in their interception of the US-193. Prior to the interception of US-193, the U.S. undertook numerous actions to insure that the international community, many of which whom still adhere strict-

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ly to the fundamentals of the OST, would be on alert of the United States' intentions and justifications for the interception of US-193. While the U.S. could be applauded for their efforts in attempting to lead by example in following closer to the requirements of Art. IX of the OST, their adherence has done little to resolve the ambiguities presented at the core of the language contained in Art. IX of the OST.

This paper will serve to analyze the most beneficial domestic and international response that might be conjured in the wake of the interceptions of FY-1C and US-193. Part I of this paper will serve to establish some historical context of exactly what measures were implemented by the U.S. and China before conducting their interceptions of US-193 and FY-1C respectively. Part II of this paper will serve to provide an analysis of the concepts of hard vs. soft international law, as well as some respective strengths and weaknesses of both. Part III will provide what might be the best-case scenario for handling the ambiguities and varying interpretations of the modern OST schedule and the subsequent responsible space exploration standards. Finally, Part IV will provide a sort of "test case" of implementing such solutions presented in Part III, in order to discuss the realistic costs, as well as supposed benefits that would be gained by implementing such legal remedies.

The concept of competitive interests within the realm of international law and politics is not a novel one, but at this point, clarity must be provided immediately. The proliferation of space debris caused by improper and inconsiderate ASAT testing, as well as decades of irresponsible launching tactics, has led to an epidemic that grows larger every day. International standards and clarity must be established soon in order to mitigate the damages constantly proliferated by such an enormous problem.

The United States has the opportunity, privilege, and obligation to lead humanity into the next generation of responsible ASAT testing, and apply those responsible testing tactics to the gamut of launching activities pursued by spacefaring nation-states abroad. Although the reformation of ASAT testing that will be facilitated by a more stringent analysis of the events in US-193 vs. FY-1C, such an analysis is only one cog in the machine drives the discussion of responsible space exploration, however, it is ab-

solutely vital to its success. The U.S. has grasped the helm of space exploration since its inception and should absolutely hold fast to it now.

I. FY-1C, US-193, AND ART. IX OF THE OST

A. The Outer Space Treaty

In 1965 and 1966, the United States, in pursuance of a solution to the ever-growing weapons proliferation that was occurring between it and the U.S.S.R, looked in part to the construction of the most relevant internationally-binding treaty.[1] After lengthy negotiation, drafting, and redrafting efforts between the U.S. and the U.S.S.R, this solution would eventually become the Outer Space Treaty (OST). Upon unanimous Senate ratification approval, the OST went into effect on October 10th, 1967.[2] Although the OST contains the most in-depth and comprehensive legal obligation and analysis ever created by an internationally-binding space exploration treaty, the focus of this paper will be constrained simply to a discussion of Art. IX of the OST. Art. IX states simply,

> In the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of co-operation and mutual assistance and shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty. States Parties to the Treaty shall pursue studies of outer space, including the Moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose. If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference

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[1] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, *opened for signature* Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

[2] *Id.*

> with activities of other States Parties in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, it shall undertake appropriate international consultations before proceeding with any such activity or experiment. A State Party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, may request consultation concerning the activity or experiment.[3]

While the language of Art. IX looks exceedingly clear in the expectations it purports to establish in examining the proper notification that should be delivered to other State Parties before any space exploration might be conducted, the vast majority of problems have been derived from two phrases contained within Art. IX. These phrases are "reason to believe"[4] and "potentially harmful interference"[5] and both seem pretty soft, comparatively, in their exact obligation requirements. This legal softness has allowed a virtual gamut of interpretation internationally. Varying interpretations have been influenced slightly by conversations surrounding the true "spirit of the treaty" that should be considered in attempting to narrow the actual expectations of Art. IX. Such attempts, however, often create more complex and convoluted subsequent discussions, spurring more confusion than clarity. There have also been attempts internationally by current space powers to "lead by example" and create a narrowing of exactly what expectations are mandated by Art. IX, however, such efforts are often viewed as more illustrative than impactful on the nations that need the most immediate sanctions for irresponsible space activity. One such comparison is illustrated by the Art. IX notification actions conducted by China in their interception of FY-1C compared to those conducted by the U.S. in their interception of US-193.[6]

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[3] *Id.* at art. 9.

[4] *Id.*

[5] *Id.*

[6] This analysis, provided in the subsequent sections "B) The Interception of FY-1C" and "C) The Interception of US-193" were originally, in large part, included in the background analysis section of the paper, George T. Lyons III, *Orbital Debris: A Scien-*

B. The Interception of FY-1C

On January 11th, 2007, China intercepted the Fengyun 1C (FY-1C) geostationary weather satellite, utilizing long range Anti-Satellite Weaponry (ASAT) technology.[7] The FY-1C was initially launched on December 8, 2006, and was to be primarily used in providing images of "cloud conditions, typhoons and storms every half an hour, and data to infer sea temperatures and winds parking over 86.5 E longitude."[8] China gave no warning to other nations of their intentions to destroy the FY-1C.[9] This lack of notification provided no risk assessment to other nations concerning the potential threat to such nations' space assets.[10] Although there is some debate as to the functional status of FY-1C at the time of its interception, such a discussion lends itself to an entirely different body of legal analysis. For the purposes of this paper, it will be assumed that the FY-1C was in fact inoperable at the time of its interception and thus its interception might be justified under relevant international interpretations. There is also a large potential discussion to be had concerning the legitimacy of China's *realistic positive expectations* in intercepting the FY-1C at such a high altitude, but, for the purposes of this paper, it will also be assumed that China had the utmost hope of a successful interception of FY-1C.[11] In any event, after the interception of FY-1C,

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tific Approach to an International Diplomatic Problem (2013) [available upon request]; moreover, while it is strictly the purpose of the author to include these sections for further clarity and depth surrounding factual events that precluded the international diplomatic efforts this paper strives to discuss, candor and transparency concerning their origins must be included as well.

[7] *OASD Satellite Engagement Communications Plan* (Feb. 14, 2008), USA-193: Selected Documents, Special Topics in Aerospace Law, No.1, page 28, 37 (compiled by P.J. Blount, 2009).

[8] *SPACEWARN Bulletin, No. 638* (Jan. 1, 2007), USA-193: Selected Documents, Special Topics in Aerospace Law, No.1, page 5, 8 (compiled by P.J. Blount, 2009).

[9] *OASD Satellite Engagement Communications Plan* (Feb. 14, 2008), USA-193: Selected Documents, Special Topics in Aerospace Law, No.1, page 28, 37 (compiled by P.J. Blount, 2009).

[10] *Id*.

[11] This is a not assumption that the author personally adheres to. In fact in writing *Orbital Debris: A Scientific Approach to an International Diplomatic Problem* (2013) [available upon request], the author outlines the scientific impossibility of conducting a space debris conscious ballistic ASAT interception at this altitude. Because this isn't the primary focus of this paper, however, the discussion will be limited to China conducting a "good-faith" interception of the FY-1C satellite.

China created an estimated 2,841 pieces of new orbital debris.[12] China's interception of FY-1C ranks number one on the list of the top ten space junk causing missions of all time, surpassing the runner-up mission on the list by almost 250 percent.[13]

In the wake of China's interception of FY-1C, Gordon Johndroe, speaking for the National Security Council, said "[t]he U.S. believes China's development and testing of such weapons is inconsistent with the spirit of cooperation that both countries aspire to in the civil space area."[14] Responding to the international criticism, Liu Jianchao, the Chinese foreign ministry spokesman, also held a press conference to reiterate that "China has always advocated the peaceful use of space, opposes the proliferation of weapons in space… has never and will never participate in an arms race in space."[15] Jianchao reiterated that "[t]his test was not directed at any country and does not constitute a threat to any country…. [a]fter various parties expressed concern we explained this test in outer space to them."[16] Jianchao summed up blatantly, "China has nothing to hide."[17] Many saw the actions of China, and the lack of any notification required under Art. IX of the OST, as a direct slap in the face to those notification requirements mandated by the OST. Again, the outcome of this test and the justifications China used in explain their adherence to Art. IX of the OST hinged on their careful explanation of just what they assumed was mandated by Art. IX and their adherence to it. Although many international OST parties disagreed, China saw itself within the requirements of Art. IX because they did not foresee any potential "reason to believe"[18] that their interception of FY-1C could result in any "potentially harmful interference"[19] with other nation-

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[12] NASA IDENTIFIES TOP TEN SPACE JUNK MISSIONS, http://www.networkworld.com/community/node/64242 (last visited Nov. 31, 2013).

[13] *Id*.

[14] Marc Kaufman, *China Criticized for Anti-Satellite Missile Test*, THE WASHINGTON POST (Jan. 19, 2007), http://www.washingtonpost.com/wp-dyn/content/article/2007/01/18/AR2007011801029.html.

[15] CHINA CONFIRMS ANTI-SATELLITE MISSILE TEST, http://www.theguardian.com/science/2007/jan/23/spaceexploration.china (last visited Nov. 31, 2013).

[16] *Id*.

[17] *Id*.

[18] Outer Space Treat, *supra* note 1, at art. 5.

[19] *Id*.

states space assets.[20] Although China had arguably violated the spirit of the OST, even in spite of their attempts to carefully couch their justifications for doing so in the ambiguities created by Art. IX, no direct violations of the OST could be established in order to pursue sanctions against China.[21]

C. The Interception of US-193

Almost a year after China's interception of FY-1C, the U.S. decided to intercept its own military reconnaissance satellite, the US-193. On February 20, 2008, at approximately 10:26 p.m. EST, the USS Lake Erie launched a single modified SM-3 towards the USA-193.[22] A few minutes later, a collision was detected between the SM-3 and the USA-193 that would later be confirmed as the successful interception of USA-193[23] at approximately 153 miles above the earth's surface.[24] The mission was marked as successful and initial reports estimated that as a result of its success, "nearly 100 percent of the debris safely burned-up during reentry within 48 hours the remainder would safely re-enter within the next few days."[25] Because, however, the interceptions of the FY-1C and US-193 were fundamentally, physically, and pragmatically very different, the events leading up to the interceptions are of the utmost

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[20] The language of the OST is included here to reiterate the ambiguity that might be illustrated by potential violating parties to the OST and the justifications that said ambiguity might be used to illustrate in their attempted release from liability under the OST.

[21] *Contra* George T. Lyons III, *Orbital Debris: A Scientific Approach to an International Diplomatic Problem* (2013) [available upon request] (This assumption that no direct violation of OST Art. IX occurred during China's interception of FY-1C is an assumption made strictly to facilitate the international comparative law discussion of this paper. In fact, the author personally does not subscribe to this view and has written a paper in which the direct violation of OST Art. IX by China is illustrated by utilizing a physics-based analysis. This analysis attempts to prove that any outcome other than a large contribution to orbital debris was physically impossible and China, being the hyper-advanced technological state that they are, knew this from the beginning of their endeavor).

[22] ONE-TIME MISSION: OPERATION BURNT FROST, http://www.mda.mil/system/aegis_one_time_mission.html (last visited Nov. 31, 2013).

[23] *Id*.

[24] *American Forces Press Service, "Navy Missile Hits Decaying Satellite Over Pacific Ocean"* (Feb. 20, 2008), USA-193: Selected Documents, Special Topics in Aerospace Law, No.1, page 121 (compiled by P.J. Blount, 2009).

[25] ONE-TIME MISSION: OPERATION BURNT FROST, http://www.mda.mil/system/aegis_one_time_mission.html (last visited Nov. 4, 2013).

importance, even when compared to the actual interception tactics of the two satellites.[26]

The U.S. went to great lengths in alerting its domestic and international communities of not only the notification of its intentions to intercept US-193, but also provided a host of justifications in doing so. Primarily, the US-193 was in low earth orbit at its time of interception and was poised to re-enter earth's atmosphere "on or about March 6, 2008."[27] Early models predicted that a satellite with the size and mass of US-193 would only lose about half of its mass to atmospheric disintegration as it reentered the atmosphere.[28] This problem was compounded by the fact that US-193 would reenter with approximately 1000 lbs. of toxic frozen hydrazine, which by all estimates would likely not melt or burn up as it reentered earth's atmosphere.[29]

While some have criticized the validity of the actual dangers of US-193 reentering the earth's atmosphere[30], the U.S. government conveyed to the world that "although the risk from a natural reentry is not high, we cannot rule out the possibility that the hydrazine fuel could cause casualties on the ground."[31] While this candor seems to be detrimental to reiterating the absolute need to intercept US-193, further good-faith and justification were provided when the U.S. sought simply to restate that "[w]e will do whatever we can to mitigate this risk."[32] Notification of USA-193's in-

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[26] *See* George T. Lyons III, *Orbital Debris: A Scientific Approach to an International Diplomatic Problem* (2013) [available upon request].

[27] *Statement by Ambassador Christina Rocca, Permanent Representative of the United States to the Conference on Disarmament* (Feb. 15, 2008),), USA-193: Selected Documents, Special Topics in Aerospace Law, No.1, page 63 (compiled by P.J. Blount, 2009).

[28] DOD NEWS BRIEFING WITH DEPUTY NATIONAL SECURITY ADVISOR JEFFREY, GEN. CARTWRIGHT AND NASA ADMINISTRATOR GRIFFIN, http://www.defense.gov/transcripts/transcript.aspx?transcriptid=4145 (last visited Nov. 31, 2013).

[29] *See* Robert L. Kelley & William C. Rochelle, *Atmospheric Reentry of a Hydrazine Tank*, NASA White Paper (undated), USA-193: Selected Documents, Special Topics in Aerospace Law, No.1, page 17 (compiled by P.J. Blount, 2009).

[30] ANALYST: U.S. SATELLITE STRIKE WAS JUSTIFIABLE; CRITICS SUCH AS CHINA, RUSSIA, ARE OFF-BASE, http://www.satellitetoday.com/publications/st/2008/02/25/analyst-u-s-satellite-strike-was-justifiable-critics-such-as-china-russia-are-off-base/ (last visited Nov. 31, 2013).

[31] *OASD Satellite Engagement Communications Plan* (Feb. 14, 2008), USA-193: Selected Documents, Special Topics in Aerospace Law, No.1, page 28, 35 (compiled by P.J. Blount, 2009).

[32] *Id*.

terception was conveyed to "the United Nations Committee on the Peaceful Uses of Outer Space, the Conference on Disarmament, and members of the United Nations Security Council."[33]

The availability and readiness of the U.S. to actively seek out the notification and consultation of such a diverse panel of parties potentially privy to the OST, was a strong illustration of the type of conduct Art. IX purports to mandate. It is also important to notice that the U.S. was quick to note that all U.S. diplomatic posts would be available to "answer host government questions regarding the engagement and consequence management preparations."[34] This is an important assertion by the U.S. because it reiterated an often overlooked portion of Art. IX. That portion is the part that creates an option for "consultation concerning the activity or experiment" for all nations who have "reason to believe that an activity or experiment planned by another State Party in outer space" might in fact "cause potentially harmful interference with activities in the peaceful exploration and use of outer space."[35] Basically, the U.S. took the opportunity to say *you have the option to consult with us about anything we do that you might view as potentially harmful, and better yet, our diplomatic posts' doors are wide open!* Again, this is maybe a little rhetorical, but it just provided one more good-faith effort to notify the parties privy to the OST of the U.S.'s intentions in intercepting US-193.

One final tactic implemented by the U.S. in preparing for OST party response, the U.S. reiterated that it would be absolutely liable for any damages caused by on earth or to other object in flight that resulted from its interception of US-193.[36] While this could be viewed as outside of the scope of Art. IX, it was just one more cog in the wheel of good-faith notification the U.S. was establishing pursuant to Art. IX.

While the U.S.'s interception of US-193 looks immensely more successful when held in comparison to China's interception

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[33] *Id*. at 39.

[34] *Id*.

[35] Outer Space Treaty, *supra* note 1, at art. 5.

[36] *OASD Satellite Engagement Communications Plan* (Feb. 14, 2008), USA-193: Selected Documents, Special Topics in Aerospace Law, No.1, page 28, 39 (compiled by P.J. Blount, 2009) (this seemingly new obligation was just a reiteration and affirmation of the U.S.'s continued involvement in the 1972 Convention on International Liability for Damage Caused by Space Objects).

of FY-1C, it is more important to reiterate again, that the true success of the U.S. was seen in the extensive measures it sought to undertake in notifying parties to the OST of its intentions to intercept US-193 pursuant to Art. IX expectations. No matter how successful the U.S. could hold its technical capabilities and accomplishments to be, no real precedent or binding authority could be enforced against China and their seemingly irresponsible interception of FY-1C in light of the U.S.'s interception of US-193 because the two events were conceptually and physically so distant. Simply stated, it was not the U.S.'s employment of some magical missile or striking technology that made their engagement of US-193 more successful, it was strictly the altitude at which each party chose to engage.

This struggle for authority, applicability, and enforceability is one that continues to plague the two countries (as well as the many other parties to the OST) today. What would ultimately be the most comprehensive, fair, and enforceable result to insure that the horrific proliferation of space debris is not a problem that continues to grow every year? The answer is extremely complex and before the discussion can even begin, some ground rules must be laid out in order to facilitate a fair discussion concerning the benefits and costs of several international law conclusions.

II. HARD LAW VS. SOFT LAW

Although the title implies otherwise, the conversation surrounding what would constitute the most appropriate international law measures requires more than a verdict between two polar concepts; moreover, the interpretation of concepts such as hard law vs. soft law, must not be viewed as an either/or decision. Instead, the two concepts should be viewed as two components at two different ends of a sliding scale, among which the appropriate solution will be the product of constantly reevaluating precisely where the most appropriate solution falls on such a sliding scale. To simplify such a hard law/soft law dichotomy, recall the concept of a number line. On one end of the number line lies the concept of hard law and on the other lies the concept of soft law. In evaluating the measure appropriate to deal with each circumstance, you must continuously evaluate what the highest priorities of the nation and its citizens are, compared to the greater good of all of