

Conflicts in Space and the Rule of Law

by

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I. Introduction

Space has become fully integrated with our daily lives. We depend on space assets for the Internet and telecommunications, for financial transactions and for travel, as the planes, trains, ships, and even automobiles we board are dependent on services provided by the American Global Positioning System (GPS), the European Galileo system, and the Russian GLONASS, to mention just three of the satellite navigational services in existence. Space applications have additionally proven instrumental in providing meteorological information, crop monitoring and aiding disaster relief. This dependence on space technology is militarily important for two reasons; firstly, many militaries are also highly dependent on these space technologies when engaging in conflicts taking place on Earth, meaning that activities in space already fall under the law of armed conflict; and secondly, the potential of these important space assets being targeted during a conflict means that they need to be protected, and space may itself become a theatre of conflict.¹

Given the increase in the number of States and non-State actors becoming active in space, and the increased reliance militaries have on space technologies, there are growing concerns about the risk of a conflict taking place in outer space. With a quick glance at recent newspaper headlines in the United States (US), it is not difficult to get a general sense of threat and urgency as far as the potential outbreak of a conflict in outer space is concerned: "War in Space May Be Closer Than Ever",² "US Military Gears Up for Space Warfare",³ "Pentagon Rushing to Open Space-War Center To Counter China, Russia",⁴ "A

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¹ As early as 1978, Dr. Bhupendra Jasani, based on his extensive study of the development of space technology and its uses, warned that outer space might become a battlefield in the future. See Bhupendra Jasani, *Outer Space – Battlefield of the Future?* (London: Taylor & Francis, 1978).

² Lee Billings, "War in Space May Be Closer Than Ever", *Scientific American* (10 August 2015), online: Scientific American <<http://www.scientificamerican.com/article/war-in-space-may-be-closer-than-ever/>> .

³ Ari Yashar, "US and China Gear Up for Space Combat", *Cosmos* (26 April 2015), online: Cosmos <<http://cosmoso.net/us-and-china-gear-up-for-space-combat/>> .

⁴ Marcus Weisgerber & Patrick Tucker, "Pentagon Rushing to Open Space-War Center To Counter China, Russia", *Defense One* (23 June 2015), online: Defense One <<http://www.defenseone.com/management/2015/06/pentagon-preparing-war-space-russia-china/116101/>> .

Coming War in Space?",⁵ "When it comes to war in space, U.S. has the edge",⁶ "The X-37B: Backdoor weaponization of space?".⁷ US Air Force General John Hyten was recently quoted by Reuters as saying that after a war in space "You go back to World War Two [...] You go back to the Industrial Age".⁸ Though it is difficult to independently verify these and other similar assertions, it is apparent that the possibility of conflicts in space are increasing and the general public remains largely unaware of these developments that might have devastating implications for the space systems of all nations and for life on Earth. Therefore, in order to avoid potentially devastating conflicts and to regulate military activities of the States (and non-State actors) in outer space, there is a dire need to clarify the applicable rules of international law, particularly rules governing the prohibition on the use of force and applicable rules of international humanitarian law that serve to minimise the detrimental effects of any future conflict.

There is currently no binding international legal instrument that effectively deals with conflicts in space. As will be elaborated in this paper, the probability of the conclusion of such an agreement or of any non-binding soft-law instrument in the near future is also very low. We believe that innovative means ought to be devised in this regard. One such means could be the development of a Manual on International Law Applicable to Military Uses of Outer Space (MILAMOS), which would follow in the footsteps of the San Remo Manual on International Law Applicable to Armed Conflict at Sea,⁹ the Harvard Manual on International Law Applicable to Air and Missile Warfare,¹⁰ and the more recent Tallinn Manual on International Law Applicable to Cyber Warfare.¹¹

This paper provides some background, general context and identifies key issues, possibly applicable principles of law, various perspectives and approaches and several international initiatives that have been taken by States as well as international institutions relating to the law governing military activities in other contexts. Our intention is to put on the table several points that may be taken into consideration in resolving the current lack of clarity on the law applicable to military and security activities in outer space. We believe these facts, concerns, questions, options, approaches and apprehensions ought to

⁵ Brendan McGarry, "A Coming War in Space?", *Defense Tech* (3 August 2015), online: Defense Tech <<http://defensetech.org/2015/08/03/a-coming-war-in-space/>>.

⁶ David Axe, "When it comes to war in space, U.S. has the edge", *Reuters* (2 October 2015), online: Reuters <<http://blogs.reuters.com/great-debate/2015/08/09/the-u-s-military-is-preparing-for-the-real-star-wars/>>.

⁷ Subrata Ghoshroy, "The X-37B: Backdoor weaponization of space?" (2015) 71: 3 *Bulletin of the Atomic Scientists* 19, online: The Bulletin of Atomic Scientists <<http://thebulletin.org/2015/may/x-37b-backdoor-weaponization-space8292>>. The author asserts that when "the United States unilaterally withdrew from the ABM Treaty, and the push in the US military for missile defense systems and the militarization of space began in earnest": *ibid*, 26-27.

⁸ See Axe, "When it comes to war in space, U.S. has the edge", *supra* note 6.

⁹ *San Remo Manual of International Law Applicable to Armed Conflict at Sea* (1995) 309 *International Review of the Red Cross* 583 [*San Remo Manual*].

¹⁰ *Harvard Manual of International Law Applicable to Air and Missile Warfare*, Program on Humanitarian Policy and Conflict Research at Harvard University, online: International Humanitarian Law Research Initiative <<http://ihlresearch.org/amw/HPCR%20Manual.pdf>> [*Harvard Manual*].

¹¹ Michael N Schmitt & NATO Cooperative Cyber Defence Centre of Excellence, *Tallinn Manual on the International Law Applicable to Cyber Warfare: Prepared by the International Group of Experts at The Invitation of the NATO Cooperative Cyber Defence Centre of Excellence* (Cambridge: Cambridge University Press, 2013) [*Tallinn Manual*].

be addressed in order to accurately determine the need of a MILAMOS and to start to identify issues for inclusion.

II. The International Rule of Law and Outer Space

Undoubtedly, the rule of law prevails when it comes to outer space activities. The 1963 UN General Assembly Declaration of Legal Principles¹² unequivocally laid down the international consensus that the exploration and use of outer space be carried out "in accordance with international law"—a fundamental principle that was later reiterated and in the 1967 Outer Space Treaty (OST).¹³

Whereas the space age began as a military and scientific competition between the Soviet Union and the United States, both States very quickly realised that their own interests and ability to continue exploring and using space required cooperation and some commonly agreed rules.¹⁴ Nuclear and ballistic missile tests in the 1950s and early 1960s had demonstrated the detrimental impact of such military activities on the operation of satellites and the safety of human spaceflight, particularly due to the resulting debris and electro-magnetic pulses.¹⁵ Satellite imaging technology allowed both States to observe each other's military developments on the ground, and would later prove instrumental in providing reconnaissance and as a technical means of verifying adherence to arms control treaties. However, the fear of the other State gaining a military monopoly on space as the new "high ground" and the desire to maintain safe access to space for civil purposes led the two Cold War superpowers to agree on the importance of the international rule of law to govern, and in many ways to constrain, activities—including, or perhaps particularly, military activities—in outer space. Through the multilateral forum of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), guiding principles on the peaceful use of outer space were adopted. The overarching role of the rule of international law is emphasised in Article III of the Outer Space Treaty, according to which all space activities must be conducted "in accordance with international law, including the Charter of the United Nations".¹⁶

¹² *Declaration of Legal Principles Concerning the Activities of States in the Exploration and Use of Outer Space*, Res 1962 (XVIII) (13 December 1963) [*Declaration of Legal Principles*].

¹³ *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*, 27 January 1967, 610 UNTS 205, 18 UST 2410, TIAS No 6347, 6 ILM 386, arts I and III (entered into force on 10 October 1967) [*Outer Space Treaty*].

¹⁴ See Bin Cheng, *Studies in International Space Law* (Oxford: Oxford University Press, 1997) at 224-225; and see Vladimir Kopal, *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*, New York, 19 December 1966, online: United Nations Audiovisual Library of International Law <http://legal.un.org/avl/pdf/ha/tos/tos_e.pdf>.

¹⁵ See US Department of State, "Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water", particularly the section on "Narrative", online: US Department of State <<http://www.state.gov/t/isn/4797.htm>>.

¹⁶ *Outer Space Treaty*, *supra* note 13, art III.

The pertinent question, then as well as now, is not whether international law governs military activities in space, but rather what specific normative rules are applicable. The notion that space is a lawless "Wild West", where States are free to do what they want when it comes to security and military activities is far from the legal truth, despite a recent portrayal in a *60 Minutes* Report entitled "The Battle Above".¹⁷

The debate regarding whether the prescription in Article IV of the OST, that outer space, including the Moon and other Celestial Bodies, be used for "exclusively peaceful purposes", should exclude military activities altogether has long since moved towards a consensus that only aggressive activities would be wrongful.¹⁸ However there are many non-aggressive military uses of space for which the specific normative rules must be clarified, especially given the pace at which new space technologies and applications are developing.

There are competing theoretical approaches to the way the regulation of space activities and strategic military use should be approached. In its simplest terms, an opposition can be drawn between those who consider space to be a "sanctuary", and those who see it as the ultimate high ground to be controlled in order to protect national interests.¹⁹ The "space as sanctuary" school of thought considers it necessary to ensure space remains weapons-free and that any military use must be entirely passive. One physicist has stated that "any kind of space warfare will put all satellites at risk",²⁰ a fact that, given our civil, commercial and military dependence on space assets, could be disastrous. The "space control" or "space defence" school of thought, on the other hand, is concerned that the increased number of space-faring nations, including the European Union (EU), China, India, Iran, Japan, South Korea, and potentially North Korea, may heighten the vulnerability of space assets. This latter school of thought may lead to increased military activity in space in ways which, though not "aggressive" in an international law sense,²¹ are more offensive than passive.²² This means that the need to

¹⁷ "The Battle Above, part one", *60 Minutes*, CBS News (26 April 2015), online: CBS News <<http://www.cbsnews.com/videos/the-battle-above-part-one/>>.

¹⁸ This has been the position of the majority of States: see Carl Q Christol, "The Common Interest in the Exploration, Use and Exploitation of Outer Space for Peaceful Purposes: The Soviet-American Dilemma" (1984) 27 *Colloquium on the Law of Outer Space* 281. At the negotiation on the International Code of Conduct for Space Activities at the UN in New York, on 27 to 31 July 2015, the delegate of the Russian Federation, for the first time, expressed the official position of his Government that "peaceful uses of outer space does not include use of force".

¹⁹ See e.g. Bruce M DeBlois, "Space Sanctuary: A viable National Strategy", (1998) XII (4) *Airpower Journal* 41.

²⁰ Joel R Primack, "Debris and Future Space Activities", in *Future Security in Space: Commercial, Military and Arms Control Trade-Offs*, Center for Non-proliferation Studies, Monterey Institute of International Studies, July 2002, cited in: James Clay Moltz, *The Politics of Space Security: Strategic restraint and the Pursuit of national Interests*, 2nd ed, (Stanford, Cal: Stanford University Press, 2001) at 6.

²¹ *Definition of Aggression*, UNGA Res 3314 (XXIX), UN Doc A/RES/3314(XXIX) (1974). Article I of this UN General Agreeably Resolution defines "aggression" as:

the use of armed force by a State against the sovereignty, territorial integrity or political independence of another State, or in any other manner inconsistent with the Charter of the United Nations, as set out in this Definition." Several other provisions of the Resolution specify numerous acts that would be considered "aggression."

²² This school of thought is reflected, for instance, in the recent shift in rhetoric that has appeared in the US National Defense Authorization Act for the 2015 fiscal year, which emphasises the development of "offensive space control and active defensive strategies and capabilities". See "Howard P. 'Buck' McKeon National Defense Authorization Act for Fiscal Year 2015", 19 December 2014, became Public Law 113-291, sect 1607, online: US Congress <<https://www.congress.gov/bill/113th-congress/house-bill/3979>>.

clarify the international law applicable to military activities in outer space is becoming more and more urgent.

III. The *Status Quo* of International Law applied to Hostilities involving Outer Space

As Manfred Lachs wrote in 1972, outer space has never been a lawless area, but rather has always been subject to international law, though the matter could never have been put to the test before.²³ International law signifies "the principles which are in force between all independent nations",²⁴ and Lachs opined that international law extends to whichever realm and at whichever moment in time States interact with one another. As soon as activities of States entered the realm of outer space, the overarching regime of international law which governs the rights and responsibilities of States became automatically applicable there.²⁵ Though obviously not all of international law would apply to the context of outer space,²⁶ many domains of international law would acquire a "new dimension" in regulating the conduct of States in outer space, and would therefore warrant "a more extensive interpretation".²⁷ In the interpretation of any international document, not only are the rules of international law that exist at the time of the treaty's conclusion relevant, but present circumstances and future trends are relevant as well.²⁸ Indeed, the International Court of Justice (ICJ) in its *Namibia* advisory opinion echoed such sentiments by underlining that law "has to be interpreted and applied within the framework of the entire legal system prevailing at the time of the interpretation".²⁹ In line with this, in its advisory opinion on the *Legality of Nuclear Weapons*, the ICJ declared that *jus in bello*, also termed the law of armed conflict (LOAC) or international humanitarian law (IHL), "applies to all forms of warfare and to all kinds of weapons, those of the past, those of the present and those of the future".³⁰

²³ Manfred Lachs, *The Law of Outer Space: An Experience in Contemporary Law-Making, Reissued on the Occasion of the 50th Anniversary of the International Institute of Space Law*, (Leiden: Brill, 2010) at 125.

²⁴ *The S.S. Lotus*, PCIJ Judgment (1927), A/10 at 17.

²⁵ Manfred Lachs, "The International Law of Outer Space" (1964) 113 *Recueil des Cours* 1 at 43-44. At 89, Lachs notes that international law, and the UN Charter, bind States in outer space "as in all other dimensions". Even before the space era, Oscar Schachter argued that legal principles and precedents which form customary international law are applicable to space activities: See Oscar Schachter, "Who owns the Universe", 8-17 in *Space Law: a Symposium prepared at the request of Lyndon B. Johnson, Chairman, Special Committee on Space and Astronautics, United States Senate, Eighty-fifth Congress, Second Session* (Washington, DC: US Government Printing Office, 1959) at 14.

²⁶ There may be some rules that do not apply such as *lex specialis* rules which governs "one or some of the other environments only", for example the law of the sea: see Lachs, "The International Law of Outer Space", *supra* note 25 at 44-46.

²⁷ As the US Representative to the First Committee of the General Assembly succinctly argued in 1962:

Outer space is not a new subject, it is just a new place in which all the old subjects come up. The things that go on in space are intimately related to the things that go on here on earth. It would be naive to suppose that we can insulate outer space from other aspects of human existence.

See "Contemporary Practice of the United States Relating to International Law" (1963) 57 *American Journal of International Law* 403 at 429.

²⁸ See *Vienna Convention on the Law of Treaties*, 23 May 1969, UN Doc A/Conf.39/27, 1155 UNTS 331, 8 ILM 679 (1969), 63 AJIL 875 (1969) (entered into force on 27 January 1980), art 31(c).

²⁹ *Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) notwithstanding Security Council Resolution 276 (1970)* (Advisory Opinion), [1971] ICJ Reports 16, para 53 at 31.

³⁰ *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, [1996], ICJ Reports 226.

On the basis that international law in general applies to all activities in outer space, the question is therefore to what extent there is a body of law applicable to hostilities (or types of hostile actions) that can be translated to govern activities in outer space without controversy as to whether this body of law is already *lex lata* (the law as it is) or only *lex ferenda* (possible future law that is in the process of developing). In general terms, as all space activities must be carried out in accordance with international law, the following bodies of law are applicable also to the space domain:

- general public international law, including the UN Charter, the law of State responsibility, and the law of treaties ;
- *jus ad bellum*, including the prohibition on the use of force and the law of self-defence;
- *jus in bello*, including those aspects of the Geneva Conventions and the Additional Protocols³¹ which are considered to be customary international law,³² as well as their application in their entirety where a situation involves States party to these treaties;
- environmental law;
- international humanitarian law;
- international human rights law;
- international criminal law;
- international telecommunications law;
- law of outer space, particularly the five UN Space Treaties; and
- treaties placing limitations on weapons and testing, such as the Partial Test Ban Treaty.³³

The question remains what normative "black letter" rules can be said to apply to activities in space specifically.

It may be possible to identify some rules from among this broad range of sub-fields of international law without controversy. For instance, Article 55 of the Additional Protocol I to the Geneva Conventions provides that methods and means of warfare that may be expected to cause "widespread, long-term and severe damage" to the environment are prohibited.³⁴ In the case of kinetic destruction of a space object, anti-

³¹ *Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I)*, 8 June 1977, 1125 UNTS 3 (entered into force 7 December 1978) [Additional Protocol I]; *Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts [Additional Protocol II]*, 8 June 1977, 1125 UNTS 609 (entered into force 7 December 1978).

³² See e.g. Jean-Marie Henckaerts, "Study on customary international humanitarian law: A contribution to the understanding and respect for the rule of law in armed conflict" (2005) 87:857 *International Review of the Red Cross* 175; and International Committee of the Red Cross (ICRC), *Customary International Humanitarian Law*, Volume I: Rules (2005) [ICRC Rules], online: ICRC <<https://www.icrc.org/customary-ihl/eng/docs/v1>>.

³³ *Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space, and Under Water*, 5 August 1963, 14 UST 1313, TIAS No 5433, 480 UNTS 43 [Partial Test Ban Treaty].

³⁴ *Additional Protocol I*, *supra* note 31, art 55. See also Article 35(3) of *Additional Protocol I*.

satellite (ASAT) tests undertaken by China, Russia and the US³⁵ demonstrated clearly the resultant creation of space debris would cause widespread, long-term and severe damage to the space environment, and a hazard to all future space activities. As such, it may be possible to say that the use of kinetic ASATs is prohibited, however there may be other, less destructive forms of ASATs which may escape this prohibition.

Another example is the principle of distinction, which is central to *jus in bello* and must apply to any decision to target a space object just as it does to conflicts on land, at sea or in the air. According to Article 48 of Additional Protocol I, which is considered to be reflective of customary international law,³⁶ parties to a conflict must "at all times distinguish between [...] civilian objects and military objectives and accordingly shall direct their operations only against military objectives".³⁷ Article 52 of Additional Protocol I defines military objectives as "those objects which by their nature, location, purpose or use make an effective contribution to military action...",³⁸ as long the targeting of such objectives do not result in disproportionate collateral damage.³⁹

However, the specificity of the space environment raises several serious questions. One predominant problem in space is that many objects are "dual use", servicing both civilian and military purposes. Although the nature, location, purpose or use of a particular space object may arguably provide a military advantage and therefore justify the targeting of that space object, the potential fallout for civilians in the case of destroying or even disabling a dual use satellite could be disastrous considering the extremely high level of dependency of civilian life on the technology the satellite provides. Article 54 of Additional Protocol I outlaws the attack against, destruction of or rendering useless of "objects indispensable to the survival of the civilian population", however it only expressly includes things such as food, crops, livestock, and water and only prohibits "denying them for their sustenance value to the civilian population".⁴⁰ The question is whether the technology or services provided by a specific satellite or space applications would amount to something indispensable to the survival of the civilian population.

Similarly, the way in which a satellite may be targeted raises questions of the definition of "attack". For the purposes of *jus ad bellum*, self-defence is only lawful in the case of an armed attack, according to the requirements of Article 51 of the UN Charter.⁴¹

³⁵ See generally "Chinese ASAT Test", *CelesTrak*, online: [Celestrak <http://celestrak.com/events/asat.asp>](http://celestrak.com/events/asat.asp). Earlier ASAT tests by the Soviet Union also created space debris: see Union of Concerned Scientists, "A History of Anti-Satellite Programs", online: Union of Concerned Scientists <<http://www.ucsusa.org/nuclear-weapons/space-security/a-history-of-anti-satellite-programs#.VdPpS5fgU-0>>. Regarding the creation of space debris by the US launch of a missile in 1985 to destroy its own aged Solwind satellite, see James Clay Moltz, *The Politics of Space Security: Strategic Restrain and the Pursuit of National Interests*, 2nd ed, (Stanford: Stanford University Press, 2011) at 202.

³⁶ *ICRC Rules*, *supra* note 32, Rule 7.

³⁷ *Additional Protocol I*, *supra* note 31, art 48.

³⁸ *Ibid*, art 52(2).

³⁹ *Ibid*, art 57(2)(iii).

⁴⁰ *Ibid*, art 54(2). See also *ICRC Rules*, *supra* note 33, Rule 54.

⁴¹ *Charter of the United Nations*, 26 June 1945, CAN TS 1945 No 7, art 51.

In the *Nicaragua* case, the ICJ held that an armed attack must be judged on the “scale and effects” of the action.⁴² It is necessary to distinguish between “the most grave forms of the use of force (those constituting an armed attack) from other less grave forms”.⁴³ Furthermore, the alleged attack must have been undertaken with the “specific intention of harming”.⁴⁴ This raises the question whether the targeting and attack of a satellite by means other than kinetic weapons, such as jamming, dazzling or interfering with the satellite by cyber means, really constitute an “armed attack”. Even a series of such incidents accumulated may not amount to an armed attack.⁴⁵ For the purposes of *jus in bello*, “attack” is defined in Article 49(1) of Additional Protocol I as “acts of violence against the adversary, whether in offence or defence”.⁴⁶ Is the disabling of a satellite really an act of violence? The Tallinn Manual made some important headway in clarifying how cyber activities could amount to an attack,⁴⁷ however other activities in space against an adversary's space assets require further attention.

Given that many military activities in space fall short of the use of force, it would also be necessary to consider the body of international law applicable to various activities that are taking place or could potentially take place in outer space. One difficult question may be with respect to the removal of space debris. If, in the name of removing space debris, an actor deliberately takes control of a space object that in fact serves a military purpose without the consent of the State that has jurisdiction over it, could this be seen as a threat or use of force? Another scenario often raised is the use of nuclear weapons for planetary defence against natural space objects that could potentially threaten life, and even civilisation, on Earth.⁴⁸ The question must be posed whether such use of nuclear weapons would contaminate the outer space environment and would be contrary to the provisions of the Outer Space Treaty and the Partial Test Ban Treaty.

IV. The urgency of clarifying the law applicable to military activities in outer space

The fear of an arms race in outer space, and by extension the outbreak of an armed conflict in outer space, was highlighted as early as the 1982 Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE) Conference.⁴⁹ Though it is recognised that

⁴² *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, [1986] ICJ Rep 14, para 195.

⁴³ *Ibid*, para 191.

⁴⁴ *Oil Platforms (Islamic Republic of Iran v. United States of America)*, [2003] ICJ Reports 161, para 64.

⁴⁵ *Ibid*.

⁴⁶ *Additional Protocol I*, *supra* note 31, art 49(1).

⁴⁷ *Tallinn Manual*, *supra* note 11, Rule 30.

⁴⁸ Lindley N Johnson, "Preparing for Planetary Defense: Detection and Interception of Asteroids on Collision Course with Earth", Space Congress Proceedings, People and Technology – the Case for Space (1995), online: Embry-Riddle Aeronautical University <<http://commons.erau.edu/cgi/viewcontent.cgi?article=1632&context=space-congress-proceedings>>.

⁴⁹ UNISPACE 1982 Report, para 13, cited in *UNISPACE '82: A Context for International Cooperation and Competition* (US Government Printing Office: Washington, DC, 1983) at 65.

outer space becoming a theatre for armed conflict is highly undesirable and may even threaten the existence of humankind,⁵⁰ the prospect of armed conflict being extended or even played out in outer space "can no longer be regarded as mere fantasy".⁵¹ According to a recent report prepared for the US-China Economic and Security Review Commission, China believes that space war is inevitable.⁵² Furthermore, a recent Russian Working Paper presented to the UNCOPUOS outlined that due to different unilateral interpretations of the legitimacy and mechanisms of the right to self-defence in space, the absence of legal clarity "would only increase threats in the case of incidents and conflicts of interests in outer space".⁵³ The very rationale to clarify the law applicable to armed conflict in outer space is to ensure that, if the outbreak of armed conflict is inevitable, all activities taking place in outer space must, like in all terrestrial theatres, be conducted subject to precise and defined rules of law that are widely – if not universally – recognised by all parties to the conflict.

Though to date States have exercised restraint in extending armed conflict into outer space,⁵⁴ there are developments that suggest this restraint is difficult to preserve. Currently, space activities are generally conducted under a legal regime "shaped largely by unilateral interpretation of general principles combined with informal rules of the road".⁵⁵ The strategic value outer space offers effectively means space will forever be an arena in which States will vie for access, use and control. As the 2011 US Department of Defense National Security Space Strategy noted, space has become "increasingly congested, contested, and competitive".⁵⁶ With renewed interest in exploring outer space, as well as the advent of new space actors and States, there will undoubtedly be increasing competition, perhaps even tensions, between States in outer space.⁵⁷ Given the "serious

⁵⁰ *Conclusion of a Treaty on the Prohibition of the Stationing of Weapons of any kind in Outer Space*, Res 36/99, UN Doc A/RES/36/99 (1981), Preamble, paras 3 and 4; see also Jackson N Maogoto, "The Military Ascent into Space From Playground to Battleground The New Uncertain Game in the Heavens" (2005) 52(3) *Netherlands International Law Review* 461.

⁵¹ Jackson N Maogoto & Steven Freeland, "The Final Frontier: The Laws of Armed Conflict and Space Warfare" (2007) 23:1 *Connecticut Journal of International Law* 165 at 169. See also Robert A Ramey, "Armed Conflict on the Final Frontier: the Law of War in Space" (2000) 48 *AFL Rev* 1.

⁵² US-China Economic and Security Review Commission, *China Dream, Space Dream: China's Progress in Space Technologies and Implications for the United States*, online: USCC <<http://www.uscc.gov/Research/china-dream-space-dream-chinas-progress-space-technologies-and-implications-united-states>>.

⁵³ Russian Federation, *Working Paper: Achievement of a uniform interpretation of the right of self-defence in conformity with the Charter of the United Nations as applied to outer space as a factor in maintaining outer space as a safe and conflict-free environment and promoting the long-term sustainability of outer space activities*, UN Doc A/AC.105/L.294 (2015).

⁵⁴ See Nina Tannenwald, "Law versus Power on the High Frontier: The Case for a Rule-Based Regime for Outer Space" (2004) 29 *Yale Journal of International Law* 363 at 402. As Project Ploughshares, a non-governmental organisation (NGO) which promotes peace and security, noted in a statement on behalf of several other NGOs before the First Committee in October 2015, "self-restraint is no substitute for effective governance mechanisms, codified in international law, especially when tensions are running high": see "UNGA First Committee – Civil society statement on outer space security Delivered by Cesar Jaramillo, Project Ploughshares – 16 October 2015" [on file with authors].

⁵⁵ Tannenwald, *supra* note 54 at 378.

⁵⁶ US, Department of Defense, *National Security Space Strategy: Unclassified Summary*, (January 2011) at 1 online: US Department of Defense <http://www.defense.gov/Portals/1/features/defenseReviews/NSSS/NationalSecuritySpaceStrategyUnclassifiedSummary_Jan2011.pdf> [National Security Space Strategy].

⁵⁷ Jackson Nyamuya Maogoto & Steven Freeland, "From Star Wars to Space Wars – The Next Strategic Frontier: Paradigms to Anchor Space Security" (2008) 33 *Journal of Air and Space Law* 10 at 10-11. See also *National Security Space Strategy*, *supra* note 54 at 1.

legal deficit⁵⁸ in concrete and effective laws to restrict, let alone prohibit, the weaponisation of, and extension of armed conflict into, outer space, the passage of time and technological advances may likely result in a situation where space itself becomes the very theatre of war.

Indeed, a number of events over the last decade hint at possible steps toward potential clash of interests, and even possible outbreak of conflict in the space arena. The US withdrawal from the Anti-Ballistic Missile Treaty in 2002⁵⁹ effectively signalled the end of a regime which for almost three decades prohibited the testing or deployment of weapons in outer space.⁶⁰ The withdrawal renewed impetus for the US to complete a ballistic missile defence system to protect the homeland as well as allies around the world. As one commentator noted, instead of contributing to security, ballistic missile defence may arguably place all space assets, including the ones a State intends to secure from adverse attacks or interference, at even greater risk.⁶¹ The ASAT tests in 2007 and 2008 served only to heighten space insecurity.

The United Nations (UN), as the closest embodiment of the consensus of the international community, is equipped with the mandate to address the matter of space security and prevent the outbreak of an armed conflict in outer space.⁶² To date, attempts at addressing the matter of space security have focused largely on the placement of weapons in outer space and transparency and confidence building mechanisms, but have not led to any binding instruments or measures. Some of these attempts include the following:

1. Since the early 1980s, the **United Nations General Assembly** (UNGA) has annually passed a resolution reminding the international community that the "prevention of an arms race in outer space [PAROS] would avert a grave danger for international peace and security".⁶³ The 2014 version of the resolution called upon:

all States, in particular those with major space capabilities, to contribute actively to the objective of the peaceful use of outer space and of the prevention of an arms race in outer space and to refrain from actions contrary to that objective.⁶⁴

⁵⁸ Maogoto & Freeland (2008), *supra* note 57 at 36.

⁵⁹ US, Department of State, Colin Powell, *Statement on the Achievement of the Final Reductions under the START Treaty* (2001), online: US State Department <<http://www.state.gov/secretary/former/powell/remarks/2001/dec/6674.html>>.

⁶⁰ Johannes M Wolff, "Peaceful Uses' of Outer Space has permitted its Militarization—Does it also mean its Weaponization?" (2003) 1 Disarmament Forum: Making Security in Space 5 at 11; see also Jonathan Dean, "Defences in Space: Treaty Issues" in James Clay Moltz, ed., *Future Security in Space: Commercial, Military, and Arms Control Trade-Offs* (Monterey, CA: Mountbatten Centre for International Studies, 2002), at 4; and Tannenwald, *supra* note 54 at 367.

⁶¹ See e.g. David Grahame, *A Question of Intent: Missile Defense and the Weaponization of Space*, British American Security Information Council (1 May 2002), online: BASIC <<http://www.basicint.org/sites/default/files/PUB010502.pdf>>.

⁶² Maogoto & Freeland (2008), *supra* note 57 at 19.

⁶³ See e.g. *Prevention of an arms race in outer space*, GA Res 69/31, UNGAOR, 69th Sess, UN Doc A/RES/69/31 (2014).

⁶⁴ *Ibid*, para 4.

It is interesting to note that the resolution was adopted by 178 in favour, none against, and 2 abstentions (Israel and the US). These two States have consistently abstained from voting on the PAROS resolutions, and have sometimes opposed them. It is believed that due to the 'soft-law' nature of PAROS resolutions and their consistent objection by a major and powerful space player like the US, these resolutions remain void of any international legal value for an effective control of the use of force in outer space.

2. The **Conference on Disarmament** (CD) is saddled with the "primary role" of negotiating a multilateral agreement "on the prevention of an arms race in outer space in all its aspects",⁶⁵ but the body remains deadlocked on the issue. China and Russia have together proposed in 2008 a Draft Treaty on the Prevention of Placement of Weapons in Outer Space (PPWT) to ban all space-based weapons.⁶⁶ Responding to serious criticism of their Draft Treaty,⁶⁷ China and Russia revised the text and resubmitted it to the CD in 2014.⁶⁸ These two major space-faring States believe that:

while the existing international agreements related to outer space and the legal regime thereof play a positive role in regulating outer space activities, however they are unable to fully prevent the placement of weapons in outer space.⁶⁹

The revised draft Treaty proposes to oblige States Parties not to:

- (a) place any weapons in outer space,
- (b) resort to the threat or use of force against outer space objects of States Parties,
- (c) engage in outer space activities inconsistent with the subject matter and the purpose of this Treaty, and
- (d) assist or incite other States, intergovernmental organisations or nongovernmental entities to participate in activities inconsistent with the subject matter and the purpose of the Treaty.⁷⁰

⁶⁵ *Ibid*, para 5.

⁶⁶ CD, Letter dated 12 February 2008 from the Permanent Representative of the Russian Federation and the Permanent Representative of China to the Conference on Disarmament addressed to the Secretary General of the Conference transmitting the Russian and Chinese texts of the draft "Treaty on 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, UN Doc CD/1839 (29 February 2008) [PPWT].

⁶⁷ See e.g. CD, Letter dated 19 August 2008 from the Permanent Representative of the United States of America addressed to the Secretary General of the Conference Transmitting Comments on the Draft "Treaty on Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force against Outer Space Objects (PPWT)" as contained in Documents CD/1839 of 29 February 2008, UN Doc CD/1847 (2008)

⁶⁸ An updated version of the proposal was presented by Russia and China on 10 June 2014, see: *Treaty on Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force against Outer Space Objects*, online: Reaching Critical Will <<http://reachingcriticalwill.org/images/documents/Disarmament-fora/cd/2014/documents/PPWT2014.pdf>>.

⁶⁹ *Ibid*, Preamble, para 5.

⁷⁰ *Ibid*, art II.

The Draft Treaty, if adopted, proposes not to affect, in any manner, the States Parties' inherent right to individual or collective self-defense, as recognised by Article 51 of the UN Charter.⁷¹ Nor does it make any provision with respect to monitoring or verifying compliance with its provisions.⁷² We are of the view that compliance measures could be the subject of an additional protocol, and that a framework treaty could therefore be agreed upon. Nonetheless, the revised version of the Draft Treaty still received criticism, particularly from the US. According to US Ambassador to the Conference on Disarmament Robert Wood, the new draft "like the earlier 2008 version, remains fundamentally flawed".⁷³ Though criticism of the Draft Treaty is not in short supply, counterproposals to improve its provisions are non-existent. This indicates that there is no appetite for any binding international agreement to control the weaponisation of space, and unless something dramatic takes place, perhaps there will not be in the near future either.

3. In 2011, the UN Secretary-General established a **Group of Governmental Experts** (GGE) from 15 States to conduct a study on transparency and confidence building mechanism (TCBMs) in outer space.⁷⁴ The GGE held three sessions and submitted its report⁷⁵ to the General Assembly at its 68th Session. The experts agreed upon a set of substantive TCBMs which include in particular the exchange of different types of information relating to States' space policy and activities, risk reduction notifications and expert visits to national space facilities. They also include basic principles, criteria, transparency and operational measures and consultative mechanisms, as well as measures of a legally binding nature.⁷⁶ The GGE recommended that States and international organisations consider and implement the suggested TCBMs on a voluntary basis and without prejudice to the implementation of obligations deriving from existing legal commitments.⁷⁷
4. It is generally believed that **Transparency and Confidence Building Measures** (TCBMs) may reduce misunderstandings and mistrust of intentions of States in outer space. In order to prevent an arms race in outer space, the UNGA adopted a resolution on "Transparency and Confidence-building Measures in

⁷¹ *Ibid*, art IV

⁷² *Ibid*, art V

⁷³ Jeff Foust, "U.S. Dismisses Space Weapons Treaty Proposal As 'Fundamentally Flawed'", *Space News* (11 September 2014), online: <http://spacenews.com/41842us-dismisses-space-weapons-treaty-proposal-as-fundamentally-flawed/>. See also Michael Listner & Rajeswari Pillai Rajagopalan, "The 2014 PPWT: a new draft but with the same and different problems", *The Space Review* (11 August 2014), online: <http://www.thespacereview.com/article/2575/1>.

⁷⁴ See Transparency and confidence building measures in outer space activities, UNGA Res 65/68, UN Doc A/RES/65/68 (2011)

⁷⁵ *Report of the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities*, UN Doc A/68/189 (2013).

⁷⁶ *Ibid*, Parts III, IV and VI.

⁷⁷ *Ibid*, para 68.

Outer Space Activities" in 2014 without a vote.⁷⁸ Under this Resolution was a unique decision of the UNGA to convene a joint *ad hoc* meeting of the Disarmament and International Security Committee (First Committee) and the Special Political and Decolonization Committee (Fourth Committee) with the aim of addressing:

possible challenges to space security and sustainability, and to include in the provisional agenda of its seventieth session, under the item entitled "General and complete disarmament", a sub-item entitled 'Joint *ad hoc* meeting of the First and Fourth Committees on possible challenges to space security and sustainability'.⁷⁹

This unprecedented joint meeting took place at the end of October 2015. Senior UN officials and some State representatives emphasised the need to address the matter of space security in a "holistic manner within multilateral forums".⁸⁰ As expected, there were "divergent views" on how best to promote and maintain space security, safety and sustainability.⁸¹ While all States favour the preservation of a safe and secure space environment, European States believe a non-legally binding international code of conduct would be the best way for achieve consensus on "an equitable and mutually acceptable basis".⁸² Russia, being "shocked and surprised" to note the Europe Union and United States talk about "already existing threats" posed by anti-satellite weapons, noted the importance of States to all agree on a resolution stipulating "no placement of weapons in outer space".⁸³ China again underlined the Draft Treaty on the Prevention of the Placement of Weapons in outer space jointly-proposed with Russia and urged for the negotiation of an arms control treaty for outer space.⁸⁴ The Non-Aligned Movement generally preferred the negotiation of a binding multilateral agreement on the matter.⁸⁵ The United States, on the other end of the debate, again stood diametrically opposed the proposed treaty which it describes as "fundamentally flawed", and instead advocated more "practical near-term initiatives, such as non-legally-binding transparency and

⁷⁸ *Transparency and confidence building measures in outer space activities*, UNGA Res 69/38, UN Doc A/RES/69/38 (2014)

⁷⁹ *Ibid*, para 6.

⁸⁰ See UN Press Release, "As Fourth, First Committees Hold Joint Meeting, Speakers Stress Need for Holistic Handling of Outer Space Security, Sustainability" (22 October 2015), UN Doc GA/DIS/3531, online: UN <<http://www.un.org/press/en/2015/gadis3531.doc.htm>>.

⁸¹ See UN Press Release, "Divergent Paths Emerge in First Committee on Ways to Achieve Outer Space Security, Safety, Sustainability, through Legally or Non-Legally Binding Pacts" (23 October 2015), UN Doc GA/DIS3532, online: UN <<http://www.un.org/press/en/2015/gadis3532.doc.htm>>.

⁸² *Ibid*, per Representative of the European Union Jacek Bylica.

⁸³ *Ibid*, per Representative of the Russian Federation Vladimir Yermakov

⁸⁴ *Ibid*, per Representative of China Ji Haojun.

⁸⁵ The remarks of the Non-Aligned Movement generally favour the initiative by China and Russia for a treaty prohibiting the placement of weapons in outer space. See *ibid* for remarks by the representatives of Indonesia, Algeria, Pakistan, Venezuela, Kuwait, Ecuador, and Bangladesh.

confidence-building measures".⁸⁶ This historic meeting between two of the UN's most prolific committees to specifically address the matter of space security is a positive development. However, as expected, there were no breakthroughs in how best to prevent and contain the outbreak of possible conflicts in outer space.

Though there appears to be a broad recognition of the need and importance of TCBMs for outer space, one must be wary about their real value in the avoidance of conflicts in space. For example, the Hague Code of Conduct against Ballistic Missile Proliferation (HCoC) was negotiated as a politically-binding TCBM instrument in November 2002 in order to internationally regulate the spread of ballistic missiles capable of carrying weapons of mass destruction.⁸⁷ Despite not having an inspection system to assure compliance with the Code, nor a system in place to impose sanctions for violations of the Code, the number of signatories to the HCoC has reached 137 by October 2015. In 2013, the UNGA welcomed the "ongoing progress in implementation of the Code of Conduct" but underlined the need to further improve its implementation.⁸⁸ Paul Meyer, a former Canadian diplomat who represented Canada at the Conference on Disarmament, is of the view that:

[t]he experience of the Hague Code of Conduct is not necessarily promising in that regard as many of its subscribing states failed to follow through with its notification and information sharing provisions. The record on voluntary reporting and submission of information under other international agreements in the arms control and disarmament field (e.g. NPT, BWC) is also not especially encouraging.⁸⁹

6. Late 2014, for the first time ever, in a resolution titled "**No First Placement of Weapons in Outer Space**", the UN General Assembly reiterated that the current legal regime is no guarantee that an arms race will be prevented in outer space and that there is a need to examine further means to prevent such a "grave danger to international peace and security".⁹⁰ In recognising the "importance and urgency" of the preventing an arms race in outer space and the "willingness of States to contribute to reaching this common goal",⁹¹ the resolution reaffirmed the need to

⁸⁶ *Ibid*, per Representative of the United States Robert Wood.

⁸⁷ See "The Hague Code of Conduct against Ballistic Missile Proliferation (HCoC), online: HCoC <<http://www.hcoc.at/>>.

⁸⁸ *The Hague Code of Conduct against Ballistic Missile Proliferation*, UNGA Res 67/42, UN Doc A/RES/67/42 (2013).

⁸⁹ Paul Meyer, *The Judgment of PAROS: How Best to Prevent an Arms Race in Outer Space*, Simons Papers in Security and Development, No 19/2012 (March 2012) at 12 [emphasis added], online: Simon Fraser University <<http://summit.sfu.ca/system/files/iritems1/14882/SimonsWorkingPaper19.pdf>>. See also Ram Jakhu, "Transparency and Confidence-Building Measures for Space Security", 35- 46 in Ajey Lele, ed, *Decoding the International Code of Conduct for Outer Space Activities* (New Delhi: Pentagon Security International, 2012).

⁹⁰ *No first placement of weapons in outer space*, UNGA Res 69/32, UN Doc A/RES/69/32 (2014). This resolution was adopted by a vote of 126 in favour to 4 against (Georgia, Israel, Ukraine, United States), with 46 abstentions, see online: UN <<http://www.un.org/press/en/2014/gadis3514.doc.htm>>.

⁹¹ *Ibid*, para 2.

"consolidate and reinforce" the legal regime aimed at maintaining the peaceful use of outer space and ensuring that space activities are consistent with international law.⁹²

It should be noted that the Russian Federation has been the prime promoter of unilateral, bilateral and international declarations or statements on "no first deployment of weapons in outer space". Prior to the adoption of the 2014 UNGA Resolution, Russia had signed such declarations with Argentina, Brazil, Cuba, Indonesia, and Sri-Lanka.⁹³ Though some may question the value of such declarations or statements, the ICJ has recognised that the obligations contained in such declarations or statements are binding on a State if they were issued with the intention of being bound.⁹⁴ The International Law Commission's Guiding Principles applicable to unilateral declarations of States capable of creating legal obligations⁹⁵ provide criteria to be applied to determine the validity (legal effects) of unilateral declarations; e.g. the capacity to make them, public manifestation, the contents, whether they are written or oral, the target audience, any restrictive interpretation, and their invalidity if contrary to *jus cogens*.⁹⁶

7. The European Union (EU) has proposed an **International Code of Conduct for Outer Space Activities (ICoC)**, which as a general principle calls upon States to take "all measures to prevent space from becoming an area of conflict".⁹⁷ Indeed, the Draft Code of Conduct further calls upon States to develop guidelines for the security and long-term sustainability of outer space activities.⁹⁸ Even after carrying out three Open-Ended Consultations (OEC) on the Draft Code of Conduct,⁹⁹ the EU convened the Multilateral Negotiations on an International Code of Conduct for Outer Space Activities in New York on 27-31 July 2015. Though the meeting was held at the UN Headquarters, it was not held under the auspices of the UN and in terms of the outcome (or the lack thereof) it can be seen as a failure. After the first day of 'negotiations' it became clear that no real negotiation was possible and thus delegates from 109 States spent the remaining four days discussing the

⁹² *Ibid*, Preamble, paras 2-6.

⁹³ Sri Lanka, Ministry of Defence, "Russia, Sri Lanka agree on no first deployment of weapons in outer space" (2 October 2013), online: Sri Lanka, Ministry of Defence <http://www.defence.lk/new.asp?fname=Russia_SriLanka_agree_on_first_deployment_of_weapons_in_outer_space_20131002_0> ; "'Weapons free space': Russia champions internationally regulated space security", *RT* (5 August 2014), online: RT <<https://www.rt.com/op-edge/178088-russia-weapons-free-space/>> .

⁹⁴ *Nuclear Test Cases (Australia v. France)* (Judgment) [1974] ICJ Rep 457 at 472-473.

⁹⁵ Text adopted by the International Law Commission at its Fifty-eighth session, in 2006, and submitted to the General Assembly as a part of the Commission's report covering the work of that session (A/61/10). The report, which also contains commentaries on the draft articles, appears in *Yearbook of the International Law Commission, 2006*, vol II, Part Two, 160. Also available online: ILC <http://legal.un.org/docs/?path=../ilc/texts/instruments/english/draft_articles/9_9_2006.pdf&lang=EF> .

⁹⁶ *Guiding Principles applicable to unilateral declarations of States capable of creating legal obligations*, *ibid*, respectively para 2 (capacity); para 1 (public manifestation); paras 3 and 7 (contents); para 5 (oral or written); para 7 (restrictive interpretation); and para 8 (peremptory norm),

⁹⁷ EU, *Draft Code of Conduct for Outer Space Activities*, 31 March 2014, sect 2, online: European External Action Service <http://www.eeas.europa.eu/non-proliferation-and-disarmament/pdf/space_code_conduct_draft_vers_31-march-2014_en.pdf> .

⁹⁸ *Ibid*, sect 3.2.

⁹⁹ In Kiev, on 16-17 May 2013; in Bangkok on 20-22 November 2013 and in Luxembourg on 27-28 May 2014,

requirements of mandate and procedure. Differences of opinion and approach, largely along the traditional division of Western nations (except Switzerland) and Japan on the one hand, and the rest of the world (mainly led by the emerging economies of Brazil, Russia, India, China and South Africa (BRICS)) on the other, became the main reason for the failure of this latest attempt to draft a non-binding, norm-creating instrument to enhance the safety, sustainability and security of outer space.¹⁰⁰ The final assessment of the Chair of the meeting was that:

based on the discussions and considering the importance afforded to the principles of openness, transparency, universality and inclusiveness, the most supported way forward would be the pursuit of negotiations within the framework of the United Nations through a mandate of the General Assembly.¹⁰¹

The above-mentioned attempts and proposed documents are all meaningful and well-intentioned to preserve peace and security in outer space and to prevent the outbreak of an armed conflict. However, their effectiveness cannot be guaranteed, and furthermore nothing to date aims to address the conduct of States in the event of hostilities or an armed conflict. It is postulated that addressing space security cannot simply focus on the prevention of the weaponisation of outer space. To properly address the broad issue of space security, it is also necessary to identify effective and legitimate rules to govern the conduct of States in the event of an outbreak of armed conflict in outer space.

The legal lacunae may lead to divergent interpretations of the law and unilateral actions. This will only serve to undermine the concept of rule of law, which since the beginning of the space age has, by and large, governed activities in outer space.¹⁰² As Schachter notes, in outer space States are often uncertain about or unwilling to express their positions on a particular matter "until actual cases and controversies have arisen".¹⁰³ Thus a more authoritative identification or pronouncement of the legality and scope of conduct permissible in times of armed conflict is urgently needed.

Some actors may be wary of any project that purports to regulate military activities that amount to hostilities or conflict in or through space, since it may appear as if such a project were condoning space warfare. However, the development of any project that would clarify the law applicable to military activities is in no way a contravention of the

¹⁰⁰ For comments and analysis of the New York meeting see Michael Krepon, "Space Code of Conduct Mugged in New York", Arms Control Wonk (4 August 2015), online: Arms Control Wonk <<http://krepon.armscontrolwonk.com/archive/4712/space-code-of-conduct-mugged-in-new-york#comments>>.

¹⁰¹ Chair's Summary, *Multilateral Negotiations on an International Code of Conduct for Outer Space Activities*, New York, 27-31 July 2015, online: PaperSmart <<https://papersmart.unmeetings.org/media2/7650931/chairs-summary-corrected-1-.pdf>>.

¹⁰² Rebecca Johnson, "Security without Weapons in Space: Challenges and Options" (2003) *Disarmament Forum* 53 at 55.

¹⁰³ See Schachter, "Who owns the Universe", *supra* note 25 at 14.

principles behind the PPWT nor the ICoC, both of which recognise the potential role of self-defence in space. The use of space assets for conflict on Earth already takes place on a large scale without this necessarily entailing the placement of weapons in space. Similarly, even the potential for conflict in space does not necessarily lead to the placement of weapons in outer space – there are many other methods and means of conflict, including Earth-to-space targeting in kinetic, laser or cyber form. As well, there are activities short of use of force, such as interference with an adversary's space assets, which may not amount to conflict at all but which would have legal consequences under international law. Given the specificity of the space environment and space technologies, the wide spectrum of military activities that may or may not amount to armed attack, and the inappropriateness of simply transplanting one set of laws to govern activities in a particular domain, reliance on general principles is not enough. This state of affairs makes the clarification of the applicable law ever more urgent.

V. The possible fora

Clarifying the law applicable to any new human activity is a daunting task that requires the input of legal experts, government policy makers, and relevant stakeholders. At the international level, the effectiveness of any law, whether it is merely a clarification, restatement or development, requires State recognition and compliance. In short, no law can exist in a vacuum, and effective law-making and law-clarification must take place in a forum, the legitimacy and authority of which is well-recognised and respected. There are several possibilities for answering the urgency for clarifying the law applicable to military activities in outer space, many of which have already been identified before.

As has been noted, developments in technology and the range of activities that are taking place in outer space are fast outpacing the laws that are in currently place. Generally, as international law is shaped by nations and strengthened by the practice and compliance of nations in the international community, the more States and subject-matter experts are involved in either the making or clarification of the law at the outset, the more legitimate and effective the laws will be.

In the "do nothing" scenario, the development of international law may be subject to the whims of the most powerful and influential States and may be fragmented and unclear as different States may have different policy objectives and national strategic concerns and interests. Differing unilateral interpretations of the applicable law and the extent of States' rights may lead to escalation during times of tension, and to a legally and factually chaotic state of affairs. Furthermore, instead of ensuring that space activities are carried out for the benefit of all of humankind, if the law is developed by allowing States to do as they wish, then the overriding objective of peaceful purposes and benefit for all States will very much be eroded in favour of State self-interest.

Resorting to the existing international fora within the UN family, such as the CD or UNCOPUOS, may produce laws that have the strongest support and legitimacy. However, while the CD is the designated organisation for negotiating disarmament agreements, and the UNCOPUOS is mandated to address "peaceful" uses of outer space, in reality there is a muddling of responsibilities. It was in fact the UNCOPUOS which negotiated and drafted the Outer Space Treaty, Article IV of which is essentially an arms control measure. Indeed, then US President Lyndon Johnson hailed the Outer Space Treaty as "the most important arms control development since the limited Test Ban Treaty of 1963".¹⁰⁴ In fact, all the five space law treaties negotiated at the UNCOPUOS govern, to various degrees, the military uses of outer space.

The greatest challenge, however, is that these institutions, though legally mandated to enjoin States to enact measures to preserve peace and security in outer space, are deadlocked and have been unable to produce binding instruments that have the force of law. The last "hard-law" instrument, the Moon Agreement, was adopted in 1979, and attracted a mere 16 ratifications. The resolution on the prevention of an arms race in outer space has been adopted annually for the over three decades, yet no concrete measure has been adopted despite calls to such effect. As mentioned above, China and Russia have sought international support for its PPWT since 2008. However, as the stalemate in the CD regarding the PPWT demonstrates, a seemingly enlightened attempt to spearhead an initiative in outer space may be open to criticism and suspicion.¹⁰⁵ Lack of progress in the UNCOPIUS and the CD is generally blamed on the rule dictating that any decisions must be made by consensus, which in the face of diverging State interests and due to the strategic nature of outer space and space applications, is a Herculean, if not almost impossible, endeavour.

The law may also be developed through an intergovernmental conference, which may be bilateral or multilateral, and which may be convened at the behest of the initiating State(s). Some examples are the successful adoption of the Partial Test Ban Treaty, Anti-Ballistic Missile Treaty,¹⁰⁶ and the Comprehensive Test Ban Treaty (CTBT).¹⁰⁷ However, this possible forum has proved unpopular among States with respect to arms control and military activities in space. It is obvious that the main reason for the lack of progress is neither the lack of fora nor the lack of logical ideas or options, but rather the lack of political will, particularly on the part of major space powers. The US has consistently

¹⁰⁴ US Senate Committee on Aeronautical and Space Sciences, *Staff Report on "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies"*, *Analysis and Background Data*, 90th Cong, 1st Sess, (1967) at 16.

¹⁰⁵ See Jeff Foust, "U.S. dismisses Space Weapons Treaty Proposal as 'Fundamentally Flawed'", *Space News* (11 September 2014), online: <http://spacenews.com/41842us-dismisses-space-weapons-treaty-proposal-as-fundamentally-flawed/>.

¹⁰⁶ *Treaty between The United States of America and The Union of Soviet Socialist Republics on The Limitation of Anti-Ballistic Missile Systems*, 26 May 1972, 944 UNTS 13 (entered into force 3 October 1972) [ABM Treaty]

¹⁰⁷ *Comprehensive Nuclear Test Ban Treaty*, 24 September 1996, S Treaty Doc 105-28 (1997), 35 ILM 1439, UN Doc A/RES/50/245 (not yet in force) [CTBT]. The example of the CTBT is of interest, which is not yet in force though it has already been ratified by 164 States. The CTBT Organisation Preparatory Commission has been functioning regularly with an annual budget of around US\$ 130 million, and is instrumental to encourage and aid States to become States Parties to this key disarmament treaty.

opposed any "arms control concepts, proposals and legal regimes" which jeopardises the right of the US to "conduct research, development, testing and operations in space for military [...] purposes",¹⁰⁸ and it opposes the negotiation of any arms control measures if they are not effectively verifiable or that would limit its freedom of action in outer space.

It could be said that it is impossible to have a totally fail-proof (100% effective and reliable) verification system or a measure (a binding treaty or a non-binding transparency and confidence-building measure) which would not 'limit' the freedom of action. Though neither the 1963 Partial Test Ban Treaty nor the 1967 Outer Space Treaty contain provisions instituting a verification mechanism, both have been fairly successful international legal instruments enjoying widespread international support and adherence. These two instruments demonstrate that States have their own national technical means of verification for mutually monitoring the compliance with international obligations.

The substantive rules governing the conduct of States in the event of an armed conflict in outer space may be a divisive issue for States, yet clarification of the rules is also urgent. An alternative forum should be sought. As previous examples have demonstrated, one such alternative is in the form of a manual drafted by subject-matter experts with the input of renowned lawyers, technical experts, military practitioners and relevant observers, such as the International Committee of the Red Cross (ICRC). Such a forum ensures that discussions are not driven by individual State interests, nor by the temporality of any given political tensions. Instead, a group of international experts can bring international perspectives, yet maintain neutrality with respect to the content of the law. A group consisting of expertise in space law, military activities in space, military technologies, public international law and the law of armed conflict would aid the chance of identifying and clarifying the law in a way that would allow States to integrate the authoritative law into their own national military operational laws.¹⁰⁹

VI. Our Proposal and the Prerequisites for its Success

A set of prerequisites can be identified that would be necessary for the success of a project to clarify the international law applicable to military activities in outer space. We propose a set of criteria that are particular to the development of an international manual, however some of these criteria may be applicable regardless of the form such a project would take. The intention here is to outline some of the factors that were discussed and decided during the September 2015 Expert Roundtable for the development of a Manual of International Law Applicable to Military Uses of Outer Space (MILAMOS). This Expert Roundtable was hosted by the McGill Centre for Research in Air and Space Law (CRASL) and took place on 10-12 September 2015. The main focus of the Roundtable

¹⁰⁸ UN Doc CD/1847, *supra* note 67 at 8.

¹⁰⁹ See Duncan Blake, "STAR LAWS: the need for a manual of international law applicable to space warfare" in Ram Jakhu, Yaw Nyampong & Kuan-Wei Chen, eds, *Global Space Governance* (Montreal: Centre for Research in Air and Space Law, 2015).

was to broadly identify which rules of international law are potentially translatable to military uses of outer space, including space warfare, and which areas need further research or clarification. The Roundtable was an interactive workshop with participation of experts in various aspects of military uses of outer space, space law and the law of armed conflict from Canada and abroad.

First and foremost, and also one of the issues discussed during the Roundtable, is the need to identify the scope of such a project. This discussion paper has repeatedly referred to "military activities", which is a broad, perhaps muddy, concept for since the beginning of the space age many space-related activities have been conducted by the militaries of space-faring States. Would "military activities" cover activities short of the threat or use of force, thus including issues beyond *jus ad bellum* and *jus in bello*? Given the nature of many space activities and technologies, it would seem that in the case of hostilities or tensions, there are many activities which fall short of the definition of force or attack, but which still impact on the capabilities or interests of a targeted State. This nuanced nature of activities requires clarification as to what would be the applicable law, or at least requires special attention from subject-matter experts as to what possible legal implications space-specific activities may entail.

Activities short of the use of force may include cyber-attacks, on which the Tallinn Manual would be instructive, but further clarification is needed to fully appreciate how such attacks should be interpreted and regulated in the space environment.¹¹⁰ Other forms of hostile activities may also include temporary blinding or jamming, and deliberate on-orbit interference between two space objects.¹¹¹ Such activities require special attention in any project clarifying the international law applicable in space in order to make the final product relevant and to ensure the scope is sufficient to govern the spectrum of potentially hostile activities that may take place in outer space.

Secondly, in order to ensure the final result truly represents international consensus and not perceived to have a Western bias, individuals contributing to such a challenging project would need to be representative of a sufficiently broad geographical spread.¹¹² A delicate balance between informed and realistic perspectives and a reasoned

¹¹⁰ "Tallinn 2.0" is currently under development, and one of the many topics being considered in this second volume is outer space. Careful consultation with the NATO Cooperative Cyber Defence Centre of Excellence would be needed to ensure consistency and to avoid redundancy when it comes to issues of cyber activity.

¹¹¹ One example is Object 2014-28E, launched in May 2014 by Russia as part of a launch of military communications satellites. The object drew attention after it began a series of complex maneuvers, including meeting up with the remains of the rocket stage that launched it. Given that this was at a time when tensions were high regarding Ukraine, there were many speculations that this was a space weapon capable of interfering with satellites. Mike Wall, "Is Russian Mystery Object a Space Weapon?", *Space.com* (19 November 2014), online: Space.com <<http://www.space.com/27806-russia-mystery-object-space-weapon.html>>; Andrew Griffin, "Is Russia flying a satellite killer around space? Unidentified Russian satellite prompts space weapon worries", *The Independent* (18 November 2014), online: The Independent <<http://www.independent.co.uk/news/world/is-russia-flying-a-satellite-killer-around-space-unidentified-russian-satellite-prompts-space-weapon-worries-9867149.html>>; Michael Listner & Joan Johnson-Freese, "Object 2014-28E: Benign or Malignant?", *Space News* (8 December 2014), online: Space News <<http://spacenews.com/42895object-2014-28e-benign-or-malignant/>>.

¹¹² This was a criticism levelled heavily on the Tallinn Manual, since it was under the auspices of a NATO Centre of Excellence, and no attempt was made to include experts from any non-Western States.

and scholarly approach must be struck. The kind of expertise needed includes military officers with experience advising on *jus in bello* in the field, military officers with experience in the space domain and space technologies, scholars with expertise in *jus ad bellum*, *jus in bello*, and scholars with expertise in space law. The need for a broad and diverse spectrum of expertise must also be balanced with the need for a limited number of contributors to ensure consensus, or at least agreement, can be reached in a timely manner.

With respect to developing a MILAMOS, it would be important that when providing their input, contributors act in their personal capacities and not as representatives of any governments or institutions, since the latter would make the project vulnerable to political agendas rather than ensuring it is a neutral, informed and insightful clarification of the law. This has been the case with respect to the 1994 San Remo Manual on International Law Applicable to Armed Conflicts at Sea, the 2009 Harvard Manual on International Law Applicable to Air and Missile Warfare, and the 2013 Tallinn Manual on International Law Applicable to Cyber Warfare. The question remains open whether consultation with State representatives at a later stage in the process would be beneficial, and if so, who these representative should be.¹¹³

Thirdly, with respect to the development of a MILAMOS, it is important that this document would be primarily a clarification and restatement of the law, rather than an exercise in developing the *lex feranda*. Although some of the previous Manuals, such as the San Remo Manual and to some extent the Tallinn Manual, are considered to be partially restatements and partially progressive development of the law, the intention of those documents has been to clarify the law in relation to technological developments rather than to create new norms.¹¹⁴ The nature of the space environment and the particularities of space technologies mean that there may appear to be many lacunae in the applicable law, some of which may need to be addressed. As space technologies and capabilities are ever-developing, enough leeway must also be left so as to ensure the contents of the proposed Manual remains relevant and can be interpreted and will still be applicable in the near and distant future. The primary intention is to clarify and instruct on the ways in which the existing international law applies.

In the case of some disagreement among the contributors on the specifics of a given rule, this would be noted in the accompanying commentary. If there were a total lack of consensus as to the existence of a particular rule, this would have to be set aside from inclusion in the final text. In the latter case, it is very likely that in the process of developing a MILAMOS that by-products of the process would identify where the *lex*

¹¹³ Once again lessons can be drawn from the previous Manuals. In the case of the Harvard Manual, State consultations were held at the very beginning, and sponsorship by the Swiss Federal Department of Foreign Affairs ensured some State involvement throughout. The Tallinn process, on the other hand, included State consultations only at a very late stage of drafting. This was preferred by the drafters, but was a source of criticism by some States.

¹¹⁴ See for example the Introductory Note to the San Remo Manual on International Law Applicable to Armed Conflicts at Sea, online: ICRC <<https://www.icrc.org/eng/resources/documents/misc/57jmsu.htm>>.

feranda requires further attention, providing the rationale and springboard for future research and scholarship.

Finally, in order for the final product to have any currency, it would need to be a document that is recognised by military officers and referred to as authoritative and instructive in the same way the existing manuals are. The success of such a document would rely in part on the first three criteria described above. The endorsement of the San Remo Manual by the ICRC, and the ensuing call by the foremost authority on the law of armed conflict upon States to take into account the San Remo provisions in their own national military manuals, no doubt play an important role in cementing the authoritativeness of the work.¹¹⁵ In this respect, we gladly welcomed two members of the ICRC to our September Roundtable and we plan to engage them and others in our activities related to the MILAMOS in the future.

VII. Conclusion

In early 2015, the Bulletin of the Atomic Scientists Science and Security Board moved the Doomsday Clock hand forward to three minutes to midnight. The adjustment of the internationally renowned measure of how close we human beings are to "destroying our civilization with dangerous technologies of our own making"¹¹⁶ was alarmingly due to:

unchecked climate change, global nuclear weapons modernizations, and outsized nuclear weapons arsenals pose extraordinary and undeniable threats to the continued existence of humanity, and world leaders have failed to act with the speed or on the scale required to protect citizens from potential catastrophe.¹¹⁷

The rapidly emerging possibilities of conflicts in space were not considered by the Board. However, in light of the very serious dangers posed by the lack of a clear and universally adhered-to governance structure to regulate conduct in outer space that have been outlined above, one can easily imagine moving the Doomsday Clock hand even more forward, potentially to two minutes to midnight.

It is undoubtedly clear that in the near- and medium-term future the adoption of an internationally binding agreement, or even non-binding transparency and confidence-building measures to effectively govern the military uses of space, including potential conflict in outer space, does not seem possible. At the same time, with the proliferation of space-faring States and actors, and the increasing dependence, indeed reliance, on the use of space and space applications, the expansion of space arms race and possible

¹¹⁵ *Ibid.*

¹¹⁶ Bulletin of the Atomic Scientists "Overview", online: Bulletin of the Atomic Scientists <<http://thebulletin.org/overview#sthash.2rdwezTy.dpuf>>.

¹¹⁷ Bulletin of the Atomic Scientists, "Press release: It is now 3 minutes to midnight", (22 January 2015), online: Bulletin of the Atomic Scientists <<http://thebulletin.org/press-release/press-release-it-now-3-minutes-midnight7950>>.

conflict in outer space may appear inevitable. In the bleakest scenario, general principles governing military activities in outer space simply will not suffice. And even if States were willing and able to exercise self-restraint and preserve space only for peaceful purposes and for the benefit of humankind, the clarification of the law applicable to the space domain will further the noble goal of cementing the international rule of law and consolidating mutual confidence and international peace and security.

The success of previous Manuals in clarifying the law as military technology develops has been instrumental to restraining and unifying military behaviour across various domains. Having a consolidated, authoritative and legally-relevant collection of rules governing the broad spectrum of potential military actions in outer space, including the use of force or any other hostile behaviour, as clarified by a group of international, interdisciplinary and independent experts is imperative and much desired.

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