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# Developments in Space Security and Their Legal Implications

**P.J. Blount***

## I. Introduction

In the past four years, the importance of space security has been highlighted by several significant events. In brief satellites have collided with each other,[1] two States have used weapons systems to intercept and destroy satellites in orbit,[2] and two States suspected of pursuing the development of weapons of mass destruction have launched or attempted to launch spacecraft.[3] These incidents serve as reminders of the value and fragility of the space environment. They also highlight the need for the rule of law to help govern and normalize relations in this most unique of territories. These concerns were primary in the development of the Outer Space Treaty[4] and its progeny.[5] However, the international space law system was created in the climate of and in reaction to the Cold War, and the system was crafted around substantially symmetric (or perceived to be symmetric) powers seeking to prevent escalating conflict.[6] The result is that, in the post Cold War world era, asymmetric powers have been

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[1] AGI Media Center, *Iridium 33 and Cosmos 2251 Satellite Collision*, Feb. 12, 2009, http://www.stk.com/corporate/mediaCenter/news/iridium-cosmos/

[2] Craig Covault, *Chinese Test Anti-Satellite Weapon*, AVIATION WEEK, Jan. 17, 2009, http://www.aviationweek.com/aw/generic/story_channel.jsp?channel=space&id=news/CHI01177.xml and USA-193: SELECTED LEGAL DOCUMENTS (P.J. Blount & Joanne Irene Gabrynowicz eds., 2009).

[3] Peter Crail, *Iran Makes First Successful Space Launch*, Arms Control Association, Mar. 2009, http://www.armscontrol.org/act/2009_03/Iran_Space and *North Korea space launch 'fails'*, BBC NEWS, Apr. 5, 2009, http://news.bbc.co.uk/2/hi/asia-pacific/7984254.stm

[4] 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].

[5] Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, opened for signature Apr. 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119 [hereinafter Rescue and Return Agreement], Convention on International Liability for Damage Caused by Space Objects, opened for signature Mar. 29 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187 [hereinafter Liability Convention], Convention on Registration of Objects Launched into Outer Space, opened for signature Nov. 12, 1974, 28 U.S.T. 695, 1023 U.N.T.S. 15 [hereinafter Registration Convention], and Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, opened for signature Dec. 18, 1979, 1363 U.N.T.S. 21 [hereinafter Moon Agreement].

[6] *See generally*, Joanne Irene Gabrynowicz, *Space Law: Its Cold War Origins and Challenges in the Era of Globalization*, 37 SUFFOLK U. L. REV. 1043 (2004) and Walter McDougal . . . THE HEAVENS AND THE EARTH: A POLITICAL HISTORY OF THE SPACE AGE (1985).

applying these same bedrock principles, which has led to the evolution of space law through its adaptation it to new technologies and new geopolitical climates. States have ceased to negotiate law making treaties on outer space, and it is unlikely that such treaty making will resume.[7] Today, the contours of space law can be identified through the actions that States take in space and how they fit these actions into the legal framework.[8]

This paper seeks to analyze how recent developments in space security inform us about the modern application of space law principles. It starts with a brief discussion of space security and its importance and then discusses the legal aspects of three recent issues in space security: 1) current negotiations on the Prevention of an Arms Race in Outer Space (PAROS) and a space weapons ban; 2) the use of Anti-Satellite (ASAT) technology by both China and the United States; and 3) North Korea's attempted launch of *Unha-2* launch vehicle and its satellite payload.

## II. The Importance of Space Security

While at a recent workshop, the author was discussing the application of the *jus in bello* to outer space activities. A participant at the workshop asked whether it mattered if States were engaged in remote wars beyond the Earth's atmosphere with only satellites as the victims. In essence, he asked "why do we care if no one is suffering?" This is an excellent question, because a conflict wherein only technology suffers (rather than humans) might be better for the world. Unfortunately, this is not the case. As a practical matter, an international armed conflict that occurs in space will most likely be matched with terrestrial violence as well. Beyond this simplistic answer though, the question highlights how little people realize the extent to which modern society relies on space assets.

First, to understand the issues, one must understand the unique physics of space on a rudimentary level.[9] When an item is put into orbit it will remain there until that orbit decays. The speed of this decay will be based on the height at which the object orbits. Therefore, when a satellite ceases to function (and it is not de-orbited or placed in a graveyard orbit) it becomes a piece of space debris. Now, imagine what happens if that object explodes; it will create a diffuse

[7] *See generally* Sergio Marchisio, *The Evolutionary Stages of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS)*, 31 J. SPACE L. 219, 224-231 (2005) (arguing that the "law-making phase of the UNCOPUOS Legal Subcommittee ended in the 1980s).
[8] Vienna Convention on the Law of Treaties, art. 31(3(b)), May 23, 2969, 1155 U.N.T.S. 331.
[9] *See generally*, DAVID WRIGHT, LAURA GREGO, AND LISBETH GRONLUND, THE PHYSICS OF SPACE SECURITY: A REFERENCE MANUAL 19-25 (2005).

cloud of debris with each individual piece of shrapnel in its own unique orbit.[10] This debris travels at roughly 7 to 8 km/s with an average impact speed of 10 km/s;[11] in other words it can be very destructive. For instance, the windshields of the *Space Shuttles* are routinely replaced due to impacts by paint chip sized debris.[12] There are currently "[a]pproximately 19,000 objects larger than 10 cm," 500,000 objects 1 to 10 centimeters, and an estimated tens of millions of objects below 1 cm in orbit,[13] and it remains a growing problem because there is no efficient way to remove debris from low Earth Orbit (LEO).[14] While there are international[15] and national standards[16] in force, space debris is one of the biggest problems space technology currently faces. Debris mitigation is becoming more prevalent among commercial and civil actors in space due to the recognition by those communities of risks involved with debris. The real dangers are intentionally destructive acts in space as exhibited by the Chinese ASAT test.[17] Keeping space as a secure and conflict free environment will reduce the risk of losing the benefits that society gains from space technologies.

The destruction of the space environment could significantly change the quality of life for the average person. Modern conveniences such as cell phones, satellite T.V., and automated teller machines (ATM) all rely on satellite technology.[18] Specifically, commercial satellite telecommunications systems provide a core piece of infrastructure on which we base a great deal of technology. These types of systems are a major contributor to the so called "shrinking world phenomena" of globalization.[19] In addition to telecommunications, satellite navigations systems have proven invaluable to a variety of transportation systems from people in their cars to the next

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[10] *Id.* at 136.
[11] NASA Orbital Debris Program Office, *Orbital Debris Frequently Asked Questions*, http://orbitaldebris.jsc.nasa.gov/faqs.html#7 (last visited Mar. 4, 2011).
[12] *See* Karen Edelstein, *Orbital Impacts and the Space Shuttle Windshield*, NASA-TM-I I0594, http://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19950019959_1995119959.pdf (undated).
[13] NASA, Orbit FAQ, *supra note* 11.
[14] *Id.* ("Cleaning up the environment remains a technical and economic challenge.").
[15] Inter-Agency Space Debris Coordination Committee, *IADC Space Debris Mitigation Guidelines Debris Mitigation Guidelines*, IADC-02-01 (Sep. 2002) [hereinafter IADC Guidelines].
[16] NASA, Process for Limiting Orbital Debris, NASA Technical Standard 8719.14 (Aug. 2007).
[17] *Chinese Anti-satellite Test Creates Most Severe Orbital Debris Cloud in History*, ORBITAL DEBRIS QUARTERLY NEWS, Apr. 2007 ("The debris cloud created by a successful test of a Chinese anti-satellite (ASAT) system on 11 January 2007 represents the single worst contamination of low Earth orbit (LEO) during the past 50 years.")
[18] INTELSAT, *Satellite Basics: Guide To Satellite-based Solutions*, http://www.intelsat.com/resources/satellite-basics/benefits.asp (last visited Mar. 4, 2011).
[19] *See generally*, Hugh R. Slotten, *Satellite Communications, Globalization, and the Cold War*, 43 TECH. & CULTURE 315 (2002) ("The communications satellite [is] an essential instrument of globalization . . .").

generation of air traffic control systems.[20] Global shipping routes and communications have also been improved with satellite technology through organizations such as the International Maritime Satellite Organization.[21] Streamlining such systems creates efficiency and energy savings.

However, if these benefits were all there is, there would be room for critique. The idea that the world should avoid international armed conflict in space so that people in developed countries can enjoy smart phones is, needless to say, a bit shallow. In addition to these benefits, space technologies have traditionally helped to maintain international peace and security. These systems have allowed the world to cope with other, more destructive technologies that have arisen. To this end space technologies have become primary tools in ensuring international peace and security.

Since the technological boom of the 1950s and 1960s, humankind has been confronted with numerous dangerous technologies. One of the most disturbing is inter-continental ballistic missiles (ICBM) equipped with nuclear or atomic warheads. These were, of course, central in the tension between the United States and the USSR during the Cold War. Space technology helped to play an important role in the negotiations between these two states on the limitations of such weapons. First, space based observation systems allowed States to enter negotiations with good estimates on the weapons systems of the other party. This helped streamline negotiations immensely. Second, and more significantly, space based observation helped to solve the verification problem in negotiating an agreement. Specifically, the USSR did not want to allow on-sight inspections by the United States or overflights in the vein if the latter negotiated Treaty on Open Skies.[22] Therefore, they agreed that national technical means (NTM) would be used for verification purposes, which was shorthand for the idea of satellite observation. This innovation was first used in the treaties negotiated during the first Strategic Arms Limitations Talks (SALT I).[23] NTM (as later revealed by Jimmy Carter)[24] refers to satellite earth observations systems,

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[20] Mark A. Kellner, *GPS soars high with FAA*, WASHINGTON TIMES, Mar. 2, 2009, http://www.washingtontimes.com/news/2009/mar/02/air-traffic-control-evolves-as-faa-adopts-gps/

[21] International Maritime Satellite Organization, *What is IMSO?*, http://www.imso.org/whatisimso_UK.asp (Mar. 4, 2011).

[22] Treaty on Open Skies, Mar 24, 1992, S. Treaty Doc. 102.37.

[23] U.S. Department of State, *Strategic Arms Limitations Talks (SALT I)*, http://www.state.gov/www/global/arms/treaties/salt1.html (last visited Mar. 4, 2011). The Treaty on the Limitation of Anti-Ballistic Missile Systems and Interim Agreement on Certain Measures With Respect to the Limitation of Strategic Offensive Arms were the resulting agreements from these talks.

and these still play an important role in the verification of disarmament and nonproliferation agreements. These activities have been important in helping to pursue the UN Charter's goal of International Peace and Security.[25]

Additionally, international peace and security has been enhanced by the use of satellites to engage in a variety of activities such as environmental monitoring, resource allocation, and disaster management. As the world comes to grips with climate change, satellite imagery will be a crucial tool in analyzing the effects and possible solutions.[26] Satellites also play an important role in identifying natural resources and allocating land use. Finally, local governments can avail themselves to satellite imagery to help respond to and manage natural and man-made disasters.[27]

Space technology, while important to the infrastructure on our daily lives, is also central to the promotion of international peace and security. In fact the Outer Space Treaty mandates that this should be the case in Article III when it states that States should engage in space activities in the "interest of maintaining international peace and security."[28] As a result, the degradation of the space environment could have an extraordinary impact on the world as we know it. It could destabilize international order and lead to disastrous consequences.

## III. PAROS and the Proposed Space Weapons Agreements

### A. Historical Context

The first treaty limitations that were promulgated on the use of weapons in outer space can be found in the Partial Test Ban Treaty of 1963.[29] This treaty requires States to "[undertake] to prohibit, to prevent, and not to carry out any nuclear weapon test explosion, or any other nuclear explosion, at any place under its jurisdiction or control: (a) in the atmosphere; beyond its

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[24] Jimmy Carter, Kennedy Space Center, Florida Remarks at the Congressional Space Medal of Honor Awards Ceremony, Oct. 1, 1978, http://www.presidency.ucsb.edu/ws/index.php?pid=29897&st=&st1=. ("Photoreconnaissance satellites have become an important stabilizing factor in world affairs in the monitoring of arms control agreements. They make an immense contribution to the security of all nations. We shall continue to develop them.")

[25] U.N. Charter, Art. 1.

[26] *See, for example*, Department of Commerce National Oceanic and Atmospheric Agency Climate Program Office at http://www.climate.noaa.gov/index.jsp?pg=./cp_oa/description.html (last visited Mar. 4, 2011).

[27] *See* Charter on Cooperation to Achieve the Coordinated Use of Space Facilities In The event Of Natural or Technological Disasters Rev.3 (25/4/2000), http://www.disasterscharter.org/web/charter/charter (last visited Mar. 4, 2011).

[28] Outer Space Treaty, *supra* note 4, art. III.

[29] Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, Oct. 10, 1963, 480 U.N.T.S. 43.

limits, including outer space."[30] Further limitations are then found in the Outer Space Treaty's Article IV. This article obligates states to "undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner."[31] Additionally, it prohibits States from stationing even conventional weapons on the Moon or other celestial bodies.[32] While these provisions were essential to ensuring global security during the Cold War, they still gave States a great amount of latitude. This is exhibited in the case of the ICBM. ICBMs carrying nuclear warheads are allowed to transit through space. They are not considered to be "placed in orbit" since they follow a paths that will intersect with the Earth's atmosphere.[33] An even starker example is the fractional orbital bomb (FOB). This device, developed by the Soviet Union, would enter Earth orbit, but before the weapon could make a full orbit it would be de-orbited onto its target.[34] Interestingly enough, the United States agreed with the Soviet position that this did not violate the Outer Space Treaty's ban on stationing a nuclear weapon in space.[35] Latitude is also gained from the fact that conventional weapons are only banned from the Moon and other celestial bodies. There is nothing illegal about placing a conventional weapon in orbit under the terms of the treaty.

Throughout the Cold War, both the US and the USSR pursued space weapons systems and, in particular, ASATs. The USSR first proposed a treaty banning space weapons in the United Nations in 1981.[36] Later proposals for these sorts of treaties would be transferred to the purview of the Conference on Disarmament (CD) and would become (along with fissile materials) one of the topics that would prevent the CD from adopting a program of work for 12 years. This was due to the fact that the United States "has refused to engage in any formal

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[30] *Id.*, at Art. I.
[31] Outer Space Treaty, *supra* note 4, at art. IV.
[32] *Id.*
[33] Raymond L. Garthoff, *Banning the Bomb in Outer Space*, INTERNATIONAL SECURITY, v. 5, n. 3, p. 25-34.
[34] *Defense: The Space Bomb*, TIME, Nov. 10, 1967, http://www.time.com/time/magazine/article/0,9171,837504,00.html
[35] Gartoff, *supra* note 33, at 38.
[36] Many thought this to be disingenuous since the proposal was made while the USSR had the only actively deployed ASAT program. Donal A. Mahley, *The State of Space Security*, remarks at the Space Policy Institute, Elliot School of International Affairs, The George Washington University, Washington, D.C., Jan. 24, 2008, http://www.america.gov/st/texttrans-english/2008/February/20080201144622eaifas0.4233362.html.

discussion of additional regulation" of space weapons "[s]ince the suspension of ASAT negotiations with the Soviet Union in 1979."[37]

### B. Current Developments

Three new developments have occurred since early 2008 that have revitalized the pursuit of a ban on space weapons: 1) two new proposals for space weapons controls have been presented at the CD; 2) the Obama administration has asserted that it will pursue a space weapons ban; and 3) the CD has adopted a program of work that includes PAROS.

In February of 2008, Russia submitted a Draft Treaty on Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force against Outer Space Objects.[38] In 2009, the European Union circulated a Draft Code of Conduct for Outer Space Activities at the CD.[39] These two different proposals highlight the one of the central issues in adopting such controls: form.[40] The first has both the benefit of and deficit of creating binding legal rules by which signatory States must abide. The benefit is that such an agreement would create obligations and rights which would be enforceable under international law. This same benefit can be considered a deficit as it may make States reluctant to join such an agreement. To use a somewhat clichéd term, space is still very much an "unknown." States, and in particular the United States, that rely on space technologies are reluctant to sign on to a treaty that might limit the future use of space by governing as of yet undiscovered technology.[41] Without strong State support from space powers a treaty of this nature will fail. For instance, the fifth treaty governing Outer Space, the Moon Agreement, is often considered to be dead letter law due to its

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[37] NANCY GALLAGHER AND JOHN D. STEINBRUNER, RECONSIDERING THE RULES FOR SPACE SECURITY 75 (2008). The United States used procedural maneuvers to prevent discussion at the Conference on Disarmament. *Id.* at 41.

[38] Draft Treaty on Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force Against Outer Space Objects, U.N. Doc. CD/1839 (Feb. 29, 2008).

[39] EU Statement on "PAROS," Feb. 12, 2009, http://www.unog.ch/80256EDD006B8954/(httpAssets)/EEA43906F2B69099C125755B003E11BA/$file/1123_EU_PAROS.pdf. This document was circulated at the CD but not an official submission to the CD. *See,* Canada Working Paper on the Merits of Certain Draft Transparency and Confidence Building Measures and Treaty Proposals for Space Security, U.N. Doc. CD/1865 (June 5, 2009). Since that time the EU has completed a revised draft with input from other States. Council of the European Union, Council Conclusions concerning the revised draft Code of Conduct for Outer Space Activities, Council Doc. 14455/10 (Oct. 10, 2010).

[40] *See,* Canada Working Paper on the Merits of Certain Draft Transparency and Confidence Building Measures and Treaty Proposals for Space Security, *supra* note 39.

[41] For a similar reasons some states have been unwilling to resolve the where does space begin debate because it may limit their actions in the future as they develop technology that could take advantage of near space. *See generally* Michael Dodge, *Sovereignty and the Delimitation of Airspace: A Philosophical and Historical Survey Supported by the Resources of the Andrew G. Haley Archive*, 35 J. SPACE L. 5 (2009).

lack of State support. Specifically, this treaty failed to gain the support of the United States, which left it an undesirable treaty of which to be party. The lesson is that if major space powers are unwilling to sign and ratify a legal instruments dealing with outer space, then that instrument will fail to create any meaningful obligations.

The code of conduct form seeks to avoid this problem by creating political rather than legal obligations. This form allows States to consent to principles that do not rise to the level of legal obligations which can lead to wider participation by States. However, the lack of legal obligations makes such arrangements palatable yet weak. States abide by them voluntarily, and when they do not there is no recourse under international law, since the instrument does not create binding rights and obligations. This can allow States to game the system by a engaging in the pretense of abiding by such an agreement until the technology is fully developed and then breaching it by deploying it. However, such measures can build confidence between nations and can lead to increased security and communication in such matters. With proper support, these instruments can lead to future agreements and possibly customary international law.

The next major development is the Obama administration's assertion that the United States will pursue a ban on space weapons. This was part of both the Obama space policy used during the campaign for office and was later released on the White House website as part of the defense "agenda."[42] This assertion marks a sea change in US thinking towards space weapons. The previous United States posture was that it would not negotiate on measures that would limit the United States potential use of space.[43] In fact under the Bush administration the U.S. space policy included the concept of space denial which many argued implied the use of weapons against space assets to deny access to space to adversaries who threaten US use of space.[44] This stance was further seen in the annual UN general assembly vote on the PAROS resolution. The United States routinely abstained from voting on this resolution which traditionally passes with

[42] Obama '08, Advancing Frontiers of Space Exploration, http://www.barackobama.com/pdf/policy/Space_Fact_Sheet_FINAL.pdf (last visited Mar. 4, 2011) ("Barack Obama opposes the stationing of weapons in space and the development of anti-satellite weapons. He believes the United States must show leadership by engaging other nations in discussions of how best to stop the slow slide towards a new battlefield."); and P.J. Blount, "Obama Administration Supports Ban on Space Weapons," RES COMMUIS, Jan. 23, 2009, http://rescommunis.wordpress.com/2009/01/23/obama-administration-supports-ban-on-space-weapons/ ("The Obama-Biden Administration will restore American leadership on space issues, seeking a worldwide ban on weapons that interfere with military and commercial satellites."). This statement has since disappeared from the White House website.

[43] U.S. National Space Policy, NSPD 49, at § 2 (Aug. 31, 2006) and Nancy & Steinbruner, *supra* note 37, at 75.

[44] U.S. National Space Policy, *supra* note 43, at § 2, *but see* Mahley, *supra* note 36.

an overwhelming majority, and later, the United States changed its vote to a negative vote becoming the only nation to vote against the resolution.[45] The Obama Administration released its Space Policy in 2010, and it emphasizes the concept of international cooperation. It still asserts the same self defense rights as the Bush administration policy, but has softened its language substantially and has left out such concepts as space denial.[46] The heightened emphasis on international cooperation is a sign that the Obama administration, while seeing space as a strategic asset also views it as a domain for multilateral action at the international level, and can probably be viewed as a precursor to the way that the Obama administration addresses space security at the international level.

The new U.S. posture also has helped lead to the third development, which is the adoption of a programme of work at the CD in 2009.[47] The CD had been in stalemate for 12 years, in part due to the PAROS issue. However, the CD still faltered in accomplishing substantive work in 2009 due to procedural matters,[48] but its unthawing on substantive matters is a major step towards the negotiation of some sort of controls. The programme of work establishes a working group on PAROS that will "discuss substantively, without limitation, all issues related to the prevention of an arms race in outer space." Ambassador Luiz Filipe de Macedo Soares of Brazil was appointed as the chairman of this working group.[49] While the implementation of the programme of work was held up on procedural grounds,[50] the change is

[45] Gallagher & Steinbrenner, *supra* note 37, at 41. *For example,* U.N. General Assembly, Record of Meeting, U.N. Doc. A/63/PV.61 at 7 (Dec. 2, 2008).
[46] National Space Policy of the United States of America (June 28, 2010) ("The United States will employ a variety of measures to help assure the use of space for all responsible parties, and, consistent with the inherent right of self-defense, deter others from interference and attack, defend our space systems and contribute to the defense of allied space systems, and, if deterrence fails, defeat efforts to attack them."), *compare* U.S. National Space Policy, *supra* note 43, at § 2 ("The United States considers space capabilities -- including the ground and space segments and supporting links -- vital to its national interests. Consistent with this policy, the United States will: preserve its rights, capabilities, and freedom of action in space; dissuade or deter others from either impeding those rights or developing capabilities intended to do so; take those actions necessary to protect its space capabilities; respond to interference; and deny, if necessary, adversaries the use of space capabilities hostile to U.S. national interests.")
[47] Decision for the establishment of a Programme of Work for the 2009 session, U.N. Doc. CD/1864 (May 29, 2009).
[48] *Conference on Disarmament: New Delay on Decision on Implementation of Its Programme of Work for 2009*, UN Press Release DC09039E, Aug. 10 , 2009, http://www.unog.ch/80256EDD006B9C2E/(httpNewsByYear_en)/F35280E0A065C28EC125760E00363899?OpenDocument [hereinafter UN Press Release DC09039E]. *See also* Conference on Disarmament, *Rules of Procedure of the Conference on Disarmament*, U.N. Doc. CD/8/Rev.9 (Dec. 19, 2003)
[49] Draft decision on the implementation of CD/1864, U.N. Doc. CD/1867 (June 25, 2009).
[50] UN Press Release DC09039E, *supra* note 48.

nonetheless significant. However, the CD has again fallen in to deadlock, as it failed to adopt a programme of work in 2010, and has not yet done so in 2011.[51]

### C. Problems

#### i. Form

As already noted, form is an issue with major implications. Simply, because all major space powers are at the same table does not necessarily mean that a treaty will be negotiated. While the Obama administration rhetoric may seem bold, only time will tell as to how bold it is. What is certain is that the United States will no doubt continue to seek to protect its own actions in space, due to U.S. reliance on space assets whether civil, military, or commercial. This is likely to lead to a code of conduct instrument. In fact the United States has indicated its interest in the European Draft Code of Conduct for space activities.[52] U.S. involvement in this are is a significant step forward in protecting all nations' space assets.

#### ii. Definitions

Definitional problems have plagued PAROS negotiations from its very beginning. Just as the legal definition of space remains undefined, so does the definition of "space weapon." This problem is due in part to the "space" part of the term: does space weapon mean a weapon that targets space? Or are stationed in space? Or traverse space? ICBMs? FOBs? The "weapon" portion of the term is also problematic in that a great deal of space hardware consists of dual use technology. Essentially, almost any satellite in orbit could be considered a weapon.[53] A prime example of this was the USSR's contention that the *Space Shuttle* constituted an Anti-Satellite Weapon because of its ability to intercept and retrieve a satellite with its robotic arm (a capability used by the US to service satellites).[54] Another example is the Soviet co-orbital ASAT program. This technology placed a satellite in the same orbit with a target satellite. The targeting satellite

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[51] *See* Report of the Conference on Disarmament to the General Assembly of the United Nations, U.N. Doc. CD/1900, at 4 (Sept. 14, 2010).

[52] Frank A. Rose, *The U.S. National Space Policy, International Cooperation and the Pursuit of TCBMs*, remarks at the Secure World Foundation and UNIDIR Conference, Space Security: Next Steps in TCBMs, New York, New York, Oct. 14, 2010, http://www.spacepolicyonline.com/pages/images/stories/Rose_-_SWF-UNIDIR_Event_Oct_10.pdf.

[53] Interestingly enough, the United States classifies all spacecraft as munitions for the purposes of export controls. International Traffic in Arms Regulations, 22 C.F.R 121.1 (Category XV) (2009).

[54] Theresa Hitchens, *When is a Space Weapon Not a Space Weapon?*, Center for Defense Information, Jan. 23, 2004, http://www.cdi.org/friendlyversion/printversion.cfm?documentID=2012.

would then explode destroying the target satellite.[55] In fact, a simple collision between a targeting satellite and a target satellite can destroy the target satellite; the power of such collisions was demonstrated by the *Cosmos-2251* and *Iridium-33* collision on 2009.[56]

The definitional problem will likely be a stumbling block in the negotiation of any instrument. Space powers will seek to protect established and future activities, whereas non space powers will seek to be more restrictive on space activities. The code of conduct form seeks to avoid the definitional problem by adopting a "no harmful interference" with others space activities standard or other sorts of behavioral limitations. This could be much more palatable to other States because it a) regulates conduct, not technology and b) the term is sufficiently vague to allow States to interpret it. The definition of "harmful interference" is not clear, though it can be found in the International Telecommunications Union's (ITU) Radio Regulations relating to telecommunications satellites, but this definition is narrow and only applies to radio communications.[57] Application of the ITU definition would have limited utility in relation to the broader spectrum of space security. It is likely though that States would interpret the term broadly as they have "peaceful purposes."[58] In this case States could reasonably interpret the term to mean nonaggressive as they have interpreted "peaceful purposes," thus it would put no more restrictions on States than the U.N. Charter does via Article 2(4). Such an interpretation has not stopped States from developing weapons systems in the past.

### iii. Verification

The final stumbling block, and one found for almost all disarmament treaties is that of verification. Space is a particularly difficult place in which to verify (ironically it is a wonderful place from which to verify). This is due to the difficulty of actual visual inspection an asset in space. States must rely on other sources of information to know the nature of a space object.

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[55] Laura Grego, *A History of Anti-satellite Weapons*," Union of Concerned Scientists, Oct. 10, 2003, http://www.ucsusa.org/nuclear_weapons_and_global_security/space_weapons/technical_issues/a-history-of-anti-satellite.html.

[56] David Wright, *Colliding Satellites: Consequences and Implications*, Union of Concerned Scientists, Feb. 26, 2009, http://www.ucsusa.org/assets/documents/nwgs/SatelliteCollision-2-12-09.pdf.

[57] The ITU Radio regulations define harmful interference as "Interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service." ITU Radio Regulations, §1.169 (2008).

[58] On the interpretation of "peaceful purposes" see P.J. Blount, *Limits on Space Weapons: Incorporating the Law of War into the Corpus Juris Spatialis*, in PROCEEDINGS OF THE INTERNATIONAL INSTITUTE OF SPACE LAW 235 (2009).

These sources are limited and without access to other forms of reliable intelligences, States can be in a difficult situation when it comes to disambiguating space objects.

One of the primary sources of information is the U.N. Registry of Space Objects.[59] States that are signatories to the Registration Convention are required to register their space objects on this registry,[60] but the registry does not require States to disclose the complete nature of the object. The treaty calls on States to disclose the "general function of the space object," but this can be a very general description.[61] For instance both U.S. military and civil satellites contain the vague description "[s]pacecraft engaged in practical applications and uses of space technology such as weather or communications."[62] Another flaw to this registry as a source of information is that not all satellites get registered. This is exhibited by the fact that the U.N. registry shows ten unregistered satellites with unknown launching states.[63] There are also commercial satellite databases that companies use to help avoid space debris, but these are built largely around unclassified information from the United States' space surveillance system. The use of one of these databases for verification would raise immediate concerns on whether the United States was distributing all needed information about its and its allies systems. Even when this information is given by a State, it is difficult to verify. Space Tracking systems are able to identify size and orbits of objects in space, but can not necessarily attribute a particular use to that object. Therefore States would be required to rely on information given by other States, something they have, historically, been reluctant to do.

This issue is a major hurdle for the negotiation of a binding treaty. It is possible that it could be overcome with an activity based standard such as "no harmful interference." This standard is also difficult to verify because of the lack of direct observation of space activities. The difference between a kinetic ASAT attack and a collision with space debris is difficult to discern on a radar screen. This is why States may turn to a code of conduct such as the Hague Code of Conduct. Instead of creating an unverified treaty or a treaty with a very invasive verification procedure, States may prefer to adopt measures that increase the transfer of information in order to increase transparency and confidence. This is the system adopted by the

[59] United Nations Office of Outer Space Affairs, Online Index of Objects Launched into Outer Space, http://www.unoosa.org/oosa/osoindex.html (last visited Mar. 4, 2011).
[60] Registration Convention, *supra* note 5, Art. IV.
[61] *Id.*
[62] For example compare the function statements of Landsat 5 (a civil satellite) and USA-198 (a military satellite) at the Online Index of Objects Launched into Outer Space, *supra* note 59.
[63] *Id.*

Hague Code of Conduct, which, instead of limiting States' technology or activities, allows States to exchange information on ICBM and space launch activities.

## IV. The Developing Law of ASATs

### A. Background

ASAT technology refers to technology used to destroy, disable, or deny access to a satellite. This can range from hacking a satellite's computer system to dazzling its sensors with lasers so that it cannot observe a target to kinetic attacks that physically destroy the satellite; the latter being the most controversial due to the amount of debris cause by the destruction of an on orbit satellite. Primarily this section will concern itself with the kinetic ASAT technology which as of late has been used twice by States to destroy satellites.

Both the Soviet Union and the United States pursued ASAT technology and weapons during the height of the Cold War. There were, during this period, negotiations to limit such weapons, but these broke down in 1979 when the USSR invaded Afghanistan.[64] US space policy embraced the development of ASAT weapons, but only as an answer to Soviet development.[65] In the 1980's both the USSR and the United States went into a voluntary moratorium on the testing of such weaponry.[66] Development was at time funded in the United States, but active tests were usually precluded by a Congressional mandate that required that no tests be undertaken unless the USSR resumed tests first.[67] Before 2007, the most recent ASAT test occurred in 1985 when the United States tested an Air-Launched Miniature Vehicle (ALMV) against an "aging Solwind satellite in a 555 km orbit." [68]

### *B. FY-1C*

On January 11, 2007, China used a ground-to-air missile to destroy *FY-1C*, an aging weather satellite, in low earth orbit.[69] This test resulted in the "single worst contamination of low Earth orbit

[64] Gallagher and Steinbruner, *supra* note 37, at 75.
[65] The Carter Administration space policy stated that the U.S. would seek a "verifiable ban on anti-satellite activities" and "vigorously pursue development of an anti-satellite capability." R. Cargill Hall, *The Evolution of U.S. National Security Space Policy and its Legal Foundations in the 20th Century*, 33 J. SPACE L. 1, 35-36 (2007).
[66] Grego, *supra* note 55.
[67] *Id.*
[68] *Id.*
[69] *Concern over China's missile test*, BBC, Jan. 19, 2007, http://news.bbc.co.uk/2/hi/asia-pacific/6276543.stm.

(LEO) during the past 50 years," making China a major contributor of all debris in Earth orbit.[70] There are two major legal lesson learned from the *FY-1C* incident.

First, through its actions China reasserted that, despite the twenty year moratorium on ASAT tests, there was no ban on ASAT tests and that States had the right to dispose of their satellites as they pleased.[71] The test itself was in no way precluded by the provisions of the Outer Space Treaty, in fact it has been argued that the Outer Space Treaty legitimizes the actions by granting states free access to outer space and giving them jurisdiction and control over their space objects.[72] While scholars have argued that Article IX should have been triggered, it is telling that no state relied on Article IX to make a claim. Since the Outer Space Treaty allows the use of conventional weapons in space, States were left with diplomatic protests and pressure as the only remedy for their grievances. Similarly, the Inter-Agency Space Debris Coordination Committee (IADC) Space Debris Mitigation Guidelines proved unhelpful, for while the mitigation guidelines do charge States with avoiding intentional destruction of space objects,[73] the guidelines are nonbinding leaving third States with no legal recourse. The only legal recourse with which States were only left is the ability to assert that China would be liable for any damage caused by debris from the craft under the Liability Convention. There seemed to be no tenable grounds that the action was *de facto* illegal.

Second, China's lack of transparency in the test drew outcry from the international community. It was not until a full 12 days after the event that China even acknowledged engaging in the test.[74] This lack of transparency, while not illegal *per se* seemed to run counter to the ideals that serve as a bedrock of space law.[75] In particular, International Cooperation seemed to be at stake when a State acts in a unilateral manner that could affect all space-faring nations. In this respect, Article IX of the Outer Space Treaty was central to the debate and whether China was under an obligation to engage in consultations under Article IX regardless of whether States relied on it in their diplomatic or legal protests. This will be addressed below.

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[70] *Chinese Anti-satellite Test Creates Most Severe Orbital Debris Cloud in History*, ORBITAL DEBRIS QUARTERLY NEWS, Apr. 2007, at 2.
[71] *See generally* Li Juqian, *Legality and Legitimacy: China's ASAT Test*, CHINA SECURITY, v. 5 n. 1, 43 (2009).
[72] *Id.* at 44-47.
[73] IADC Guidelines, *supra* note 15, Guideline 5.2.3.
[74] *China confirms anti-satellite missile test*, THE GUARDIAN, Jan. 23, 2007, http://www.guardian.co.uk/science/2007/jan/23/spaceexploration.china.
[75] *For example*, Outer Space Treaty, supra note 4, Art. 1, 2, 9.

### *C. USA-193*

A little more than a year later the United State also executed a successful satellite interception with a sea-to-air missile. *USA-193*, a National Reconnaissance Office (NRO) satellite that had malfunctioned shortly after launch, was in a decaying orbit and was rapidly approaching reentry into the Earth's atmosphere. The United States claimed that a hydrazine tank on board posed a threat to individuals on the ground, and for the safety of people around, the world the satellite should be destroyed in order to minimize that risk.[76] It should be noted that many experts attributed less ingenuous motivations to the United States for this action.[77] Primarily, the United States was accused of going forward with the intercept to guard secrets on the spy satellite and to send a message to China by show of force via its own ASAT technology. This paper will not attempt to discern the United States' motivations. The thrust of this inquiry, regardless of US motivations, is to evaluate the public face of the United States' actions, which were engineered to differentiate the US action from that of China.

The *USA-193* incident differs stridently from the Chinese test in the amount of information released on the intercept. The United States engaged in a full transparency model before the intercept. First, the United States put forth a justification of its actions that was based on furthering international security and safety via its claim that it was engaging the satellite in order to keep it from harming individuals upon reentry. Second, the United States engaged in information sharing with the international community. Diplomatic notes were sent to nations around the world to notify them of the United States actions, and the US gave presentations at the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOUS) and the CD. There were also a string of documents released from a variety of government agencies that gave information on the satellite intercept and addressing health and safety concerns.[78] Finally, the United States explicitly recognized its liability if damage were caused by the resulting debris, while noting that this debris would de-orbit shortly due to the low altitude at which the intercept

[76] *See* Transcript: Department of Defense News Briefing with Deputy National Security Advisor Jeffrey, Gen. Cartwright and NASA Administrator Griffin (Feb. 14, 2008), in Blount & Gabrynowicz, *supra* note 2, at 51.
[77] *See* Yousaf Butt, *Technical comments on the U.S. satellite shootdown*, BULLETIN OF THE ATOMIC SCIENTISTS, Aug. 21, 2008, http://www.thebulletin.org/web-edition/features/technical-comments-the-us-satellite-shootdown.
[78] Agencies included the Center for Disease Control (CDC), Federal Emergency Management Agency (FEMA), and the Federal Aviation Administration. *See* Blount & Gabrynowicz, *supra* note 2.

would occur.[79] In fact the last piece of debris de-orbited on October 9, 2008,[80] less than a year later, while Chinese debris is still in orbit and will remain there for decades to come.

As already noted the United Sates posture was designed to differentiate itself from the Chinese. It embraced openness about its planned activities and released a great deal of information meant to inform not just the public, but also to inform the international community.

### D. Article IX

Many commentators, faced with the implicit legality of ASATs found in Article IV of the Outer Space Treaty turn to its Article IX in order assert that there should have been more action on both China's and the United States' parts. The relevant provision of Article IX states:

> 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 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.[81]

Essentially it has been posited that Article IX requires prior consultations before an ASAT can be used. It has also been argued that the United States, in light of the Chinese ASAT, missed a chance to help define Article IX and actions taken under it.[82] In fact, the United States explicitly addressed Article IX, and stated that it fell outside the threshold for invoking Article IX obligations:

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[79] *OASD Satellite Engagement Communications Plan (Feb. 14, 2008)*, in Blount & Gabrynowicz, *supra* note 2, at 42.
[80] *Jonathan's Space Report, No. 602 (Oct. 26, 2008)*, in Blount & Gabrynowicz, *supra* note 2, at 155.
[81] Outer Space Treaty, *supra* note 4, Art. IX.
[82] Michael Minero, *FY-1C and USA-193 ASAT Intercepts: An Assessment of Legal Obligations under Article IX of the Outer Space Treaty*, 34 J. SPACE L. 321, 352 (2008).

> The United States has certain obligations based on treaties and other agreements related to activities in space. The 1967 U.N. treaty on exploration and use of outer space, in particular, calls on states to keep others informed of activities of potential concern.
>
> While we do not believe that we meet the standard of Article IX of that treaty that says we would have to consult in the case of generating potentially harmful interference with other activities in space, we do believe that it is important to keep other countries informed of what is happening. We let many countries know at the end of January that the satellite was descending, that it would likely have hydrazine, and talked a bit about the consequences of that. Today, we're reaching out to all countries and various organizations -- the U.N., some of its subordinate agencies, the European Space Agency and NATO -- to inform them of the actions that we're describing to you today.[83]

This evaluation by the U.S. is reasonable considering the low altitude at which the intercept was intended to occur. What is important, though, is that the U.S. did its own evaluation and then "reach[ed] out to all countries" by sharing information. Essentially, the United States fulfilled its Article IX obligations by evaluating whether it needed to engage in consultations, but by also empowering other States (through the sharing of information) to make the evaluation for themselves as to whether they needed to activate Article IX by requesting a consultation. In fact the United States has added State practice to Article IX by further defining *de minimis* standards for the information sharing on space activities of this nature.[84] Significantly, Article IX also requires States to "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."[85] To this end the United States may be helping to define what "due regard" requires under Article IX. The release of information can be characterized as acting in due regard.

The *de minimis* standard might be characterized as requiring that the international community be given: 1) notice of the activity and 2) notice of potential risks to third party

[83] Transcript: Department of Defense News Briefing with Deputy National Security Advisor Jeffrey, Gen. Cartwright and NASA Administrator Griffin (Feb. 14, 2008), in Blount & Gabrynowicz, *supra* note 2, at 52.
[84] Vienna Convention on the Law of Treaties, *supra* note 8, art. 31(3(b)).
[85] Outer Space Treaty, *supra* note 4, Art. IX.

States. What makes this important is that this information allows other States the ability to make a request for consultations under Article IX if they so please. Thus at a minimum a State should give enough information about a space activity that a third State should know whether it needs to request a consultation. Support for this theory is born out in the international reactions to the two intercepts. China was criticized by a large portion of the international community, whereas the United States only received mild public condemnation from China.[86]

This reading of these events is supported by the Outer Space Treaty's call for free access and international cooperation. Since space is a global commons with unique physics, information sharing by States is crucial to enhancing the security and usability of the territory. The United States illustrated that baseline data is needed for the treaty to work. The China incident reveals the risks of improper use of space without prior information exchange.

## V. Unha-2

In April of 2009, North Korea announced that it had successfully launched a satellite into low Earth orbit on a *Unha-2* launch vehicle that was broadcasting "transmitting data and the 'Song of General Kim Il-sung' and 'Song of General Kim Jong-il.'"[87] Despite North Korean claims, the satellite failed to reach orbit. Regardless, the legal implications of this attempted launch are important to space security, especially in light of the close relationship between ICBMs and space technology.

### A. Free Access and the UN Security Council Resolution

One of the key issues is the relationship between Security Council resolutions on ballistic missile activities and the customary norm of free and peaceful access to space. In Resolution 1718, the Council proscribed North Korea from engaging in any ballistic missile program.[88] The resolution fails to mention a space program.[89] Unfortunately, drawing the line between a

[86] *See generally*, Blount & Gabrynowicz, *supra* note 2.
[87] *Defiant N Korea launches rocket*, BBC NEWS, Apr. 5, 2009, http://news.bbc.co.uk/2/hi/asia-pacific/7982874.stm.
[88] S.C.Res. 1718, at par. 5 ("Decides that the DPRK shall suspend all activities related to its ballistic missile programme and in this context re-establish its pre-existing commitments to a moratorium on missile launching")
[89] Of course, the Security Council could have explicitly banned North Korea from engaging in a space program pursuant to the Security Council's powers under the U.N. Charter.

ballistic missile and a space launch vehicle can be very difficult.[90] In fact the two technologies evolved hand in hand, which was one of the reasons that the Soviet launch of Sputnik was so disturbing to the United States; it meant that the Soviets had the capability of delivering a warhead to the United States.[91] In light of the fact that space launch vehicles are essentially ICBMs, the question arises as to whether a ban on the former precludes the later. The answer is unclear. An affirmative answer would necessarily deny a State's rights that flow from customary international law in relation to free access to space, while a negative answer allows a State to develop ballistic missile capabilities while banned from doing so. The result is that States may be able to game the system.

Prior to the launch, North Korea acceded to the Registration Convention,[92] signed but did not ratify the Outer Space Treaty,[93] and released detailed trajectory information to the International Civil Aviation Organization (ICAO) and the International Maritime Satellite Organization (IMSO).[94] In taking these actions, North Korea went through all the proper actions for legally launching a space object, including the *de minimis* information sharing threshold set out earlier in this paper. [95] If States are to allow a space program to develop separately from an ICBM program, then without a verification program, they must rely on a nation's disclosures about that program. In this case North Korea made all the proper disclosures and even stated that the launch was for "peaceful purposes."[96] Unfortunately, North Korea's statements have not always been known to be trustworthy.

It seems that such gaming of the system is definitely in violation of the spirit of the law, but it may also violate the letter of the law. This is due to the fact that ICBMs and Space Launch vehicles are often controlled by the same legal instruments, inseparably linking the two. For

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[90] For instance the START Treaty has detailed rules on what will be considered a ICBM and what will be considered a space launch vehicle. Treaty Between the United States Of America and the Union Of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms, July 31, 1991, Art. IV & V.

[91] McDougal, *supra* note 6, at 62.

[92] Convention on Registration of Objects Launched Into Outer Space New York, 12 November 1974, Democratic People's Republic Of Korea: Accession, C.N.154.2009.TREATIES-1 (Depositary Notification) (Mar. 10, 2009).

[93] *N.Korea joins space treaty, convention - Russian ministry source*, RIA NOVOSTI, Mar. 12, 2009, http://en.rian.ru/world/20090312/120530546.html.

[94]ICAO, *ICAO Officially Advised of DPRK Plans for Rocket Launch*, PIO 02/09, Mar. 12, 2009 and IMSO, *Safety of Navigation Information on the Launch of an Experimental Communications Satellite "Kwangmyongsong No.2",* SN.1/Circ.278, Mar. 12, 2009.

[95] It is important to note that North Korea is not a party to the Outer Space Treaty, so States would not have been able to request Article IX consultations.

[96] Jon Herskovitz, *U.S. deploys anti-missile ships before N.Korea launch*, REUTERS, Mar. 30, 2009, http://www.reuters.com/article/worldNews/idUSTRE52T0F820090330.

instance, in both the START Treaty and the Hague Code of Conduct,[97] space launch vehicles are controlled alongside of ICBMs. This is an indication that the two can be controlled by one instrument such as a Security Council Resolution. The problem is only one of taxonomy; a space launch vehicle is "[a] rocket or other vehicle used to launch a probe, satellite, or the like."[98] An ICBM only becomes a launch vehicle when a payload of a "probe, satellite, or the like" is loaded onto it. The rockets character has not changed only the payload. In fact the rocket still contains the same capabilities (though some technical changes must be made), thus it is reasonable that it would still be governed by any applicable rules on ICBMs. Since the Security Council's intent was to preclude the development of long range missiles, space launch vehicles would be implicitly included. This answer though is not without its troubling aspects, it would negate the idea of an absolute customary right to freedom of access to outer space. However, looking at the international law in general, it can be argued that there are very few absolute rights. For instance, States have the right to be free of the use of force against them,[99] but even this most fundamental of rights has its exceptions, explicitly when that force is authorized by the U.N. Security Council.[100] Similarly, the UN Security Council can preclude the right of free access when it deems that access to be destabilizing to international peace and security, which is arguably a precondition to free access under the Outer Space Treaty.[101]

### B. Lawful Responses to the Launch

The next question is, assuming that the launch is illegal under the Security Council Resolution, what would be an appropriate response to the launch, and specifically would the use of force against the alleged space object be proper. Before North Korea attempted the launch Japan did state that it would shoot the missile down if it threatened to harm the country.[102]

The first question is whether the use of force could be justified under the auspices of UNSC Resolution 1718. Force carried out under the auspices of a Security Council Resolution is legal under the UN Charter.[103] However, in the resolution at hand there is no Security Council

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[97] Hague Code of Conduct Against Ballistic Missile Proliferation (HCOC) (Nov. 25, 2002).
[98] NASA, AEROSPACE SCIENCE AND TECHNOLOGY DICTIONARY (2005).
[99] UN Charter, art. 2(4).
[100] UN Charter, art. 42.
[101] *Id.*, art. 41-42.
[102] *Japan threat to shoot down N. Korean satellite*," CNN, Mar. 13, 2009, http://www.cnn.com/2009/WORLD/asiapcf/03/13/nkorea.launch.japan/index.html?eref=rss_world
[103] UN Charter, Art. 42.

endorsement of the use of force, and without explicit authorization a State would be precluded from using force in this manner.

The next option for a State wanting to use force would be to rely on the doctrine of self defense. Self defense under the U.N. Charter must be in response to an "armed attack."[104] It seems likely that this would also be untenable grounds for the justification of the use of force. North Korea released numerous statements and notifications before the launch of the vehicle. In fact the country made it very clear that it was not an armed attack even if it was illegal. A State could argue that, even if the UN Charter precluded an act of self defense, it would still have a right to anticipatory self defense under customary international law.[105] If such a standard exists at international law, a State would still be unable to assert it since the requirement of an imminent threat would be undermined by North Korea's statements which made clear that there was no such threat.[106] The only grounds that a State could reasonably rely on would be preemptive self defense. This standard, argued by the Bush administration during the Invasion of Iraq is highly controversial and most likely not accepted as a ground for self defense by the international community. If it were though, a State could argue that if North Korea is allowed to actively pursue missile technology the result will be a breach of the international peace because North Korea will later engage in acts of aggression with this technology. The assumptions made in such a line of reasoning are at best flawed (for example, the development of weapons systems does not necessarily lead to acts of aggression).

The final grounds to resorting to force were articulated by the United States. U.S. Defense Secretary Robert Gates stated that the United States would not take any action against the launch unless the missile "looked like it was headed for Hawaii."[107] This use of force is only if the missile enters the sovereign airspace[108] of a State and violates that States territorial integrity.[109] There is no free passage of space objects through the territory of a second State without prior permission, and violations of airspace are often met with force.[110] States have

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[104] UN Charter, Art. 51.
[105] *See generally,* Yoram Dinstein, War, Agression, and Self-Defence 179-182 (4th ed. 2005).
[106] *See for instance* KCNA, *Preparations for Launch of Experimental Communications Satellite in Full Gear*, in The North Korean Expendable Carrier Rocket, Unha-2: Selected Legal Documents 31 (P.J. Blount & Joanne Irene Gabrynowicz eds. 2010).
[107] Herskovitz, *supra* note 96.
[108] Convention on International Civil Aviation, Dec. 7, 1944, 15 UNTS 295, Art. 1.
[109] UN Charter 2(4).
[110] For instance the Gary Powers U-2 incident and the KAL-007 incident. *See generally* Quincy Wright, *Legal Aspects of the U-2 Incident*, 54 AMERICAN JOURNAL OF INTERNATIONAL LAW 836 (1960) and Farooq Hassan, *The*

traditionally upheld the right to defend against violations of their sovereign territory including their airspace.[111] In light of the military nature of North Korea's space program, a State could feel sufficiently threatened to justify the shooting down of the launch vehicle if it were going to penetrate the State's airspace.

## VI. Conclusion

This paper has sought to give a brief introduction into developing issues in space security law. It has, to this end, focused on major events from recent years. This is definitely not representative of the whole of space security law, which covers a broad range of topics. Protecting the space environment from conflict and contamination is important, but reality dictates that States will not do so if it is contrary to their interests. While most space-faring nations recognize the risks and dangers, there are spoilers in the international community that may seek to exploit these. The key is finding common ground on which States can work through the difficult issues to make not only space but the Earth itself a safer more secure place.

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*Shooting Down of Korean Airlines Flight 007 by the USSR and the Future of Air Safety for Passengers*, 33 I.C.L.Q. 712 (1984).

[111] However territorially intrusion does not necessarily rise to the level of an armed attack for the purposes of Article 51. *See* Military and Paramilitary Activities in and against Nicaragua (*Nicaragua v. United States of America*), 1986 I.C.J. 14.