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CANADIAN SPACE DETERRENCE – THE CASE FOR A CANADIAN NATIONAL SECURITY SPACE STRATEGY

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**CANADIAN SPACE DETERRENCE – THE CASE FOR A CANADIAN NATIONAL
SECURITY SPACE STRATEGY**

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CANADIAN SPACE DETERRENCE

1. Introduction

1.1 Canada in the Space Domain

Outer space has long been the exclusive domain of world established powers with a spattering of nascent or medium powers. Weeden determined that developments in the past ten years have pushed the space domain to the forefront, exposing vulnerabilities in western powers capabilities to conduct conventional warfare.¹ Actions such as poor space debris management or manufacturing processes create security conundrums that can quickly escalate to an armed confrontation in the domain that used to be intrinsically linked to the nuclear warfare realm. Canadian leaders have an obligation as one of the first nations in space to uphold peace in an emerging domain.

Canada's long history in space spans all four elements of national power. The Canadian Space Agency and Industry Canada have on their part spearheaded the economic oversight, advancing yardsticks both in robotics through the Canadarm project and specialized technology components of space exploration missions.² Canadian astronauts have a long history of contributing well above and beyond their counterparts; their informational power showcased by the otherworldly 45 million YouTube views from Canadian astronaut Commander Chris Hadfield.³ The signature of the 1967 Outer Space Treaty and subsequent arms ban and regulatory treaties in the space domain

¹ Charity Weeden. *Strong, Secure, Engaged in a Threatened Space Domain*. Policy Update. Canadian Global Affairs Institute, 2018. 1-2

² Canadian Space Agency. *Canada's Space Policy Framework*. Ottawa, ON, 2014. 5

³ Canadian Space Agency. "12 Great Chris Hadfield Moments in Space." . Accessed 10 April, 2019. <http://www.asc-csa.gc.ca/eng/blog/2016/08/29/12-wonderful-chris-hadfield-moments-in-space.asp>.

showcase the apolitical diplomatic efforts deployed to ensure peace.⁴ The defence team's history in operating in the space domain is intrinsically tied to its NORAD roots and is still a budding capability connected to military alliances. Previous national strategies emphasized the role of scientific, peaceful and exploratory use of space while stressing economic benefits. New actors in the space domain push for new realities, linking diplomacy with military means continue the long-standing Canadian tradition of peace.

1.2 Canadian Foreign Interventions in Space

Canadian foreign policy objectives are to promote the peaceful and responsible use of outer space. Weeden found that trends in world politics complicated diplomatic attempts of influencing others.⁵ Shabbir and Sarosh explained that nascent space powers have a vested interest in linking diplomatic preventative resolutions to their national deterrence means.⁶ Canadian diplomats are currently negotiating with 92 nations to prevent future conflicts in space at the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS).⁷ Coordination between Global Affairs Canada (GAC) and the Canadian Armed Forces (CAF) was a crucial linchpin in previous successes.

The CAF benefits immensely from its operations in the space domain; its primary objectives is to guarantee access, protect investments and support GAC. The 2017 minted defence policy *Strong, Secure, Engaged* (SSE) tasked the CAF to support GAC's efforts,

⁴ Gordon Vachon. *Canada's Role in Promoting International Security through Arms Control and Disarmament: Capitalizing on A New 'Climate of Change'*. Vol. 10. Ottawa: Royal Military College of Canada, 2009. 1-2; Treaty on Outer Space. Vol. 90, 1. Washington: Government printing office, 1967.

⁵ Charity Weeden. *Strong, Secure, Engaged in a Threatened Space Domain*. Policy Update. Canadian Global Affairs Institute, 2018. 6

⁶ Zahem Shabbir and Ali Sarosh. "Counterspace Operations and Nascent Space Powers." *Astropolitics* 16, no. 2 (Aug 24, 2018). 10-13

⁷ United Nations Office for Outer Space Affairs. "Committee on the Peaceful Uses of Outer Space: Membership Evolution." . Accessed 25 March, 2019.

thus ensuring the long established peace.⁸ The CAF capabilities for operations in the space domain are currently under development; ten space specific projects are slated for development under the SSE strategic investment plan.⁹

The CAF and GAC have successfully synchronized efforts on prior foreign policy objectives. Shabbir and Sarosh found that medium space powers have a distinct advantage of linking national deterrence means, setting conditions for successful negotiations with stronger powers.¹⁰ The CAF has a long history through its NORAD and defence of Europe contributions during the Cold War to national and allied deterrence activities. Identifying gaps in GAC requirements with CAF space deterrence current and future capabilities presents an opportunity to achieve long term Canadian strategic. The study aims to answer in which specific area and to what extent can GAC and CAF combine their efforts and tools at their disposal to promote the peaceful use of outer space. Overall, the study will emphasize gaps between GAC requirements and CAF planned development activities.

1.3 Study Outline

This essay will attempt to demonstrate that GAC and the CAF have sufficiently complementary fields of expertise to combine and synergize their efforts as part of a Canadian National Security Space Strategy. An international treaty negotiation to limit or outright ban space weapons would be the desired end state. The treaty would act as a

⁸ Canada. Dept. of National Defence and Canada. *Strong, Secure, Engaged: Canada's Defence Policy*. Ottawa, Ont.: National Defence. 2017. 71

⁹ *Ibid*, 39

¹⁰ Zaeem Shabbir and Ali Sarosh. "Counterspace Operations and Nascent Space Powers." *Astropolitics* 16, no. 2 (Aug 24, 2018). 3

deterrence to the future development of space weapons, achieving the stated goal of peaceful use of outer space.

This paper is divided into two main sections; the determination of the areas of synergies between diplomacy towards deterrence efforts and the strategic implications thereof. The first portion of the study, areas of convergence between deterrence and diplomacy to include GAC and CAF specific elements will be presented. In the second part of the study, a space deterrence strategy to cover areas of focused applications of diplomacy and military powers towards Canadian national objectives will be explored.

2. Deterrence

2.1 Applied Space Deterrence Theory

Boyce explains that the three basic tenets of deterrence are capability, credibility and communication¹¹; all three working in concert towards shaping the outlook of an entity towards the desired end state. Few outside of the great powers can unilaterally deter other nations.¹² Crump found that deterrence depends on a greater system based on synergies of the three tenets above.¹³ Canada as a medium power requires multiple departments to share their scarce resources across multiple domains, coined the whole of government (WoG) approach. An effective WoG first requires a clear mandate, a lead agency, and resources. SSE states that the peaceful use of outer space is the mandate, identified GAC as the lead agency, and intends for the CAF to support with resources.

Space deterrence is a subset of general deterrence theory; derived from nuclear deterrence theory due to the nature of the environment of which actions are

¹¹ Bryan Boyce. "Twenty-First Century Deterrence in the Space War-Fighting Domain: Not Your Father's Century, Deterrence, Or Domain." *Air & Space Power Journal* 33, no. 1 (Mar 22, 2019). 1

¹² Constantin Popescu and Dan-Lucian Petrescu. "Military Intervention as a Type of Conflict." *International Scientific Conference "Strategies XXI"* 1, (Jan 1, 2017). 256

¹³ David Crump. "Deterrence." *St.Mary's Law Journal* 49, no. 2 (2018): 317. 35-36

indiscriminate. Freedman explains that all deterrence could be explained by two¹⁴ major approaches.¹⁵ Canada has a long history in committing resources to deterrence actions via denial and punishment strategies, albeit rarely unilaterally.¹⁶ Deterrence via punishment in space is impracticable due to the indiscriminate nature of the environment; an effect on one eventually threatens all, most evident when China tested their direct ascent anti-satellite system in 2007.¹⁷ Deterrence by punishment in other domains for transgressions in space is possible and a center of focus for military exercises such as the Schriever war games; this avenue will not be discussed in this paper.

2.2 Nuclear Denials – Lessons Observed

The CAF and GAC are able to exert international influence by combining efforts and tools towards a mutual deterrence by denial subset strategy coined deterrence by regulatory means.¹⁸ The denial through regulatory means is setting legal frameworks to deny adversaries the means to acquire, develop, and research capabilities to influence others; a strategy that is expertly employed by Israel across multiple domains.

Israeli nuclear and general deterrence is highly dependent on diplomatic and international legal teams. Ténèze determines that the Israeli concept of defensive deterrence focuses and links the international regulatory agencies with diplomatic efforts to block aggressors on multiple fronts; the end-state being legitimacy of actions

¹⁴ Deterrence by denial when an actor prevents an adversary from benefiting from their intended actions, and deterrence by punishment when an actor imposes or threatens to impose costs upon transgression

¹⁵ Freedman, Lawrence. *Deterrence*. Cambridge: Polity Press, 2004.

¹⁶ David S. McDonough. "Canada, NORAD, and the Evolution of Strategic Defence." *International Journal* 67, no. 3 (Jul 1, 2012). 807-808

¹⁷ Todd Harrison and Kaitlyn Johnson. *Space Threat Assessment 2018*: Center for Strategic and International Studies, 2018. 8

¹⁸ Dorothy E Denning. *Rethinking the Cyber Domain and Deterrence*. Washington: National Defense University, 2015. 2-3

supported by inter-state organizations.¹⁹ The deployment of legal teams in international agencies ensures that adversary actions are denied benefits and Israeli actions are judged as legitimate.²⁰

Canadian diplomats have a long history of mediating international treaties and agreements.²¹ GAC has the means and the mandate to synchronize Canadian international judiciary efforts to push for the denial via established inter-state mediums such as the UNCOPUOS. Negotiations at the UNCOPUOS have been slow to restrict the weaponization of space due to the lack of trust between great powers in the budding domain.²² A new disarmament treaty would require successfully navigating interests of multiple great powers, of which the Canadian soft power approach the GAC has been successful in past.²³

The space and nuclear domains matured in parallel²⁴; thus lessons from one can be ported to the other. Yoshihara and Holmes explain that Canada was able through diplomatic means to deny aggressors the ability to develop and grow their nuclear capabilities via treaties such as the Comprehensive Test Ban Treaty (CTBT), despite not being a nuclear power.²⁵ Canadian diplomats continued such traditions throughout the Cold War and beyond; in 2001 a co-signed Chemical Weapons Convention saw further

¹⁹ Nicolas Ténèze. *Israel et sa Dissuasion; Histoire et Politique d'un Paradoxe*. Paris: L'Harmattan, 2015. 286-288

²⁰ *Ibid*, 286-288

²¹ Charles-Philippe David and Stéphane Roussel. "'Middle Power Blues': Canadian Policy and International Security After the Cold War." *American Review of Canadian Studies* 28, no. 1-2 (Jun 1, 1998). 146; Nelson Michaud in *In the National Interest: Canadian Foreign Policy and the Department of Foreign Affairs and International Trade, 1909-2009*. Calgary: University of Calgary Press, 2011. 191

²² Zulfqar Khan, and Ahmad Khan. "Chinese Capabilities as a Global Space Power." *Astropolitics* 13, no. 2-3 (Sep 2, 2015) 16-17

²³ David Mutimer. *Confidence-Building and the Delegitimization of Nuclear Weapons: Canadian Contributions to Advancing Disarmament*. Ottawa, ON: Department of Foreign Affairs and International Trade, 2000. 6

²⁴ Toshi Yoshihara and James R. Holmes. *Strategy in the Second Nuclear Age*. Washington, D.C: Georgetown University Press, 2012. 16

²⁵ *Ibid*, 33

restrictions on this specific type of weapons of mass destruction.²⁶ The declaration was seen as a point of departure for international oversight and mutual trust, pushing for the restriction of multiple types of weapons of mass destruction such as bacteriological agents.²⁷ Canadian diplomats were instrumental in communicating resolve, while the CAF was able to supplement the efforts via verification actions; increasing the trust between parties.

The US, China, and Russia have a long history of distrust between parties during arms control treaty negotiations due to grey zone conflicts employed by and on them, thus trust built between parties could be subverted by one actor. Andres finds that previous diplomatic engagements were shrouded by grey zone operations that bypassed the spirit and intent of the discussion, effectively undermining trust between parties.²⁸ Votel, Cleveland, Connett, and Irwin find that such strategies are most effective for gaining an edge during discussions and tipping the scales in the nation's favour.²⁹ The grey zone operations on the ground elements of space systems would be more likely, although unlikely due to the placement and security of launch and control facilities. The cyber domain permeates every space system and grey zone operations therein are increasingly difficult to attribute with the use of privateers and other permissible subversive means.³⁰ The open nature of the space environment makes grey zone operations in space more easily identifiable, albeit more expensive and more difficult to

²⁶ Eric Croddy, Jeffrey Arthur Larsen, and James J. Wirtz. *Weapons of Mass Destruction*. Santa Barbara, California ; Denver, Colorado: ABC-CLIO, 2005. 115

²⁷ David Mutimer and Canada. Dept. of Foreign Affairs and International Trade. *Confidence-Building and the Delegation of Nuclear Weapons: Canadian Contributions to Advancing Disarmament*. Ottawa: Dept. of Foreign Affairs and International Trade, 2000.

²⁸ Richard Andres. "Cyber Gray Space Deterrence." *Prism* 7, no. 2 (Jan 1, 2017): 90-99. 2

²⁹ Joseph L Votel, Charles T. Cleveland, Charles T. Connett, and Will Irwin. "Unconventional Warfare in the Gray Zone." *Joint Force Quarterly: JFQ* no. 80 (Jan 1, 2016): 101. 2

³⁰ Scott Jasper. *Strategic Cyber Deterrence: The Active Cyber Defense Option*. Lanham, Md: Rowman & Littlefield, 2017. 7

ascertain. Cheng finds that neither China, the US or Russia benefit from kinetic or destructive actions against each other in space.³¹ Grey zone operations inherently subvert legal treaties, but the lattermost ensures that a minimum standard is adhered to, such as the physical safety of the space domain and the restriction on kinetic engagements in space.

2.3 Regulatory Deterrence – Canadian Implications

GAC and the CAF have complementary mandates and capabilities, in concert with allies, to communicate and enforce regulatory agreements on the world stage. Direct and unilateral confrontation from one state towards another suffers from a lack of international legitimacy; standing or ad-hoc alliances are the key.³² Vandier found that power struggles in this century are marked by indirect actions and proxy confrontations.³³ The space domain used to be reserved for a handful of great powers, but the tenet is challenged by the ready availability of commercial and relatively inexpensive space launch providers. The impracticability of direct engagements and threats to space assets also creates a shift in the balance of power. Kinetic actions in space, tested only by a few countries to date, have been highly criticized and are recognized as a threat to all; similar to the nuclear development era.³⁴ Indirect approaches have been more successful in shaping behaviours towards disarmament, of which deterrence via punishment in other domains has been used the most in recent history. Sacrificing alliance status to achieve a

³¹ Dean Cheng in *The U.S.-Japan Alliance and Deterring Gray Zone Coercion in the Maritime, Cyber, and Space Domains*: RAND Corporation, 2017. 92-93.

³²Constantin Popescu and Dan-Lucian Petrescu. "Military Intervention as a Type of Conflict." *International Scientific Conference "Strategies XXI"* 1, (Jan 1, 2017). 256

³³ Pierre Vandier. *La Dissuasion Au Troisieme Age Nucleaire*. Paris: Editions du Rocher, 2018. 54-55

³⁴ Secure World Foundation. April, 2019. *Global Counterspace Capabilities: An Open Source Assessment*. 16

regulatory deterrence regime in space is not beneficial to the multidomain Canadian deterrence strategy.

The CAF contributes to greater alliance deterrence means which ensures a certain protection umbrella in space. Harrison, Cooper, Johnson and Roberts found that credible alliance deterrence relies on the capabilities and resolve of great powers. The historical links and geography intrinsically link Canadian security policies with those of the US³⁵; thus Canadian space deterrence strategies must align with American efforts in the domain. Boyce found that the development of deterrence in the new millennium will be focus on legitimacy based on multinational and multidimensional approaches.³⁶ Aligning GAC and CAF increase the legitimacy of Canadian alliances and synchronize the limited resources within a greater WoG framework. Boyce also determined that one of the primary methods that found that US military flexible deterrence options (FDO) in space is through increased defence support to diplomatic efforts.³⁷ GAC and CAF synchronization of tools could provide FDOs to the Canadian government but would require a clear strategy to focus its minimal pool of combined resources. Von Hlatky and Wenger found that the link between diplomatic and military power first goes through strong political will.³⁸ The extent to which GAC and the CAF can collaborate to present FDOs relies on a stable strategy.

The CAF and GAC have the mandate to collaborate to shape the space domain for peaceful purposes. The extent in which both agencies are able to synchronize resources

³⁵ Paul Mitchell. *At What Cost Sovereignty: Canada-US Military Interoperability in the War on Terror*. Vol. 14. Ottawa: Royal Military College of Canada, 2014. 85

³⁶ Bryan Boyce. "Twenty-First Century Deterrence in the Space War-Fighting Domain: Not Your Father's Century, Deterrence, Or Domain." *Air & Space Power Journal* 33, no. 1 (Mar 22, 2019). 1

³⁷ *Ibid*

³⁸ Stéfanie Von Hlatky and Andreas Wenger. *The Future of Extended Deterrence: The United States, NATO, and Beyond*. Washington, D.C: Georgetown University Press, 2015. 2

towards deterrence efforts is through a strategic focus on deterrence by denial, specifically aimed at enforcing a regulatory regime limiting the development and use of space weapons. The basis of the proposed Canadian space deterrence strategy is a disarmament treaty, of which GAC has the ability and experience to lead international negotiations; achieving the greater Canadian aim of exerting greater international influence.

3. Diplomacy

3.1 Smart Canadian Diplomacy

Canada punches above its weight on the world stage; continued diplomatic efforts increase our negotiation base across all four elements of national power.³⁹ Harrison, Cooper, Johnson, and Roberts find that deterrence by denial is based on the ability to convince the other party of the resolve of the imposing nation towards an expected norm.⁴⁰ The proposed deterrence efforts in support of the peaceful use of outer space relies on a diplomatic push to regulate the use of space weapons. Smart power projection is a handy tool for medium powers to exert influence within an international institution.⁴¹

Canadian diplomats are internationally known for their abilities to contribute heavily to international security negotiations with great powers; increasing soft power through openness and trust.⁴² The Prime Minister and top Canadian diplomat

³⁹ Diplomatic, informational, military, and economic

⁴⁰ Todd Harrison and Kaitlyn Johnson. *Space Threat Assessment 2018*: Center for Strategic and International Studies, 2018. 29

⁴¹ Stephane Paquin, Kim Richard Nossal, and Stephane Roussel. *The Politics of Canadian Foreign Policy*, Fourth Edition Queen's Policy Studies Series. Queen's Policy Studies. 80-81

⁴² Pratt, Cranford. *Middle Power Internationalism*. Kingston, ON: McGill-Queen's Univ. Pr, 1990.

involvement is a strategic symbol of resolve to solving an issue.⁴³ Faizullaev found that strategic use of symbols increased the likelihood of messaging success.⁴⁴ Canadian involvement in the negotiation for a peaceful use of outer space represents an opportunity for GAC to promote mutual trust with allies and potential adversaries. Chitty, Rainsley, and Hayden found that the basis of national power was slowly moving away from hard power, due in part to the multitude of agreements, treaties and alliances, towards one dominated by soft power and mutual trust.⁴⁵ Canada has been a leader in space technologies, the promotion of exploration of outer space and an active member in the international space community through academia and business; the attractiveness of Canadian schools that specialize in space sciences is growing.⁴⁶ The smart diplomatic power that GAC could use as a negotiating base is Canadian soft power.

3.2 Diplomatic Interests

Canadian interests lie in a stable space ecosystem; limiting the development of space weapons through negotiations to support a treaty represents an opportunity for Canada to exert international influence.⁴⁷ The positional based approach guides Canadian diplomatic efforts towards increasing legitimacy by building a strong negotiation base; alternatives rely on the willfulness of participants to surrender a portion of their sovereign

⁴³ Nelson Michaud in *In the National Interest: Canadian Foreign Policy and the Department of Foreign Affairs and International Trade, 1909-2009*. Beyond Boundaries. NED - New edition, 1 ed. Calgary: University of Calgary Press, 2011. 182

⁴⁴ Alisher Faizullaev, "Diplomatic Interactions and Negotiations." *Negotiation Journal* 30, no. 3 (Jul, 2014). 278

⁴⁵ Naren Chitty, Li Ji, Gary D. Rawnsley, and Craig Hayden. *The Routledge Handbook of Soft Power*. London ; New York: Routledge, 2017.64-65

⁴⁶ British Broadcasting Corporation. "How Canada Became an Education Superpower.". 1

⁴⁷ Matt McDonald. "Constructivisms." *Chap. 5 in Security Studies: An Introduction*. 2nd ed., edited by Paul D. Williams, 63-76. Abingdon, Oxon: Routledge, 2013. 9

rights to the international institution.⁴⁸ One method to build legitimacy in international relations is to negotiate through international institutions.⁴⁹ Supporting failing institutions reduces the perception of the international legitimacy of the agreements.⁵⁰ Established and successful international institutions and forums such as the UNCOPUOS are critical areas for the exertion of medium power influence approaches.

Kugiel found that soft power that is not used is useless unless it is converted to shaping others' attitude towards an issue at hand.⁵¹ McKercher found that national strategies relying exclusively on hard power resources were decreasingly effective due to the international legitimacy of actions.⁵² Martin, Mayer, and Thoenig find that an increase in world trade created interwoven and interdependent economies, thus reduces the likelihood that nations intervene militarily.⁵³ Canada does not have the means nor the political will to adopt a hard power centric space strategy; shaping behaviours through smart power is an option for medium powers. Nye found that the basis of smart power was the country's reputation in the world.⁵⁴ Canada and its diplomats are seen as agents of peace, focused on global prosperity and the rule of law.⁵⁵ The expansion of negotiated norms of disarmament and non-proliferation is congruent with previous Canadian

⁴⁸ The positional based negotiation methodology is best explained through realism, while constructivist theory would highlight the benefits of the interest-based approach

⁴⁹ Ian Hurd. "Legitimacy and Authority in International Politics." *International Organization* 53, no. 2 (Apr 1, 1999): 390-391

⁵⁰ *Ibid*, 391

⁵¹ Patryk Kugiel. *India's Soft Power*. London and New York: Routledge, Taylor & Francis Group, 2017. 93

⁵² B.J.C McKercher. *Routledge Handbook of Diplomacy and Statecraft*. Florence: Routledge Ltd - M.U.A, 2012. 441-446

⁵³ Martin, Philippe, Thierry Mayer, and Mathias Thoenig. "Make Trade Not War?" *The Review of Economic Studies* 75, no. 3 (Jul 1, 2008). 894

⁵⁴ Joseph S. Nye, *Soft Power*. 1. ed. ed. New York, NY: Public Affairs, 2004. 107

⁵⁵ Diane Lemieux. *Canada - Culture Smart! : The Essential Guide to Customs & Culture*. Chicago: Kuperard, 2016. 30-31

actions; GAC is well poised in adapting lessons learned in earlier negotiations towards a new resolution.

3.3 Treaty Implications

The CAF can support verification and compliance with negotiated agreements. The cost of verification of space activities would detract GAC's diplomatic efforts due to high technological costs. The CAF has the mandate to monitor and characterize space activities.⁵⁶ GAC can leverage the CAF expertise and growing capabilities to increase its negotiation credibility; the most prominent capability being military intelligence. Canadian diplomats would possess the means to demonstrate intents, thus discouraging counter-productive actions. A Cold War type weapons race between the current space powers poses a challenge to an agreement. National diplomatic deterrence options to gain momentum towards a treaty is a mitigating strategy to avoid further arms race challenges.

Diplomatic deterrence is characterized as a scale ranging from escalation prevention to armed conflict. Day-to-day diplomatic engagements to prevent escalations in space remain the basis of long-lasting deterrent effects. Canadian diplomats have been reliable allies in the past in support of multilateral disarmament and arms control measures.⁵⁷ Canadian diplomats proved most effective during recent multilateral negotiations with great powers such as the Ottawa Landmine agreements.⁵⁸ Arbatov and Dvorkin determined that preventing the arms race in space faces similar challenges than

⁵⁶ Canada. Dept. of National Defence and Canada. *Strong, Secure, Engaged: Canada's Defence Policy*. Ottawa, Ont.: National Defence, 2017. 71

⁵⁷ Adam Chapnick in *In the National Interest: Canadian Foreign Policy and the Department of Foreign Affairs and International Trade, 1909-2009*. Calgary: University of Calgary Press, 2011. 86; Gordon Vachon. *Canada's Role in Promoting International Security through Arms Control and Disarmament: Capitalizing on A New 'Climate of Change'*. Vol. 10. Ottawa: Royal Military College of Canada, 2009. 1-2

⁵⁸ Charles-Philippe David and Stéphane Roussel. "'Middle Power Blues': Canadian Policy and International Security After the Cold War." *American Review of Canadian Studies* 28, no. 1-2 (Jun 1, 1998). 146

in the nuclear era.⁵⁹ One method that was credited in reducing escalation, setting the conditions for South Africa to disarm, was diplomatic engagements towards increasing trust between potential adversaries.⁶⁰

3.4 Momentum Diplomacy

Trust in diplomacy relies heavily on effective messaging and transparency. Berridge found that messaging to the voter base of the adversary public while having a message for your public is the key to maintaining momentum in diplomatic negotiations.⁶¹ A tool to regain momentum in negotiations is the use of public diplomacy to gain widespread acceptance within a target nation electorate. Pamment finds that public diplomacy is most effective when engaging foreign lobbyist, business leaders and local influencers.⁶² an posits that digital media synchronized with attractive strategic messaging is quickly becoming the new normal in governmental engagement.⁶³ Social media messaging relies on actors being genuine and credible. Strategic communications during weapons control treaty negotiations have historically focused on coercive methods and scare tactics. The British Ambassador to the 2007 Multilateral Arms Control and Disarmament convention in Geneva was the first to aptly use a budding social media to gain support for a deal.⁶⁴ Public diplomacy tools are well suited to ensure momentum is kept during negotiations, harnessing a nations soft power. British diplomats have refined

⁵⁹ Aleksei Georgievich Arbatov and Vladimir Dvorkin. *Outer Space: Weapons, Diplomacy and Security*. Washington, DC: Carnegie Endowment for International Peace, 2010.79-81

⁶⁰ Daryl Copeland. *Science and Diplomacy After Canada's Lost Decade: Counting the Costs, Looking Beyond*. Policy Paper (Canadian Global Affairs Institute). Canadian Global Affairs Institute, 2015. 1-2

⁶¹ Geoff Berridge. *Diplomacy*. 4. ed. ed. Basingstoke [u.a.]: Palgrave Macmillan, 2010. 66-67

⁶² James Pamment. *British Public Diplomacy and Soft Power : Diplomatic Influence and the Digital Revolution. Studies in Diplomacy and International Relations*. Cham: Palgrave Macmillan US, 2016. 144-5

⁶³ Sandre, Andreas. *Digital Diplomacy*. Lanham [u.a.]: Rowman & Littlefield, 2015. 58-59

⁶⁴ James Pamment. *British Public Diplomacy and Soft Power : Diplomatic Influence and the Digital Revolution. Studies in Diplomacy and International Relations*. Cham: Palgrave Macmillan US, 2016. 244

the realm of public diplomacy and have determined that decentralizing public diplomacy efforts while coordinating a larger strategy works best.⁶⁵

Pamment finds that the successes of the Foreign and Commonwealth Office (FCO) were due to the campaign planning approach undertaken and refined throughout multiple significant events.⁶⁶ The FCO approach relies on one centralized agency responsible for synchronizing efforts in support of governmental priorities abroad while enabling other departments and agencies.⁶⁷ Multiple Canadian Government departments operate abroad, yet only GAC has the responsibility for strategic communications in support of foreign affairs. Pahlavi finds that Canadian diplomats have attempted to institutionalized public diplomacy in the past, but the program was under-resourced and the control over the program as fragmented.⁶⁸ Arms control treaties benefits stemming from public diplomacy relies on long-term dedicated approaches, adequately resourced organizations, and a centralized agency responsible for synchronizing efforts.

All current space powers have publicly stated that their strategic objective in outer space is the peaceful use of the domain⁶⁹; an obstacle is the lack of trust between statements and perceived actions. Sartori found that a country that is known for honesty has the most chance to be successful in diplomatic engagements.⁷⁰ Canada has an

⁶⁵ Nicholas Cull. *Public Diplomacy: Lessons from the Past*. CPD Perspectives on Public Diplomacy. Los Angeles, CA: Figueroa Press, 2009. 26-27

⁶⁶ Pamment, James. *British Public Diplomacy and Soft Power : Diplomatic Influence and the Digital Revolution*. *Studies in Diplomacy and International Relations*. Cham: Palgrave Macmillan US, 2016.244

⁶⁷ Nicholas Cull. *Public Diplomacy: Lessons from the Past*. CPD Perspectives on Public Diplomacy. Los Angeles, CA: Figueroa Press, 2009. 27

⁶⁸ Pierre Pahlavi. "La Diplomatie Publique Du Canada: Virage Ou Figure De Style?" *Canadian Foreign Policy Journal* 14, no. 1 (2008): 12-13

⁶⁹ United States of America Department of Defense. *National Security Space Strategy*. Washington, DC, 2018. 149; Zulfqar Khan and Ahmad Khan. "Chinese Capabilities as a Global Space Power." *Astropolitics* 13, no. 2-3 (Sep 2, 2015). 5; Zaeem Shabbir and Ali Sarosh. "Counterspace Operations and Nascent Space Powers." *Astropolitics* 16, no. 2 (Aug 24, 2018). 10.

⁷⁰ Anne Sartori. *Deterrence by Diplomacy*. Princeton, NJ: Princeton Univ. Press, 2005. 44-45

international reputation for honesty. Canadian diplomats engaged in building trust between adversarial nations would require independently derived information about negotiating parties to advance transparency. Some space actors would undoubtedly rebuff international efforts to limit their weaponization efforts due to the disproportionate effects a small investment can return.

Canada has developed a tradition of coercive diplomatic engagements to convince rogue nations to adopt the proposed resolution. George found that coercive diplomacy was most effective when it leaves some maneuvering space for the enemy to stop its aggressive behaviour without losing face.⁷¹ Creating this space from a diplomatic standpoint is vital since any rogue actor could force one great power to reengage in space weapons, which would undoubtedly be checked by another based on the balance of power.

Diplomatic engagements are the default foreign policy power projection for medium powers. The Comprehensive Test Ban Treaty is an example of a mutually beneficial regulatory framework based on trust that sets the conditions for a stop to the space arms race and future restrictions on development actions once ratified.⁷² Arbatov and Dvorkin found that the most critical feature of nuclear disarmament was that countries were permitted to verify each other's activities, leading to an increase in trust.⁷³ The CAF has developed an expertise in verification measures through participation in the Open Skies and other disarmament programs. The CAF has also

⁷¹ Alexander L. George. *Forceful Persuasion: Coercive Diplomacy as an Alternative to War*. Washington, DC: 1991. 5-7

⁷² *Comprehensive Test Ban Treaty*. United States Arms Control and Disarmament Agency. Vol. 18. Washington, DC: US Arms Control and Disarmament Agency, 1965. 37

⁷³ Aleksei Georgievich Arbatov and Vladimir Dvorkin. *Outer Space: Weapons, Diplomacy and Security*. Washington, DC: Carnegie Endowment for International Peace, 2010. 79-81

developed expertise in the verification in space; starting with the Baker-Nunn cameras installed in the early 1930s to the launch of the Sapphire satellite.⁷⁴ GAC has the negotiation tools to pursue a regulatory framework to limit the escalation of weaponization of space but lacks the capabilities to verify actions in space. The CAF can fill the GAP and can provide expertise in the verification regime and national technical means to boost the credibility and informational power of GAC at the negotiation tables.

4. Strategy

The two previous sections highlighted the complementarities between GAC and the CAF in terms of deterrence and diplomacy. This new section will seek to demonstrate that these synergies can be optimized as part of a Canadian National Security Space Strategy (CNSSS).

4.1 The Canadian National Security Space Strategy

The proposed Canadian National Security Space Strategy (CNSSS) would become the foundation to mandate an active GAC and CAF partnership; combining tools to the extent of negotiating and contributing to the enforcement efforts for an international arms control treaty is ratified. The intent is to set the conditions for future deterrence by denial, specifically through the enforcement of regulatory regimes. The objectives of the CNSSS would have to include at a minimum a link within the US NSSS, areas of synergies with allies, and a national enforcement mechanism.

Previous disarmament and non-proliferation treaties have taken multiple years to ratify and take effect.⁷⁵ A stable, long-term, and apolitical⁷⁶ CNSSS would enable GAC

⁷⁴Canada. Dept. of National Defence and Canada. "Sapphire Satellite in Space." Government of Canada, 1 July, 2013.

⁷⁵Rose Gottemoeller. "Rebuilding American Support for the CTBT." *The Nonproliferation Review* 23, no. 3-4 (Jul 3, 2016). 363-364

to remain focused throughout the negotiation period and provide the CAF time to force develop verification capabilities. A non-partisan CNSSS would recognize that the Canadian best-interest is stability and long-term peace in space; thus, ensuring the current order. The proposed CNSSS would harness Canadian smart power, placing GAC at the forefront of a renewed disarmament treaty aimed at limiting the development and restricting the use of space weapons. Canadian diplomatic successes in support of mediating allies with similar end-states are indicative of GAC's capabilities to adapt strategies for promoting the peaceful use of outer space.⁷⁷

4.2 Strategic Impediments

The strong military alliance with the US through our contributions in the North American Aerospace Defence (NORAD) Command and the North Atlantic Treaty Organization (NATO) is of primordial importance to the CNSSS smart power approach. Sheehan finds that NATO has benefited the US via enforcing hegemonic influence both through international institutions and internal allied political cultures; ensuring a quasi-status quo.⁷⁸ The proposed CNSSS could appeal to the US self-interest of maintaining the status quo via allied cooperation; negating the current escalation through weaponization.⁷⁹ The negotiation for disarmament requires diplomatic diligence due to the Canadian reliance on collective and multidomain defence strategies. SSE states that

⁷⁶ Tobias Böhmelt. "International Treaty Ratification and Leader Turnover." *Foreign Policy Analysis* 15, no. 2 (Apr 1, 2019). 199

⁷⁷ Stephane Paquin, Kim Richard Nossal, and Stephane Roussel. *The Politics of Canadian Foreign Policy*, Fourth Edition Queen's Policy Studies Series. Queen's Policy Studies, 2015. 63-64

⁷⁸ Michael Sheehan. *The International Politics of Space*. 1. publ. ed. London [u.a.]: Routledge, 2007. 67

⁷⁹ Secure World Foundation. April, 2019. *Global Counterspace Capabilities: An Open Source Assessment*.

partnerships are the primary means of deterrence.⁸⁰ A consultation framework based on a collaborative strategy is thus preferable before implementation. The CAF has long established links with like-minded allies⁸¹ in space through the Combined Space Organization (CSpO).⁸² Linking Canadian strategic impediments with those of allies would be most effective at gaining the trust moving forward into negotiations for disarmament; gaining diplomatic momentum for the ratification of a treaty requires trust from all parties including competing nations.

Canadian diplomats are most well versed in negotiating multilaterally.⁸³ Canada should complement the US National Security Space Strategy (NSSS) due to the close economic, cultural, security, and geographical ties with the US.⁸⁴ Ultimately the implementation of a Canadian strategy would rely on American support and coordination. The primary objective of the NSSS is the stabilization of the space environment.⁸⁵ Sadeh finds that the US would benefit from other nations peacefully developing space capabilities; a lack of transparency during the development process could trigger an arms race.⁸⁶ The balance of power in space is heavily dominated by the US, Russia, China, and Europe; India has recently surfaced as a major actor.⁸⁷ The downfall of the Soviet Union

⁸⁰ Canada. Dept. of National Defence and Canada. *Strong, Secure, Engaged: Canada's Defence Policy*. Ottawa, Ont.: National Defence, 2017. 50

⁸¹ Australia, Canada, France, Germany, New Zealand, the United Kingdom and the United States

⁸² Royal Canadian Air Force. "Military Cooperation Concerning the Space Domain Vital to Nations' Interests." *Royal Canadian Air Force*, 10 April, 2019. 1

⁸³ Global Affairs Canada. *Departmental Results Report 2017–18*. Ottawa, ON: Government of Canada, 2019. 19

⁸⁴ Matthew Trudgen. "The Key to the Canada-United States Relationship: Homeland and Continental Defence in American Strategic Culture." *Canadian Foreign Policy Journal* 22, no. 2 (May 3, 2016). 190-191

⁸⁵ United States. Department of Defense and United States. Office of the Director of National Intelligence. *National Security Space Strategy: Unclassified Summary*. Washington, DC: 2011. 1-2

⁸⁶Eligar Sadeh. *Space Strategy in the 21st Century*. Space Power and Politics. London: Routledge Ltd, 2013.13

⁸⁷ Secure World Foundation. April, 2019. *Global Counterspace Capabilities: An Open Source Assessment*. vii-x

in the early 1990s enabled unimpeded hegemony for the US, which in turn developed force enablers in the space domain that are now embedded into the very fabric of American society and combat capabilities.⁸⁸ Threatening US space capabilities challenges the current balance of power.⁸⁹ Schweller, Levy, and Thompson find that when the status quo interested hegemon's balance of power is threatened, conflict is inevitable⁹⁰; a point of analysis developed from realism theory.⁹¹ A framework limiting the use or the outright elimination of the kinetic threats to space capabilities thus prevents an armed conflict or outright arms race based on the acceptance that the US, Russia, China, now India would keep the balance.

Canadian diplomats have showcased leadership in past negotiations by bridging the trust between great powers.⁹² A method for enhancing trust between potential adversaries is through transparency; confirmed through national technical means of verification capabilities.⁹³ Objects and tests in space are more easily verifiable due to the open nature of the space environment.⁹⁴ Lefebvre found that effective Space Situational Awareness (SSA) is the basis of every space deterrence strategy as a nation can monitor and

⁸⁸ Frank Rose. *Using Diplomacy to Advance the Long-Term Sustainability and Security of the Outer Space Environment*. Washington, Dc, 2016. 1

⁸⁹ Johnson-Freese, Joan. *Space Warfare in the 21st Century*. Cass Military Studies. London: Routledge Ltd - M.U.A, 2016. 23-24

⁹⁰ Randall Schweller. *Deadly Imbalances: Tripolarity and Hitler's Strategy of World Conquest*. New York: Columbia Univ. Press, 1998. 243; Levy, Jack S. and William R. Thompson. "Hegemonic Threats and Great-Power Balancing in Europe, 1495-1999." *Security Studies* 14, no. 1 (Jan 1, 2005). 29-30

⁹¹ Both approaches stem from the hegemonic stability theory and the power transition theory; advocating for a sudden shift and conflict when rebalancing world order.

⁹² Elizabeth Riddell-Dixon in *In the National Interest: Canadian Foreign Policy and the Department of Foreign Affairs and International Trade, 1909-2009*. Calgary: University of Calgary Press, 2011. 241-242

⁹³ Daniel McCarthy and Matthew Fluck. "The Concept of Transparency in International Relations: Towards a Critical Approach." *European Journal of International Relations* 23, no. 2 (Jun, 2017). 417-418

⁹⁴ J.C. Moltz in *Space Strategy in the 21st Century*. London: Routledge Ltd, 2013.

characterize the activities of others.⁹⁵ The Handbook for New Actors in Space, published by the Secure World Foundation, also finds that characterization activities can be used for communicating to others that their actions are being monitored.⁹⁶ The CAF has a long history of contributing to the US SSA capabilities⁹⁷, and more recently has undertaken measures to develop a Canadian. A potential obstacle to the collaboration between GAC and the CAF is the link and dependence on American technologies, components, and processing; the collected information is thus subject to US State Department oversight, control measures, and influence.⁹⁸ The current restrictive and over classification approach to space technologies and data would conceivably restrict the CAF and GAC's ability to communicate collected information with potential adversaries for negotiations and treaty control without first clearing with the US State Department. A potential solution to the impediment would be to develop segregated Canadian capabilities; contributors to US networks, but wholly controlled, developed and processed by Canadian means. Canadian diplomats would be sufficiently armed and well poised to exert influence by indirectly having the capability to target dissenters, increasing their legitimacy as mediators strategically.

4.3 Strategy Elements

The proposed CNSSS would take as an example the US NSSS; a portion of the strategic elements was presented, but more research is required to develop a complete plan. The main objective for the strategy remains the peaceful use of outer space defined

⁹⁵ Maxime Lefebvre. *La Politique Étrangère Américaine. Que Sais-Je?.* 3e éd. ed. Presses Universitaires de France, 2018. 19

⁹⁶ Christopher Johnson. *Secure World Foundation: Handbook for New Actors in Space: Secure World Foundation*, 2017. 94

⁹⁷ Andrew Godefroy. "The Intangible Defence: Canada's Militarization and Weaponization of Space." In *The Canadian Way of War: Serving the National Interest*, edited by Bernd Horn. Toronto: Dundurn Press Limited, 2006. 340

⁹⁸ *Arms Export Control Act 1976 (22 U.S.C. 2751, et. seq.). SS 2754*

as a stable space ecosystem. All four elements of national power contribute to the overall stability of the system and would conceivably be part of the overall strategy. The combination of diplomatic and military powers into a smart power push towards regulatory deterrence via an international arms control treaty requires a national mandate, political will, and the synchronization of limited resources via a WoG approach. Negotiations towards the international agreement require trust between parties, are enabled by public diplomacy tools, and enforced through verifiable means.

It is recommended that the Canadian government endorse a round of public consultations and evidence-based research to mandate GAC and the CAF to collaborate to meet strategic aims outlined in an apolitical Canadian National Security Space Strategy. The strategic synchronization of tools between GAC and CAF for the promotion of the peaceful use of outer space is outlined in SSE⁹⁹, but does not provide a framework nor specific objectives beyond the general statement. Nesting the CNSSS with allies, most notably with the US, remains the most significant strategic impediment due to our overarching security structure. The CAF and GAC can combine efforts towards a regulatory regime based on diplomatic leadership in international organizations such as the UNCOPUOS. GAC's relative power position throughout the negotiation phase would benefit from national and independent capabilities to verify; the CAF is best positioned to assist based on capabilities, experience and current mandates.

⁹⁹ Canada. Dept. of National Defence and Canada. *Strong, Secure, Engaged: Canada's Defence Policy*. Ottawa, Ont.: National Defence, 2017. 71

5. Conclusion

5.1 Argument

The space domain is increasingly congested, competitive and contested; Canada has a vested interest in maintaining the status quo in power relationships seeing as our most important ally has hegemonic power over the domain. The recent threats posed by China¹⁰⁰, Russia¹⁰¹ and India¹⁰² to the base of western powers mobilizes medium powers such as Canada to act to deter such actions; promoting the peaceful international use of space. Canadian space power projection is limited, a whole-of-government approach, synergizing capabilities and resources across multiple departments is a proven method to focus efforts. Combining GAC and the CAF tools enables Canadian diplomats in their mandates to exert influence internationally. Under the umbrella of a proposed apolitical Canadian National Security Space Strategy, GAC and the CAF can advance Canadian interests via established channels such as UNCOPUOS; coordinating efforts with US and allied national interests.

5.2 Case for Apolitical Strategy

The CAF is mandated to assist GAC in promoting the peaceful use of outer space¹⁰³, but GAC has not deployed high-level teams to diplomatically push the treaty option as it had in similar past situations. McKercher found that Canadian long-term strategic efforts were often hindered by politically charged formulation, primarily related

¹⁰⁰ Chapman, Bert. "Chinese Military Space Power: U.S. Department of Defense Annual Reports." *Astropolitics* 14, no. 1 (Jan 2, 2016). 5

¹⁰¹ Secure World Foundation. April, 2019. *Global Counterspace Capabilities: An Open Source Assessment*. ix

¹⁰² Krishna, Rahul and Aradhya Shandilya. "Mitigating the Threat in Space: Chinese Military Space Capability and India's Response." *National Security, Vivekananda International Foundation* 1, (2019). 126-127

¹⁰³ Canada. Dept. of National Defence and Canada. *Strong, Secure, Engaged: Canada's Defence Policy*. Ottawa, Ont.: National Defence, 2017. 71

to defence.¹⁰⁴ The average time to negotiate an international arms control treaty that would be effective at regulating space weapons extends beyond a single Canadian House of Commons mandate. The extent to which the CAF and GAC can achieve long-term results are thus dependent on apolitical decision-making. The SSE framework aimed explicitly in some circles as non-partisan policy; the 2019 federal elections will showcase the survivability of long-term strategies, provide lessons learned for the proposed CNSSS. One area common throughout all major Canadian party platforms is the exertion of national influence. Preparing and planning for diplomatic engagements towards weapons control is thus a conservative step without overstepping.

5.3 CAF Recommendations – Repurposing Verification

Supporting diplomatic engagements both during negotiations and enforcement phases requires smart power. One of the most critical steps in ensuring the legitimacy of a treaty is the verification mechanisms and associated capabilities. The CAF has historically operated weapons verification and space surveillance systems; a mandates national collaboration between the CAF and GAC provides flexible deterrent options during the negotiation and the enforcement phases of an arms control treaty. Current space surveillance systems are reliant on US processing and tools, thus subject to direct control and oversight over the data. Collaboration between GAC and the CAF on research and development activities to shape Canadian national technical means, independent of allied processing is an option that increases GAC's negotiation base.

5.4 Future Research

¹⁰⁴ B.J.C. McKercher. *Routledge Handbook of Diplomacy and Statecraft*. Florence: Routledge Ltd - M.U.A., 2012. doi:10.4324/9780203807804.

Areas of future research stemming from this study include the following. The specific national technical means to verify space weapons. The CAF through efforts at the Assistant Deputy Minister of Science and Technology has researched and developed prototypes of similar systems. Researching other elements of the proposed CNSSS; a strategy that holds solely on the negotiation of a single treaty is bound to fail in today's security environment ripe with gray zone activities. Determining the links with the cyber domain deterrence efforts; space assets are entirely reliant on data, signals, and processing which occurs in the cyber domain.

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