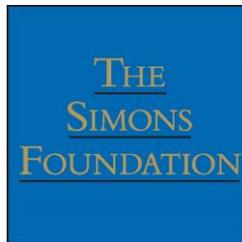


Graduate Research Awards for Disarmament, Arms Control and Non-Proliferation 2012 – 2013 DEBATES



A Joint Programme of



and

**The International Security Research and Outreach Programme (ISROP)
of Foreign Affairs and International Trade Canada (DFAIT)***

**now Foreign Affairs, Trade and Development Canada (DFATD)*

**POSITION PAPERS PRESENTED BY RECIPIENTS OF THE 2012-2013
GRADUATE RESEARCH AWARDS FOR DISARMAMENT, ARMS CONTROL AND NON-PROLIFERATION**

February 22, 2013

Foreign Affairs and International Trade Canada (DFAIT)
John G. Diefenbaker Building, Ottawa, Canada

Preface

The *Graduate Research Awards for Disarmament, Arms Control and Non-proliferation (GRA)* programme was initiated by Dr. Jennifer Allen Simons, President of The Simons Foundation, in partnership with the International Security Research and Outreach Programme (ISROP) of Foreign Affairs and International Trade Canada (DFAIT) in 2003. The primary objective of the Awards is to enhance Canadian graduate-level scholarship on non-proliferation, arms control and disarmament (NACD) issues.

Since its inception, the Graduate Research Awards programme has provided over \$215,000.00 in scholarships to Canadian graduate students working on policy-relevant NACD issues and has helped to encourage a new generation of young scholars dedicated to further expanding their knowledge and expertise on these critical issues.

The programme originally offered three Doctoral Research Awards of \$5,000.00 and four Master's Research Awards of \$2,500.00 each year to support research, writing and fieldwork leading to the completion of a major research paper or dissertation proposal on an issue related to disarmament, arms control and non-proliferation. The Simons Foundation offered to double the funding available for the 2010-2011 competition in order to increase the number of students able to participate, which led to ISROP developing a new and innovative format for the GRA programme and consultations held at DFAIT headquarters in Ottawa at the conclusion of each annual competition. The format of the programme was restructured to consist of a series of one-on-one debates on timely issues designated by the programme organizers and assigned to the applicants.

The live debate format has since been adopted and, this year, candidates presented arguments in favour and against the following topics:

- ***Nuclear Non-Proliferation and Disarmament:*** “Be it resolved that given the recent progress that has been made in the advancement of nuclear disarmament, the international community needs to focus greater attention on putting in place nuclear non-proliferation measures to address proliferation challenges, including by non-state actors and states of proliferation concern.”
- ***Commercialization of Space:*** “Be it resolved that the commercialization of space will provide a net benefit to space security, in terms of the secure and sustainable access to, and uses of, outer space, and freedom from space-based and space-enabled threats.”
- ***Membership in the Nuclear Suppliers Group:*** “Be it resolved that the objectives of the Nuclear Suppliers Group (NSG) would be best achieved by expanding the Group to include the states which remain outside of the Nuclear Non-Proliferation Treaty.”
- ***Transparency and Freedom of Information for Dual-Use Research:*** “Be it resolved that proliferation and security concerns should not trump transparency and freedom of information when publishing dual-use biological, chemical, or nuclear research, when there are likely to be positive benefits for humankind arising from such research.” (e.g. recent studies with biological agents that could have both positive and negative public health implications.)

Following an initial review of applications, 13 candidates were short-listed for further consideration and assigned a position corresponding to one of the designated debate topics. Applicants were then required to research and write, individually and independently, a 1,000 – 1,500 word position paper arguing their assigned position on the subject. The eight students who submitted the strongest position papers overall, as determined by the Expert Review Panel, were selected to receive a Graduate Research Award of \$3,000 and present their argument in person at the GRA Debates held at DFAIT in Ottawa on February 22, 2013. Additional monetary awards of \$1,000 were provided to the students deemed to have made the most effective arguments in support of their assigned position during each of the four debates.

Officials of the International Security and Intelligence Bureau of Foreign Affairs and International Trade Canada (DFAIT) attended the debates providing a unique opportunity for exchange among departmental officials, Canadian opinion-leaders and the next generation of experts in the NACD field. The GRA Debates concluded with the awards presentation and a working lunch in honour of the GRA recipients hosted by DFAIT.

We wish to recognize Jasmin Cheung-Gertler of DFAIT and Elaine Hynes of The Simons Foundation for their work to coordinate and execute the programme again this year. Our appreciation is also extended to the members of this year's Expert Review Panel (listed as follows) who assessed the initial applications and the position papers submitted by the candidates and provided their recommendations on the students who were chosen to receive an award this year: Professor Trevor Findlay, The Norman Paterson School of International Affairs, Carleton University, and the Belfer Center for Science and International Affairs, Harvard Kennedy School, Harvard University; Professor Jeremy Littlewood, The Norman Paterson School of International Affairs, Carleton University; and Professor Stéphane Roussel, Ecole nationale d'Administration publique (ENAP).

We are pleased to acknowledge the 2012-2013 recipients of the Graduate Research Awards who each received a cash award of \$3,000.00 from The Simons Foundation, and to further congratulate Saira Bano, Alexandre Léger, Elizabeth Silber, and Nancy Teeple who received an additional prize of \$1,000.00 for their exceptional performance at the GRA Debates in Ottawa.

- Saira Bano, University of Calgary
- Anton Bezglasnyy, University of British Columbia
- Brent Gerchicoff, Concordia University
- Susan Khazaeli, University of Ottawa
- Alexandre Léger, Concordia University
- Elizabeth Silber, University of Western Ontario
- Nancy Teeple, Simon Fraser University
- Matthew Wiseman, Wilfrid Laurier University

The 2013-2014 Graduate Research Awards competition will be launched in Fall 2013 and we look forward to welcoming the 2013-2014 Graduate Research Award recipients to Ottawa for the next round of the GRA Debates in early 2014.

Jennifer Allen Simons, C.M., Ph.D., LL.D.
Founder and President
The Simons Foundation

Isabelle Roy
Director, Non-Proliferation and Disarmament Division
Foreign Affairs and International Trade Canada (DFAIT)



Some of the 2012-2013 Graduate Research Award recipients with Dr. Jennifer Allen Simons, President of The Simons Foundation, and representatives of The International Security Research and Outreach Programme (ISROP) of DFAIT at the GRA Debates in Ottawa. (Photo credit: A. Bezglasnyy)

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Opening Remarks

Isabelle Roy

Director, Non-Proliferation and Disarmament Division

Foreign Affairs and International Trade Canada (DFAIT)

Isabelle Roy est directrice pour la non-prolifération et le désarmement au Ministère des Affaires étrangères et du Commerce international du Canada depuis septembre 2011. Elle était auparavant directrice des relations avec l'Afrique occidentale et centrale (2008-2011), et ambassadrice du Canada au Mali (2005-2008). Elle a aussi occupé des postes à l'ambassade du Canada au Cameroun (1991-1993) ainsi qu'en France (1995-2003). À Paris (France), elle a servi au sein de l'ambassade du Canada en France (1997-2001), à la Représentation permanente du Canada auprès de l'Organisation de coopération et de développement économiques (2001-2003), ainsi que dans le cadre d'un échange avec le ministère français des Affaires étrangères, après avoir été détachée à l'École nationale d'administration (ÉNA) à Paris (1995-1997). À l'Administration centrale, elle a travaillé au sein de la Direction des relations avec l'Afrique occidentale et centrale en tant que directrice adjointe, de la Direction de l'Europe de l'Ouest, de la Direction des relations économiques et financières et de la Direction des affaires\pard plain de la Francophonie. En 2001, M^{me} Roy a été lauréate du Prix des agents du service extérieur canadiens. Avant de se joindre au service extérieur canadien, M^{me} Roy a assumé les fonctions de consultante en économie pour la Banque mondiale (Washington), et de professeure de mathématiques au Gabon. Elle possède une maîtrise en économie et un baccalauréat en mathématique de l'Université de Montréal (Canada). Elle détient également un diplôme d'administration publique de l'ÉNA, à Paris (France).

Au nom de la Direction de la non-prolifération et du désarmement, je vous souhaite la bienvenue aux Ministère des Affaires étrangères et du Commerce international du Canada pour cette troisième édition des Débats des lauréats des Bourses de recherche au niveau des études supérieures.

Nous sommes ravis de tous vous recevoir pour cet événement inédit, qui, comme mes collègues en conviendront, sera très certainement à la fois dynamique et informatif.

We are privileged to welcome to the department the recipients of the Graduate Research Awards for Disarmament, Arms Control and Non-Proliferation in 2012-2013.

I understand that this year's award winners represent Canadian universities from almost coast-to-coast, including the University of British Columbia and Simon Fraser University, the University of Calgary, and - moving East, Concordia University and Wilfrid Laurier University, and our own University of Ottawa. It is appropriate, therefore that we are also convening today in rooms named for Canadian provinces in the West and the East.

Our congratulations on your awards!

The Graduate Research Awards competition has a long history of engaging young scholars and future experts in the NACD field, and the department has been proud to be a part of it since 2003, in cooperation with The Simons Foundation.

Thank you Dr. Simons, for your continuing leadership and support to the Program, and for being with us today. We are looking forward to your remarks, this morning.

Le programme d'aujourd'hui mettra à l'honneur un format novateur pour discuter de ces importantes questions stratégiques dans le cadre de quatre débats.

As you may know, this is the third consecutive year that we have held the GRA event as a series of debates, which we have found to be a very useful and innovative format to explore many of the current issues on the international Non-Proliferation, Arms Control and Disarmament (NACD) agenda.

The four debate subjects cover only a portion of the bigger NACD picture we must face on a daily basis. Currently, WMD threats exist from Iran, North Korea, and Syria, for which we must remain vigilant.

Progress on nuclear non-proliferation and disarmament will be discussed in depth at the second Preparatory Committee meeting for the 2015 Review Conference of the Nuclear Non-Proliferation Treaty in Geneva this April. Following up on Canada's UN General Assembly resolution adopted last fall, the UN has started to seek views from Member States on a Group of Governmental Experts to be convened in 2014 and 2015 to discuss aspects of a Fissile Material Cut-off Treaty.

This is also the year of the Third Review Conference of the Chemical Weapons Convention, which will focus on completing the destruction of declared chemical weapons, prevention of their re-emergence, and the future direction of the Organisation for the Prohibition of Chemical Weapons (OPCW) in the post-destruction era.

Final negotiations on the Arms Trade Treaty, which is intended to set global standards for the export of conventional arms, will take place from March 18-28 at the UN in New York.

So, these, in brief are today's "debates".

A few final words on the format, and logistics.

Each debate will be 35 minutes, followed by 10 minutes of discussion.

Immediately following this plenary at 09:30, will be the first round of concurrent debates. These will focus on Nuclear Non-Proliferation and Disarmament issues and the Commercialization of Space, and will take place here, and next door in the Nova Scotia room, respectively.

Nuclear non-proliferation and disarmament, with the peaceful uses of nuclear energy, form the pillars of the Nuclear Non-Proliferation Treaty (NPT).

These principles remain the bedrock on which the international regime is built.

Since the Treaty's creation, however, there has been a constant tension between advocates for concrete action on disarmament and advocates for further measures to strengthen non-proliferation, with each side arguing that the other is not doing enough.

Today's debate will consider whether, in light of progress to date in the advancement of nuclear disarmament, the international community should focus greater attention to address proliferation challenges from both state and non-state actors.

Taking place next door will be a debate on the implications of the role of commerce and private sector actors, in the space domain.

The commercial space sector plays an increasingly important role in the provision of launch, communications, and imagery services.

In addition, the sector's relationships with government, civil, and military programs, make this growing sector an important factor of space security. Today's debate on the commercialization of space will explore the extent to which the commercial space sector's impact on space security is beneficial, or the source of additional challenges.

After a short break for refreshments at 10:15, the second round of debates will begin at 10:30.

These will address debates associated with members in the Nuclear Suppliers Group and approaches to dual-use research, and freedom of information.

Canada currently has Nuclear Cooperation Agreements in place with 45 countries and organizations to permit nuclear trade. The NSG plays a significant role in ensuring that this nuclear trade for peaceful purposes does not contribute to the proliferation of nuclear weapons or other nuclear explosive devices. The NSG's Guidelines for the transfer of nuclear items and dual-use equipment are implemented by Canada in our stringent export control system. Today's debate will explore the extent to which the inclusion of non-NPT signatories in the NSG would strengthen or weaken international non-proliferation efforts.

In the Nova Scotia room, we will debate the implications of what we call "dual-use" research.

Sciences have been rapidly advancing, giving rise to new benefits for humanity but also new risks. This dual-use research has led to certain controversies in recent years between international scientific and security communities, which assume differing approaches to balancing security and academic freedom and transparency, with respect to these novel threats.

Today's debate will explore these issues in a fruitful and thought-provoking manner.

We will break at 11:15, and a few of us will then have the difficult job of determining the four individual "winners" of the debates who will be announced during the closing session and awards presentation, at 11:30am.

So that, in brief, is today's program, which is a Chatham House discussion operating on a non-attribution basis.

As you can see, we will have a full day – so without any further ado, it is my privilege to introduce to you **Dr. Jennifer Simons**, who will deliver remarks.

Jennifer Allen Simons is the President of The Simons Foundation, based in Vancouver, Canada.

Through the Foundation's work, Dr. Simons has pioneered research, advocacy and action in advancing nuclear disarmament, peace, human rights and global co-operation.

In 2003, the Graduate Research Awards for Disarmament, Arms Control and Non-Proliferation was initiated by Dr. Simons, in partnership with the Department's International Security Research and Outreach Programme.

Since then, scholarships have been provided annually by The Foundation to Canadian post-graduate students pursuing Masters and Doctoral studies on arms control and disarmament issues.

Dr. Simons is a Member of the Order of Canada.

Sans plus tarder, il me fait plaisir de donner la parole au Dr. Simons.

Keynote Address

Jennifer Allen Simons, C.M., Ph.D., LL.D.
Founder and President
The Simons Foundation



Dr. Jennifer Allen Simons is Founder and President of The Simons Foundation, a private foundation located in Vancouver, Canada, with a mission to advance positive change through education in peace, disarmament, international law and human security. As an award-winning educator, thought leader and policy advisor, Dr. Simons and her foundation have supported major international initiatives, providing critical financial support, convening international leaders in policy dialogue, and driving academic research. Her partnerships with other NGOs, academic institutions, the Government of Canada, international governments, and the United Nations have made her an important and effective actor in the effort to address violence and war. Dr. Simons was appointed to the Order of Canada for her contributions to the promotion of peace and disarmament and, among her many other awards and acknowledgements, she received the Queen Elizabeth II Golden Jubilee Medal in 2002 and the Queen's Diamond Jubilee Medal in 2012.

Good Morning,

It is a pleasure to be here, participating again, in the annual Graduate Research Awards seminar, a joint programme of the International Security Research and Outreach Programme of the Department of Foreign Affairs and International Trade, and The Simons Foundation. We believe this is a worthwhile contribution to Disarmament Education and as well, an invaluable agent for positive change in the world.

It is gratifying that, even though the government departments have undergone budget cuts, the Department of Foreign Affairs values the programme and is willing to continue to partner with us despite these cuts.

The programme is important to the work of both our organizations for it contributes to the development of a pool of specialist expertise on Canadian foreign policy, specifically related to disarmament. It furthers disarmament education in Canada and thus plays a part in building a community of disarmament scholars.

The programme also provides the students with the opportunity to contribute to Canada's foreign policy, to benefit financially, and perhaps, opens avenues for future career choices.

It is a unique programme! And in early December of last year, I was invited to brief the Australian Department of Foreign Affairs on the Prospects for Nuclear Disarmament following the U.S. Election, and I mentioned this programme and our partnership. The Chair of the meeting expressed much interest and I promised him full information which I have provided. I imagine they would like such a programme there. So Canada leads in this!

Jasmin, I want to commend you for your continuing excellent organization of these events. And though she is not present, I also commend Elaine Hynes from The Simons Foundation who, with Jasmin Cheung-Gertler develops, organizes and manages the entire process.

I would like to congratulate the recipients of this year's Awards. I am looking forward to lively debate and I wish all you debaters every success.

Three of debates are related to nuclear disarmament issues. Nuclear disarmament is the major focus of the work of The Simons Foundation, so today I would like to speak about the prospects of furthering nuclear disarmament following the re-election of President Barack Obama.

There was radical shift in the disarmament policy of the United States in 2009 with President Obama's election, and in his historic speech in Prague on April 5th, 2009, he committed to a world free of nuclear weapons. The prospects for nuclear disarmament had not looked so bright since the 2000 NPT Review Conference - and in fact were even brighter - for this was the first President of the United States to commit to the elimination of nuclear weapons.

The following September President Obama chaired a meeting of the UN Security Council. He oversaw the adoption of Security Council Resolution 1887 **committing** the Security Council to work towards a world without nuclear weapons, and **endorsing** a broad framework of actions to reduce global nuclear dangers. This was the first action by the Security Council on this issue since the 1990s. As well, it was because of the efforts of the Obama Administration - determined that the 2010 NPT Review Conference would not fail - that the Conference was able to adopt a final document.

Yet, despite these actions and UN Secretary-General, Ban Ki-Moon's continuing endeavours, we have not seen much action in the United Nations since then. The Conference on Disarmament has still not agreed on a programme of work, so there has been no action on securing a Fissile Materials Cut-off Treaty. The IAEA has not received essential support including funding; the United States has not ratified the CTBT; the nuclear weapons states continue to upgrade the capacity of their nuclear weapons, with the British planning an upgrade of their Trident to last another 80 years.

However, the numbers of nuclear weapons **are** coming down. The United States and Russia have made progress in cutting their arsenals through the new START Treaty.

President Obama has been criticized for not undertaking more action during his first term. However, there was no possibility of achieving Congress ratification of the CTBT because the Republicans seemed determined to deny passage of any law promoted by the White House, even to point of voting against issues which they had previously endorsed.

The prospects for furthering nuclear disarmament are much greater in this second term. Because of the increased Democrat majority in the United States Senate with the addition of three new seats - though still not filibuster proof - it is very possible that the President will bring forward the CTBT for ratification.

There was not much visible action from the White House on this issue during President Obama's first term. He was, however, developing his plan for reductions of the U.S. nuclear arsenal requesting studies and recommendations, from the Pentagon and the State Department, on the minimum numbers of weapons necessary to maintain national security.

Dr. Bruce Blair, Co-Founder of Global Zero, former nuclear launch officer and pre-eminent expert on de-alerting nuclear weapons, is a member of the US Secretary of State's International Security Advisory Board. And he was tasked by the Board to write a plan to present to Secretary Hillary Clinton to cut nuclear weapons to 900 – that is 450 deployed and 450 in storage. It seems though, from what we are hearing now, the number will be around one thousand to eleven hundred.

President Obama has also built a national security team of like-minded people – Chuck Hagel, Secretary of Defence (when his position is finally confirmed!) is a Principal Signatory of Global Zero; General Cartwright, a close advisor to Obama on military affairs, is also a prominent member of Global Zero. Denis McDonough, Chief of Staff and Tom Donilon, National Security Advisor are known to be sympathetic to the issue.

And eleven days after President Obama's Inauguration, Vice-President Joe Biden was at the Munich Security Conference.

And in a side meeting with Russian Foreign Minister Lavrov, discussed the start of negotiations for further cuts to the US and Russia's nuclear arsenals. Last week, Rose Gottemoeller, Under Secretary of State for Arms Control and Negotiator of the new START Treaty, was in Moscow and said to have proposed launching negotiations for these further reductions of the US and Russian arsenals. Her visit is followed by National Security Advisor Tom Donilon to present some proposals and to lay the groundwork for future talks.

There **are** obstacles to be overcome - Missile Defence, Conventional Forces Treaty, Russian concerns about the superiority of the US's conventional weapons, and the issue of tactical nuclear weapons on European soil, and space-based weapons.

However, the Russian Foreign Ministry used the Global Zero Moscow Conference in November – 2 days after President Obama was re-elected – to make several statements which suggest that Russia is willing to engage. Deputy Foreign Minister Sergei Ryabkov said that Russia wants to join the United States in discussions on tactical nuclear weapons, specifically referring to the US weapons based in Europe. **What is new is this** is that Russia has traditionally demanded that the U.S. withdraw all its tactical weapons from Europe as a **precondition** to negotiations on Russian tactical weapons.

On the missile defence issue, Russia has asked for “legally-binding guarantees that [the United States'] plans for a European defence system would not be directed against Russia.”¹ The United States has refused Russia's request to provide these guarantees because the guarantees require Congressional approval and it is unlikely that it would be possible to achieve. However, the President famously said to Russian Prime Minister Medvedev - before an open microphone - that he would have more flexibility on missile defence after the election. At the November Global Zero Conference, Russian officials called on Obama “to remember his statement.” And by the end of November, the Obama Administration had responded affirmatively their willingness to work on a deal on European Missile Defence.

President Obama will, no doubt, encounter difficulties and setbacks in fulfilling his commitments.

If he cannot get support from the required two-thirds of the Senate, it is thought that his Administration will negotiate a legally-binding agreement in an addendum to the 2010 START

Treaty. He may also engage with Russia in this agreement for the two countries to remove nuclear weapons from high alert status.

Though he has said nuclear weapons reductions will not be unilateral he **does** have the power under the United States Constitution to make unilateral reductions. In fact, the majority of United States nuclear stockpile reductions over the past 25 years have been by unilateral decision – not by treaties.

Contingent up the success of the Biden, Gottemoeller and Donilon discussions with the Russians for tandem reductions of their arsenals – and it is said that the Russians are receptive – the United States and Russia then will proceed with further cuts, reducing the stockpiles to the level at which the other nuclear weapons states are willing to engage in multilateral negotiations, to continue the downward process to zero.

My view is that both countries will cooperate in continuing to cut their arsenals to the point in which the other nuclear weapons states will enter into multi-lateral negotiations. Global Zero estimates the point in which other states will join in these negotiations will be when 900 total weapons remain on both sides – an 80% reduction from current levels.

Russia is especially keen for the United Kingdom and France to enter into multilateral negotiations; and both Russia and the United States want China to join. In October 30th of last year, Russian Deputy Foreign Minister, Sergei Ryabkov said that “The disarmament process must be multilateral [With regard to] the nuclear disarmament talks, a multilateral approach is an integral part of strengthening strategic stability”²

Of course, there are other obstacles to overcome, for example, North Korea’s nuclear test and Iran’s intransigence. However, these **need not** affect reductions of nuclear arsenals. In fact, politically, it **makes it imperative** that the nuclear weapons states continue to reduce their arsenals to an eventual zero in order to remove the double standard, because as Iran’s President Ahmadinejad said to the US: **“if you have them, we want them, if they are so good, we want them too.”**

North Korea does not have ICBM capability so it is no immediate threat to the US. However, there is the danger of **furthering proliferation**. North Korea is a threat to Japan and to South Korea and this week threatened South Korea with annihilation. North Korea’s actions may cause these states to consider acquisition of nuclear weapons - thus destabilizing North-East Asia.

North Korea has a record of selling and sharing nuclear technology and could provide Iran with valuable information on its latest test and thus make it possible for Iran to move forward with its goal for nuclear weapons (if this is its goal which is questionable) without the need to undertake a test of its own.

Furthermore, the advantages of nuclear weapons possession are reinforced by North Korea’s withdrawal from the NPT with impunity, by its continuing nuclear explosion and missile tests; and by the contrasting consequences to former nuclear weapons acquisition “rogues”, Iraq and Libya.

China can be a very important actor in constraining the North Korean regime. Though China has, in the past, supported North Korea, China has now expressed its dissatisfaction and opposition to North Korea’s actions. It is important now for Western powers and Russia to liaise with China and encourage it to apply pressure to North Korea to abide by its commitments and return to the NPT.

Finally, I would like to talk about the importance of civil society in making any real headway in nuclear disarmament. Civil society - constituencies - hold the key to progress on these issues.

Leadership in democratic states comes not from the top, but rather in response to the citizens, the voters, the grassroots.

We are already seeing the beginnings of a campaign-style in President Obama's second term – reaching out to the public - in order to pass into law the policies that he presented in his State of the Union address.

So while President Obama can make this commitment to a nuclear weapon-free world, he needs the voting public behind him in the United States, and all the nuclear weapons states - in order to carry it through. He needs the support of the European Union. He needs the support of all the Non-Aligned countries and those countries protected by the US nuclear umbrella – Canada, Japan, Australia, South Korea and so on.

With politically difficult issues - like nuclear disarmament - that hinge, in the United States on the defence industry which underpins the U.S. economy - the only possible hope for resolution of the issue - for change - is for collective action of an aroused public.

The major achievements in the past were the results of mass civil society protests – predominantly in the form of marches - which took place in many parts of the world - and have been very effective in moving the nuclear disarmament agenda forward. In 1961, Women Strike for Peace, the largest national women's peace march of the century influenced President Kennedy to call for a ban on atmospheric testing. He said he saw the mass protest from his window.

In the 1980s one million marched in New York. And five million Europeans demonstrated against the planned deployment of United States intermediate range nuclear missiles on their territories.³

And President Reagan was said, by George Schultz, to be stunned by this, and decided he had to propose nuclear disarmament. Soviet President Gorbachev, influenced by both the Western peace movements and the Chernobyl disaster, and possibly for economic reasons as well, willingly joined with Reagan and the process began of reducing their nuclear arsenals.

Since the end of the Cold War and specifically since 2001, the grassroots movement has essentially disappeared. Most non-governmental organizations and their networks have lost touch with the people and the issue of nuclear disarmament has stagnated. As well, all of the large US Foundations ceased to support nuclear disarmament. Yet the dangers remain, and are in fact, heightened.

The Simons Foundation's support for the issue has never wavered and it has become the pre-eminent foundation funding in this area. We are currently primarily focusing primarily on two differing streams of activity in our nuclear disarmament work.

The Simons Foundation's primary path to achievement of a nuclear free world is through Global Zero which has a step-by-step plan for the phased, verifiable, multilateral elimination of all nuclear weapons by 2030, accompanied by a legally binding agreement (a ban) which would be negotiated in Phase III of the plan - 2019-2023.

Global Zero activities combine policy development and direct dialogue with governments - with public outreach, including media, online and grassroots initiatives to make the elimination of nuclear weapons an urgent global imperative.

Global Zero has produced an acclaimed documentary film, *Countdown to Zero* and is building an international student movement, and to date, has more than 150 campus chapters in twenty countries. Plans are underway for a Global Zero National Canadian Conference to be held this at York University.

Global Zero has been extremely successful to date. Its name has become shorthand for the elimination of nuclear weapons. It has received extraordinary media coverage and as I mentioned earlier, the government of Russia used the recent Global Zero Moscow conference as the forum to presents its several messages to the United States.

The Simons Foundation's second path is through research, education and dissemination of knowledge on the humanitarian aspects of nuclear weapons – or better said their inhumane nature.

The International Red Cross presented a ground-breaking statement to the UN on this issue. The International Physicians for the Prevention of Nuclear War with the ICAN Campaign are actively educating the public on the dangers to human health, human life and the environment. And The Simons Foundation/IALANA Vancouver Declaration, *Law's Imperative for the Urgent Achievement of a Nuclear-Weapon-Free World*, have all played a strong role in bringing humanitarian aspects of nuclear dangers to the forefront. Civil society is now coalescing around this issue, and early next month (March 4-5th) the Government of Norway is hosting an international conference on the humanitarian impact of nuclear weapons.

The Government of Mexico has entered a proposed Amendment to the Rome Statute of the International Criminal Court to criminalize the use of nuclear weapons in the context of armed conflict as a war crime. If accepted, individuals at all levels who are responsible for the use of a nuclear weapon will be prosecuted for committing a crime against humanity. That is if anyone has survived!

This is an important and essential step. However, The Simons Foundation's aim in furthering research and discussion in this area is to take the issue away from war law - International Humanitarian Law – and focus on nuclear dangers in times of peace – possession of nuclear weapons. For reason that use of a nuclear weapon is actually already illegal under war law - International Humanitarian Law because of the indiscriminate nature of the weapon and because its “blast, heat and radiation effects are uncontrollable in space and time.”⁴ To use a nuclear weapon would constitute a crime against humanity. However, **possession** is not illegal. The Simons Foundation goal is to have International Law prohibit possession of nuclear weapons.

Possession of nuclear weapons in peace-time, poses great dangers. There is the danger of accidental or malicious launch because the weapons are targeted and on high-alert status. Moreover, there is the danger of a cyber attack. Hackers – on a regular basis - attempt to penetrate the Pentagon and the nuclear weapons command and control systems –a very frightening prospect - because the command and control system is highly automated. There is the danger of nuclear accidents during production, storage and transport. And as well, there is the potential for acquisition by terrorists.

It is time now to move forcefully on the Nuclear Weapons Convention prohibiting the development, production, testing, deployment, stockpiling, transfers and threat of use of nuclear weapons and for their complete elimination – to zero.

I do hope that the Government of Canada returns to its previous more forward-looking and active stance on nuclear *disarmament*; moves **from its abstention to support** for this Convention and undertakes action to bring about its entry into force. Support for a Convention banning nuclear weapons is not inconsistent with NATO Nuclear policy – to quote - *NATO is committed to the goal of creating the conditions for a world without nuclear weapons. As long as nuclear weapons exist, NATO will remain a nuclear alliance.*

This does not prohibit any NATO state from supporting a resolution in the United Nations to ban nuclear weapons. This action is a necessary step in *creating the conditions for a world without nuclear weapons.*

In summary: with President Obama leading on this issue, the time is ripe for support from all states because of the recognition that nuclear weapons have no utility as war-fighting weapons, they are inhumane, and, in fact, create more insecurity for states than security. It is past time for a mass public education programme on nuclear weapons and their dangers. It is time for a renewal of action by governments and the collective action on the part of civil society, last seen in 1980s.

Thank you very much, and I am looking forward to the debates.

¹ Ria Novosti, May 26/11

² www.nti.rsvpl.com/gsn/articles October 30,2012

³ Laurence Wittner

⁴ Vancouver Declaration, 2011, Annex: *The Law of Nuclear Weapons*

Debate 1

Nuclear Non-Proliferation and Disarmament

“Be it resolved that given the recent progress that has been made in the advancement of nuclear disarmament, the international community needs to focus greater attention on putting in place nuclear non-proliferation measures to address proliferation challenges, including by non-state actors and states of proliferation concern.”

Assigned Position: IN FAVOUR

Argument presented by Alexandre Léger

Alexandre Léger is a graduate student in the Masters in Public Policy and Public Administration, at Concordia University, in Montreal. His primary focus is defence policy; recently focusing on Chinese security policy. He graduated from Concordia with BA in Political Science and a Minor in Human Rights. From 2009 to 2011, Alexandre was member of the Conseil permanent de la jeunesse du Québec, advising the provincial government on youth issues. He has been involved with Junior Achievements Québec for seven years now. As a member of the Canadian Forces Reserves, Alexandre is a bagpiper in the Black Watch (Royal Highland Regiment) of Canada and is posted during the summer season to the Ceremonial Guard, in Ottawa. Alexandre has represented the Canadian Forces as far as Los Angeles, California, and Kingston, Jamaica.



I. OPENING STATEMENT

The post-cold war era ushered in a new global non-proliferation regime, which includes institutions such as the Nuclear Non-Proliferation Treaty (NPT), the Comprehensive Test Ban Treaty (CTBT), the NPT Exporters Committee and Nuclear-weapons-free zones (NZWFZs).¹ Moreover, at the Lisbon Summit in 2010, while recognizing the importance of nuclear weapons to security, NATO now vows to reduce its arsenal of tactical nuclear weapons, deployed across Europe, if matched by Russia.² From the Canadian perspective, Canada is part of a program to dismantle Soviet era nuclear submarines.³

However, the post-911 world is not a bi-polar world, but one with nine nuclear-weapon states, with more bidding to join the nuclear club.⁴ The dynamics of the nuclear game have been altered and new issues have risen. The identification of new threats by the international community formally took place at the 2002 G8 Summit, in Kananaskis, while under Canadian presidency.⁵ Now the world’s most dangerous nuclear threats are from terrorist organisations, such as Al-Qaeda, and potential new nuclear powers, like Iran.⁶

By acknowledging the successes to meet traditional proliferation concerns and the new dangers of a contemporary nuclear world, the global non-proliferation regime must now put into place “action-oriented”⁷ measures to react to the new realities. There are three main issues at hand, which must be addressed by new measures: the threat of nuclear terrorism, the dangers of state level proliferation and the overlooked matter of delivery methods.

II. MAIN ARGUMENTS

The Threat of Nuclear Terrorism

As non-state actors, terrorist organisations represent not only a physical threat to peace, but a threat to the theoretical understanding of the bomb. While nuclear deterrence is hailed as responsible for peace, the nature of terrorist organisations circumvents the rules of rational deterrence theory. Most importantly, they cannot be deterred by threats of retaliation.⁸ Moreover, this threat requires us to rethink the nature of nuclear warfare, drawing away from counter-force and counter-strike tactics and doctrine. Terror groups do not require large weapon programs since radioactive material, however small, can be employed to build low-tech dirty bombs. Highlighting this reality, Interpol has received almost 3,000 cases of such threats. Further, this is not limited to the N-States but extends to 119 countries.⁹

Non-state actors have a menacing ability to gain access to nuclear weapons expertise. For example, former Pakistani nuclear official, A.Q. Khan has been identified by the CIA as having set up a network, providing expertise and material to Libya, North Korea and Iran. The network has also been reported to have been in contact with Al-Qaeda.¹⁰ While authors, such as Graham Allison, write of Al-Qaeda's continued efforts to obtain weapons of mass destruction¹¹, other non-state organisations, the likes of North Caucasus terrorist groups and the Japanese cult, Aum Shinrikyo, have similarly stated their intentions to acquire nuclear capability.¹²

The Dangers of State Level Proliferation

When discussing the issue of states of proliferation concern, one must first look at why countries invest in nuclear weapons and continue to challenge the international community in attempting to acquire them. In simple terms, nukes are a cost and time efficient weapon, providing colossal destructive force compared to conventional means of war, such as aerial bombing.¹³ Other than a means to flatten cities, nuclear weapons have enormous tactical value as a counter-force weapon. They represent a tremendous force multiplier, able to “decompose the members of a land army”¹⁴ on the battlefield. Despite their usability, these weapons provide deterrence, coercing enemies to avoid military engagement in the first place.

Here it is noteworthy to identify current states of proliferation concern: Pakistan, India, North Korea and Iran. The first three are nuclear states, but they are not party to the NTP. India and Pakistan have been identified as the most likely case for nuclear war, since the end of the Cold War.¹⁵ Their relation represents a powder keg of issues, ranging from water security¹⁶ to border disputes over Kashmir.¹⁷ This raises the question of inadvertent escalation to nuclear conflict.¹⁸ The prospect of new states getting the bomb would jeopardize regional balance, encouraging neighbouring states to ensure their own deterrence.¹⁹ Moreover, states of concern, like the DPRK, are known to attempt to share technology and actively promote proliferation.²⁰

The Overlooked Matter of Delivery Methods

The subject of delivery systems is overshadowed by the dangers of nuclear devices and fissionable material. However, delivery systems are an intrinsic part of the equation as they allow for the projection of the nuclear umbrella of deterrence. States of proliferation concern are involved in this domain of research and in its exportation. Recent delivery system tests, successful or not, by the DPRK²¹, India²² and Pakistan²³ illustrate the continued relevance of the threat of vertical proliferation.

Moreover, this subject is not restricted to ICBMs, MRBMs or SLBMs, as tactical nuclear warfare remains a hazard.²⁴ For example, the presence of Iranian missiles in the latest conflict between Israel and Lebanon shows the impact of delivery systems sharing.²⁵ Along this line, any comprehensive measure to curb proliferation must account for the possibility of nukes being deployed in a variety of tactical and strategic delivery systems. Nukes can take the form of air-to-air missiles, nuclear mines and even artillery. This is a sobering fact as North Korea possesses one of the world's largest artillery forces.²⁶ The development of nuclear weapons has moved towards "smaller, less powerful and more accurate weapons"²⁷, exemplified by the MB 1 Genie, which was once part of the RCAF's weaponry.²⁸

III. COUNTER-ARGUMENTS AND REBUTTALS

Nuclear Weapons – A Weapon of Peace

Opposing disarmament and non-proliferation initiatives lays the camp which contends that nuclear weapons are a tested and true method to create peace. This position is notably held by Kenneth Waltz²⁹ and John Mearsheimer³⁰, who even advocate the security benefits of a nuclear Iran³¹. Nuclear deterrence has eliminated war between major states since the Cold War, preventing a possible World War III.³² Furthermore, Waltz stated that "short of universal brain surgery, nothing can erase the memory of weapons and how to build them".³³ This indicates that backtracking is not a viable solution.

In response, I would like to begin with Waltz's view that nuclear peace has pushed violent conflict to the periphery of international politics.³⁴ This is the core problem with this pro-proliferation view, as current threats to nuclear stability lie at the heart of this very periphery. Mainly the threat of non-state actors undermines the notion of balancing, rational deterrence theory and the stability/instability paradox. Defending the other side of the debate are scholars such as Scott Sagan, who advocate for disarmament as a means to increase security, limiting the risk of accident, inadvertent war, or of material falling into the wrong hands.³⁵

The Inefficiency of Sanctions

Undermining initiatives by the international community to control states of concern is the question: how can measures be enforced? Drawing from the Sanctions Debate, there is a reigning academic consensus that sanctions are not effective in achieving their policy goals. Robert A. Pape states in simple terms: "sanctions do not work"³⁶. Drawing back to the subject at hand, "a ban on all nuclear weapons would be impossible to police and enforce"³⁷. Furthermore, less far-reaching initiatives are also doomed to fail, in light of the lack of a strong foreign policy tool to enforce measures.

In response, it must be recognised that the salience of an issue is key in the efficiency of measures and sanctions.³⁸ The nuclear issue holds great saliency in the international community, as demonstrated by the number of participating countries increased from the 47, at the 2010 Washington Nuclear Summit³⁹, to 53, at the 2012 Seoul Nuclear Summit.⁴⁰ Moreover, the chance of success of a sanction is heightened by the number of sanctioning parties.⁴¹ If diplomacy fails, the use of force remains an option⁴², as Israel employed with Iraq⁴³ and Syria⁴⁴, and is warning it will do with the case of Iran⁴⁵.

IV. CONCLUSION

Finally, the threat of nuclear terrorism, the dangers of state level proliferation and the overlooked matter of delivery methods require the implementation of new non-proliferation measures. From the identified threats coming from states of proliferation concern, such as North Korea, Iran, India and Pakistan, to the debate between Mearsheimer and Waltz against Sagan, it becomes clear that the current nuclear issues are not fully met by the traditional non-proliferation regime. In closing, the Seoul conference demonstrates recognition by the international community to meaningfully tackle these issues multilaterally and in solidarity.⁴⁶ To follow the international community's commitment to proliferation challenges, we must look to the 2014 Nuclear Summit, in the Netherlands.

V. ADDENDUM: ADDITIONAL REBUTTAL POINTS

Current Stance of the International Community

This position defended on the importance and danger of new proliferation challenges is not just one simple side of an academic discourse, as the international community is actively addressing the question. As new measures of the global non-proliferation regime are implemented and ratified, they become national law.

- 2011 Global Initiative to Combat Nuclear Terrorism (GICNT)⁴⁷
- 2008 G-8 Global Partnership Against the Spread of Materials and Materials of Mass Destruction (G-8 GP)⁴⁸
- 2005 International Convention for the Suppression of Acts of Nuclear Terrorism⁴⁹
- 2005 INFCIRC 225 Rev. 5⁵⁰
- 2004 UN Security Council Resolution 1540⁵¹
- 1980 Convention on the Physical Protection of Nuclear Material (CPPNM)⁵²

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Debate 1

Nuclear Non-Proliferation and Disarmament

“Be it resolved that given the recent progress that has been made in the advancement of nuclear disarmament, the international community needs to focus greater attention on putting in place nuclear non-proliferation measures to address proliferation challenges, including by non-state actors and states of proliferation concern.”

Assigned Position: AGAINST

Argument presented by Anton Bezglasnyy

Anton Bezglasnyy is graduating with an MA in international relations from the Department of Political Science, University of British Columbia. His Master's Thesis examines Canadian foreign and defence policy in the Asia-Pacific region. In 2012, he interned with the United Nations Department of Political Affairs, Security Council Affairs Division, in New York City and in 2011, with the Department of Foreign Affairs, at the Canadian Embassy in Washington, DC.



I. OPENING STATEMENT AND THESIS

Since its signing in 1970, states party to the Nuclear Non-Proliferation Treaty (NPT) have agreed to its ‘three pillars’ which include non-proliferation, disarmament and peaceful use of nuclear energy.¹ Countries like Canada, who are members of every relevant international organization and non-proliferation export control regime, are acting to support the global nuclear non-proliferation regime.² However, states including Iran, North Korea and Pakistan are either blatantly cheating on their commitments to the NPT ‘three pillars,’ or have withdrawn from the NPT completely. Discussion on states such as India and Israel, which are outside the Treaty but largely follow NPT protocol, is outside the scope of this paper.

It is argued that a lack of disarmament is a greater threat than the risks stemming from proliferation, in the 21st Century. In order to accurately compare the dangers stemming from each activity, a risk assessment is conducted of the impact and likelihood of worst-case scenarios resulting from continued proliferation and a pause in further disarmament. For this purpose, the National Security Risk Assessment Model of the United Kingdom *2010 National Security Strategy*, is adopted.³

It is discovered that in each instance, the worst case scenario is a high impact one – the detonation of a nuclear device. Risks stemming from non-disarmament are found to be a high likelihood event, due to the lack of significant progress in disarmament, as well as the strategic instability among both NPT nuclear weapons states (NWS) and non-NPT nuclear weapons states. The consequences of nuclear proliferation beyond Iran, are demonstrated to be lower likelihood

scenarios, due to a robust non-proliferation norm and the low probability of a proliferation cascade in either the Middle East or Northeast Asia. On balance therefore, while proliferation and non-disarmament present high impact threats, the lack of disarmament is a higher likelihood scenario and therefore deserves greater attention from the international community.

II. MAIN ARGUMENTS

A: Risks of non-disarmament are high impact and high likelihood.

A1. Recent disarmament progress has not been significant. Entering into force in February 2011, the New Strategic Arms Reduction Treaty (START) between Russia and the United States only addresses the oldest and most stable strategic relationship in the world.⁴ New START only covers about 30 percent of the American arsenal, because it does not constrain reserve strategic warheads, or tactical weapons.⁵ Stalled negotiations in the Conference on Disarmament, and on the Fissile Material Cut-off Treaty⁶ further suggest that there has not been a significant amount of progress on global nuclear disarmament.

A2. NPT nuclear weapons states are at a point of strategic instability. As the international system rebalances to accommodate China's rise and relative American decline, the strategic relationship between Beijing and Washington endures a period of heightened instability and uncertainty. Existing security challenges stemming from developments in cyberspace, Taiwan or the South China Sea, are exacerbated by the possibility of escalation, misunderstanding or bluffing. The historical record demonstrates that an environment of increased conflict is likely, during periods of power transition.

A3. Non-NPT nuclear weapons states are at a point of strategic instability. India, Pakistan, North Korea and Israel are all highly insecure states that view the benefits of nuclear weapons higher than the considerable political costs associated with being a non-NPT nuclear weapons state. India and Pakistan are of particular concern, as the traditional understandings of nuclear deterrence do not apply to these states, due to their history of conventional conflict, lack of secure second strike capabilities, and close geographical proximity. These dynamics of the New Delhi – Islamabad strategic relationship increase the pressure for preemptive strikes. Other potentially unstable dyads, composed of both NPT and non-NPT NWS, include India – China, Russia – China and North Korea – United States.

B. Consequences of proliferation beyond Iran are high impact but low likelihood.

B1. The historical record suggests that nuclear restraint is the rule, not the exception. Five states – the United States, Russia, France, the United Kingdom and China – obtained nuclear weapons during the 1940s and 1950s. In the following fifty years, just four states – India, Pakistan, Israel and North Korea – have chosen to acquire and keep nuclear weapons, whereas approximately fifty nations possess the scientific-industrial capacity to do so.⁷ This slowdown in the rate of proliferation, which occurred in the context of widespread dissemination of nuclear knowledge⁸,

demonstrating the presence of a robust international norm against proliferation. Furthermore, states such as Ukraine and South Africa, have given up their nuclear, while others including Brazil and Libya, voluntarily terminated nuclear weapons programs. Finally, ‘cascade’ proliferation, has been exceptionally rare since the Nuclear Non-Proliferation Treaty came into force in 1970, with neither the nuclearization of Israel nor North Korea, triggering reactive proliferation in their regions.⁹

B2. Even if Iran becomes a NWS, reactionary proliferation in the Middle East is unlikely. The American security umbrella in the Middle East will prevent further proliferation. Saudi Arabia (largely), and perhaps Turkey or Egypt, are considered the most likely prospects for reactionary proliferation following an Iranian nuclear test. For Riyadh, the reputational, economic and strategic costs of nuclearization far outweigh the benefits, meaning that Saudi Arabia is more likely to balance Iran through deeper security guarantees from the United States, than the development of a nuclear weapon.¹⁰ Turkey on the other hand, is a member of the North Atlantic Treaty Organization and therefore benefits from the deterrence granted by American, French and British nuclear weapons. Egypt, also has little to gain from proliferation, with President Ahmadinejad’s February 2013 visit to Cairo – the first in over three decades – demonstrating warming relations.¹¹

B3. North Korea has consolidated its status as a NWS, but reactionary proliferation is unlikely. A highly insecure nation with few allies, inferior conventional forces and a collapsing economy, North Korea affirmed its status as a nuclear weapons state by detonating a nuclear device with a yield of 5-15 kilotons in February 2013.¹² South Korea and Japan are widely considered to be the most likely states for cascade proliferation in Northeast Asia. Since North Korea’s 2006 test, Japan and South Korea have responded with a mix of internal balancing, by maintaining superior conventional forces, and external balancing, by tightening their alliances with the United States. Pyongyang’s 2009 nuclear detonation did not change the strategic calculus in Seoul or Tokyo. The 2013 test is unlikely to alter the status quo, given the considerable disincentives to proliferation. For both Japan and South Korea, these include a damaged relationship with Washington, international sanctions, and the risk of igniting a regional arms race. The American nuclear umbrella and alliance guarantees therefore, will prevent further proliferation in Northeast Asia.

III. COUNTER-ARGUMENTS AND REBUTTALS

Counter argument 1: The possibility of a non-state actor acquiring fissile material or a nuclear device is escalating, and demonstrates a scenario where proliferation is both a high risk and high consequence event. *The US-Russia Joint Threat Assessment on Nuclear Terrorism*, demonstrates that al Qaeda and North Caucasus terrorist groups have both made statements indicating that they seek nuclear weapons, and have attempted to acquire them.¹³

Rebuttal: While the acquisition of fissile material or a crude nuclear device by non-state actors does represent a threat of considerable likelihood, the risks associated with this possibility are

qualitatively and quantitatively lower than those stemming from non-disarmament and a possible nuclear exchange between states. Because any device constructed by groups such as al Qaeda is likely to be a crude 'gun-type' weapon, the yield (of several megatons) will be considerably lower than a thermonuclear device (of several kilotons) assembled with the resources at the disposal of a nation-state. Furthermore, while nuclear weapons states currently possess several to thousands of devices¹⁴, it is unlikely that non-state groups would produce more than a single weapon. The consequences of nuclear use by nation-states therefore, are greater than those posed by non-state actors.

Counter Argument 2: The transfer of a nuclear device from state to non-state actors is a possibility, given Iran's ties to its proxy, Hezbollah and Pakistani ISI's continued tolerance of jihadist and other groups on its territory.¹⁵ Non-state actors in possession of a nuclear device are highly likely to use it, because these entities are not deterrable like states, having no territory or assets to defend.¹⁶

Rebuttal: It is highly unlikely that nuclear weapons states like Pakistan or Iran would risk giving fissile material or a nuclear device to jihadists or proxies, because the consequences for doing so – up to and including nuclear retaliation – are exceptionally high. The nuclear forensics capabilities of states including the United States and France, can trace the origin of fissile material and attribute nuclear use to a nation-state, resulting in proportional retaliation. Furthermore, violating the norm against nuclear first use would result the offending state being ostracized from the international community.

IV. CONCLUSION

Recent disarmament progress has not been significant, as demonstrated by the limitations of the New START, as well as stalled negotiations in the CD and FMCT. In the current geostrategic environment, characterized by power transition and global rebalancing, both NPT and non-NPT nuclear weapons states are at a point of strategic instability. The risks stemming from a lack of disarmament, are high impact and high likelihood events.

The consequences of proliferation beyond Iran, on the other hand, are high impact but low likelihood scenarios, with the historical record suggesting that nuclear restraint is the rule, not the exception in global affairs. Cascade proliferation in the Middle East and Northeast Asia, is unlikely due to the reputational, economic and strategic costs that would negate any potential benefits of nuclearization.

It follows therefore, that a lack of disarmament is a greater threat than the risks stemming from proliferation, in the 21st Century, and deserves greater attention from the international community.

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¹ DFAIT 2012a.

² James Martin Center for Nonproliferation Studies 2012.

³ United Kingdom 2010: 37.

⁴ Pifer 2012: 211.

⁵ Pifer 2013.

⁶ Meyer 2012.

⁷ Jones 2013.

⁸ Kahl, Dalton and Irvine 2013: 11.

⁹ Jones 2013. Kahl, Dalton and Irvine 2013: 11.

¹⁰ Kahl, Dalton and Irvine 2013: 17-19.

¹¹ New York Times 2013.

¹² Lind, Lieber and Press 2013. Oswald 2013.

¹³ Bunn et al. 2011: 23-30.

¹⁴ The United States and Russia, for example, possess several thousand nuclear weapons while China, France, the United Kingdom, have several hundred. Even North Korea is believed to have enough plutonium for ten nuclear devices. See Arms Control Association, 2013.

¹⁵ Delpech 2012: 58 and 99.

¹⁶ Ibid., 27.

Debate 2

COMMERCIALIZATION OF SPACE

“Be it resolved that the commercialization of space will provide a net benefit to space security, in terms of the secure and sustainable access to, and uses of, outer space, and freedom from space-based and space-enabled threats.”

Assigned Position: IN FAVOUR

Argument presented by Nancy Teeple

Nancy Teeple is pursuing a Doctorate in Political Science at Simon Fraser University. In 2007, she received a Master’s in War Studies from the Royal Military College, in Kingston Ontario. She also received a certificate in international terrorism studies from St. Andrew’s University in Scotland, in 2010. In addition to her academic work, Nancy has been published in the Canadian Army Journal and has conducted research for Defence R&D Canada (DRDC) of the Department of National Defence. Nancy was the recipient of a Social Sciences and Humanities Research Council of Canada Doctoral (SSHRC) Fellowship, 2012-2014.



I. BACKGROUND/CONTEXT:

This report presents a number of arguments regarding the debate on whether the commercialization of outer space will provide a net benefit to the security and sustainability of outer space access and utilization, or whether it poses a risk to these endeavors.

Experts describe outer space as a testing ground for the balance between international cooperation and military competition, depending on how states pursue their national interests beyond Earth’s atmosphere.¹ The increasing commercialization of space technologies involving intra-state and non-state actors factor into the equation, namely private national and transnational companies involved in the space sector, seeking profit through innovation in space technology and the provision of space products and services to customers.² However, low-risk space commerce requires secure and sustainable access to and use of outer space.

In the Cold War space technology served the military interests of the two rival superpowers – the U.S. and USSR – with certain technologies being progressively commercialized since the 1960s.³ At the height of the strategic rivalry, the U.S. and USSR also sought to restrict space weaponization through bi- and multi-lateral treaties, such as the Outer Space Treaty (1967) and Partial Test Ban Treaty (1963).⁴ These prevented the placement of WMD in space, while at the same time did not prohibit the transit of such weapons through space or launching of nuclear weapons into space to destroy incoming missiles. There were also gaps in verifying that states adhere to the treaties’ provisions.

The 1970s and 80s saw the commercialization of navigation, remote sensing, and launch vehicle capabilities⁵ through private companies contracting for governments. While U.S. policy encouraged private sector space activity, commercialization included limitations for national security purposes.⁶ In the post-Cold War period the decline in defence budgets and increasing dependence on space technologies for military operations made the U.S. increasingly dependent on the commercial sector and civil uses of imaging and navigation.⁷ While the U.S. and its business sector remains a dominant player in space activity, numerous foreign actors are increasingly becoming active in space commercialization.⁸

Since the Cold War, the space operating environment has become increasingly vulnerable to various space-based and space-enabled threats. Space-based threats comprise debris, meteoroids, and other items in orbit that pose a collision risk to satellites, launches, the international space station, and space travel. Other space-based threats include space weather from solar activity which can interfere with satellite functions. Space-enabled threats include anti-satellite technology (ASAT),⁹ and the unannounced launching of satellites into orbit.¹⁰ Accidental collision or intended destruction of space material adds to space debris.¹¹ Space is a limited resource, in terms of the availability of low and geostationary satellite orbits, radio frequencies, and exploitable celestial bodies.

II. ARGUMENTS IN FAVOUR:

The commercialization of space will facilitate peaceful uses of space through collaboration between space-faring nations sharing in the risks, costs, and benefits of space commerce. Security and sustainability would be reinforced by the utility argument that space-faring nations would reject threats to their ability to access and use space for commercial, science and technological development. Such perspectives guiding cooperation would encourage the creation of normative and legal regimes to control space weaponization, including the use of ground-based systems. Such mechanisms already exist in international treaties prohibiting the placement of nuclear weapons in space.¹² These rules and regulations might be adapted to international space commerce in terms of treaties limiting certain space weapons that would threaten commercial enterprise. Because satellites are vulnerable to nuclear explosion, greater arms control measures could be negotiated to deny the transport of nuclear weapons through space. Such measures would reinforce international norms for responsible behaviour in space, increase transparency between nations, and encourage coalition-building to enhance collective security to be able to respond to an attack on U.S. or allied space systems.¹³

*The commercialization of space provides incentive for innovative mechanisms for the clean-up of volatile space debris, furthering both sustainability and security of space by removing space-based threats posed by the presence of “space junk” to satellites, the International Space Station, and space transportation vehicles.*¹⁴ Such innovative endeavors are already in progress by companies in Canada, Switzerland, and United States exploring ways to clean up space debris.¹⁵ It is likely that progress in this realm will be cooperative in nature due to the common interest of space-faring nations to ensure the sustainability of access to orbits and safe launch, transportation, ISS activity, and celestial exploration. Canada is currently leading the Inter-

Agency Space Debris Coordination Committee that represents 12 agencies from around the world.¹⁶ National and multi-national businesses would certainly see the profit in exploring this part of the space industry.

*The commercialization of space provides cost-benefit alternatives to the deployment of civil and military technology into orbit through the provision of commercial launch capabilities and “hosted” or secondary payload options.*¹⁷ The launch alternative reduces costs, time, and manufacture of essential satellite components, while increasing the number of launches and revenue for a nation’s space industry.¹⁸ Other collaborative initiatives between the public and private sector includes establishing redundancy measures that provide for safety and reliability through back-up systems and the distribution of space capabilities among a number of satellites,¹⁹ so that in the event of destruction/collision of space assets, the system will remain in working order.²⁰ This contingency measure will increase the survivability of space systems in the event of an attack by ensuring that the services supporting space-based and terrestrial critical infrastructure will remain intact.²¹

III. ARGUMENTS AGAINST:

The commercialization of space may adversely affect security and sustainability because United States’ dominance of the space sector threatens to make outer space less accessible to foreign states. Commercializing space could potentially reinforce U.S. power by dominating the marketplace, or allowing its monopoly on space capabilities, pressuring the marketplace to adhere to certain standards and practices, requiring adoption of compatible systems, and interference with foreign space activities – even denying access to technologies and outer space. The dual-use nature of many space technologies and international space law requiring nations to take responsibility for their activities in space suggest that commercial interests will be dominated by national interests, particularly in terms of strategic defence space capabilities.²² This would necessitate regulatory control mechanisms that could restrict private market opportunities. The likely outcome is that the U.S. would be challenged by nations, NGOs and companies with vital interests in space.²³ Rising space powers²⁴ may begin demonstrating their offensive space capabilities with destructive capacity, contributing to space debris, challenging arms control agreements, and generally creating an atmosphere of insecurity and uncertainty complicating efforts towards international cooperation and regime-building regarding outer space activity.

The commercialization of space may adversely affect secure and sustainable access to space by facilitating the proliferation of space debris from admitting more actors into space, increasing the number of satellites in orbit. An increase in satellites, and the possible deployment of anti-satellite capabilities,²⁵ would add to the number of objects in earth orbits, posing the risk of collision with other satellites, the International Space Station, and space vehicles, thereby creating more space debris. The proliferation of space debris could eventually reach critical mass, making it impossible to launch satellites or vehicles into space, thus preventing access to outer space. A secondary impact of satellite collisions and destruction from debris is the failure of critical infrastructure of global civilization.²⁶

The commercialization of space might adversely affect the security and sustainable use of outer space through public-private partnerships with states, particularly military space technologies. Commercial enterprise working towards enhancing military capabilities of a state or group of states might be viewed as provocative to other nations, creating tensions between adversaries. This could lead to further breakdown of arms control agreements and ignite space-based arms races. Since businesses are profit-maximizing entities, the utility argument suggests that dual-use or “spin-off” technologies could be developed by adversarial nations or hostile non-state actors for weaponization purposes because they can afford the cost of procuring the technology. Finally, through the declassification and commercialization of technologies such as communications, remote sensing, and navigation, any individual or state can use these technologies for intelligence-gathering purposes, providing a hostile nation with a target for anti-satellite weapons, or cyber attack against satellite operations.²⁷

IV. RECOMMENDATION:

This report finds greater support for the arguments in favour of the commercialization of space. The benefits of space commercialization are clear in arguments suggesting that space commerce will facilitate cooperation and regime-building encouraging the peaceful uses of space, ensuring access through the reduction of threats, including arms control.²⁸ The profit incentive for involving commercial enterprise in developing technologies to clean up debris includes cooperation and sharing responsibility for ensuring continued access to space and security from space-based threats. Public-private partnerships in using alternative methods to get technologies into space contribute to managing space debris, while saving costs, time, and launch fuel. These arguments take into consideration international dependence on space-based systems for civilian and peaceful military purposes. Space, as a limited resource, requires continued international cooperation, rules and regulations regarding the use of space, sharing of limited resources, capabilities, and innovation, and solutions to debris and other space-based threats.

ADDENDUM: ADDITIONAL REBUTTAL POINTS:

The arguments in favour of the benefits of commercialization of space are stronger than those that argue against commercialization because space commerce requires continued access to space and the international market, while being assured of the security of its investment. Therefore, it will be more profitable to encourage international cooperation and the proliferation of regimes, innovation in technologies to manage space debris, and capitalize on government use of commercial launch capabilities and hosted payload options. Otherwise facilitating weaponization or allowing one state to dominate the marketplace work against the utility of sustainable access and security of the space market.

¹ ----. 'Peaceful' and Military Uses of Outer Space: Law and Policy. Background Paper. Prepared by the Institute of Air and Space Law, Faculty of Law, McGill University. Feb. 2005. Web. 20 Feb. 2013.

² The commercialization of space can be described as public and private companies commercializing (i.e. introducing into the market) space products and services.

Dupas, Alain. "Commercial-Led Options, Future Security in Space." *Future Security in Space: Commercial, Military and Arms Control Trade-Offs*. Ed. James Clay Moltz. Center for Non-Proliferation Studies. Occasional Paper No. 10. Monterey Institute of International Studies. n.d. pp 58-60.

Jaramillo, Cesar (Ed.). *Space Security Index 2012*. Kitchener, Ontario: Pandora Press, 2011.

OECD. "The Commercialisation of Space and the Development of Space Infrastructure." Organization for Economic Co-operation and Development. Sept. 2003. Web. 5 Dec. 2012.

³ The Communications Satellite Act of 1962 commercialized satellite communications and authorized the creation of non-governmental communications satellite corporation. This move saw the launch of first commercial satellite Telstar I by NASA in July 1962 for the telecommunications company AT&T.

Doerer, Richard C. (Lt.Col.). *National Security Implications of the Commercialization of Space*. US Army War College Strategy Research Project, 2000. Web. 16 Dec. 2012.

⁴ United Nations. *The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies* (the "Outer Space Treaty"). Adopted by the United Nations General Assembly in [resolution 2222 \(XXI\)](#). Signed on 27 January 1967. Entered into force on 10 October 1967.

United Nations. *Treaty Banning Nuclear Weapon Tests in the Atmosphere, Outer Space, and Under Water* (Partial Test Ban Treaty or Limited Test Ban Treaty). Signed in Moscow on August 5, 1963, by the United States, Soviet Union, and United Kingdom. This treaty prohibits any nuclear explosions in outer space.

⁵ In 1983, President Reagan issued a U.S. Presidential Directive to commercialize navigation. The Global Positioning System (GPS) became available for civilian aircraft under the direction of the Department of Transportation which set commercial space based navigation policy and spurred on the GPS commercial industry.

France commercialized its remote sensing satellites (SPOT) and Ariane launch vehicle capabilities.

Doerer, 2000

⁶ Hertzfeld, Henry R. "Commercial Space and Space Power." *Toward a Theory of Spacepower: Selected Essays*. Eds. Charles D. Lutes & Peter L. Hays. Fort McNair, D.C.: National Defense University Press, 2011.

⁷ For instance, NASA came to rely on national and commercial partnerships for innovation and development. The NASA Authorization Act, 2010 describes companies working with NASA, such as SpaceX, Boeing, and Sierra Nevada. Administration policy changes relaxed restrictions on technology transfer between the military and commercial communities and between the U.S. and other nations. Public-private partnerships involved the design, manufacture, and operation of launch vehicles by private aerospace companies. Other R&D includes space exploration, human spaceflight, and utilization of the International Space Station at Low Earth Orbit.

Herzfeld, 2011.

Doerer, 2000.

Gonzales, Daniel. *The Changing Role of the U.S. Military in Space*. Report prepared for U.S. Air Force by RAND, 1999. pp. xi-xxi.

⁸ Such as France, Japan, and Israel.

⁹ Including ICBMs or LRBMs, and lasers that can reach and destroy satellites.

¹⁰ North Korea successfully launched a satellite into orbit on December 12, 2012.

Feng, Zhu. "DPRK's Satellite Launch: A Spiraling Tension Clouds East Asia." *China-US Focus* 18 Dec. 2012. Web.

In January 2007, China tested its ASAT laser system on old weather satellite.

Gill, Bates, & Martin Kleiber. "China's Space Odyssey: What the Antisatellite Test Reveals About Decision-Making in Beijing." *Foreign Affairs* (May/June 2007). Web.

¹¹ On Feb. 21 2008 the U.S. destroyed a malfunctioning spy satellite using a sea-based missile interceptor

Gallagher and Steinbrunner, vi.

In February 2009, the U.S. satellite Iridium-33 collided with Russia's defunct satellite Cosmos-2251, creating an explosion and subsequent space debris.

United Nations. *Long-Term Sustainability of Outer Space Activities*. Committee on the Peaceful Uses of Outer Space, Scientific and Technical Subcommittee. Forty-seventh session. Vienna, 8-19 Feb. 2010. Item 14 of the draft provisional agenda – Preliminary Reflections.

¹² Outer Space Treaty, 1967; Partial Test Ban Treaty, 1963. The treaties do not prohibit weapons in space, except for placement of nuclear weapons. Weapons are not to be placed on the moon or other celestial bodies.

Dahlitz, Julie. "Arms Control in Outer Space." *The World Today*, 38.4 (1982): 154-160.

¹³ Pugliese, David. "U.S. Defense Department Updates Its Space Policy – Canadian Forces Still Without One." *Ottawa Citizen* 24 Nov. 2012. Web.

¹⁴ There are approximately 20 000 pieces of debris orbiting around the earth, posing a collision threat to any space-based asset or vehicle travelling through space. Satellites must occasionally maneuver around incoming debris to avoid collision.

"Canadian Satellites Threatened by Space Debris." *Canadian Press* 21 Jan. 2012. Web.

¹⁵ Swiss space centre EPFL is developing a "janitor satellite" capable of sweeping up debris and permanently removing it from orbit. This CleanSpaceOne project is slated to launch within five years, with the goal to sell pre-assembled systems to remove defunct satellites from orbit.

Jha, Alok. "Swiss create 'janitor satellite' to clean up space." *Guardian UK* 15 Feb. 2012. Web.

Bradley, Simon. "Swiss janitor satellite to clean up space." *Swiss Info* 15 Feb. 2012. Web.

In the U.S. NASA is working in collaboration with commercial, national, and international agencies to explore ways to clean up space debris. Star Technology and Research of South Carolina is developing a vehicle to clean up space debris from low earth orbit. This device is called the Electro Dynamic Debris Eliminator (EDDE).

Azriel, Meryll. "Electro Dynamic Debris Eliminator receives funding." *Space Safety Magazine*. International Space Safety Foundation. 13 Mar. 2012. Web.

Pearson, J., J. Carroll, & E. Levin. "Active Debris Removal: EDDE, the Electrodynamical Debris Eliminator." 61st International Astronautical Congress. Prague, Czech Republic, 2010.

Macdonald, Dettwiler and Associates (MDA) in Richmond, B.C. is working on robotics technology to service satellites, extending their life so that they would not become debris.

"Canadian Satellites Threatened by Space Debris." *Canadian Press* 21 Jan. 2012. Web.

¹⁶ Ibid.

¹⁷ Secondary payload involves sharing a satellite bus (rather than sharing a space launch vehicle) on which government agencies can send sensors or other equipment into space.

Doerer, 2000.

¹⁸ Ibid.

An example of collaboration are the partnerships between U.S. government and Arianespace, ILS, CGWIG, and ISRO, utilizing foreign launch sites and assured priority in launch access, sharing of Industrial capacities, beginning with the hosted payload concept. Alternatively, the Center for Strategic and International Studies identifies the potential for a security breach in the hosted payload concept. Foreign intrusion may result prior to launch through the deliberate targeting of payloads containing sensitive military, civil, or intelligence technologies on commercial satellites.

CSIS. *National Security and Commercial Space Sector: An Analysis and Evaluation of Options for Improving Commercial Access to Space*. Center for Strategic and International Studies. Defense-Industrial Initiatives Group. July 2010. pp. 11 and 32.

¹⁹ A constellation-like architecture comprised of numerous small inexpensive microsatellites has been among recommendations to fill the gaps in the vulnerability of large complex and expensive satellites. France, UK, and China have already starting to use microsatellites for military purposes.

Marshall, William S. "Micro-Satellites: Charting a New Course to Space Security." *Belfer Center Newsletter*. Belfer Center for Science and International Affairs. Harvard University, Summer 2006.

Microsatellite technology is being developed for both government and commercial aerospace applications.

Lew, Ark L, et al. "Microsatellites: An Enabling Technology for Government and Commercial Aerospace Applications." *Johns Hopkins APL Technology Digest* 22.2 (2001): 124-134.

²⁰ NASA. "Active Redundancy." NASA Preferred Reliability Practices. Practice No. PD-ED-1216. n.d. Web. 12 Dec. 2012.

Pugliese, 2012.

Jaramillo, 142.

Pellerin, Cheryl. "Report Urges Lifting Some Satellite Export Controls." American Forces Press Service. U.S. Department of Defence. 18 Apr. 2012. Web.

²¹ Space-based systems play an important role within national critical infrastructures.

Johnson, C.W. & A. Atencia Yepez. "Cyber Security Threats to Safety-Critical, Space-Based Infrastructures." Proceedings of the International Association for the Advancement of Space Safety. University of Glasgow, 2011.

²² Herzfeld, 2011.

²³ Gallagher and Steinbrunner, 5-6.

²⁴ Such as China, Russia, and North Korea, especially if U.S. relations with China and Russia deteriorate.

²⁵ To destroy old defunct satellites to make room for new ones in orbit.

²⁶ Imburgia, Joseph S. (Lt.Col.). "Space Debris and Its Threat to National Security: A Proposal for a Binding Agreement to Clean Up the Junk." *Vanderbilt Journal of Transnational Law* 44 (2011): 589-641.

²⁷ Johnson & Yepez, 2011.

²⁸ Measures extending beyond the Outer Space Treaty, such as the UN Resolution of 1967 Prevention of an Arms Race in Outer Space advocates for a ban on the weaponization of space, in addition to the Conference on Disarmament, provide a foundation for further arms control and non-proliferation in outer space.

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United Nations, Report of the Secretary General, International Cooperation in Space Activities for Enhancing Security in the Post-Cold War Era. N.p. n.d. Web. 10 Dec. 2012.

Debate 2

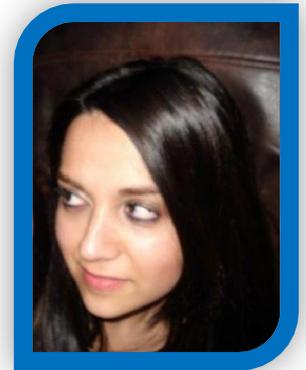
COMMERCIALIZATION OF SPACE

“Be it resolved that the commercialization of space will provide a net benefit to space security, in terms of the secure and sustainable access to, and uses of, outer space, and freedom from space-based and space-enabled threats.”

Assigned Position: AGAINST

Argument presented by Susan Khazaeli

Susan Khazaeli is a Ph.D. candidate in the School of Political Studies at the University of Ottawa. Her research interests include negotiations and diplomatic cultures, the Middle East (especially Iran), and issues related to nuclear (non) proliferation and disarmament. Her dissertation is concerned with the determinants of nuclear supply.



I. OPENING STATEMENT

The issue of commercialization is a relatively new debate, in part because the astronomical cost of operating in outer space previously made space exploration and commerce prohibitive to all but a handful of rich governments. Now that private capital is looking to assume a greater role in outer space, we must determine on the basis of security, access, and risk considerations whether such a role is desirable.

Commercialization refers to the deployment of or use of materials to produce goods and services of commercial value. The representation of the debate in terms of ‘commercialization’ is misleading, however. This is because space has already been used for commercial purposes and has the potential to be lucrative. Proponents will thus stress that commercialization is not a new development. They will make this debate about the attractiveness of commerce. They will argue that there is nothing to fear by pointing to the widespread availability of space-based or space-enabled commercial products. To be sure, satellite communication technologies and navigation systems, such as GPS, are examples of the commercial use of space. Proponents of space commercialization will emphasize how these products have made life more convenient so as to persuade you that commercialization is beneficial.

However, the debate here does not concern convenience nor is it about the profitability of commercial enterprise. The question is whether allowing private industry to dominate outer space will present a net benefit or a risk to space security. I argue that commercialization will not provide a net benefit to space security.

First, commercialization will endanger the security and sustainability of outer space. Second, unfettered commercialization will limit our access and use of outer space. Third, commercialization will increase our vulnerability to space-based and space-enabled threats.

The real critical issue that we must consider before further encouraging commercial activity in outer space concerns access. We have to carefully consider the following questions: Who will have access? Whose interests will dominate? How best do we manage questions of space security and access?

II. RESPONSE

I do not disagree with my opponent's claim that commercial actors are already present in space and are involved in space activities. Private companies have worked with government agencies in the past, public-private collaborations are in progress, and there will likely be more partnerships in the future. For example, a private American firm, Space-X, has recently been entrusted with the delivery of materials in support of NASA missions.¹ There is no denying the reality of commercial actors in outer space.

My objective is not to deny commercial actors access to space. Commercial actors can play a role in outer space, and from the perspective of some governments, such a role may even be desirable.² For one, states attract private capital because it helps alleviate the burden on state coffers and allows them to pursue more pressing goals. However, it is incumbent that all states come together to establish a clear set of rules on acceptable conduct by commercial actors operating in outer space and that there is an external regulatory body, which enforces rules.³

III. REBUTTAL

The problem is not with commercialization per se. The problem lies in allowing the commercial sector (that is businesses and private individuals) to invest, produce, and innovate in outer space, and to do so without establishing some sort of managing body. We cannot think about commerce in outer space in the same way as we do about commerce in traditional markets. Outer space requires entirely different thinking. For one, because space's environment resembles a vacuum (e.g., no external pressure; near absence of gas molecules, temperature range) traditional navigation and exploration methods, and even human exposure produce different, and sometimes deleterious outcomes. Other environmental factors that make space exploration dangerous include the presence of meteoroids (i.e., rock and metal particles caused by collisions of comets and asteroids) and residual debris, which travel at high velocities.⁴ The presence of private interest in outer space threatens to diminish access to satellites on which we depend for communication, intelligence, and security.

In addition, the consensus that space belongs to all states challenges traditionally held assumptions about commercialization, generally and privatization, specifically. The Outer Space Treaty (OST) precludes claims of sovereignty or ownership, and assures the access and use of

outer space to all states.⁵ Because of the unclear boundaries of outer space, the Moon Treaty (1979) also placed the surfaces of celestial objects and orbital space under international jurisdiction. The added presence of commercial actors means that there will be more interests competing for resources (e.g., ice-water, minerals, etc.), increased risk of collisions (e.g., such as knocking out sensitive satellites), which may diminish the continued environmental sustainability of, and access to outer space.⁶

In the absence of a regulatory body, states should continue to be the primary actors in space, and not private entities. States are accountable not only to their domestic audiences but also, through these treaties, to each other. Most states have signed treaties that outline shared codes of conduct, prohibit certain forms of behaviour, and limit their freedom of action. Space-faring governments have signed the OST, the Moon Treaty, and other international legal frameworks, and – unlike commercial actors, are bound by such laws.

IV. SECOND RESPONSE

We cannot allow commercialization to expand at the expense of space security and access.⁷ Commercial actors are not bound by existing international laws. Current treaties governing appropriate conduct in and use of space do not apply to non-state entities. Although international laws could be created in order to accommodate the presence of new actors, there are no assurances that private actors will behave ethically and abide by prevailing norms especially in the absence of a legitimate, enforcement agency. The hazards of commercialization far outweigh the benefits it might offer. At present, there is simply nothing in place to ensure that private actors will comply with existing laws governing the use and exploration of outer space, and no mechanism in place to punish private actors from rules and norms violations. Wide-scale commercialization should be avoided if we intend to maintain the secure and sustainable access to outer space into the future. Commercialization should not deepen until there are clear legal parameters on the kinds of activities that private interests are able to conduct and a managing body that is empowered to ensure compliance.

The principal claim made by supporters is that commercialization can lessen the drain on government resources and stimulate the economy.⁸ Proponents of commercialization emphasize the material benefits to commercialization, without telling you about the risks that we will incur in order to reap these economic benefits. Commercialization needs to be regulated because unfettered commercial activity may lead to insecurity and instability. States have established rules (e.g., communicating launches, stationing, and orbiting in advance) that lessen the chances that their activities will be seen as aggressive or hostile by other states. It is important that commercial actors agree to these protocols. It is not in the interest of any state to have a free for all in outer space wherein different corporate interests station or orbit materials in space. States have refrained from weaponizing outer space in accordance with the OST. However, we should be concerned about the omission on conventional weapons, and whether space-military industries will exploit the lacuna in the future. Unmitigated private competition might, however inadvertently, lead to an arms race in space. This possibility should

encourage states to ban all classes of weapons (e.g., conventional, anti-satellite, land-based) in outer space, and to consider the possible security implications of commercialization.

Commerce is good, but it is not a necessary condition for scientific progress. For decades, states have been the primary actors in space and states have led remarkable and indeed rapid technological and scientific progress. To repeat my earlier statement, the private sector can play a role in outer space, such as helping with environmental sustainability.⁹ The debris problem presents opportunities for entrepreneurship to remediate. With state support, the private sector could innovate around trash collection, interception, and disposal.¹⁰ Controlled commercialization could be supported.

Nonetheless, we should generally be wary of public-private partnerships.¹¹ Partnerships between the private and public sector in outer space have a dismal track record.¹² The private sector is inexperienced in outer space, and unlike states, it pulls out when the costs becomes too excessive.¹³ To give you an example, the US government had a joint collaboration with Lockheed Martin to create a spacecraft.¹⁴ The partnership never succeeded and ultimately cost the US government \$912 million and Lockheed Martin \$357 million.¹⁵ We should also be conscious of the risks that close public-private collaborations particularly on security matters might entail.¹⁶ The guiding principle should be security. Governments should be careful not to outsource security sensitive activities or information to commercial actors, who might be compelled to sell the intelligence to rival states or actors.

V. SECOND REBUTTAL

Commercialization can be lucrative.¹⁷ Yet, this comes at the cost of diminished access and security.¹⁸ Commercial actors are primarily motivated by profits. This raises important questions, such as the treatment of natural resources.¹⁹ For instance, do we want to see these commoditized? Given that the international space laws that apply to states do not bind private actors, what incentives will they have to share access and distribute resources? Access to, and use of space are paramount concerns for all states. States do not want to be displaced by private actors in outer space because they fear that others will seek to deny them access in the future.²⁰

We cannot allow commercial actors to participate in outer space without establishing a legal framework that governs their behaviour. For example, without regulation we can expect private actors to contribute to the current problem of space garbage, which has largely been caused by prior human missions in outer space. The environmental effects of space exploration, particularly the accumulation of trash and debris, represent one of the most serious risks to space security and sustainability.²¹ For instance, space trash and debris, if sufficiently large in size, have the potential to knock out vital satellites. Satellites are essential for security: they help forecast the weather; connect remote areas in the world, guide people through unfamiliar territories; and discourage conflicts by exposing weapons facilities.²² Scientists warn that the continued secure and sustainable access to, and use of outer space requires active preservation

and conservation efforts.²³ Certainly, if the behaviour of multinational corporations operating outside the borders of their host states is any indication of how they may behave in outer space, then there is cause for worry. My opponent suggests that commercial actors will self-regulate and abide by customary laws, but the empirical record simply does not support her optimism.

The national laws of their host states bind private firms, such as Space X. Accordingly, proponents of commercialization argue that host states will ensure that their private entities behave in accordance with international law and will hold them accountable for violations and transgressions. However, national governments are neither always able nor willing to hold their corporations to account. Let's not forget that in countries, such as the United States, multinational corporations and military industries are quite powerful. Because private actors can also impose constraints on the preferences of states, then it is absolutely necessary that an impartial international body is established which can monitor the behaviour of space-faring actors and ensure compliance with international law.

VI. CLOSING STATEMENT

In conclusion, commercialization may lead to instability, threaten the security of states, or possibly initiate an arms race.²⁴ This, of course, depends on the nature of work that private actors are conducting in outer space and the perception of those observing their activities. Commercialization might also diminish the access and use of outer space. The proliferation of actors in outer space contributes to space degradation and pollution, and commerce is unlikely to be moved by environmental concerns. As a result, there needs to be a legal multilateral framework that establishes the parameters of appropriate conduct, ethical responsibilities, and signalling in outer space.²⁵ Space-faring actors must collectively negotiate the terms of conduct.²⁶ New actors must also respect the terms of existing multilateral treaties. For instance, because weaponization would undercut international stability, all actors must vow not to take any action that might undermine space security.²⁷ Negotiations surrounding appropriate commercial behaviour could act as a springboard for talks around other pressing non-proliferation and disarmament issues. In the interim, all space-faring actors should take steps to reduce fears about future intentions, such as renouncing space weapons and pledge to take responsibility for the actions of their commercial actors. The objective should be the amendment and strengthening of existing outer space treaties, their extension to commercial actors, and the establishment of an independent international managing body. In the absence of such laws, commercialization will undercut space security, in terms of the secure and sustainable access to, and uses of, outer space, and freedom from space-based and space-enabled threats.

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¹ "Space X Dragon capsule docks with space station to deliver cargo," *The Guardian*, 3 March 2013. <www.guardian.co.uk/science/2013/mar/03/spacex-dragon-capsule-space-station>

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³ Negotiations should aim to establish a code of space conduct shared by all actors as are outlined in the EU Code of Conduct.

⁴ U.S. Congress, Office of Technology Assessment, *Orbiting Debris: A Space Environmental Problem-Background Paper*, OTA-BP-ISC-72 (Washington, DC: U.S. Government Printing Office, September 1990).

⁵ There is widespread recognition that the main treaty – the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (OST), on the acceptable use of outer space is inadequate. For one, the OST does not prohibit the development of conventional weapons in outer space.

⁶ Outer space has vast amounts of natural resources, including energy, minerals, and metals. For example, certain asteroids can be mined for iron, cobalt, and platinum. It has also been reported that Mercury harbours significant quantities of water ice, which encourages notions of habitable terrain and space colonization in the future. See Peter Diamandis, "Space: The Final Frontier of Profit? – A debate on the pros and cons of commercializing the cosmos; valuing asteroids at \$20 trillion each," *The Wall Street Journal*, 13 February 2010. <http://online.wsj.com/article/SB10001424052748703382904575059350409331536.html>

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- ²⁷ For example, all spacefaring actors should be made to agree to the objectives of the Prevention of an Arms Race in Outer Space (PAROS) initiative and ratification be made a precondition to business licenses in space. On some of the risks, see Theresa Hitchens, "Weapons in Space: Silver Bullet or Russian Roulette?: The Policy Implications of US Pursuit of Space-Based Weapons," CDI (Washington), 18 April 2002. <<http://www.cdi.org/missile-defense/spaceweapons.cfm>>

Debate 3

MEMBERSHIP IN THE NUCLEAR SUPPLIERS GROUP

“Be it resolved that the objectives of the Nuclear Suppliers Group (NSG) would be best achieved by expanding the Group to include the states which remain outside of the Nuclear Non-Proliferation Treaty (NPT).”

Assigned Position: IN FAVOUR

Argument presented by Matthew Wiseman

Matthew Wiseman holds both a Bachelor of Education and a Master of Arts from Lakehead University. He is currently a PhD Candidate in the Department of History at Wilfrid Laurier University in Waterloo, Ontario, where his doctoral research explores Canadian foreign relations during the Cold War. In particular, he is interested in transnational geopolitics and the development of continental security relations between Canada and the United States. He has lectured on various aspects of the Canada’s defence policy as well as Arctic sovereignty, and is actively involved in contemporary security research at the Laurier Centre for Military Strategic and Disarmament Studies.



I. BACKGROUND/CONSIDERATIONS

The Non-Proliferation Treaty (NPT) has been the cornerstone of international efforts to prevent the spread of nuclear and nuclear-related materials since its inauguration in 1968, but several developments have since exposed loopholes in the agreement, subsequently leading to the creation of auxiliary arrangements to augment the goals of its signatory states.¹ In May 1974, as a non-signatory of the NPT, India manufactured and tested its first nuclear device by using materials that were supplied by Canada and the United States.² France and West Germany too, were on the verge of supplying nuclear materials and technology related to uranium enrichment and reprocessing in the mid-1970s, to plants in Pakistan, South Korea, Taiwan, and Brazil.³ Because many of these regions, like India, had yet to make an international commitment to the NPT, concerns about the adequacy of the agreement emerged. The Nuclear Suppliers Group (NSG), which first met in 1974 at the American Embassy in London, materialized out of these concerns to establish effective export controls – specific guidelines that strengthened the nuclear transfer restraints fostered in the NPT and its International Atomic Energy Agency (IAEA) safeguards agreements.⁴

The original NSG Guidelines, published by the IAEA in January 1978 as INFCIRC/254, specified a number of nuclear-related technologies deemed acceptable for transfer to non-NPT states if first subjected to IAEA safeguards.⁵ After IAEA inspections in 1991 and 1992 revealed that Iraq had obtained nuclear-related materials, technology and equipment for its nuclear weapons program, the NSG updated its Guidelines to include arrangements covering exports of 65 dual-use items – safe nuclear materials that may be altered for clandestine purposes.⁶ The Group has

since grown to 46 member states, most of which are traditionally strong in nuclear technology, and all of which are willing to co-operate to prevent irresponsible international transfers of nuclear-related materials and knowledge.

As an informal agreement, the NSG is not bound by international law, so a participating state co-operates by implementing the Guidelines in accordance with its national jurisdiction.⁷ This method has been criticised, and so too has the Group's credibility and effectiveness. Looming over the NSG since its inception has been the issue of "whether it is any longer fair, or efficient, to reserve the control of a wide range of nuclear transactions to a self-appointed group with a limited, traditional composition."⁸ Unfortunately, further expansion comes with uncertain risks. This paper explores these issues and seeks to determine whether or not the NSG would benefit from expanding to include the states which remain outside of the NPT.

II. IN FAVOUR

Argument 1: NSG members agree to full disclosure of all nuclear and nuclear-related activities, so expanding the Group will significantly increase the knowledge base of its current member states and enable international preventative action against suspicious nuclear activities. The individual jurisdictions of participating NSG states have been strengthened by the implementation of IAEA safeguards, to which the non-proliferation regime has been a direct beneficiary. In 2005, for example, the United States successfully objected the sale of two nuclear reactors from China to Pakistan on the grounds that NSG Guidelines reject the supply of nuclear materials to states that refuse international inspections of their facilities.⁹ Proactive expansion also prevents non-NPT states from emerging as nuclear suppliers and developing the technical and industrial capacities to undermine the effectiveness of the NSG. As Michael Krepon argues, the NPT was designed for an era "before the advent of a single dominant military power, underground networks or nuclear commerce, and terrorist cells seeking nuclear weapons and fissile material."¹⁰ The inadequacies of the NPT in dealing with these issues can be addressed through the export control efforts of the NSG, which will be fully utilized by extending membership to as many non-participant states as possible.

Argument 2: Extending membership in the NSG to states which remain outside of the NPT will help reduce, or at least control, the global procurement of materials related to clandestine nuclear activities.¹¹ In recent years, nuclear proliferation has made the sale of weapons technology very profitable. Emerging evidence continues to demonstrate that non-state actors operate independently of their governments as suppliers and buyers of direct nuclear-weapons assistance. Since the difficulty in obtaining fissile material is "the principal obstacle to developing nuclear weapons," arms manufactures will increasingly be tempted by the lucrative financial gains offered through the sale of weapons systems and related technology to countries and non-state actors which are unable to produce such systems on their own.¹² The NSG is a transgovernmental network of non-proliferation, and growing it to include the states which remain outside of the NPT will only further promote the international security efforts of its current members by increasing their ability to globally enforce nuclear export controls, thereby aiding the international process to reduce dangerous horizontal nuclear proliferation.¹³ Any

action otherwise would be to support, as Christopher Ford argued in 2008, the “unchecked or unsafeguarded acquisition of material-production capabilities by countries with potential nuclear weapons ambitions,” and is therefore antithetical to the primary purpose of the non-proliferation regime.¹⁴

III. AGAINST

Argument 1: The international actions of the states which remain outside of the NPT suggest unwillingness on their part to co-operate in the promotion of the non-proliferation regime, so the likelihood of their co-operation with current NSG members is remote. Following the detection of Iraq’s nuclear weapons program in 1992, the IAEA established 93 + 2 – a comprehensive set of reforms for its safeguards system – which led to the creation of an Additional Protocol (AP).¹⁵ In combination with integrated safeguards, the AP is intended to provide the IAEA with a complete understanding of the nuclear capabilities of each co-operating state, but collected information is subject to state declaration and may therefore be incomplete or misleading. If the goals of the NSG are to be achieved, each member state must apply the same criteria when implementing the Guidelines, but since “there are no agreed standards that set out in detail the elements of a legally based domestic export control system,” some NSG members believe that only those countries willing to accept a shared normative framework should join.¹⁶ Therefore, the criteria established by some existing states effectively limits future expansion.

Argument 2: Further expansion of the NSG should not include the states which remain outside the NPT, as their addition may constitute an unnecessary security risk. Access to the NSG information exchange is only granted to participating member states, so an expanded participatory body may increase the potential misuse of highly sensitive or confidential information related to current members and their export control efforts.¹⁷ Amy Sands argues that, “limiting the availability of information on how to make gaseous diffusion barriers or of certain types of equipment (such as hot isostatic presses) may impede the availability of a state to move from scientific theory to actual capability.”¹⁸ Consequently, denying non-NPT states entry into the NSG simultaneously limits the unwarranted dissemination of critical information pertaining to the current export control systems of each participatory member and prevents the horizontal proliferation of nuclear materials and related technology to potentially dangerous regions or organizations.

IV. RECOMMENDATION

Access to nuclear technology and information has been underappreciated as a cause of nuclear proliferation, so it may seem that the NSG should avoid the potential security risks associated with an expanded membership. Yet nuclear weapons are “neither potent causes of war, nor irrelevant to world politics.”¹⁹ There is a strategic logic to expanding the Group to include the states which remain outside of the NPT. In 1992, Paul Leventhal, then President of the Nuclear Control Institute in Washington, D.C., coined the term “non-proliferation paralysis” to describe the state of international efforts of the NPT.²⁰ He argued that the non-proliferation regime had been “too long on secrecy and too short on political will,” and that competing interests among participating states had wrongfully derailed effective nuclear export controls.²¹ Because

horizontal nuclear proliferation cannot be prevented, only controlled, the subsidiary networks of the NPT must be strengthened.²² An increased participatory body will enable the NSG to cover as many global sources of nuclear supply as possible, thereby preventing “non-proliferation paralysis” and achieving the primary objective of eliminating irresponsible international transfers of nuclear-related materials and knowledge.

ADDENDUM: ADDITIONAL REBUTTAL POINTS

If NPT signatories are to encourage non-participatory nuclear weapon states to engage in supportive dialogue, the regime must “resort to some lateral thinking and evolve unique and unorthodox strategies.”²³ Be it affirmed that the NSG, which represents the highest international standard of export controls, offers the perfect opportunity to bridge the gap between signatory and non-signatory NPT states. Increasing membership in the Group will offer non-NPT states the opportunity to benefit from the discussion of technical licensing and enforcement issues relevant to the prevention of horizontal nuclear proliferation at the highest international standard currently available.²⁴ In time, a process of socialization might also lead countries to adopt the standards and norms shared by NSG participating states, which will further promote the goals of the Group as well as the global efforts of the non-proliferation regime.

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¹ Signed on 1 July 1968 at London, Moscow and Washington, the Treaty on the Non-Proliferation of Nuclear Weapons, or Non-Proliferation Treaty (NPT), formed largely out of proposals that were first tabled by Irish foreign minister Frank Aiken in 1959, who called on the United Nations (UN) to prevent the further spread of nuclear weapons. See Philip Margulies, *Nuclear Nonproliferation*, (New York: Facts On File Inc., 2008) 168-169.

² Fred McGoldrick, "The Road Ahead for Export Controls: Challenges for the Nuclear Suppliers Group," *Arms Control Association*, Jan/Feb. 2011, (Accessed 2 Dec. 2012) <http://www.armscontrol.org/act/2011_01-02/McGoldrick>.

³ Ibid.

⁴ Nuclear Suppliers Group, "History of the NSG," *Nuclear Suppliers Group (NSG) Website*, (Accessed 29 Nov. 2012) <<http://www.nuclearsuppliersgroup.org/Leng/01-history.htm>>.

⁵ Jean-Francois Rioux, ed., *Limiting the Proliferation of Weapons: The Role of Supply-Side Strategies*. (Ottawa: Carleton U P, 1992) 183-184.

⁶ Officially, the updated guidelines are now entitled Guidelines for Transfers of Nuclear-Related Dual-use Equipment, Material, Software, and Related Technology. See Ian Anthony, et al., *SIPRI Research Report No. 22 Reforming Nuclear Export Controls: The Future of the Nuclear Suppliers Group*, (New York: Oxford U P, 2007) 19-24; Daniel H. Joyner, *Interpreting the Nuclear Non-Proliferation Treaty*, (New York: Oxford U P, 2011) 51-56.

⁷ Anthony, et al., 13.

⁸ Ibid., Preface vi.

⁹ Daryl G. Kimball, "A Non-Proliferation Reality Check," *Economic and Political Weekly*, Vol. 40, No. 35, 2 Sep. 2005, pp. 3819. (Accessed 2 Dec. 2012) <<http://www.jstor.org/stable/4417072>>.

¹⁰ Michael Krepon, *Better Safe Than Sorry: The Ironies of Living with the Bomb*. (California: Stanford U P, 2009) 4.

¹¹ The NSG aims to simultaneously facilitate the international trade of nuclear materials and ensure that this trade does not contribute to the proliferation of nuclear weapons. The Group facilitates the development of peaceful nuclear trade by providing specific procedures to enable co-operation between states and the implementation of its Guidelines in a manner consistent with the international nuclear non-proliferation regime. See Noel Stott, "Motivations and Capabilities to Acquire Nuclear, Biological, or Chemical Weapons and Missiles: South Africa?" in James J. Wirtz and Peter R. Lavoy, Ed., *Over the Horizon Proliferation Threats*. (California: Stanford U P, 2012) 70; Nuclear Suppliers Group, "What Are The Guidelines? Aim of the NSG Guidelines," *Nuclear Suppliers Group (NSG) Website*, (Accessed 29 Nov. 2012) <<http://www.nuclearsuppliersgroup.org/Leng/02-guide.htm>>.

¹² Joyner, *Interpreting the Nuclear Non-Proliferation Treaty*, 49.

¹³ Horizontal proliferation refers to the spread of nuclear-related materials and weapons between states, while vertical proliferation refers to an increase or spread within one state. See Tom Sauer, *Nuclear Arms Control: Nuclear Deterrence in the Post-Cold War Period*, (New York: St. Martin's P, 1998) 31.

¹⁴ Ibid.

¹⁵ At the fifteenth plenary meeting of the NSG in Oslo in June 2005, member states agreed on the establishment of further restrictions to govern transfers of nuclear "fuel-cycle-related" equipment and technology. See Anthony, et al., *SIPRI Research Report No. 22 Reforming Nuclear Export Controls*, 34; Tariq Rauf, "Export controls and Multilateral Nuclear Arrangements," in Morten Bremer Mærli and Sverre Lodgaard, ed., *Nuclear Proliferation and International Security*, (New York: Routledge, 2007) 276-277.

¹⁶ Anthony, et al., 29-32.

¹⁷ Ibid., 28-31.

¹⁸ Amy Sands, "The Impact of New Technologies on Nuclear Weapons Proliferation," in Mitchell Reiss and Robert S. Litwak, ed., *Nuclear Proliferation after the Cold War*. (Washington: Woodrow Wilson Center P, 1994) 263.

¹⁹ Matthew Kroenig et al, "The Causes and Consequences of Nuclear Proliferation," in Robert Rauchhaus, Matthew Kroenig, and Erik Gartzke. ed. *Causes and Consequences of Nuclear Proliferation*, (New York: Routledge, 2011) 10.

²⁰ Paul L. Leventhal, "Nuclear Export Controls: Can We Plug the Leaks?" in Rioux, ed., *Limiting the Proliferation of Weapons*, 41.

²¹ Ibid.

²² Weapons-grade fissile materials such as enriched uranium and plutonium are used in both military and civil spheres by states that engage in nuclear power generation. Since these materials are used for purposes other than for the creation of strategic weapons, their complete elimination is highly unlikely. See Götz Neuneck, "Is a World without Nuclear Weapons Attainable? Comparative Perspectives on Goals and Prospects." in Kelleher, Catherine McArdle and Judith Reppy, ed., *Getting to Zero: The Path to Nuclear Disarmament*. Stanford, (California: Stanford U P, 2011) 58.

²³ Laxminarayan Ramdas, "Abolition of Nuclear Weapons: Political Apathy and a Possible Way Ahead" in David Krieger, ed., *The Challenge of Abolishing Nuclear Weapons*, (New Jersey: Transaction Publishers, 2009) 19.

²⁴ Anthony, et al., *SIPRI Research Report No. 22 Reforming Nuclear Export Controls*, 32.

Debate 3

MEMBERSHIP IN THE NUCLEAR SUPPLIERS GROUP

“Be it resolved that the objectives of the Nuclear Suppliers Group (NSG) would be best achieved by expanding the Group to include the states which remain outside of the Nuclear Non-Proliferation Treaty (NPT).”

Assigned Position: AGAINST

Argument presented by Saira Bano

Saira Bano is a PhD candidate in Centre for Military and Strategic Studies (CMSS) at the University of Calgary. Her research focuses on the nuclear nonproliferation regime, nuclear weapons issues in South Asia, especially India, and nonproliferation policies of states, such as the US, Pakistan, Israel and India. Her PhD dissertation, grounded in regime theory, analyses the India-United States Civilian Nuclear Agreement, and explores its implications for the nuclear non-proliferation regime. She

has won several academic and research awards. She was awarded the prestigious Joseph-Armand Bombardier Canada Graduate Scholarship Doctoral by SSHRC (Social Sciences and Humanities Research Council). Previous to her doctoral work, she completed her MSS (Master of Strategic Studies) degree from the same institution. Her MSS research topic was “The NSG (Nuclear Suppliers Group) Waiver for India and the Non-proliferation Regime”. In this dissertation, she analyzed the four texts of the NSG waiver, the process of negotiations for the waiver, and of the United States and Indian statements, and the prospects for and consequences of the NSG membership expansion.



I. BACKGROUND

The Nuclear Suppliers Group (NSG) is a multinational body which aims to prevent nuclear exports for peaceful purposes from being used to make nuclear weapons. The NSG was founded in 1974 in response to the Indian nuclear test that demonstrated that peaceful nuclear technology could be readily turned to nuclear weapons development. It was evident that the Nuclear Non-Proliferation Treaty (NPT) alone cannot prevent nuclear proliferation and the NSG was formed to “support the effective implementation of the NPT.”¹

After a series of meetings, the NSG agreed on guidelines for nuclear exports under certain International Atomic Energy Agency (IAEA) safeguards in 1978. The NSG did not meet again until 1991. The revelations about the Iraqi nuclear weapons program led to the tightening of the nuclear exports controls and in 1992 the NSG adopted the policy of requiring IAEA full-scope safeguards, covering all nuclear facilities and activities, as a condition of nuclear supply.²

In this way the non-NPT states – India, Pakistan, and Israel (North Korea signed and then withdrew in 2003) – that do not accept full-scope safeguards were no longer eligible to have

nuclear trade with the NSG member states. On September 6, 2008, as part of the India-US Civil Nuclear Agreement, the NSG exempted India from its full-scope guidelines, making it the first country that had not signed the NPT to be allowed to have nuclear trade with NSG members. The US sought an India-specific NSG waiver to pursue its strategic objectives regarding India. Now the US has supported the inclusion of India in the NSG.³

Some scholars suggest that the NSG could be strengthened by a criteria-based approach to non-NPT states, as it would improve nuclear safety and security, and export controls. The NSG focuses on trade controls and therefore should bring into its fold all states that can export nuclear technology.⁴ Others fear that including non-NPT states in the NSG would challenge the fundamental norms and rules, which have served as the linchpin of the nonproliferation regime. It would undercut the NPT 'bargain' (trading safeguarded access to peaceful nuclear energy for a forgoing of nuclear weapons).⁵

II. IN FAVOUR

The non-NPT states are nuclear-armed states. Sanctions could not prevent these states from acquiring nuclear weapons. These states cannot be coerced to join the NPT as Non Nuclear Weapon States (NNWS) nor is it possible to admit them as Nuclear Weapon States (NWS) due to the complexity involved in amending the treaty. The indefinite extension of the NPT in 1995 solidified this gap and now we have no option but to move beyond the NPT.

Today non-NPT states are excluded from participation in the NSG. This was not always the case. When the NSG was established, one of its primary aims was to include France – a country with nuclear weapons outside the NPT - in the international export control regime. France was planning to export a plutonium separation plant but after it was included in the NSG, it abandoned its export to Pakistan.⁶ France acceded to the NPT in 1992. Later on the NSG also invited China to join the group despite its poor nonproliferation history, but after China joined the group in 2004, it has become a more responsible nuclear exporter. Although its nuclear reactor export to Pakistan is arguably in violation of NSG guidelines, it is at least under IAEA safeguards.⁷

The NSG waiver for India had a similar rationale. The waiver has confronted the fact that India has a nuclear weapons program and cannot be coerced to forgo its nuclear options.⁸ Now India is bidding for NSG membership with the same argument. The Obama administration is already advocating this. The NSG can establish criteria for states to qualify for NSG membership. A criteria-based approach would set robust benchmarks and it would provide the world greater security against the threat of nuclear weapons proliferation.⁹

It would open up the horizon for legitimate nuclear commerce to non-NPT states; it would also provide an opportunity to include criteria, which are not currently condition for nuclear trade. The real world has moved beyond the NPT in some ways and these states are significant players. Their inclusion would produce an increase in global nuclear safety, security, and sustainable development.¹⁰

The non-NPT states inside the NSG and abiding by its guidelines would be less threatening than outside the global export control regime. This approach could help resolve persistent questions about the NSG's future, which were raised by Russia's previous commerce with India, the India waiver, and the China-Pakistan nuclear agreement.¹¹ This strategy has the potential to resolve this issue in a way that strengthens the NSG, by giving non-NPT states the international legitimacy they seek and providing incentives for adhering to the NSG guidelines.

III. AGAINST

This would weaken the NPT, which is the primary bargain and the most important multilateral treaty in the nonproliferation regime. The NPT is a bargain between NWSs and NNWSs in which NWSs agreed to share nuclear technology for peaceful purposes and gradually disarm their nuclear arsenals while NNWSs agreed not to develop nuclear weapons and to accept IAEA safeguards. By including non-NPT states in the NSG, these states would enjoy the benefits of nuclear energy along with their nuclear weapons program, which reduces the incentives for NNWSs to belong to the NPT.¹² This deal would convince states like Iran and North Korea that they can break the rules and not only get away with it, but eventually be rewarded.

The 189 NPT member states have remained true to the original bargain and forsworn nuclear weapons in return for access to peaceful nuclear technology under full-scope IAEA safeguards. Many of these states have made this choice despite strong pressure to pursue the nuclear weapons path. They might make different choices in the future if non-NPT states are allowed to have nuclear trade along with their nuclear weapons programs.¹³ It would undermine the attractiveness of the NPT and the credibility of the NSG as an effective organization to prevent nuclear proliferation.

The United States modified the nonproliferation regime to conclude the India-US nuclear agreement but presented these changes as India-specific to discourage other non-NPT states from following this precedent. The negotiation of the India waiver shows that, despite India's strong non-proliferation record and stable democracy, it was not easy for the United States to get the exemption: it had to revise the draft three times to address the concerns of some NSG member states and mount a significant diplomatic efforts at the end. This demonstrated that similar waivers for the other two non-NPT states are unlikely.

The NSG made the waiver India-specific, which reduces the possibility of the waiver leading to a criteria-based approach to further waivers. As well the Hyde Act specifically limits the US in this regard. The India-specific waiver and the terms of the Hyde Act, make the inclusion of the other non-NPT states much less viable.

The India NSG waiver was criticized, as setting precedent for states to follow. China's decision to sell two nuclear reactors to Pakistan (in violation of NSG guidelines) was cited as evidence in this regard. China justified its decision as 'grandfathered' under the old trade deal.¹⁴ The lack of generality in the India waiver has encouraged China and Pakistan to seek a deal outside the NSG, but this approach has limitations and cannot be sought on a regular basis.

IV. RECOMMENDATION

The NPT is a nearly universal (except for four countries) treaty and the cornerstone of the global nonproliferation regime. Including non-NPT states in the NSG would reduce the incentives of 189 countries belonging to the NPT. It would encourage the NPT NNWSs to reconsider their decision regarding nuclear weapons. The proposal to include the non-NPT states in the NSG does not solve the problem, but instead creates other problems.

The United States, due to its strategic and economic interests, is trying to seek India-specific exemption for NSG membership and is discouraging others from seeking such exemption to limit the damage to the regime.

The other non-NPT states can be engaged through the following means without including them in the NSG: (1) The NSG Outreach Program, (2) The UNSC Resolution 1540, (3) The Nuclear Security Summit, (4) The International Convention for the Suppression of Acts of Nuclear Terrorism etc.

V. ADDENDUM: ADDITIONAL REBUTTAL POINTS

- The criteria-based approach would outline the standards. The decisions whether these states meet those standards are governed by political considerations.
- The NSG has an outreach program to engage countries that are outside the Group. Israel has been applying the NSG guidelines since 1990's and Pakistan has been involved in the NSG's outreach program since 2002.
- Israel maintains a policy of "nuclear opacity" and is unlikely to embark on a nuclear power program that would rely on nuclear imports. In the case of Pakistan, vendors are unlikely to invest in a country that is politically unstable and economically fragile.

¹ - "The Nuclear Suppliers Group", Foreign Affairs and International Trade, Canada. Available at

<http://www.international.gc.ca/arms-armes/nuclearnucleaire/nsg.aspx?lang=eng&view=d> (Accessed on December 17, 2012)

² - "The NSG Guidelines", The Nuclear Suppliers Group.

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<http://www.nuclearsuppliersgroup.org/Leng/05-public.htm> (Accessed on December 17, 2012)

³ - "US to support India's full membership in NSG", The Times of India, November 06, 2010.

⁴ - Toby Dalton, Mark Hibbs, and George Perkovich, "A Criteria-Based Approach to Nuclear Cooperation with Pakistan", Policy Outlook, June 22, 2011.

⁵ - Daryl Kimball, "Indian Membership in the NSG? A Bad Idea Whose Time Has Not Come", June 23, 2011. Available at

<http://armscontrolnow.org/2011/06/23/indian-membership-iin-the-nsg-a-bad-idea-whose-time-has-not-come/> (Accessed on December 17, 2012)

⁶ - Toby Dalton, Mark Hibbs, "Nuclear Suppliers Group: Don't Rush New Membership", Proliferation Analysis, June 14, 2012.

⁷ - Ibid.

⁸ - T.V. Paul and Mahesh Shankar, "Why the U.S.-India Nuclear Accord is a Good Deal", Survival, Vol. 49, No. 4, 2007. PP 17-118.

⁹ - Mark Hibbs, "Moving Forward on China, Pakistan, and the NSG", June 23, 2011. Available at <http://hibbs.armscontrolwonk.com/archive/228/moving-forward-on-china-pakistan-and-the-nsg> (Accessed on December 17, 2012)

¹⁰ - Mark Hibbs, "The Future of the Nuclear Suppliers Group" Carnegie Endowment for International Peace, 2011.

¹¹ - Pierre Goldschmidt, "NSG Membership: A Criteria-Based Approach for Non-NPT States", Proliferation Analysis, May 24, 2011.

¹² - Benjamin Wastler, "Having its Yellow Cake and Eating it too: How the NSG Waiver for India Threatens to Undermine the Nuclear Nonproliferation Regime", Boston College International and Comparative Law Review, Vol. 33, No. 1, 2010. p. 202.

¹³ - Ibid.

¹⁴ - Daniel Horner, "China, Pakistan Set Reactor Deal", Arms Control Today, Vol. 40, No. 6, 2010.

Debate 4

TRANSPARENCY AND FREEDOM OF INFORMATION FOR DUAL-USE RESEARCH

“Be it resolved that proliferation and security concerns should not trump transparency and freedom of information when publishing dual-use biological, chemical, or nuclear research, when there are likely to be positive benefits for humankind arising from such research.”

Assigned Position: IN FAVOUR

Argument in presented by Elizabeth Silber

Elizabeth Silber is a PhD Candidate in Physics at Western University, where she also obtained her Honors BSc in Astrophysics. She studies infrasound, which is one of the four verification regime technologies used by the Comprehensive Test Ban Treaty Organization to monitor and detect any nuclear explosion conducted on Earth. She has won a number of scholarships and awards, and is a past winner of the Graduate Research Award for Disarmament, Arms Control and Non-Proliferation. She has previously conducted research in the area of missile and rocket infrasound, and re-analyzed the recently declassified bolide dataset from the Cold War era. In addition to working on completing her thesis, Elizabeth is currently leading a study investigating the Windsor Hum on behalf of Government of Canada and is also teaching a first year course at Western.



1. BACKGROUND/CONSIDERATIONS

In the words of the great Richard Feynman ...*“Scientific knowledge is an enabling power to do either good or bad — but it does not carry instructions on how to use it”*¹. Those words reverberate now more than ever in the light of the dual use research dilemma² and the recent controversial publications in the field of biosciences². Dual use research (DUR) is defined as research that generates new technologies and information aimed for public good, yet with the potential to be used for malevolent purposes, such as harming the public, environment, economy or national security³.

While DUR technically applies to nuclear, chemical and life sciences⁴, it is the latter with the highest potential of misuse by terrorist and criminal elements, for the simple reason that is the easiest to exploit maliciously due to the low sophistication and minimal resources required, with the highest impact and the most disastrous consequences. The nuclear research has been highly classified from its inception at all levels^{5,6} and requires state level resources and an extremely sophisticated expertise, whereby these research activities are easily monitored due to their specific signatures⁷. In contrast, the chemical science research is less expensive, requiring significantly less resources and expertise; however, the potential low impact of misuse makes this area of science less attractive to terrorists. The increasing threat of terrorist abuse of scientific knowledge in life sciences has led scientists, politicians and security officials to

consider additional ways of mitigating the dangers of DUR⁸, and call for a range of actions, from reasonable to extreme⁹, that may have a lasting impact not only on the scientific discipline in question but on the welfare of the whole society¹⁰. This essay will focus on concisely evaluating the contrasting options between the transparency in publishing what is considered dual use research on one side and restriction of free exchange of scientific information on the other, and will examine the validity of arguments on both sides and their implications.

2. IN FAVOUR

The pivotal point in life sciences and dual use research occurred in 2001 when an Australian microbiologist, in an attempt to induce mouse infertility, synthesized a super-strain of small pox, publishing not only his results, but also the complete methods and materials in the *Journal of Virology*¹¹. Subsequent and equally controversial work and contentious publications on synthesizing a live polio virus¹², DNA sequencing and engineering of a human immune system defeating protein SPICE¹³, and a reconstruction of the Spanish Flu virus¹⁴ brought a sobering realization to the scientific, security and political establishments of a potential catastrophic misuse of published information. One of the ways that the US government has dealt with the problem of DUR publications was by establishing of the National Science Advisory Board for Biosecurity (NSABB)¹⁵ with the role of assessing potentially exploitable manuscripts a year after the National Research Council (NRC) recommended self regulation of scientists involved in dual use research¹⁶. Finally, in 2012, the US implemented a range of laws, regulations and guidelines for biosecurity, resulting in the formation of the government policy for Dual Use Research of Concern (DURC)¹⁷. An ensuing ferocious debate¹⁸ whether to permit publishing of similar manuscripts following the notorious H1N1 study and its subsequent publication¹⁹ led to calls to restrict or even completely ban DUR publications²⁰. Such a point of view and a potential resulting policy or law should be considered, but not implemented for the following critical reasons:

- Imposing restrictions and the prohibiting publishing of DUR studies will lead to top scientific talent exodus and an abandonment of research with Select Agents, something which has already occurred to some degree²¹. This would have “*chilling effects on biodefense research vital to US national security*”¹⁶ in addition to a false sense of security²².
- Restricting publishing will impede the dissemination of important findings that could benefit society²³ and consequently interfere with the development of protection against new diseases and pandemics or even against potential bioweapon attacks. Case in point is that a recent mathematical model study showing how to infect a country’s milk supply with botulinum toxin¹⁰ resulted in improved security procedures in the dairy industry across the board²².
- A restrictive publishing environment will impact the quality of research²⁴ and impede the general advancement of science² as publishing is the integral part of research²⁵ and the independent verification and reproducibility of the findings would be prevented.

Consequently, while urgent and comprehensive steps must be taken to deal with a real and emerging threat of terrorists exploiting life sciences for malicious purposes, it has to be

recognized in the political and security communities that scientific integrity and freedom must remain intact.

3. AGAINST

A considerable number of scientific disciplines foster a strict culture of secrecy and total absence of transparency in the name of national security^{6,9,26}. Therefore, in the age of global terrorism it can be argued that the same secrecy and restrictive environment should be applied to all DUR in life sciences to effectively manage potential threats from rouge entities particularly considering advances in genetics, neuroscience²⁷ and the convergence of biology and chemistry²⁸, coupled with the availability of specific technical knowledge from published sources. To illustrate the seriousness of the present situation, it is prudent to note that it is estimated that *“the cost of killing one person with a biological weapon is \$1, while chemical and nuclear weapons would cost \$1000 and \$1 million, respectively”*^{9,29}. The most effective immediate response to the given paradigm is to restrict or even completely ban the publication of DUR in life sciences if there is a potential for it to be used maliciously. The arguments for that can be presented as follows:

- Restricting or outright banning publications of a sensitive and dangerous DUR nature is the logical preemptive measure and prevents terrorists from obtaining a technical know-how and the appropriate materials and equipment to construct a biological weapon. While rouge state actors are unlikely to commit to such an act since the invoked response would mean collective suicide³⁰, extremist groups and individuals with ill intent are willing to use any means to inflict harm on society in general, as evident from the September 11 anthrax attacks and the previous Tokyo subway sarin attack³¹.
- As some authors observed³² scientists are unable to self regulate because of the specific lack of security training, lack of access to classified national security data, and some perceived bias; their work and publications need external oversight, regulation and approval in particular when DUR is involved. Therefore wherever there is a conflict between security and science, security must take precedent.
- Finally, the DUR publishing restrictions would prevent possible proliferation and the potential accidental release of biological agents if an attempt is made in a third world country's laboratory with insufficient biosafety to replicate the experiment. Moreover, national security favors secrecy as it preserves the strategic advantage over possible adversaries and competitors.

These steps represent an immediate response to the DUR dilemma and mitigate the threat at least in the immediate future. However, at this point, the real question must seek to understand the potential implications and consequences of such actions in the long term, regarding the national security, scientific and economic progress and overall benefit for the society.

4. RECOMMENDATION

Responding to DUR threats is a complex task and it is imperative to recognize its importance by all stakeholders. Science does not favor censorship and any scientific suppression may compromise the national security, economy and health of the whole society in the long term¹⁰. For that reason, the full scientific and publishing freedoms along with self governance should be endorsed. However, the emphasis must be on training scientists in ethics and security issues^{25,27}. The current level of government involvement and oversight should be maintained for the proper

regulatory and security regimes, while the full cooperation between scientific, public health and security communities²⁴ is needed to preemptively deal with potential threats. In closing let us remember Einstein's words: "The right to search for truth implies also a duty; one must not conceal any part of what one has recognized to be true"³³.

ADDENDUM: ADDITIONAL REBUTTAL POINTS

Additional arguments in favour of scientific freedom are as follows:

- It is clearly recognized that the more danger the pathogen possesses the more important it is to study it³⁴. Moreover restricting bioscience will cause scientists to move to countries with fewer restrictions²⁵.
- "Censorship of science is just one more civil liberty infringement in the name of the war on terror"², and in the process it impedes freedom of research and inquiry, freedom of speech and publication and the balance between the right to know and dangers of knowing³⁵.

¹ Robbins, J. *The Pleasure of Finding Things Out: The Best Short Works of Richard P. Feynman*. Cambridge, MA, USA, Basic Books. 1999. Print.

² Selgelid, M. "A Tale of Two Studies: Ethics, Bioterrorism, and the Censorship of Science". *Hastings Center Report* 37.3 (2007): 35-43. Web. 30 Nov. 2012

<http://www.jstor.org/discover/10.2307/4625744?uid=3739448&uid=2129&uid=2&uid=70&uid=3737720&uid=4&sid=21101465430613>

³ National Science Advisory Board for Biosecurity. *Proposed Framework for the Oversight of Dual Use Life Sciences Research: Strategies for Minimizing the Potential Misuse of Research Information*. Office of Science Policy. National Institutes of Health. 2007. Web. 30 Nov. 2012.

http://oba.od.nih.gov/biosecurity/pdf/Framework%20for%20transmittal%200807_Sept07.pdf

⁴ Miller S. and M. Selgelid. "Ethical and philosophical consideration of the dual-use dilemma in the biological sciences". *Science and Engineering Ethics* 13 (2007): 523-80. Web. 30 Nov. 2012.

<http://www.springer.com/social+sciences/applied+ethics/book/978-1-4020-8311-2>

⁵ The Atomic Energy Act of 1946, 42 Chapter 14 US Code: 1801-1819. Print.

⁶ The Invention Secrecy Act of 1951, 35 Chapter 17 US Code: 181. Web. 30 Nov. 2012.
<http://www.law.cornell.edu/uscode/text/35/181>

⁷ Silber, E., ReVelle, D., Brown, P and W. Edwards. "An estimate of the terrestrial influx of large meteoroids from infrasonic measurements". *JGR-Planets* 114.E08006 (2009): 1-8. Print.

⁸ *National Research Council. Globalization, Biosecurity and the Future of the Life Sciences*. Washington, DC. The National Academic Press. 2006. Print.

⁹ Gorman, B. "Biosecurity and Secrecy Policy: Problems, Theory, and a Call for Executive Action". *A Journal of Law and Policy for the Information Society* 2.2 (2005/06): 53-102. Web. 30 Nov. 2012.

http://moritzlaw.osu.edu/students/groups/is/files/2012/02/Gorman_Final_formatted_.pdf

¹⁰ Resnik, D. "Can Scientists Regulate the Publication of Dual Use Research?". *Studies in Ethics, Law, and Technology* 1.1.6 (2010): 1-7. Web. 28 Nov. 2012. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3134283/>

¹¹ Jackson, R.J., Ramsay, A.J., Christensen, C.D. et al. "Expression of Mouse Interleukin-4 by a Recombinant Ectromelia Virus Suppresses Cytolytic Lymphocyte Responses and Overcomes Genetic Resistance to Mousepox". *Journal of*

Virology 75.3 (2001): 1205-1210. Abstract available at: <http://www.ncbi.nlm.nih.gov/pubmed/11152493> Web. 30 Nov. 2012.

¹² Cello J., Paul A.V., and E. Wimmer. "Chemical synthesis of poliovirus cDNA: Generation of infectious virus in the absence of natural template". *Science* 297.5583 (2002): 1016-1008. Web. 30 Nov. 2012. <http://www.sciencemag.org/content/297/5583/1016.full>

¹³ Rosengard A.M., Liu Y., Nie Y.Z., and R. Jimenez. "Variola virus immune evasion design: expression of a highly efficient inhibitor of human complement". *Proceedings of the National Academy of Sciences of the United States of America* 99.13 (2002): 8808-8813. Web. 1 Dec. 2012. <http://www.jstor.org/discover/10.2307/3059097?uid=3739448&uid=2&uid=3737720&uid=4&sid=21101465661603>

¹⁴ Tumpey, T.M., Basler, C.F., Aguilar P.V., et al. "Characterization of the reconstructed 1918 Spanish Influenza pandemic virus". *Science* 310.5745 (2005): 77-80. Web. 29 Nov. 2012. <http://www.sciencemag.org/content/310/5745/77.full>

¹⁵ National Science Advisory Board for Biosecurity. Web. 30 Nov. 2012. <http://www.biosecurityboard.gov>

¹⁶ National Research Council. *Biotechnology research in an age of terrorism*. Washington, DC. National Academies Press. 2004. Print.

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Debate 4

TRANSPARENCY AND FREEDOM OF INFORMATION FOR DUAL-USE RESEARCH

“Be it resolved that proliferation and security concerns should not trump transparency and freedom of information when publishing dual-use biological, chemical, or nuclear research, when there are likely to be positive benefits for humankind arising from such research.”

Assigned Position: AGAINST

Argument presented by Brent Gerchicoff

Brent Gerchicoff is a PhD candidate in Political Science and International Relations at Concordia University. Brent’s particular research focus has been on nuclear policy and doctrine, and has had an opportunity to present on these themes at conferences and symposiums, including at the 7th annual conference of the Research Group in International Security (REGIS): a joint programme of the Université de Montréal and McGill University. Brent was the recipient of the CEPES (Centre d’études des politiques étrangères et de sécurité) Security Scholarship in 2010.



I. BACKGROUND

The publication of scientific research serves at once to advance the field’s understanding, as science build on the foundations of reproducible lines of experimentation, replication, and confirmation. However, in a field such as the life sciences that typically delves into pathogens, highly contagious diseases, resistance to immunology and vaccinations, a problem arises; research publications in the life sciences often possess the potential to be misused and weaponized for the state and non-state actors for violent purposes.

One argument is that science, and especially life sciences progresses through transparent dissemination of information. Progress in the sciences is usually non-linear, with unexpected results often leading to breakthroughs.¹ Restricting, censoring, or classifying the publication of life sciences research is anathema to the scientific process.² Furthermore, mechanisms are in place with various multilateral treaties and conventions exist to limit the impact of potential misuse.

On the other side, the publication of dual-use research presents a security risk. Non-state actors, especially terrorist capabilities could stem from dual-use life science research. The publication of dual-use research does present insight into preparation biological, chemical, and possibly nuclear weapons. In addition to non-state actors, military biologists employed by actual (and potentially) hostile states present a threat to national security, up to date with the most current scientific research and the proliferation of dual-use research may enable advancement of capabilities.³

II. IN FAVOUR

Research in the multidisciplinary field of the life sciences paves the way for advancements in vaccinations, limiting the spread of contagions, and eradicating infectious diseases. These provide a tangible benefit for people, raising quality of life around the globe, as breakthroughs in European labs may eradicate disease in Burkina Faso. While the time frames of biomedical research differ,⁴ benefits of life science research are sometimes debatable, “or at least not clearly recognizable.”⁵ Advancements in research are sometimes non-linear,⁶ scientific progress is left free to progress. This, in part, is justification for the publication of dual-use scientific research that may be misused. For example, polymerase chain reaction (PCR) revolutionized medical diagnostics, but could create dangerous pathogen.⁷

Censorship, as classifying dual-use research is inappropriate and drastic. Firstly, international organizations and multilateral agreements make this unnecessary. The Review Conferences of the Biological and Toxin Weapons Convention (BTWC), while recognizing the “potential for the misuse of both science and technology” in the field of biotechnology,⁸ the document recognizes the inherent importance of promoting “the fields of vaccine and drug production, disease surveillance, direction, diagnosis, and containment of infectious disease”.⁹ In fact, the sixth Review Conference outlined measures to promote codes of conduct, “preventing misuse in the context of advances in bio-sciences and bio-technology research”.¹⁰

Secondly, other measures may be attempted before resorting to censorship of life science research. While BTWC indicates the advisability of training scientists of their obligation under the Convention, this has not been the case, as 22 out of 142 degree courses make reference to BTWC, bioweapons, or arms control in a study conducted in the EU.¹¹ The study argues scientists may be better trained to understand and meet safety requirements in BTWC; censorship of scientific research for security purposes would be rendered unnecessary if sufficient care is taken by these scientists.

III. AGAINST

National security considerations trump transparency and freedom of information when publishing dual-use NBC research, even when that research is likely to produce positive benefits from the life sciences. The potential for state military actors and non-state actors, especially terrorist organizations represent too great a potential source of insecurity for national governments not to take an active role in creating and maintaining a system that would classify dangerous dual-use research.

The largest threat with respect to the acquisition of biological weapons remains state-military actors. The expertise stemming from military biologists hired at the nation-state level for the development of bioware programmes likely possess the greatest amount of resources and technical knowledge, keeping up with the latest in scientific research and able to direct this back into the development of nuclear, chemical and biological weapons.¹² Scientific laboratories and an understanding of pathology are the main skills needed for at least a rudimentary bioweapons programme. As a case in point, Iraq was able to start their programme by obtaining pathogenic cultures and North Korea was able to develop thousands of chemical agents and biological weapons, while still being unable to develop a functional nuclear weapons delivery system.

Starting with the obtaining seed cultures of pathogens from commercial laboratories in France and the United States, Iraq was able to develop a range of biological agents, including pathogenic bacteria (anthrax and gas gangrene, *Clostridium perfringens*), toxins (botulinium, aflatoxin, ricin), anti-crop agent, and incapacitating viruses (including hemorrhagic conjunctivitis, rota-virus, camel pox).¹³ The United Nations Special Commission on Iraq (UNSCOM) inspected the Saddam Hussein regime from 1991 to 1994, destroying 28,049 chemical munitions and over 481,000 liters of chemical warfare agents.¹⁴ Despite the efforts of inspection regimes, however, UNSCOM was unable to find or eliminate Iraq's VX stockpile and Saddam Hussein was able to pursue strategic chemical weapons and deploy chemical warheads under international scrutiny.¹⁵ The Democratic People's Republic of Korea (DPRK) also possesses a variety of chemical and biological weapons. The Korean People's Army's (KPA) arsenal is purported to include VM and VX nerve agents, mustard gas, phosgene, hydrogen cyanide and a stockpile of up to 5,000 tons of chemical agents¹⁶ as well as biological weapons in the form of anthrax, botulism, cholera, hemorrhagic fever, smallpox, and plague.¹⁷ To further emphasize dual-use implication, US Armed Forces Institute of Pathology scientists were able to sequence the DNA of 1918 influenza victims, constructing a blueprint of viral genome.¹⁸ To make matters more dangerous, it is easier to produce biological weapons agents than it is to -develop antibodies.

The publication of dual-use life science research extends the democratization of knowledge and information. With the right information, biological weapons may not necessarily require extensive technical expertise.¹⁹ While transparency and access to information are laudable goals, this results in expanding the capability to more individuals and groups to misuse this research; groups and individuals who would already be difficult to identify.²⁰ As Al Qaeda searches for opportunities to seek out bioterror weapons, the diffusion of bioweapon information and processes shorten the time line significantly through publications such as the 1918-Influenza project,²¹ the H5N1 project,²² and the publication of viral genome sequences;²³ cutting-edge laboratory equipment and leaders of the scientific community are not limiting factors.²⁴ State actors (and the international community), by not providing sufficient oversight are potentially creating more A.Q. Khan networks of proliferators-for-hire; while the process of the diffusion of technical knowledge cannot be stopped, it can be delayed.

IV. RECOMMENDATIONS

The risk of biological weapons is as prominent as ever. With the UN envoy in Libya declaring the "missing" 7,000 drums of uranium after 8-month civil war,²⁵ there is a rise in activity surrounding Syria's biological and chemical weapons sites (believed to contain mustard gas) as international intervention is considered²⁶ - in fact it would take tens of thousands of ground troops for to secure Syria's chemical and biological weapons sites,²⁷ in addition to the Al Qaeda and non-state actors attempting to acquire non-conventional weapons. The fact of the matter is that advancements in life sciences is crucial to increasing standards of living and human progress, and as science is often a non-linear progression, it is not justifiable to limit human progress. However, the magnitude and potential destruction from NBC attacks warrants security concerns. While research needs to proceed as unencumbered as much as possible to advance the standard of living, particularly in the life sciences, the state is responsible for the maintenance of national security interests, protecting itself and citizens from enemies foreign and domestic. With that in mind, security must be tantamount especially given that most dual-use research does not provide a clear pathway for progress.

While censoring scientific publications is problematic, some measure of oversight should be put in place for dual-use studies in a manner similar to the National Science Advisory Board on Biosecurity (NSABB). Furthermore, there should be a regulatory body in a manner similar to the Social Science and Humanities Research Council of Canada (SSHRC) that provides oversight to funding practices with scientific advisers and government officials²⁸ making up the council to interpret some of the implications of dual-use research,²⁹ so that a cost-benefit analysis may be responsibly projected. In terms of private funding, there should also be a national equivalent to the International Gene Synthesis Consortium that reached an agreement, covering core components.³⁰

REBUTTAL POINTS

Multilateral conventions and treaties do not ensure that states parties will not defect from international law, which remains ostensibly unenforceable. Historically, these treaties can largely be ignored: Canada has never withdrawn from the Kellogg-Briand Pact, promising not to engage in war since 1928. While the BTWC creates norms for the non-use of biological and chemical weapons, the United States is still producing non-conventional stockpiles. Furthermore, the Non-Proliferation Treaty did not stop DPRK from their 2003 withdrawal and joining the nuclear club.

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Closing Remarks

Isabelle Roy

Director, Non-Proliferation and Disarmament Division

Foreign Affairs and International Trade Canada (DFAIT)

Chers collègues,

Après cette journée bien remplie, il me fait plaisir de conclure les débats avec le mot de la fin. Je voudrais tout d'abord féliciter chaleureusement les gagnants des débats et de remercier tous les participants.

Thank you for your excellent work and preparations, which were apparent from the quality of the debates on the four complex themes this morning.

We also welcome your feedback on the debate format to inform future activities, bringing together scholars and officials to discuss issues of common interest.

L'objectif de ces bourses est de former la prochaine génération de chercheurs canadiens sur des enjeux liés à la sécurité internationale, notamment le désarmement, le contrôle des armements et la non-prolifération.

We are proud of the Department's continuing work, with the The Simons Foundation, to promote education in Canada in areas related to disarmament, non-proliferation and arms control.

And, speaking from the perspective of international affairs and diplomacy, educational initiatives such as the GRA Program have not gone un-noticed in Canada's work internationally to promote Canadian perspectives on international arms control.

Last year, the GRA program was cited as a Canadian contribution to disarmament education in a working paper co-sponsored by Canada at the 2012 Nuclear Non-Proliferation Treaty (NPT) Preparatory Committee meeting.

Our guests and young scholars have highlighted for us the value that comes from these kinds of unique exchanges.

You should all be proud of what you have accomplished today!

We are also very grateful to The Simons Foundation for the continuing support to the program.

Therefore, let me again convey our sincere gratitude to Dr. Jennifer Simons, whose commitment and energy is central to the Program's continuing success.

En posant un regard autour de la salle aujourd'hui, il est clair que le programme a atteint son objectif: promouvoir la recherche et la discussion bien informée au Canada dans le domaine du désarmement et de la non-prolifération.

Once again congratulations to all participants, and to our debate winners.

Thank you. Merci.

Expert Review Panel

Professor Trevor Findlay is Chair, William and Jeanie Barton Chair in International Affairs and Professor of International Affairs at the Norman Paterson School of International Affairs, Carleton University, and joint Fellow with the International Security Program and Managing the Atom Project at the Belfer Center for Science and International Affairs, Harvard Kennedy School, Harvard University. Dr Findlay spent thirteen years in the Australian diplomatic service, with postings in Tokyo, Mexico City and Geneva. This was followed by several academic appointments at the Peace Research Centre at the ANU and four years at the Stockholm International Peace Research Institute. From 1998 to early 2005 he was Executive Director of the London-based Verification Research, Training and Information Centre. Following his professorial appointment at Carleton in 2005, Dr. Findlay became director of the Canadian Centre for Treaty Compliance (CCTC) at NPSIA until 2012. During that time he was also a Senior Fellow at the Centre for International Governance Innovation (CIGI) in Waterloo, Ontario. In 2013 he was appointed to the UN Secretary-General's Advisory Board on Disarmament Matters.

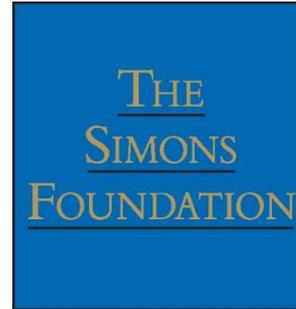
Professor Jeremy Littlewood is Director, Canadian Centre of Intelligence and Security Studies (CCISS) and Assistant Professor of International Affairs at the Norman Paterson School of International Affairs, Carleton University. He joined NPSIA in July 2007 as an Assistant Professor and as the Director of the Canadian Centre of Intelligence and Security Studies (CCISS). He teaches the courses on Intelligence, Statecraft and International Affairs (INAF 5204), Terrorism and International Security (INAF 5244) and Intelligence and National Security (INAF 5224). His research interests include proliferation and counter-proliferation of WMD, terrorism, national and international security, and intelligence. He served previously as an Advisor to the Counter-Proliferation Department of the UK Foreign & Commonwealth Office, the United Nations Department for Disarmament Affairs (Geneva), and with HM Forces (Army) of the UK. He is a UK national and permanent resident in Canada.

Professor Stéphane Roussel is Professor of Political Science at Ecole nationale d'Administration publique (ENAP). He is the director of the *Centre interuniversitaire de recherche sur les relations internationales du Canada et du Québec* (CIRRIQ) and of the *Observatoire de la Politique et de la Sécurité dans l'Arctique* (OPSA). From 2002 to 2012, he was Professor at the Université du Québec à Montréal (UQAM). He held the *Canada Research Chair in Canadian Foreign and Defence Policy*, and was director of the *Centre d'études des politiques étrangères et de sécurité* (CEPES). He was President of the ISA Canada section in 2004-2005 and the *Quebec Association of Political Science* (SQSP) in 2010-2011. Dr Roussel is Fellow at the *Canadian Defence & Foreign Affairs Institute* (CDFAI, Calgary) and the *Réseau francophone de recherche sur les opérations de paix* (Université de Montréal). He works regularly with the Canadian Forces, at the Canadian Forces College (CFC, Toronto) and the Security and Defence Forum (SDF, Ottawa). His research interests relate to Canadian foreign and defence policy, with particular emphasis on the relations with the United States and European countries. He currently directs three research programs entitled "Competing Views of Emerging Challenges in the Arctic", "The (Neo)Continentalist Approach in Canadian Foreign Policy", and "Quebec's Public Opinion Attitude Toward International Security".

Annex I

Agenda for the 2012-2013 GRA Debates

ISROP **PRISI**
 INTERNATIONAL SECURITY RESEARCH AND OUTREACH PROGRAMME
 PROGRAMME DE RECHERCHE ET D'INFORMATION DANS LE DOMAINE DE LA SÉCURITÉ INTERNATIONALE



Graduate Research Awards for Disarmament, Arms Control and Non-Proliferation 2012-2013 competition

The GRA Debates, February 22nd 2013, 125 Sussex Drive Ottawa

09:00 Opening Plenary

Alberta Room

Isabelle Roy, Director, Non-Proliferation and Disarmament Division, DFAIT

Remarks by **Dr. Jennifer Allen Simons**, President of The Simons Foundation

09:30 Debates 1 and 2 (with Q&A)

Nuclear Non-Proliferation and Disarmament

Alberta Room

Chris Grout, Non-Proliferation and Disarmament Division (Chair)

Debate Question:

“Be it resolved that given the recent progress that has been made in the advancement of nuclear disarmament, the international community needs to focus greater attention on putting in place nuclear non-proliferation measures to address proliferation challenges, including by non-state actors and states of proliferation concern”

Alexandre Léger/ In Favour

Concordia University

Anton Bezglasnyy / Against

University of British Columbia

Commercialization of Space

Nova Scotia Room

Julie Crêteau, Non-Proliferation and Disarmament Division (Chair)

Debate Question:

“Be it resolved that the commercialization of space will provide a net benefit to space security, in terms of the secure and sustainable access to, and uses of, outer space, and freedom from space-based and space-enabled threats”

Nancy Teeple/ In Favour

Simon Fraser University

Susan Khazaeli /Against

University of Ottawa

10:15 Health Break

Alberta Room

10:30 Debates 3 and 4 (with Q&A)***Membership in the Nuclear Suppliers Group***

Alberta Room

Amir Farid, Non-Proliferation and Disarmament Division (Chair)

Debate Question:

“Be it resolved that the objectives of the Nuclear Suppliers Group (NSG) would be best achieved by expanding the Group to include the states which remain outside of the Nuclear Non-Proliferation Treaty (NPT).”

Matthew Wiseman / In Favour

Wilfrid Laurier University

Saira Bano / Against

University of Calgary

Transparency and Freedom of Information for Dual-Use Research

Nova Scotia Room

Andrew Halliday, Non-Proliferation and Disarmament Division (Chair)

Debate Question:

“Be it resolved that proliferation and security concerns should not trump transparency and freedom of information when publishing dual-use biological, chemical, or nuclear research, when there are likely to be positive benefits for humankind arising from such research”

Elizabeth Silber / In Favour

University of Western Ontario

Brent Gerchicoff / Against

Concordia University

11:15 Meeting of the Awards Committee

Nova Scotia Room

11:30 Closing Remarks and Announcement of GRA Debate Winners

Alberta Room

Dr. Jennifer Allen Simons, President, The Simons Foundation (presentation of awards)**Isabelle Roy**, Director, Non-Proliferation and Disarmament Division, DFAIT (closing remarks)

Debate Format:

Side A	Opening statements	6 minutes
Side B		6 minutes
Side A	A's first rebuttal	2 minutes
Side B	Response	2 minutes
Side B	B's first Rebuttal	2 minutes
Side A	Response	2 minutes
Side A	A's second rebuttal	2 minutes
Side B	Response	2 minutes
Side B	B's second rebuttal	2 minutes
Side A	Response	2 minutes
Side B	Closing statements	3 minutes
Side A		3 minutes
Approximate Total		35 minutes

- Each debate will be approximately 35 minutes in duration, followed by a 10 minute Q & A. Two debates will be held concurrently in separate rooms (Alberta and Nova Scotia Rooms).
- Each debate will begin with students' opening statements (6 minutes x 2).
- Following the opening statements, there will be two (2) rounds of rebuttals and responses (2 minutes for each student x 4).
- Each side will give a closing statement (3 minutes x 2)

Annex II

2012-2013 GRA Programme Information

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GRADUATE RESEARCH AWARDS *for Disarmament, Arms Control and Non-Proliferation* 2012-2013

Competition Details

Graduate Research Awards for Disarmament, Arms Control and Non-Proliferation 2012-2013 are offered by The Simons Foundation and The International Security Research and Outreach Programme (ISROP) of Foreign Affairs and International Trade Canada (DFAIT).

The primary objective of the Graduate Research Awards is to enhance Canadian graduate level scholarship on disarmament, arms control and non-proliferation issues.

A total of eight awards of Cdn\$3,000 will be available to Masters and/or Doctoral students to support the research and writing of short position papers that will be presented at the Graduate Research Awards (GRA) Debates in Ottawa hosted by DFAIT. Awards include travel support to Ottawa (domestic transportation, accommodation, and meals) where successful candidates will be required to present their completed position papers in the form of a one-to-one debate during a special event at DFAIT in early 2013.

Deadline for applications:	October 22, 2012
Selection of short-listed candidates:	November 19, 2012
Deadline for position papers:	December 17, 2012
Selection of eight award recipients:	January 21, 2013

HOW TO APPLY:

Applications should be sent to Elaine Hynes at The Simons Foundation by email to: elaine_hynes@sfu.ca by the close of business (PST) on October 22, 2012. Hard copies of official transcripts and other documents may be sent to follow by mail. Your application must include:

- An introductory letter of interest that supports your candidacy for the GRA programme.
- A writing sample (up to 1,000 words) that addresses non-proliferation, arms control and disarmament (NACD) issues.
- Your resume, including proof of citizenship status.
- A complete, official transcript of your grades.
- A letter of reference from your supervisor.
- A second letter of reference.

ELIGIBILITY:

Canadian citizens and Canadian permanent residents/landed immigrants are eligible to apply. Previous recipients of a Graduate Research Award are eligible to apply, but priority will be given to students who have not already participated in the programme in order to expand the community of Canadian scholars working on NACD issues.

SELECTION PROCESS:

Following the initial review of applications, up to 16 candidates will be short-listed for further consideration. Applicants will be advised by November 19, 2012 if they have been selected as one of the short-listed candidates. Each of the short-listed candidates will be assigned one of the four pre-determined debate topics (see below) and will be required to research and write, individually and independently, a 1,000 word position paper arguing in favour or against, as instructed. Reading lists for each topic will be provided, along with a position paper template. Position papers must be submitted by December 17, 2012. Short-listed applicants may be re-assigned a debate topic for presentation at the GRA debates, to ensure appropriate debate pairings. The eight students whose position papers make the strongest argument for their assigned position, and are chosen to receive the award, will be notified by January 21, 2013.

GRA DEBATES:

Award winners will be required to present their positions at the GRA Debates hosted by DFAIT in Ottawa in early 2013. At the debates, an additional monetary award of \$1,000 will be presented to the students who make the most effective arguments in support of their positions in each of the four debates. The debates will be subject to Chatham House Rule and a report of the GRA Debates, including the position papers presented, will be published online by The Simons Foundation. ***Please note that attendance at the GRA Debates is a mandatory requirement of the award.*** Domestic travel, accommodation and meal expenses will be provided by ISROP, in accordance with Government of Canada Treasury Board Guidelines.

2012-2013 GRA DEBATE TOPICS ¹

Debate #1: Membership in the Nuclear Suppliers Group

Be it resolved that the objectives of the Nuclear Suppliers Group (NSG) would be best achieved by expanding the Group to include the states which remain outside of the Nuclear Non-Proliferation Treaty (NPT).

Debate #2: Transparency and Freedom of Information for Dual-use Research

Be it resolved that proliferation and security concerns should not trump transparency and freedom of information when publishing dual-use biological, chemical, or nuclear research, when there are likely to be positive benefits for humankind arising from such research (e.g. recent studies with biological agents that could have both positive and negative public health implications).

Debate #3: Commercialization of Space

Be it resolved that the commercialization of space will provide a net benefit to space security, in terms of the secure and sustainable access to, and uses of, outer space, and freedom from space-based and space-enabled threats.

Debate #4: Nuclear Non-Proliferation and Disarmament

Be it resolved that given the recent progress that has been made in the advancement of nuclear disarmament, the international community needs to focus greater attention on putting in place nuclear non-proliferation measures to address proliferation challenges, including by non-state actors and states of proliferation concern.

¹ Positions will be assigned to the short-listed candidates; Each topic will require arguments “for” and “against”.

BOURSES DE RECHERCHE AU NIVEAU DES ÉTUDES SUPÉRIEURES
pour le désarmement, le contrôle des armements et la non-prolifération
2012-2013

Détails du concours

Les **bourses de recherche au niveau des études supérieures (BRES) de 2012-2013 pour le désarmement, le contrôle des armements et la non-prolifération** sont offertes par la Simons Foundation et le Programme de recherche et d'information dans le domaine de la sécurité internationale (PRISI), d'Affaires étrangères et Commerce international (MAECI).

L'objectif principal du programme de BRES est de promouvoir, au sein de la communauté étudiante de cycle supérieur du Canada, les connaissances sur les enjeux entourant le désarmement, le contrôle des armements et la non-prolifération.

Huit bourses d'une valeur de 3 000 \$CAN sont offertes aux étudiants à **la maîtrise ou au doctorat** afin d'appuyer la rédaction de courts exposés de position et les recherches afférentes. Ces exposés seront présentés sous forme des Débats aux BRES à Ottawa, organisés par Affaires étrangères et Commerce international. Les bourses couvrent les frais de voyage à Ottawa (transport intérieur, hébergement et repas), où les candidats sélectionnés devront présenter leur exposé de position dans le cadre d'un débat de type face-à-face à l'occasion d'un événement spéciale qui se tiendra au MAECI au début de 2013.

Date limite de présentation des candidatures :	22 octobre 2012
Présélection des candidats :	19 novembre 2012
Date limite de remise des exposés de position :	17 décembre 2012
Sélection des huit récipiendaires de la bourse :	21 janvier 2013

PRÉSENTATION DES CANDIDATURES

Les dossiers de candidature doivent comprendre :

- Une lettre d'intérêt appuyant votre candidature au programme de bourses de recherche;
- Un texte écrit de 1 000 mots traitant des enjeux liés à la non-prolifération, au contrôle des armements et au désarmement;
- Un curriculum vitae comportant votre statut de citoyen (les Canadiens et les résidents permanents au Canada sont admissibles);
- Un relevé de notes officiel et complet;
- Une lettre de recommandation de votre superviseur;
- Une deuxième lettre de référence.

Les dossiers de candidature doivent être soumis dans leur intégralité avant la fermeture des bureaux le 22 octobre 2012. Ils peuvent être acheminés à M^{me} Elaine Hynes, de la Simons Foundation : elaine_hynes@sfu.ca

CRITÈRES D'ADMISSIBILITÉ

Les citoyens canadiens, résidents permanents/immigrants reçus du Canada sont admissibles au programme. Les lauréats précédents du Prix de recherche des diplômés sont admissibles, mais la priorité sera donnée aux étudiants qui n'ont pas déjà participé au programme en vue d'élargir la communauté des chercheurs canadiens travaillant sur les questions de NCAD.

PROCESSUS DE SÉLECTION

Une fois les candidatures passées en revue, jusqu'à 16 candidats seront présélectionnés. Nous communiquerons avec ceux-ci d'ici le 19 novembre 2012.

Chacun de ces candidats se verra assigner l'un des quatre sujets de débat (voir plus bas). Il devra se documenter et rédiger, personnellement et de façon indépendante, un exposé de position de 1 000 mots faisant valoir des arguments pour ou contre, selon les directives reçues. Il disposera d'une liste de lectures de référence de même que d'un modèle d'exposé de position. L'exposé de position doit être remis avant le 17 décembre 2012. Il est possible que les candidats présélectionnés se voient attribuer un nouveau sujet de débat à présenter à l'occasion des Débats des lauréats des Bourses de recherche au niveau des études supérieures, afin de garantir un appariement approprié des débats.

Les huit étudiants dont les exposés de position auront mis de l'avant les arguments les plus solides à l'égard de la position qui leur a été assignée, seront avisés de leur sélection d'ici le 21 janvier 2013.

DÉBAT

Les lauréats devront défendre leur position à l'occasion des Débats aux BRES qui sera organisés par le MAECI à Ottawa au début de 2013. À l'issue de ces débats, les quatre étudiants qui auront avancé les arguments les plus convaincants en faveur de leur position recevront des bourses supplémentaires de 1 000 \$. La règle de Chatham House s'appliquera au débat, dont la Simons Foundation publiera en ligne un compte rendu, qui comprendra les exposés de position présentés.

Veillez prendre note que l'obtention de la bourse est conditionnelle à la participation aux Débats aux BRES. Les frais de transport intérieur, d'hébergement et de repas seront pris en charge par le PRISI conformément aux lignes directrices du Conseil du Trésor du gouvernement du Canada.

SUJETS DU DÉBAT 2012-2013¹

Débat n°1 : l'adhésion au Groupe des fournisseurs nucléaires (GFN)

Il est résolu qu'il serait plus facile d'atteindre les objectifs du Groupe des fournisseurs nucléaires (GFN) si celui-ci élargissait son effectif de façon à comprendre les États qui n'ont pas adhéré au Traité de non-prolifération nucléaire (TNP).

Débat n°2 : Transparence et liberté d'information pour la recherche à double usage

Il est résolu que les préoccupations liées à la prolifération et à la sécurité ne devraient pas avoir préséance sur la transparence et la liberté d'information lors de la publication des résultats de recherche sur des agents biologiques, chimiques ou nucléaires à double usage, dans les cas où des avantages pour l'humanité peuvent être tirés de cette recherche (p. ex. des études récentes sur des agents biologiques peuvent avoir des incidences positives et négatives sur la santé publique).

Débat n°3 : Commercialisation de l'espace

Il est résolu que la commercialisation de l'espace apportera un avantage net à la sécurité de l'espace, sur le plan de l'accès et de l'utilisation sécuritaires et durables de l'espace extra-atmosphérique, et à la protection contre les menaces basées dans l'espace et facilitées par l'espace.

Débat n°4 : Non-prolifération et de désarmement nucléaires

Il est résolu que, compte tenu des récents progrès réalisés dans le domaine du désarmement nucléaire, la communauté internationale doit porter une attention particulière à la mise en place de mesures de non-prolifération nucléaire visant à enrayer celle-ci, y compris celle d'acteurs non étatiques et d'États soulevant des préoccupations au chapitre de la prolifération.

¹ Les positions seront assignées aux candidats présélectionnés; Chaque sujet exigera des arguments en faveur de la position et contre celle-ci.